



# UCC

**University College Cork, Ireland**  
Coláiste na hOllscoile Corcaigh

**Evaluation of the Pilot  
Implementation of the Safe Nurse  
Staffing Framework in Emergency  
Care Settings  
Report 3  
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Department of Health

## **Programme of Research into Safe Nurse Staffing and Skill-Mix**

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# Section 1

## 1.1 Executive Summary

### 1.1.1 Background

The determination of safe and appropriate nurse staffing levels and skill-mix in the Irish healthcare system has traditionally been based on historical need and professional judgement rather than informed by a systematic structured approach. In order to address this, the Department of Health published a policy document titled: *A Framework for Safe Nurse Staffing and Skill Mix in General and Specialist Medical and Surgical Care Settings in Ireland* (Department of Health 2018) (henceforth referred to as the *Framework*). This report outlined a number of recommendations pertaining to staffing levels in medical and surgical wards in acute hospitals to ensure safe and effective delivery of care.

The Department of Health has since extended the model and developed a draft document titled: *A Pilot to Implement the Framework for Safe Nurse Staffing and Skill Mix in Emergency Care Settings* (Department of Health, 2018) This document, following on from the model in the *Framework for Safe Nurse Staffing and Skill Mix in General and Specialist Medical and Surgical Care Settings in Ireland* (Department of Health 2018) outlined a number of key approaches to determine safe staffing and skill mix within emergency care settings. These approaches included: 1) the identification and testing of a systematic approach to determine staffing levels in emergency care settings (ED and Injury Units); 2) the delivery of care by 85% registered nurse and 15% healthcare assistant (HCA) grades; and 3) that the Clinical Nurse Manager (CNM) 2 role was 100% supervisory per shift. In addition, the pilot ED Framework also recommended the identification and utilisation of data collected in emergency settings for decision making.

Two previous reports submitted to the Department of Health outlined baseline data (Report 1 – September 2019) and the initial results observed following the implementation of the *Framework* for emergency care settings and its recommendations (*Evaluation of the Pilot Implementation of the Safe Nurse Staffing Framework in Emergency Care Settings Report 2*). Report 2 (September 2020) reported on the outcomes from the implementation of the recommendations in *A Pilot to Implement the Framework for Safe Nurse Staffing and Skill Mix in Emergency Care Settings* (Department of Health, 2018) in three pilot site emergency departments (EDs) and one injury unit (IU). This Final Report, which includes Time 3 data, builds on data collected at baseline (Time 1) and at Time 2 (following the implementation of the recommendations and reports on data collected from the pilot sites from March 2020 up to April 2021).

During the pilot testing of the *Framework* within the emergency settings, the Covid-19 pandemic occurred. As a result, the research team extended the study of the pilot sites in order to determine if the initial outcomes from *Framework* had been sustained and the impact that Covid-19 had on safe staffing within emergency care settings. Hence,

this is the final Report on the key findings from the Implementation of the pilot *Framework* in emergency care settings and provides data depicting the changes within ED settings during the Covid-19 pandemic. This was recommended by the Taskforce to measure both the ongoing implementation of the pilot recommendations and the impact of the Covid-19 pandemic on patient, staff and organisational outcomes in emergency settings.

These changes refer to the number and type of presentations, ED care times, as well as staffing levels and skill-mix within the EDs over the course of the COVID-19 pandemic. Data in relation to the impact of the pandemic, is outlined in a separate section to provide specific insight into the impact of a pandemic on emergency settings. While Report 2 identified the key findings from the testing of the pilot *Framework*, data collected over a longer period of time was required to allow for the changes in staffing to stabilise. In addition to the challenges afforded by the pandemic, on May 14<sup>th</sup>, 2021, the HSE was subjected to a cyber-attack; this severely affected data retrieval from the pilot sites. Data in this report is presented in reference to each individual hospital's ED to reflect unique and diverse range of outcomes. Data from Hospital 7, the injury unit, is outlined in a separate section due to the differences in service provision that an IU provides in comparison to an ED.

### **1.1.2 Aims and Objectives**

The overall aim of this research was to measure the effect of the implementation of the safe nurse staffing pilot policy *Framework* in emergency care settings, including measuring the impact of its recommendations on patient outcomes, staff outcomes, and organisational factors. The study also aimed to examine longitudinal data as a means of informing the implementation and evaluation of the *Framework* as well as building capacity with senior staff to monitor staff levels in these settings. As a result of the Covid-19 pandemic and to provide insight into the impact of a pandemic on emergency care settings, it was agreed to also extend the research to ensure an accurate reflection of data over a sustained period of time was captured.

#### **Objectives:**

- Objective 1: To measure the impact of implementing safe nurse staffing and skill-mix measures as outlined in the *Pilot Framework* on patient outcomes, staff outcomes and organisational factors.
- Objective 2: To examine the extent to which patient outcomes changed over time as a consequence of the pilot introduction of the *Pilot Framework* in emergency care settings.
- Objective 3: To examine the impact of introduction of the *Pilot Framework* on adverse patient outcomes and safety CLUEs (Care Left Undone Events).

Objective 4: To determine the impact of the introduction of the *Pilot Framework* on staff outcomes (e.g., job satisfaction, burnout, intention to stay).

- Objective 5: To determine the impact of the introduction of the *Pilot Framework* on organisational/ward environment factors.
- Objective 6: To determine the cost implications arising from the introduction of the *Pilot Framework*.
- Objective 7: To determine the impact of the Covid-19 pandemic on outcomes at an organisational, staff and patient level within the ED context<sup>1</sup>.

### **1.1.3 Methods**

The research took place across three emergency departments and one injury unit, with the hospitals chosen by the Department of Health according to their location and specialist function. The research design included longitudinal analysis of administrative data from all patients who attended the three EDs and IU across the study period (excluding patients who attended clinics associated with the EDs), as well as cross-sectional nurses and HCAs involved in direct patient care within the selected departments.

The research was undertaken in conjunction with alterations to the nursing staff levels and skill-mix that were made following the implementation of a systematic approach to determine staffing levels based on patient acuity and dependency, the implementation of the recommended skill-mix (85% RN to 15% HCA) and ensuring the role of the CNM 2 (ED/unit leader) is 100% supervisory. The Nursing Hours per Patient Presentation (NHpPP) model was the selected systematic approach for determining staffing levels in emergency care settings. This model calculates the number of Whole-Time Equivalent (WTE) nursing staff (RN and HCA) required to care for patients based on their triage category as a dependency and acuity measure.

While the previous report (Report 2) focused on presenting the findings from the initial implementation of the *Framework* within the emergency care setting, this was limited due to the current Covid-19 pandemic and subsequent disruption to the health service. However, since the publication of the initial report depicting the findings of the study, national restrictions have begun to ease, and healthcare services are more easily accessible from a research perspective. Hence, this report focuses on administrative data and data pertaining to rosters, including agency usage in the research sites in the period from March 2020 up to April 2021<sup>2</sup>.

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<sup>1</sup> Objective 7 was added at the request of the National Taskforce as a consequence of the Covid-19 pandemic and its impact on the health services in Ireland.

<sup>2</sup> Note that while restrictions have begun to ease in May/June 2021, due to Covid-19 the collection of cross-sectional data was not feasible at this time. Also, key sites were affected by difficulties in accessing IT systems due to a cyber attack on the health service, and as a result, access to their administrative data was disrupted.



A number of approaches were employed in this research programme at including the collection of cross-sectional data at three timepoints and administrative data throughout the duration of the study. Initially, administrative data was collected for patients who attended the three EDs and the IU between January 2018 and March 2020, with the 31<sup>st</sup> March 2020 selected as a cut-off point for administrative data collection due to the Covid-19 pandemic and the subsequent impact on the healthcare system (see earlier reports). The majority of secondary data was provided by the ED administrative systems of the respective departments. The administrative data collected were used to measure the impact of staffing adjustments arising from the recommendations of the *Pilot Framework* on patient outcomes (leaving without being seen, time to triage, triage to be seen, ED registration to be seen, ED care time, and patient experience time). Definitions of each outcome measure are provided in section 3.2.2.1 of this report.

The cross-sectional element of the study measured data on nursing work, job satisfaction and intention to leave as well as care left undone events, burnout and the prevalence of violence and aggression. The survey component of the research was administered to staff at baseline (Time 1) and following the changes to their staffing based on the recommendations of the *Pilot Framework* (Time 2) and during the COVID-19 pandemic (Time 3). Staffing changes were implemented at differing times within each of the emergency departments; however, Time 2 survey data were collected in the emergency departments from February 2020 onwards as adjustments to staffing were being implemented in each site at this time. Secondary data on patient experience in the emergency departments were also extracted from the HIQA annual patient experience survey for 2018 and 2019; Note data for 2020 and the first Quarter of 2021 (up to April 2021) was unavailable due to the Covid-19 pandemic.

Following on from this, administrative and cross-sectional data has since been collected from March 2020 up to April 2021 (inclusive) in the key pilot ED sites as well as the IU in order to determine if the initial improvements observed in Time 2 have been sustained and to measure the impact of the Covid-19 pandemic on staff outcomes.

#### **1.1.4 Summary of Key Results – Emergency Departments and Injury Unit**

The results are reported according to the timeframes in which the data was collected. The administrative data is reported on a monthly and annual basis. Data on staffing levels are reported both monthly and annually and consist of data collected from staff rosters, agency levels, and skill-mix.

##### *Nursing Hours per Patient Presentation, Agency Usage*

- Using data for the year 2018 as a baseline, the Nursing Hours per Patient Presentation (NHpPP) model determined that EDs in hospitals 4, 5 and 6<sup>3</sup> required variations in staffing to ensure the delivery of safe and effective patient

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<sup>3</sup> To maintain the anonymity of the three hospitals, codes are used throughout.

care based on the patient's triage category. The calculations were based on adult presentations only<sup>4</sup>.

- It was determined that Hospital 4 required 89.70 WTEs to staff the adult ED and, at the commencement of the study, had 83.20 WTEs in place prior to the implementation of NHpPP. From the baseline data, adjusting for the adult only ED, Hospital 4 required an additional 6.5 WTEs, this included 6 WTE post through the conversion of their agency and a further 0.5 post funded uplift; this comprised an adjustment of 2.11 RNs and 4.39 HCAs and was based on the 85/15 skill-mix recommendation. This allowed agency usage to be converted to WTEs. This included 2.11 RNs and 4.39 HCAs resulting in a total of 6.5 WTEs.
- Hospital 5 required a total WTE of 47.53 WTEs and had 39.03 WTEs in place prior to the calculation. Therefore, based on this assessment, the department required an additional 7.1 RNs and 1.4 HCAs, a total of 8.5 WTEs to bring the department to the recommended staffing complement.
- Based on emergency presentations to Hospital 6 in 2018, the ED required 105.48 WTEs and had 77.00 WTEs in place prior to the calculation. Therefore, to meet this staffing complement, it was identified that an extra 28.5 WTEs were required; this consisted of 18.7 RNs and 9.8 HCAs.
- Due to the nature of the presentations, the NHpPP model, which is based on a patient's Manchester Triage Score (MTS), was not deemed suitable for the pilot Injury Unit (IU)<sup>5</sup>. However, from investigating the data from baseline it was apparent that the RNs in the IU were carrying out a number of non-nursing duties, such as cleaning, stocktaking, and replenishing stocks. Thus, an uplift of two WTE HCAs was identified to release nursing time from these non-nursing duties to facilitate them to provide direct patient care.
- It is of note that the recruitment of the required staff took place over an extended period, with the new staff recruited undergoing a mandatory period of induction and adaptation to the department due to its specialist nature. Agency staff were required to provide care in the ED and, in particular, for boarded patients<sup>6</sup> during this period; therefore, this study reports on those patients who required ED care only and excludes those patients whose process of ED care had finished but were awaiting a bed<sup>7</sup>. Furthermore, the majority of staffing changes were made towards the end of 2019/beginning of 2020, with the Covid-19 pandemic potentially impacting on potential changes from March 2020 onwards. Such factors highlighted the need for the collection of further data over a longer period of time to explore the impact of staff stabilisation on agency

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<sup>4</sup> One hospital received both adult and paediatric patients.

<sup>5</sup> As IUs predominantly treat patients with minor injuries who are triaged as standard/non urgent, the MTS was identified as not suitable to distinguish the level of care required by patients attending the unit.

<sup>6</sup> This study did not calculate staffing requirements for boarded patients; that is, those patients who were in the ED awaiting allocation to a bed in the hospital.

<sup>7</sup> The staffing requirements for boarded are outlined in WRC Agreement

use and economic outcomes. As a result, the research was extended to examine whether changes initially observed within the pilot sites at Time 2 were sustained as well as measuring the extent to which the Covid-19 pandemic impacted on outcomes.

- EDs had to respond significantly during the Covid-19 pandemic. These responses included, for example, the provision of parallel access streams for Covid-19 and non-Covid-19 patients, and staff redeployment to and from ED. Thus, staff requirements and allocation were affected due to the change in care requirements because of the pandemic. Additionally, EDs within the pilot phase had to set up modular units housed outside their main ED to cope with these Covid-19 pathways. Therefore, the results in this Report, particularly those from Time 3, need to be considered within this context.
- Improved outcomes were noted in the extent to which agency staff were used following the introduction of the recommendations in the *Pilot Framework*.
- Hospital 4 RN agency staffing remained relatively stable across the initial two years of 2018 and 2019 with RN agency staff accounting for approximately 10-11\_WTEs in each year. However, RN agency usage decreased in 2020 to 13,774 hours (6.79 WTEs) following adjustments to staffing. HCA agency usage increased slightly from 2019 to 2020 equating to 5.09 WTEs in comparison to 4.82 WTEs in 2019. RN agency use decreased in 2021 to 1,120.00 hours down from 1147.83 in 2020. HCA agency use showed some increase in 2021 with the majority of agency staff required during this period to provide care to patients who had completed their ED care but were awaiting a bed.
- Hospital 5 recorded a significant reduction in their agency usage from 2018 up to April 2021 with almost no HCA agency staff utilised following the introduction of the recommendations in the *Pilot Framework*. This was despite an increase in admissions in patients aged 75 years and older. Hospital 5's RN agency remained relatively stable ranging from an average of 4.69 WTEs in 2018 to 5.34 in 2019 and falling to 3.46 in 2020 (following the staffing adjustment).
- Hospital 6 recorded a decrease of 4.35 WTE or 735.64 hours in RN agency use from 2019 to 2020, coinciding with a decrease in vacant posts. The converse was seen in HCA agency use in Hospital 6, with an increase in agency use in 2020 coinciding with an increase in HCA vacancies. The data showed that overall agency use in Hospital 6 began to decrease in late 2019, with the downward trend continuing into early 2020.
- For Hospital 7 (IU) the NHpPP was not identified as a valid model for this setting but an uplift of 2 HCAs was deemed necessary to assist in the performance of non-nursing tasks. The IU did not use agency staff throughout the timeframe of the study.

- It is important to note that prior to the pandemic, the majority of agency costs were accrued in the allocation of staff to care for patients who have been admitted but are waiting in the ED for a bed on a ward; these patients were predominantly cared for by agency staff. In addition to caring for boarded patients, reasons for requesting extra agency staff include unplanned sickness absence, unfilled vacancies, maternity/parental leave, and to cover compassionate leave. While no inferences can be incurred, the data suggests that the recent Covid-19 pandemic had a substantial bearing on the number of agency staff to cover sickness absence as requested by hospitals 4, 5 and 6.

### *Economic Analysis*

Overall, there was a substantial decrease agency spend both for RNs and HCAs following the introduction the staffing adjustments. Agency costs for Hospital 4 decreased by 32%, Hospital 5 by 29% and Hospital 6 by 22%. Overall, total agency costs in the three pilot sites decreased from €2,427,614.20 in 2018 (prior to the adjustments) to €1,905,075.96 in 2020 (following the adjustments), an overall 22% decrease in agency spend.

### *Patient Outcomes*

- Overall, there were approximately 443,158 patient presentations in the three pilot EDs recorded for the duration of the study – January 2018 to April 2021.
- 28,705 patient presentations were recorded in the Injury Unit (January 2018 to April 2021).
- In almost all patient variables, a change in outcomes were evident as a consequence of the spread of the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) in Ireland. There were a number of time periods in which ED presentations fell below 4,000 coincided with the three ‘waves’ of Covid-19 cases in Ireland, March-April 2020, October-November 2020, and January-February 2021, and the consequent lockdown policies put in place. However, as the pandemic and the public health response to the virus developed throughout 2020 and into 2021, ED presentations returned to near pre-pandemic levels, with many patient outcomes variables stabilising at ranges below those of baseline data.
- Overall, patient outcomes have continued to improve year on year despite the recent Covid-19 pandemic; these outcomes are outlined in further detail below.

### *Time to Triage*

- All hospitals, following the introduction of the recommendations in the Framework, demonstrated a reduction in time to triage for patients.
- The median time to triage (TTT) as a proportion of hours for Hospital 4 was 0.24 in 2021 down from a median of 0.33 in previous years.

- Median time to triage for Hospital 5 in March 2021 was 33.3% lower than the corresponding figures for 2018 and 2019. In April 2021, median time to triage was recorded at 0.22 hours, down from 0.32 hours for the same month in 2019, with an equal number of presentations.
- Time to triage (TTT) data for Hospital 6 for 2018 and 2019 showed a monthly median range of 0.28-0.48 hours. Data for the period October 2019-February 2020, that is following the commencement of the staffing adjustment and pre-pandemic, showed a decrease of 22.7-29.2% from the median TTT of the corresponding month of the previous year. Having reached a low of 0.15 hours in April 2020, median TTT stabilised at the range of 0.17 hours to 0.20 hours in the months from May 2020 to March 2021. Median TTT for April 2021 was 0.27 hours, 28.9% below the median TTT for April 2019, with comparable ED presentation figures.
- For Hospital 7, time to triage (TTT) across each year is relatively short at 0.30 hours in 2018, 0.28 hours in 2019 and 2020, and falling to 0.20 hours in 2021 (following staffing adjustments).

#### *Time from Triage to Be Seen*

- Time from triage to being seen by a decision maker for Hospital 4, when similar presentation numbers from previous years were compared, decreased from an average of 1.8 hours in 2018 to 0.93 in 2020 and to 0.51 in 2021.
- For Hospital 5 for January and February 2020 (following staffing adjustments and prior to Covid-19 pandemic)) for time to being seen showed improvements from their respective figures for the previous year, with median times falling respectively to 0.57 hours (January 2020) from 0.92 hours (January 2019) and to 0.58 hours (February 2020) from 0.87 hours (February 2019). Data for the months of June to September showed that upper quartile times from triage to being seen by a decision maker ranged from 1.35-1.90 hours in 2019 (prior to the implementation of the pilot Framework), but a lower range of 1.00-1.18 hours was recorded in 2020 (following the introduction of the Framework), with comparable patient presentation levels<sup>8</sup>.
- Median monthly wait times ranged from 0.45 to 1.98 for Hospital 4 and 0.33 to 0.98 for Hospital 5. For Hospital 6 Median monthly wait times from being triaged to being seen by a decision-maker ranged from 1.50 to 1.98 hours in 2018, and from 1.07 hours to 1.83 hours in 2019. December 2019 recorded the second lowest monthly median time to be seen of that year, at 1.10 hours, in contrast to December 2018, which had the third highest monthly median time of that year, at 1.87 hours. Median times to be seen per month did not move above one hour following the outbreak of the pandemic, reaching a low of 0.38 hours

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<sup>8</sup> These time periods take into account the impact of Covid-19 on patient presentations; therefore similar patient presentation numbers are compared.

in April 2020. Median figures rose gradually during the summer 2020 before stabilising at a range of 0.75-0.88 hours from August 2020 to April 2021.

#### *Registration to Seen by A Decision Maker*

- Median time per month per registration to being seen by a decision maker for Hospital 4 and 5 were reduced in 2020 from previous years, by 20% and 32% respectively. The median time per month from registration at the ED to being seen by a decision maker for Hospital 6 was consistently above two hours at baseline, with a highest median time of 2.52 hours recorded in April 2018. Following the implementation of the staffing adjustments, median registration to being seen times for the months October 2019 to February 2020 were more than 20% lower than 2018 figures for the respective months. A decline to a median of 0.61 hours in April 2020 was followed by a return to a range of around one hour (0.95-1.13) at the end of 2020 and into 2021. A median time of 1.32 hours recorded in April 2021 represented a 47.7% decrease from the 2018 time for that month.
- Wait times from ED registration to discharge for Hospital 4 and 5 was on average 5.52 hours and 5.15 hours respectively. Hospital 4 ED registration to Seen Time average was down 1.27 hours from previous years. With Hospital 5 seeing a decrease of 21% in 2020. The median time a patient had to wait from ED registration to time of discharge/decision to admit (ED care time) for Hospital 6 showed a range of 5.27-6.27 hours and 5.13-6.55 hours in 2018 and 2019 respectively. Following an initial decrease in April 2020, median ED care was approximately 4-5 hours each month through to the end of the data collection period. Upper quartile data showed that in April 2021, 75% of patients had been discharged or admitted within 6.55 hours, a decrease of at least three hours from the corresponding figure in 2018 (9.76 hours) and 2019 (9.85 hours).

#### *Patient Experience Times*

- *PET was defined as the time in hours from ED registration to the time of departure from the ED following discharge/admission, inclusive of boarding time following the decision to admit.*
- In Hospital 4, patient experience time (ED PET) was 22.5% lower in 2020 compared with 2018, 2019. Median PET values for Hospital 4 ranged from 4.46 hours to 7.7 hours across the study period. February 2019 recorded the highest median PET. March 2020 recorded the lowest median PET value, down 3.02 hours from the same month in the previous year. From April 2020 to September 2020, data shows that median values were at their lowest dropping by between 12.26-26% from the corresponding months of 2019. In 2021, median ED PET was 6.32 down by 18% on 2018 and 5.6% on 2019.
- In Hospital 5, patient experience time (ED PET) was defined as the time from ED registration to departure from the ED, inclusive of boarding time following

the decision to admit. Monthly data showed a 27.0% decrease was recorded in March 2021 from the corresponding 2018 figure, while a 23.7% decrease was recorded in April in median ED PET over the same period. Median ED PET ranged from 3.17-3.45 hours for June-September 2020, all of which were the lowest median PET recorded for the respective months, with presentation levels comparable to pre-pandemic figures.

- Hospital 6 36.5-47.3% of patients had an ED PET of 6 hours or less, 52.4-65.5% had times of 9 hours or less, and 86.0-94.4% were discharged from the ED within 24 hours of registration over the study duration. Proportions of all three metrics rose as ED presentations declined at the outbreak of Covid-19. However, as monthly presentation figures approached comparable levels, the proportion of patients meeting the KPIs of an ED PET  $\leq 6$ , 9, and 24 hours remained above pre-pandemic levels, with the lowest monthly proportion following the outbreak of the pandemic above the highest monthly proportion prior to March 2020.

### *Leaving Without Being Seen*

- For Hospital 4, The proportion of patients leaving without being seen was less than 2% for the period March 2020 up to April 2021. The proportion of patients in Hospital 5 leaving without being seen almost halved in February 2020 (2.4%) from the corresponding 2018 baseline figure (4.7%), while January 2020 saw a reduction to 3.1% of presentations from 3.7% in January 2018. With an equal number of presentations, the proportion of patients LWBS in April 2021 dropped to 1.9% from 2.6% in 2019.
- The overall proportion of patients who left before being seen or before the completion of treatment in Hospital 6 is high, however, this is consistent with the patient profile of the ED. Over 20% of patients were recorded as LWBS in 2018 and 2019. As the pandemic developed and a series of lockdown measures were introduced in response, LWBS figures declined, with 4.7% of presentations in April 2020 LWBS. As ED presentation figures increased and the country moved out of lockdown restrictions, LWBS figures remained below pre-pandemic levels, with each month from May 2020 recording a proportion of patients LWBS less than half of their peak figures before the outbreak of the virus in Ireland.

### *Nursing Work*

- The profile of the respondents in each hospital was relatively similar. While self-report of nurse-to-patient ratios were obtained, these are based on how many patients an individual was caring for rather than how many the entire team were caring for. This is due to the issue of the ever-changing patient flow in ED and the difficulty around staff members being aware of this figure. However, the results are indicating some changes in the ratios following the introduction of the recommendations. Hospital 4 reported decreased ratios at Time 2, with

Hospital 6 in particular reporting a decrease in nurse-to-patient ratio for RNs only on day and night shifts.

- The results from the measuring the working environment are indicating some upwards trends in all four subscales. Both Hospital 4 and 6 showed increases on the subscales with Hospital 5 remaining relatively stable across the two time periods. In particular, Hospital 6 showed a substantial increase on scores of Staffing and Resource Adequacy following the introduction of the recommendations.
- At hospital level, it is clear that Time 2 has substantially better ratings on quality of care, patient safety and quality of care over the last 6 months. However, this did not translate into fewer items of care being left undone or delayed with over 85% of shifts in both times having at least one item of care left undone and almost 90% for care delayed. However, the average number of care items left undone fell from Time 1 to Time 2. The number of items delayed remained higher than undone but showed a slight reduction from Time 1 to Time 2. Missed and/or delayed meal breaks were showing improvements from Time 1 to Time 2.
- Job dissatisfaction was relatively high in Time 1 although substantial improvements were apparent in job satisfaction in Time 2 and the vast majority of staff were satisfied with the profession in general in both time-points. However, despite these improvements in job satisfaction, a large proportion stating that they intended to leave their job due to job dissatisfaction. Staff reported relatively high levels of emotional exhaustion in Time 1, which are beginning to improve in Time 2. Low levels of depersonalization were seen in Time 2; however, these scores increased in Hospital 5 but showed a slight decrease in Hospitals 4 and 6. However, the personal accomplishment scores remained relatively high indicating that staff take pride in their work.
- High levels of physical, psychological, and verbal violence and aggression, along with similarly high levels of conflict, were experienced by the staff over the last 3 months in their work in both Time 1 and 2 with little change seen. Staff highlighted a number of issues in their qualitative comments including, the challenges of their environment, staffing and skill-mix, support and teamwork, workload, quality of care and missed care, and the fact that they are burned out and stressed. These issues were prevalent in both Time 1 and 2
- Overall, the staff data indicate a number of issues in Time 1, most of which can be related to staffing resources and availability of time, however many of these outcomes improved or were improving during Time 2. However, data was collected during the Covid-19 pandemic which changed the typical ED environment. As such, these results may not be entirely reflective of staffing in the EDs.



### **1.1.5 Summary of Key Results – Injury Unit**

#### *Staff Adjustment*

- For Hospital 7 (IU) the NHpPP was not identified as a valid model for use but an uplift of 2 HCAs was deemed necessary to assist in the performance of non-nursing tasks that staff within the IU were engaged such as cleaning, stock ordering and waste management, adversely impacting their available direct patient contact time. Two HCAs were allocated to the IU in recognition of this, allowing for the prioritisation of patient care. However, on taking up the role in April 2020, the HCAs were immediately redeployed in light of the Covid-19 pandemic and were not reassigned to the IU until late August 2020. The IU did not use agency staff.

#### *Patient Outcomes*

- Overall, the IU demonstrated good patient outcomes over the three-year period, regardless of the overall population or those over the age of 75. The average time to triage (TTT) is approximately half an hour while the average PET is just under two and a half hours. Over 94% of all patients across each year (2018, 2019 and 2020) had treatment completion and discharge, admission or transfer within 6 hours, while over 97% of patients had this within 9 hours. A small number of patients are admitted or transferred to another hospital with the vast majority completing their treatment in the IU and less than 1.0% overall left without being seen (LWBS).

#### *Nursing Work*

- Cross-sectional data for the IU was collected at three time points, in October 2018 (Time 1), in late August early September 2020 (Time 2) (following the introduction of extra HCAs) and September 2021 (Time 3). Note there was a delay in the collection of data for Time 3 due Covid-19 and the redeployment of staff within the healthcare infrastructure. Data was collected under the domains of demographics, nurse-to-patient ratios, the nursing environment, quality of care, care left undone/delayed, job satisfaction, burnout and the prevalence of violence and aggression.

### **1.1.6 Conclusion**

This is the first study in Ireland to examine nurse staffing and related outcomes in the emergency care setting over a longitudinal period of time. In addition to this, it is one of the few studies that provides valuable insight into staffing within EDs during a worldwide pandemic, considering Covid-19 and its impact on organisational, staff and patient outcomes. This report has identified some promising outcomes for further analysis in examining the impact of the Safe Staffing Framework in emergency care settings on patient outcomes, staff outcomes, and organisational factors, in addition to the challenges associated with the implementation of the *Draft Framework*. These challenges include the recruitment of the workforce and the need for further

longitudinal data collection and analysis to examine the long-term impact of the implementation of the safe staffing initiative.

Despite the staffing adjustments arising from the NHpPP calculations being made during the latter part of data collection, some positive trends are evident in the data, exemplified by the decline in agency use, particularly for RN grades. Similarly, positive outcomes were evident when analysing the key patient outcomes of time to triage and patients' leaving without being seen. Though the influence of the pandemic on the delivery of healthcare within the ED is to be taken into account, as monthly ED presentations returned to levels comparable to pre-pandemic levels, the data for key patient outcomes associated with nurse staffing showed an improvement from pre-pandemic levels. The data in this report demonstrates the impact of the pandemic on the ED, yet also demonstrates the ability of Hospital 6 following the staffing adjustments to deliver emergency care faster, even when managing a similar level of patients in the midst of a pandemic. This study has highlighted that administrative data is a useful resource in the determination of staffing requirements, as well as in the examination of the impact of staffing changes within the ED, particularly over a longitudinal period, through the pandemic and beyond.

Overall, the data in Report 2 study showed that the hospitals which had modest changes to staffing levels generally remained stable or showed slight improvements in outcomes, despite increasing patient presentations. The data in this report demonstrate that Hospital 6, having received the greatest staffing adjustment, was able to effectively deliver faster emergency care to all patients in the ED when compared with baseline data, even with the various protocols in place around Covid-19. Data from Hospital 5 suggests that positive outcomes observed at Time 2 have been sustained with a substantial decline in agency usage, particularly HCA agency during the pandemic. Hospital 4 data suggests that overall, their staffing required substantial variations however, this is more than likely as a result of their service provision altering and increased activity within the unit. The results of this study offer support for the implementation of the *Draft Framework* within the emergency care setting. Future programmes of research can build on the insights and learning of this study in assessing emergency department outcomes over time in relation to staffing levels and skill-mix.

## Section 2

### 2.1 Introduction

The Department of Health previously published a policy document titled: *A Framework for Safe Nurse Staffing and Skill-Mix in General and Specialist Medical and Surgical Care Settings in Ireland* (Department of Health 2018) (henceforth referred to as the *Framework*). In this report, a number of recommendations were made to ensure that the staffing of medical and surgical wards in hospitals was safe and effective; that is to ensure the right number of nurses are in the right place at the right time and with the right skills to deliver care. The objectives of the Framework were to:

- Develop a staffing (RN and HCA) and skill-mix ranges Framework related to general and specialist medical and surgical care settings.
- Set out clearly the assumptions upon which the staffing and skill-mix ranges are determined.
- Make recommendations around implementation and monitoring of the Framework.

The *Framework* was developed following consultation with key stakeholders in the healthcare system and national and international experts. The consultation resulted in a number of recommendations, including: the undertaking of quality research on the association between nurse staffing and patient outcomes; that patient safety tipping points are monitored; the CNM 2 role is fully supervisory and ‘that a systematic ... evidence-based approach to determine nurse staffing and skill-mix requirements is applied’ (Department of Health 2016: 9). The recommendations in the *Framework* document were based on research undertaken by a research team from University College Cork, the University of Southampton, University of Technology Sydney and National University of Ireland Galway (Drennan *et al.* 2018). Based on this approach, a decision was made by the Department of Health to extend the model to develop a *Pilot Framework* for emergency care settings (the subject of this Report).

This *Framework* was followed by the publication of a draft document titled: *A Pilot to Implement the Framework for Safe Nurse Staffing and Skill-Mix in the Emergency Care Settings* (Department of Health 2018). This document (henceforth referred to as the *Pilot Framework*) outlined a number of draft recommendations to ensure the safe staffing of emergency care settings, including:

1. That an evidence-based tool be used to consistently and systematically quantify patient care requirements in the emergency clinical settings.
2. That patient-related information is captured from existing ED data systems regularly to inform decisions on the determination of nurse staffing requirements; this data includes but is not limited to the following: patient volume and attendance, patient profile, admission rates, patient transfer and escort and the average length of patient stay. In addition, it is further recommended that this information is used to interpret patterns of predictable demand over the spectrum of the day/week/month/year and to allocate the nurse staffing resource according to these patterns.

3. That information on the nursing team profile across the emergency care setting is captured, considering a number of variables including: education level; skill mix; and competence and grade mix (that is: mix of Registered Nurse, Clinical Nurse Manager, Clinical Nurse Specialist and Advanced Nurse Practitioner and Healthcare Assistant).
4. That specialist clinical skills and competencies should be determined based on patient and department profile (for example, specific clinical skill requirements for specialist input into children's services, including mixed adult and children's EDs).
5. That, for the purposes of this pilot, an RN/HCA skill-mix of 85%/15% for EDs is put in place (once a safe nurse staffing level exists).
6. That planned and unplanned absence is factored into the calculation of the nurse staffing establishment across emergency care settings.
7. That organisations invest in unit leader capacity by ensuring that 100% of the role of the CNM 2 unit leader is safeguarded to fulfil her/his/their supervisory and leadership role within the ED. The *Pilot Framework* further recommended that the CNM 2 role, as a shift leader in the Emergency Department, operates over a 24-hour, seven day a week period for those EDs that operate on this basis.
8. That organisations invest in the role of the CNM 1; this is recognition not only of her/his/their supportive role to the CNM 2, but equally for the importance of this role as a necessary provision for CNM 2 succession planning across the organisation and the development of leadership capabilities.
9. That organisations put in place mechanisms to measure patient outcomes systematically and consistently to indicate the capability of the nurse staffing skill-mix and level to meet patient need.
10. That the patient experience be measured in the emergency care setting and can be undertaken within the wider context of the hospital/organisation patient experience surveys.
11. That measurement of the staff experience is recommended in emergency care settings to capture information on the work environment as a key component to nurse staffing.
12. That Care Left Undone Events (Safety CLUEs) are measured in the ED setting.

The research in this report provides follow up data on the implementation of the *Pilot Framework* in emergency departments (EDs) and builds on two previous reports (Report 1 – Baseline Report and Report 2 – follow up following the implementation of the recommendations from the *Pilot Framework*). The extent to which changes in

staffing impacted the experience of patients in EDs, such as the length of time waiting for care, patient experience time and leaving without being seen, for the three pilot emergency departments (EDs), and the injury unit (IU) are outlined in this report. In addition, patient outcomes and the trends observed in agency usage over the duration of the Covid-19 pandemic are also presented. Based on our results, this document will outline a number of key findings from the data to the Department of Health on how the *Pilot Framework* for emergency departments in Ireland is progressing to ensure EDs are safely staffed and have the required skill-mix to provide safe, high-quality care. This report also provides data on the impact of the Covid-19 pandemic on patient, nurse and organisational outcomes in the three pilot emergency departments and one injury unit.

### **2.1.1 Background to Safe Nurse Staffing in Emergency Departments and Injury Units**

A number of enquiries have identified failings in care that have resulted in adverse patient outcomes in several countries; for example, in Ireland investigations into the safety and governance of two major hospitals (Health Information and Quality Authority (HIQA) 2012, 2013); in the UK, The Mid Staffordshire NHS Foundation Trust Inquiry (The Mid Staffordshire NHS Foundation Trust Inquiry, chaired by Robert Francis QC, 2010); and an enquiry into a preventable death at the Royal Darwin Hospital in Australia (Coroner's Court 2008). The role of safe nurse staffing was highlighted in several of these reports as a factor in ensuring good patient outcomes.

A safe nurse staffing approach stipulates that there must be sufficient nurses available to meet patient needs, that nurses have the required skills, and are organised to enable them to deliver the highest care possible. Research over the last 20 years has demonstrated the impact that nurse staffing can have on patient outcomes, with several studies reporting that lower levels of nurse staffing are associated with adverse outcomes (Aiken *et al.* 2002; Kane *et al.*, 2007; Needleman 2011; Griffiths *et al.* 2014).

In relation to nurse staffing and patient outcomes, it was identified that higher rates of staffing are associated with lower rates of failure to rescue, falls, length of stay and readmission rates. It has also been identified that lower levels of staffing are associated with higher rates of drug administration errors and episodes of care left undone. In particular, there is a body of evidence that reports on the association between lower nurse to patient ratios and increased patient mortality (Cho *et al.* 2003; Rafferty *et al.* 2007; Needleman *et al.* 2011; Aiken *et al.* 2014; Griffiths *et al.* 2016a; Ball *et al.* 2017).

There have been a number of systematic reviews that have examined the relationship between safe staffing and patient outcomes, identifying a number of associations between nurse staffing, skill-mix, and patient outcomes (Kane *et al.* 2007; Butler *et al.* 2011; Griffiths *et al.* 2015, Simon *et al.* 2015). Reviews undertaken for the National Institute of Health and Care Excellence in the UK (NICE) (Griffiths *et al.* 2015; Simon *et al.* 2015, Drennan *et al.* 2016) identified that higher rates of staffing are associated with lower rates of mortality, failure to rescue, falls, length of stay and readmission rates. In the reviews for NICE, it was also identified that lower levels of staffing are

associated with higher rates of drug administration errors and episodes of care left undone or missed nursing care.

### 2.1.2.1 Emergency Departments

In Ireland, as in other developed countries, there is increasing demand for emergency care. The report. *Health in Ireland: Key Trends 2019* (Department of Health 2019)<sup>9</sup> identified that 1,323,466 patients presented to EDs in the year ending 2018; a 5.6% increase since 2009. Those aged 65 and older represent an increasing proportion of ED discharges each year, rising from 36.5% of discharges in 2012 to 41.3% in 2018 (Department of Health, 2019). Seasonal factors were evident in ED Patient Experience Times (PET)<sup>10</sup> with the winter months of December to February showing larger variation in PET than other months when looking at time spent within the ED by 95% of people as measured by the 95th percentile (Department of Health, 2019). In the *Health in Ireland: Key Trends 2018 report* (Department of Health, 2018), weekdays were indicative of higher attendances with Monday mornings between 11am and 1pm seeing the highest attendance volume across the week.

Data from the Health Service Executive Performance Report (HSE, 2019) showed that emergency department presentations increased by 2.6% from 2018 figures, with 1,506,343 emergency presentations from January 2019 to December 2019. This actual presentation figure represented a 2.1% increase for year-to-date December 2019 target figures for ED presentations ED presentation figures were significantly impacted by the dramatic changes to healthcare and wider society arising from the outbreak and development of the Covid-19 pandemic in 2020. In a report undertaken shortly following the outbreak of the pandemic in Ireland, it was reported that national ED attendance figures for March 2020 were 32.5% less than the same month of the previous year (Brick, Walsh, Keegan, & Lyons, 2020). Overall, in 2020, there were 1,278,283 emergency presentations, a fall of 15.1% when compared to 2019; this was below the expected activity of 1,547,713 (HSE 2020). However, in the three ED pilot sites, activity levels towards the end of 2020 and in the first quarter of 2021 have returned to levels evident in 2018 and 2019. The timeline of the development of the pandemic and the public health response in Ireland is outlined in further detail in Section 2.1.2.

In relation to ED Patient Experience Time (ED PET), the HSE outlines guidance for vulnerable groups, with a target of ED PET  $\leq 24$  hours for all patients, including those aged 75 years and older (HSE, 2019). In December 2019, the proportion of all patients who recorded an ED PET  $\leq 9$  hours was 76.1%, and  $\leq 24$  hours was 95.8%. ED PET  $\leq 24$  hours for patients aged 75+ was 88.8% in December 2019. For 2020, 98% of all patients were seen within 24 hours with 95.3% of patients aged 75 years and older seen within 24 hours (HSE 2020).

The first published systematic review on safe staffing in emergency departments (Recio-Saucedo et al. 2015) concluded that there is inconsistent evidence from small-

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<sup>9</sup> This Report was not published in 2020.

<sup>10</sup> PET is defined as the time in hours from ED registration to the time of departure from the ED following discharge/admission, inclusive of boarding time following the decision to admit.

scale observational studies that associates ED nurse staffing levels with patient outcomes. Although the evidence does not provide strong support for the validity of any single variable as an indicator of safe staffing in the ED, it appears to indicate that levels of nurse staffing in the ED are associated with patients leaving without being seen, emergency department care time and patient satisfaction. Lower staffing is associated with worse outcomes. The review concluded that there are a number of factors that were not studied that may influence nurse staff requirements in the ED including unit layout, patient acuity, overcrowding and time of day and day of week on which patients attend the ED.

### **2.1.2 Covid-19 in Ireland**

The outbreak of SARS-COV-2 (Covid-19) in late 2019 resulted in a worldwide pandemic leading to an unprecedented public health crisis that resulted in severe pressure on the provision of health services, including emergency care.

On February 29<sup>th</sup>, 2020, the first confirmed case of Covid-19 in the Republic of Ireland was announced (Government of Ireland, 2021a). The second confirmed case was reported on March 3<sup>rd</sup> 2020 with new cases being confirmed each day from that point on. The first confirmed death due to Covid-19 was reported in the east of the country on March 11<sup>th</sup>, the date on which the outbreak was officially declared a pandemic by the World Health Organization (2020), while the milestones of 100 and 1000 confirmed cases were surpassed on March 14<sup>th</sup> and 23<sup>rd</sup> respectively (Government of Ireland, 2021a). In response to the increasing number of cases and in line with international guidelines, the Irish Government introduced a series of containment measures at the onset of the pandemic, culminating in the introduction of strict 'stay-at-home' lockdown measures on midnight of March 27<sup>th</sup>, 2020 (Government of Ireland, 2020d).

Such measures were implemented to reduce the pressure on the healthcare system, with the capacity of intensive care units a focus of attention. The novel and evolving nature of the situation compelled health services to engage in a radical and rapid transformation of how care was delivered. A core example of this adoption of alternative methods was the accelerated integration of technology into care delivery; this was demonstrated by the fivefold increase in the use of telemedicine in Ireland from March to October 2020 (Behaviour & Attitudes, 2020). The Irish College of General Practitioners reported that telemedicine consultations comprised 12.5% of all consultations by GPs and practice nurses in February 2020, rising to 51.0% of all consultations by June 2020 (Homeniuk & Collins, 2021). The development of adapted models of care and service delivery processes responsive to the increasing understanding of the pandemic allowed health services to minimise risk of exposure to service users and facilitators, while ensuring resource availability to effectively respond to the crisis.

Within the acute care sector, modified patient flow paths through emergency departments were introduced, with divergent paths for potential/suspected cases of Covid-19 infection where possible (Health Service Executive, 2021). Clinical guidance for unscheduled acute care recommended that all patients be assessed by a senior decision-maker using a structured risk assessment form, and subsequently directed into the most appropriate referral pathway based on signs and symptoms of Covid-19,

risk of exposure, and severity of presentation (Health Service Executive, 2020b). Separate infrastructure and staffing were put in place for Covid-19 and non-Covid-19 pathways, though consideration of guidelines in relation to local circumstances and risk assessments, with the protection of patients and staff central to the recommendations. All those patients designated for admission from emergency settings were required to have a SARS-CoV-2 test, with recommendations that such patients were not to be boarded overnight, even in the case of pending test results (Health Service Executive, 2020b).

The adverse impact of the pandemic was evident in the reduced service use across many sectors. The number of biopsies (excluding gastrointestinal biopsies) performed from March to June 2020 was 44% lower when compared with the same period in 2019. Quarterly data on non-Covid-19 elective admissions showed that cardiovascular, dermatology, gastroenterology, and respiratory admissions were over 50% lower between quarters 2 and 4 in 2020 than expected figures based on quarter 1, while elective cancer admissions were down by just over a third for the same period (Health Service Executive, 2021). Nationwide emergency admission data for Q2-4 of 2020 showed that admissions with stroke and transient ischaemic attack and admissions of acute myocardial infarction were lower than expected levels based on Quarter 1 by 12.1% and 14.7% respectively (Health Service Executive, 2021).

Anecdotal accounts of empty waiting rooms and beds prompted fears among healthcare officials that people were delaying or avoiding necessary treatment to reduce the potential for exposure to the virus, resulting in advice from the National Public Health Emergency Team (NPHE) encouraging people not to ignore signs of non-Covid-19 illnesses and to seek medical attention where necessary (NPHE, 2020).

The country entered Phase One of the easing of restrictions on May 18<sup>th</sup>, 2020, and an incremental process proposed to work towards the full reopening of the country by August 2020 (Government of Ireland, 2020a). However, following concerns over the growing number of cases of Covid-19 in July and August 2020, the full lifting of restrictions was delayed multiple times, while localised restrictions were put in place in several counties. Level 5 (full lockdown) restrictions were reinstated nationally at midnight of October 21<sup>st</sup> 2020 for a six-week period (Government of Ireland, 2020c). Having briefly been lifted from December 1<sup>st</sup>, the country entered Level 5 restrictions again at midnight on December 30<sup>th</sup>, 2020 (Government of Ireland, 2020b). These measures remained in place, with minor changes such as the phased reopening of schools and childcare settings from March, until May 2021.

The first Covid-19 vaccine in the Republic of Ireland was administered on December 29<sup>th</sup>, 2020 (Health Service Executive, 2020a). Data to May 11<sup>th</sup>, 2021, showed that almost two million doses of vaccine had been administered, including 514,808 second doses (Government of Ireland, 2021b).

As of May 10<sup>th</sup>, 2021, marking the beginning of the phased reopening of the country from lockdown restrictions in 2021, the cumulative total of Covid-19 cases in Ireland stood at 253,189, with 4,921 deaths attributed to the virus (Government of Ireland, 2021a). The effect on ED presentation figures of the various restrictions put in place to curb the spread of Covid-19 will be discussed in Section 3 of the report.



### 2.1.3 Aims and Objectives

#### Overall Aim

The overall aim of this research was to measure the implementation of the safe nurse staffing *Pilot Framework* in emergency departments and determine if key outcomes have been sustained over a period of time despite the recent Covid-19 pandemic. The study also aimed to examine longitudinal data which will be used to inform the implementation and evaluation of the *Pilot Framework*<sup>11</sup>.

#### Objectives

- Objective 1: Measure the impact of implementing safe nurse staffing and skill-mix measures as outlined in the *Pilot Framework* on patient outcomes measures, staff outcomes and organisational factors.
- Objective 2: Examine the extent to which patient outcome measures changed over time as a consequence of the pilot introduction of the *Pilot Framework* in emergency care settings.
- Objective 3: Examine the impact of pilot introduction of the *Pilot Framework* on adverse patient outcomes and safety CLUEs (Care Left Undone Events).
- Objective 4: Determine the impact of the pilot introduction of the *Pilot Framework* on staff outcomes (job satisfaction, burnout, intention to stay).
- Objective 5: Determine the impact of the pilot introduction of the *Pilot Framework* on organisational/ward environment factors (ward climate, impact of Clinical Nurse Manager II supervisory leadership).
- Objective 6: Determine the cost implications arising from the pilot introduction of the *Framework* and the resources required to deliver national roll-out and to maintain the *Pilot Framework*.
- Objective 7: To determine the impact of the Covid-19 pandemic on outcomes at an organisational, staff and patient level within the ED context<sup>12</sup>.

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<sup>11</sup> This Report only includes measurement of patients who received emergency care; it excludes an analysis of boarded patients – that is, those patients who have completed their emergency care but remain in the department waiting allocation of an in-patient bed.

<sup>12</sup> Objective 7 was added due of the Covid-19 pandemic and its impact on the health service staff in Ireland.

## **Section 3**

### **Methods**

#### **3.1 Research Design**

The study used both longitudinal and cross-sectional designs in developing and testing a model for safe nurse staffing and skill-mix in emergency care settings. This report focuses on presenting findings pertaining to the administrative and secondary data within three pilot ED sites and one injury unit to establish if key outcomes that were initially evident in Time 2 have been sustained (see Report 2). The research was undertaken in conjunction with changes to nurse staffing made by the Department of Health and are based on recommendations in the *Pilot Framework*; that is the introduction of a systematic approach to quantify patient care requirements, the alteration in skill-mix (85% RN/15% HCA) and, ensuring the role of the CNM 2 (ED/unit leader) is 100% supervisory. This approach included the measurement of the total nursing hours available pre and post the intervention; this was further divided into RN hours and HCA hours (skill-mix) and the measurement of supervisory and clinical hours provided by the CNM 2 grade. Actual and required staffing was estimated through the Nursing Hours per Patient Presentation Approach (NHpPP). Based on staffing measures pre the intervention (actual staff levels), nurse staffing levels and skill-mix were adjusted (required staff levels) in the pilot emergency departments based on patient needs as determined by triage scores and length of time in the department (see Report 1 on the comprehensive process involved in the identification of the NHpPP model to determine staffing levels). The research reported also includes a Time 3 survey of ED nursing staff to measure the impact of the Covid-19 pandemic on a number of outcomes.

#### **3.2 Data Collection**

Both administrative and cross-sectional data was collected to measure the impact of the *Pilot Framework* on patient, staff and organisational outcomes. Routinely collected administrative data was collected from ED IT systems pertaining to: patient wait times, triage categories, leaving without being seen, length of stay, care time and demographic information. Secondary data on staff rosters and agency usage was also collected from the four pilot sites. Cross-sectional data was collected from RN and HCA staff working within the EDs at three timepoints. All staff members were invited to complete a survey pertaining to socio-demographics, nursing environment, burnout, job satisfaction, intention to leave/stay, prevalence of violence and aggression as well as missed care.

##### **3.2.1 Predictor/Explanatory Variables**

###### **3.2.1.1 Nursing Hours per Patient Presentation**

Using data that are routinely collected in each of the sites, the Nursing Hours per Patient Presentation (NHpPP) model was the selected systematic approach for determining required staffing levels. The NHpPP formula uses the triage category as

a measure of acuity and dependency in its calculation to estimate the number of whole-time equivalent (WTE) nursing staff needed to care for patients. As outlined in the baseline report on the ED data, a variety of models were trialled to determine the most effective means of determining the required staffing level within the pilot sites. Methods such as the BEST workforce planning tool and the NICE staffing recommendations carried logistical difficulties in their practical application, such as a reliance on a very high capture rate of patients throughout their ED stay, and a high resource demand on nursing staff during the data collection period. Considering such concerns, the NHpPP model's utilisation of routinely collected administrative data was deemed a preferable means of calculating the staffing requirement. This was based on recommendations in the Australian healthcare system (Department of Health and Human Services 2011; Williams et al. 2011; Williams et al. 2014).

The NHpPP calculation is inclusive of ED and triage activity and includes all staff that provide direct patient care (Clinical Nurse Manager 1, Registered Nurse and Healthcare Assistants levels). Each triage category is assigned a mean number of hours of care. The allocation of NHpPP is based on a number of measures, including:

- Number of patient presentations – this can also be used to determine triage staffing levels.
- Patient's Manchester Triage Score
- Average Emergency Department Care Time for each triage category

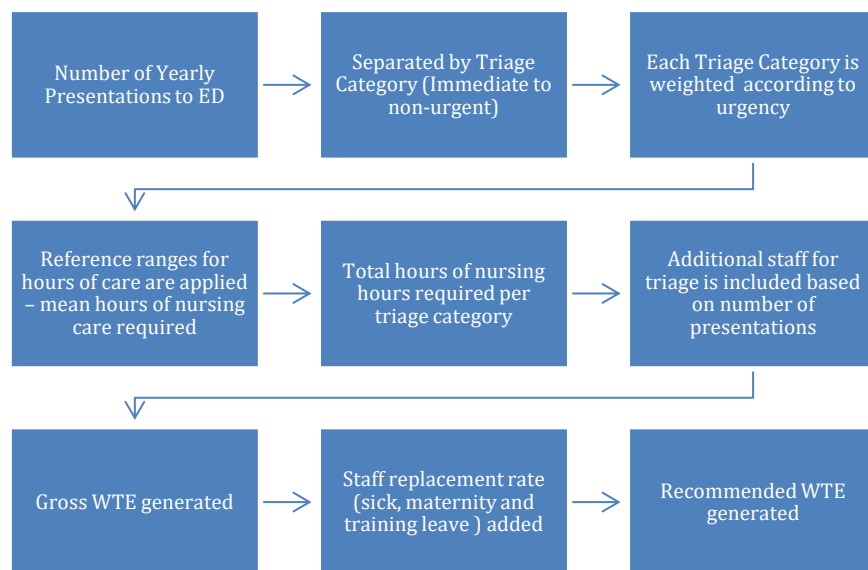
A number of studies have reported on average ED care time for each of the triage categories and were consulted in determining the weighting required (Gäff et al. 2016; Department of Health and Human Services 2011; Williams et al. 2011). For the purpose of this research an average weighting was calculated across the three sites: 'Immediate' = 6.13, 'Very Urgent' = 3.83, 'Urgent' = 2.33, 'Standard' = 1.42, 'Non-urgent' = 0.58. This weighting is multiplied by the number of category presentations to determine the total number of nursing hours required per triage category, with these subtotals summed to give the total hours of care required. Annual hours of care are calculated at 2,028 hours (39 hours per week\*52 weeks). Total hours of care are divided by annual hours of care to give the clinical WTE required. A 20% staff replacement rate for covering absences/study leave/vacation is then added to the clinical WTE to produce the total WTE required for each site. The total WTE is then divided in a ratio of 85:15 to determine the number of RN (85%) and HCA (15%) WTEs required to achieve the recommended skill-mix.

It is important to note that the NHpPP calculation is not used to determine staffing levels for patients where a decision to admit has been made but who remain in the department while waiting for a bed to become available. The staffing for such patients is determined under the terms of the 2016 WRC agreement<sup>13</sup>.

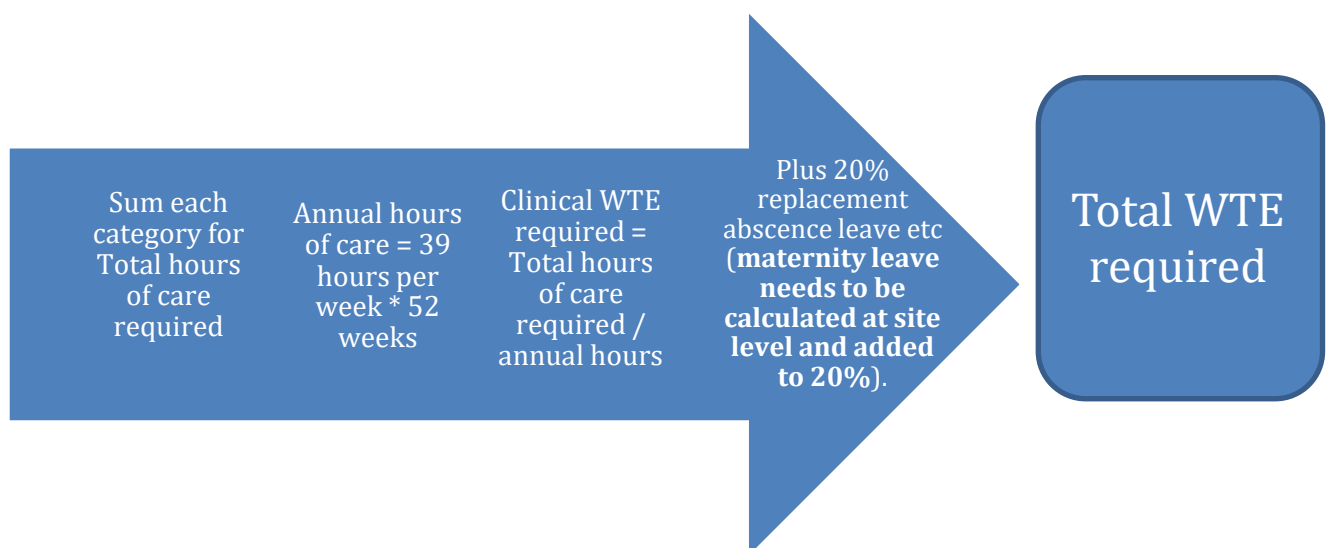
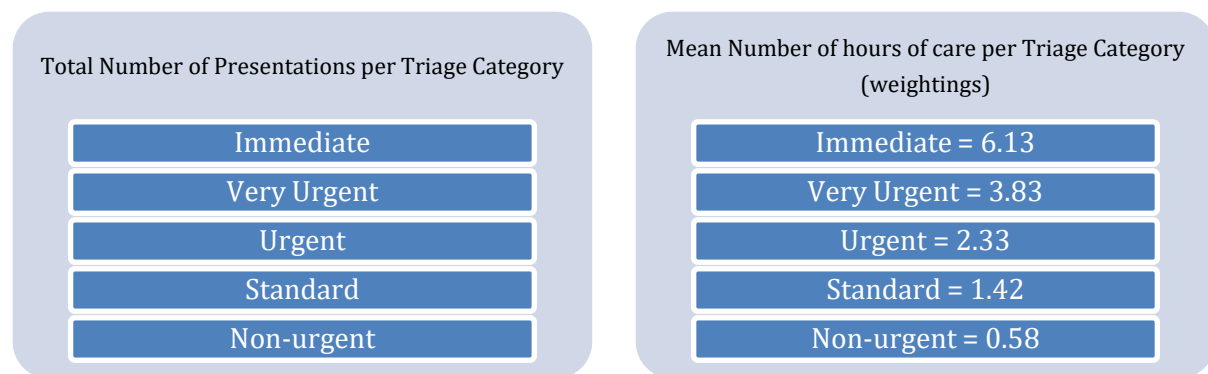
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<sup>13</sup> <https://www.hse.ie/eng/staff/resources/hr-circulars/hrcircular0072016.html>

**The approach to calculating NHpPP is outlined below:**



**The data required to calculate NHpPP is as follows:**



### 3.2.1.2 Demographic and Department Profile

The demographic profile of patients who presented to the ED was collected. This data outlined the number of patient presentations, triage category, as well as key outcomes measures depicted below (section 3.2.2.1). In addition, the number of nurses and patients present on the unit and grade of staff was also attained as well as the requisite whole-time equivalents (WTEs).

## 3.2.2 Outcome Measures

### 3.2.2.1 Patient Outcome Measures

To examine the extent to which patient outcome measures changed over time as a consequence of the introduction of the recommendations in the Pilot *Framework*, a retrospective analysis of the data related to all patients who registered in the ED over the period of research was undertaken. The data in this report refers to patients who registered in the ED from January 2018 to April 2021 inclusive. Included in this retrospective analysis was an examination of patient outcomes associated with nurse staffing by examining data collected from the administrative system of the ED. This data included:

- *Leaving without being seen (LWBS)*: Data was obtained from ED databases that provided the monthly patient census and the number of patients who LWBS. The percentage of patients who LWBS was calculated as the number of patients who left before being seen by a healthcare professional divided by the total number of patients registered.
- *Time to Triage (TTT)*: TTT was calculated as the time in hours from registration in the ED to being triaged by a nurse.
- *Triage to be Seen*: This was operationalised as the time in hours from triage to time of being seen by a decision maker.
- *ED Registration to be Seen*: This was calculated as the time in hours from registration in the ED to time of being seen by a decision maker.
- *ED Care time*: This was defined as the time in hours from ED registration to the time of decision to admit or ED discharge<sup>14</sup>.
- *Patient Experience Time (PET)*: PET was defined as the time in hours from ED registration to the time of departure from the ED following discharge/admission, inclusive of boarding time following the decision to admit.

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<sup>14</sup> This excludes the time a patient spends in the ED once a decision to admit has been made.

### 3.3 Settings

Following an open application process, the sites to pilot the implementation of the recommendations in the *Framework* were identified by the Department of Health. The sites were chosen according to meeting the scored criteria, which included their location and specialist functions, annual presentations, and population demographics. In the maintenance of confidentiality, the pilot sites are referred to with a code; the codes for the pilot EDs are Hospital 4, Hospital 5 and Hospital 6 with Hospital 7 code used to refer to the IU. Eligibility criteria included ED settings providing 24-hour, seven-day care for adults<sup>15</sup>.

### 3.4 Sample

Data was collected relating to patients who attended the EDs from January 2018 to March 2020 and is discussed in Report 2, for this report the data was collected from administrative systems from March 2020 up to and including 30<sup>th</sup> April 2021 for three EDs and one IU. Due to IT system difficulties arising from a cyber-attack on HSE systems during the data collection phase, there were challenges in collecting data from a number of sites. This, in some cases, required the re-building of data sets. Cross-sectional data was also collected from each of the pilot sites and is presented in this report as Time 3<sup>16</sup>.

### 3.5 Administrative Data

We collected administrative data for all patients who attended the ED from January 2018 to April 2021; this was to ensure that seasonal variation was accounted for. All secondary data was collected by administrative systems in place in the respective units. This report will present the administrative data from the entire sample of patients who attended the pilot sites during this time period. This approach enables a direct comparison of monthly data across the years of the study, accounting for factors such as seasonal variation and allows for greater visualisation of the impact of the Covid-19 pandemic on a number of outcomes.

### 3.6 Procedure

Members of the research team contacted the administrative personnel within the hospital sites and requested the anonymised data from March 2020 up to 30<sup>th</sup> April 2021 inclusive. The data was password encrypted and sent via email with the password provided in a separate correspondence. All data was completely anonymised prior to being sent so that the research team had no way of linking it to any specific individual. Staff completed surveys at three time-points: Time 1 – baseline (prior to the implementation of the *Pilot Framework*); Time 2 – following the

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<sup>15</sup> One ED provided care to both adults and children; however, for the purpose of this report, only adult attendances were included in the analysis.

<sup>16</sup> Time 1 – baseline; Time 2 – following the implementation of the recommendations in the *Pilot Framework*; Time 3 – Following the Covid-19 pandemic.

implementation of the recommendations in the *Pilot Framework*; Time 3 – during the Covid-19 pandemic (September 2021).

### **3.7 Analysis**

All data analysis was conducted under the quality control system of the Statistics and Data Analysis Unit of the Health Research Board Clinical Research Facility at University College Cork using the R Project for Statistical Computing (R Core Team 2017).

Following the retrieval of the anonymised administrative data, the data was cleaned and checked for accuracy. The roster data was inputted into an Excel spreadsheet for consistency. This spreadsheet detailed: the number of RN, HCAs rostered to be on each shift as well as CNM 1s, and CNM 2s, agency filled and unfilled requests, reasons for agency requests; for example, vacancy, sick leave, additional activity as well as other types of leave.

### **3.8 Ethics**

Ethics applications to undertake the research were submitted to the research ethics committees of the four pilot sites. All data was coded, and no individuals or individual hospitals are identifiable in this reporting of results. All computer datasets were password protected (right to privacy). Data will only be used for the purposes disclosed. Data collection complies with Irish data protection and GDPR regulations ([www.dataprotection.ie](http://www.dataprotection.ie)).

### **3.9 Conclusion**

Traditionally nurse staffing levels in emergency departments have been determined based on historical need, and professional judgement with little or no systematic approach or evidence underpinning it. Recent publications by the Department of Health have highlighted the need for a more robust approach to determining safe staffing within healthcare systems to be incorporated. The *Pilot Framework for Safe Nurse Staffing and Skill-Mix in Emergency Care Settings* (Department of Health, 2018), outlined several recommendations including the identification, testing and use of a structured systematic approach in determining safer nurse staffing levels and skill-mix within EDs. This approach is cognisant of patient dependency and acuity, as well as designated workload of the nurse manager. This third Report outlines the testing of a systematic approach to determining staffing levels and skill-mix in EDs and an IU as well highlighting the impact of Covid-19 on staff working in the pilot sites.

## **Section 4**

### **Results**

#### **4.1 Introduction**

This section outlines the results from the research for the three pilot emergency departments and injury unit included in the Programme of Research into Safe Nurse Staffing and Skill-Mix. The results are outlined in a number of sections and present a comprehensive outline of the variables associated with nurse staffing; both secondary and cross-sectional data were collected. Secondary data, collected from the ED administrative systems, was used to collate data on a patient outcome related to staffing in the Emergency Department (collected from iPMS, iSOFT, and Patient Centre) and was also used to calculate staffing based on the Nursing Hours per Patient Presentation (NHpPP) model of staffing. Cross-sectional data was collected from nursing staff (RNs and HCAs) working in the three pilot emergency departments and one injury unit. Nursing staff provided data on nursing work, job satisfaction and intention to leave as well as care left undone events, burnout and their experience of violence and aggression. The survey results presented outline the Time 1 and Time 2 data for the three emergency departments and the injury unit included in the pilot study. For this report we present an update of the results for the period of 2019, 2020 and the first quarter of 2021. Time 1 – baseline and prior to any adjustments to staffing - is considered from January 2018 to November 2019; Time 2 – following staffing adjustments is from December 2019 to April 2021. Time 3, September 2021, includes a cross-sectional survey of RNs and HCAs to measure the impact of working in ED during the Covid -19 pandemic.

#### **4.2 Calculation of Nursing Hours per Patient Presentation (NHpPP)**

This section outlines the process that was used to identify adjustments to staffing based on triage category of patients who presented to the EDs. Triage category was determined by the Manchester Triage Scale. Data on number of patient presentations per triage category (immediate, very urgent, urgent, non-urgent and standard) was collected from the ED in hospitals 4, 5 and 6 for the years 2018, 2019, 2020<sup>17</sup> and up to the 30<sup>th</sup> April 2021 (40 months) (see section 3.2.1.1 for details on NHpPP). Data on current staffing was also collected with an emphasis on staff that provide direct clinical care to patients (RNs, HCAs, and CNM1s)<sup>18</sup>. Changes to staffing were initially based on data for the year 2018.

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<sup>17</sup> Administrative data collected is widely skewed after March 2020 due to the outbreak of Covid-19 and thus the data do not represent the typical throughput of the EDs.

<sup>18</sup> CNM 3 are included as supervisory. Advanced Nurse Practitioners are not included.



### ***Hospital 4 NHpPP***

Hospital 4 is an adult and paediatric ED. It consists of a children's section, a clinical decision unit (CDU) and recently opened a new rapid assessment unit<sup>19</sup>. Calculations for staffing were based on those required in the adult ED only with 14 WTE identified to staff the children's ED and 13 WTE for the (CDU). In 2018, based on NHpPP calculations, it was determined that Hospital 4 required 89.70 WTEs to staff the adult ED and, at the commencement of the study, had 83.20 WTEs in place prior to the implementation of the *Pilot Framework*. Therefore, based on baseline data (triage category of patients), adjusting for the adult only ED, Hospital 4 required an additional 6.5 WTEs; this comprised an adjustment of 2.11 RNs and 4.39 HCAs and was based on the 85% RN 15% skill-mix recommendation. In addition, the CNM 2 role on each shift is not included in the calculation of staff required to provide direct care.

### ***Hospital 5 NHpPP***

Hospital 5 is an adult only ED. Based on NHpPP calculations and triage category for patient presentations in 2018, Hospital 5 required a total WTE of 47.53 WTEs and prior to the implementation of the *Pilot Framework* 39.03 WTEs in place. Therefore, based on this assessment, the ED required an additional 7.1 RNs and 1.4 HCAs, a total of 8.5 WTEs to bring the department to the recommended staffing complement (See section 4.4.) (Table 4.2.1.1).

### ***Hospital 6 NHpPP***

Hospital 6 is an adult only ED. Based on emergency presentations and patients' triage categories to Hospital 6 in 2018, the ED required 105.48 WTEs and had 77.00 WTEs in place prior to the calculation. Therefore, to meet this staffing complement, it was identified that an extra 28.5 WTEs were required; this consisted of 18.7 RNs and 9.8 HCAs.

### ***Hospital 7 (IU) Staff Adjustment***

Due to the nature of the presentations, the NHpPP model was not deemed suitable for the pilot Injury Unit (IU). However, from investigating the data from baseline it was apparent that the RNs in the IU were carrying out a number of non-nursing duties, such as cleaning and stocktaking. Thus, an adjustment of two WTE HCAs was identified to release nursing time from these non-nursing duties and facilitate the provision of direct patient care. These HCAs commenced in post in April 2020 but were immediately redeployed to other areas due to the Covid-19 pandemic. Once the HCAs were re-assigned back to the IU in August 2020 the research team were able to commence the data analysis for Time 2. However, it is of note that due to the HCAs not being in post for a substantive period of time, results should be interpreted with caution. The research team collected data from the administrative system within the IU from January 2018 to July 2021. This allowed for differences in seasonal variation

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<sup>19</sup> It is of note that Hospital 4 changed the layout of the ED and services offered during the period of research. This is likely to impact the staffing requirements for Hospital 4 as adjustments were made based on 2018 data.

to be taken into account as well as a sustained view of the implementation that the addition of HCAs to the workforce incurred.

Table 4.2.1.1: Number of WTE RNs and HCAs required based on NHpPP\* model and available for each ED based on Patients' Manchester Triage Category in 2018

	Hospital 4	Hospital 5	Hospital 6	Hospital 7 (HCA)**
	2018	2018	2018	2018
Total				
<i>Required</i>	89.70	47.53	105.48	0.00
<i>Available at baseline</i>	83.20	39.03	77.00	0.00
<i>Adjustment Required</i>				
RN	2.11	7.10	18.70	0.00
HCA	4.39	1.40	9.80	2.00
Total	6.50	8.50	28.50	2.00
<i>Available plus adjustment</i>	89.70	47.53	105.48	2.00

\*Calculation for hospitals 4, 5 and 6 for adult EDs only based on patient presentations and triage level. \*\*Changes to staffing were made throughout 2019 and were calculated on 2018 patient presentations. \*\*Note Hospital 7, the Injury Unit (IU) was not a candidate for the NHpPP model requiring the addition of two HCAs.

## 4.2 Agency Use

Rosters collected for each year of the research allowed for the calculation of total hours of care delivered by agency staff per year (2018, 2019, 2020) and the first quarter of 2021 (January to April). To compare across the three years, the total hours were converted to Whole Time Equivalents (WTEs) for each year (Tables 4.2.2.1-3). Figures 4.2.2.1-3 display the number of hours of agency use per month across the entire research period. It should be noted that agency staff that are placed in the ED can be deployed to care for boarded patients (those patients for whom a decision to admit has been made but are still awaiting a bed) and/or the main ED. It was identified that the majority of agency staff were recruited to care for boarded patients, however, it is recognised that staff may move between caring for patients who have finished their process of ED care and are awaiting a bed and those requiring emergency care<sup>20</sup>. It should be noted that no ED currently has a system in place that enables an accurate assessment of this distinction to be made.

It is important to note that due to the scale of the staffing adjustments, recruitment occurred over a period of several months. This recruitment and adjustment of staff took place in the latter part of 2019 and, in some cases, continued into early 2020. New staff recruited required a period of induction and adaptation. In addition, recruitment that took place from March 2020 onwards needs to be considered in the context of the Covid-19 pandemic.

### ***Agency Use - Hospital 4***

Hospital 4 RN agency staffing remained relatively stable across the initial two years of 2018 and 2019 with RN agency staff accounting for approximately 10-11\_WTEs in each year. However, RN agency usage decreased in 2020 (following the staffing adjustments) to 13,774 hours (6.79 WTEs) – a 32% decrease in agency use. HCA agency usage increased from 2019 to 2020 equating to 5.09 WTEs in comparison to 4.82 WTEs in 2019. RN monthly agency use decreased in 2021 to 4,480 hours with average hours per month of 1,120.00 in 2021 hours down from average per month of 1,147.83 hours in 2020. However, agency use for HCAs for 2021 increased from 2020 with hours increasing from an average of 860.73 per month to 1,545.89 per month. Figure 4.2.2.1 shows the agency use within Hospital 4 for the duration of the study period.

The increase in HCA agency staff employed in Hospital 4 in 2021 was due to a number of factors; the Covid-19 pandemic, the provision of new rapid patient transit unit as well as a substantial increase in boarded patients.

### ***Agency Use - Hospital 5***

Figure 4.2.2.2 shows Hospital 5's agency usage from January 2018 up to April 2021 (inclusive). Hospital 5's agency usage remained relatively stable over the period of

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<sup>20</sup> Calculation of staffing required for boarded patients is not part of this report but is outlined in the WRC agreement of 2016 – see Appendix B.

data collection; this was despite an increase in admissions in patients aged 75 years and older. Hospital 5's agency use of HCAs was low across each year with a range of 0-106.5 hours on average, the equivalent of 0.12-0.63 WTE HCAs, with no HCA agency used from March 2020 to April 2021. Hospital 5's RN agency remained relatively stable ranging from an average of 4.69 WTEs in 2018 to 5.34 in 2019 and falling to 3.46 in 2020. As staffing levels stabilised, there was a notable decrease in agency usage from March 2020 to April 2021 at RN level<sup>21</sup>. In addition, HCA agency use within the department has been at zero hours since mid 2020.

### ***Agency Use - Hospital 6***

In Hospital 6, following the introduction of the *Pilot Framework*, there was a decrease in agency use. Table 4.2.2.3 outlines the actual agency staff hours, the average and the conversion to WTE per year. The deficit for RNs in 2018 and 2019 was covered predominantly by agency staff (4.83 and 3.14 WTEs respectively). In contrast to this, deficit in RN shifts for 2020 and 2021 were covered by agency shifts equating to 3.10 WTE in 2020 and 1.17 WTE in 2021. HCA agency in 2020 was, on average, 2.80 WTE reducing to 0.41 WTE in 2021. Hospital 6 reported the highest point of staffing adjustments in August 2020 with all but 1.27 of the recommended RN posts filled. Between 2018 (prior to the introduction of the *Pilot Framework*) and 2020 (following the staffing adjustments, there has been a 37% fall in RN agency use and a 22% decrease in HCA agency use.

### ***Agency Use – Hospital 7***

There was no agency use in hospital 7 prior to or following the adjustment to staffing levels.

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<sup>21</sup> It is important to note that this occurred with the introduction of Covid-19 in Ireland.

Table 4.2.2.1: Agency in Hospital 4

	2018	2019	2020	2021*
Total number of hours				
<i>RN</i>	20,378.5	21,580.45	13,774.00	4,480
<i>HCA</i>	5,832.35	9,851.75	10,328.75	6183.57
<i>Total</i>	26,210.85	31,432.2	24,102.75	10,663.57
Average hours per month				
<i>RN</i>	1,698.20	1,798.37	1147.83	1,120.00
<i>HCA</i>	486.04	820.98	860.73	1,545.89
<i>Total</i>	2,184.24	2,619.35	2,008.56	2,665.89
Conversion to WTE				
<i>RN</i>	10.05	10.64	6.79	6.63
<i>HCA</i>	2.87	4.86	5.09	9.15
<i>Total</i>	12.92	15.50	11.88	15.77

\*January 2021 up to April 2021 inclusive

The above figures represent agency hours to cover all ED activity including care required for boarded patients. Note: The majority of agency staff are allocated to care for patients who a decision to admit has been made but are awaiting a bed in ED.

Table 4.2.2.2: Agency in Hospital 5

	2018 Total	2019	2020	2020 (minus vacancy posts)	2020 (minus Covid-19 requested hours)	2021*	2021 (minus Covid-19 requested hours)
Total number of hours							
<i>RN</i>	9,504.00	10,836.00	7,022.00	-	6410.00	492.00	392.00
<i>HCA</i>	528.00	1,278.00	48.00		48.00	0.00	0.00
<i>Total</i>	10,032.00	12,114.00	7,070		6458.00	492.00	392.00
Average hours per month							
<i>RN</i>	792.00	903	585.16		534.17	123.00	98.00
<i>HCA</i>	44.00	106.5	4.01		4.00	0.00	0.00
<i>Total</i>	836.00	1009.5	589.17		538.17	123.00	98.00
Conversion to WTE							
<i>RN</i>	4.69	5.34	3.46		3.16	0.73	0.58
<i>HCA</i>	0.26	0.63	0.02		0.02	0.00	0.00
<i>Total</i>	4.95	5.97	3.48		3.18	0.73	0.58

Note: The majority of agency staff are allocated to care for patients who a decision to admit has been made but are awaiting a bed in ED \*January to April 2021 (inclusive). No vacancy posts were evident in HCA data

Table 4.2.2.3: Agency in Hospital 6

	2018	2019	2020	2021*
<b>Total Hours</b>				
<i>RN</i>	9962.25	6375.67	6293.5	790
<i>HCA</i>	7310.02	3689.92	5690.50	276.5
<b>Average hours per month</b>				
<i>RN</i>	830.18	531.31	524.45	197.5
<i>HCA</i>	609.17	307.49	474.20	69.13
<b>Conversion to WTE</b>				

<b>RN</b>	4.92	3.15	3.10	1.17
<b>HCA</b>	3.60	1.82	2.80	0.41
<b>Total</b>	8.52	4.97	5.9	

\*Four months of data only: January- April up to April 30<sup>th</sup>

Note: The majority of agency staff are allocated to care for patients who a decision to admit has been made but are awaiting a bed in ED \*January to April 2021 (inclusive).

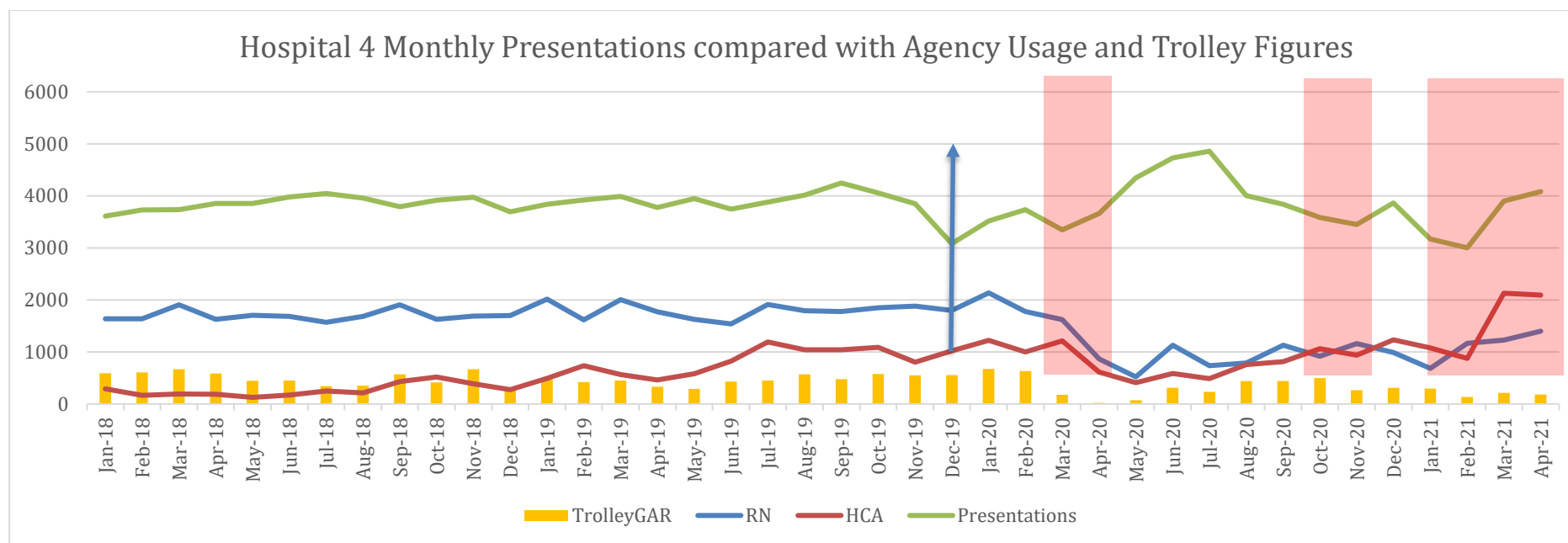



Figure 4.2.2.1: Hospital 4 agency use per month in hours compared with monthly presentations and Trolley figures.  Time staffing adjustments commenced. Note: The majority of agency staff are allocated to care for patients where a decision to admit has been made i.e. boarded patients.



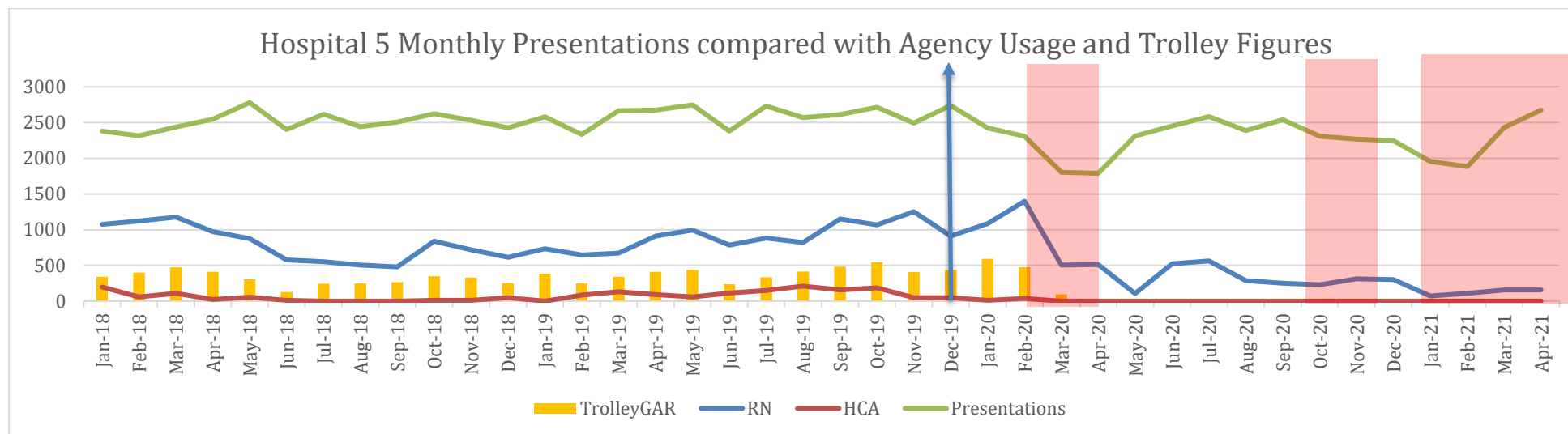



Figure 4.2.2.2: Hospital 5 agency use per month in hours compared with monthly presentations and Trolley figures.  Time staffing adjustments commenced. Note: The majority of agency staff are allocated to care for patients where a decision to admit has been made i.e. boarded patients.



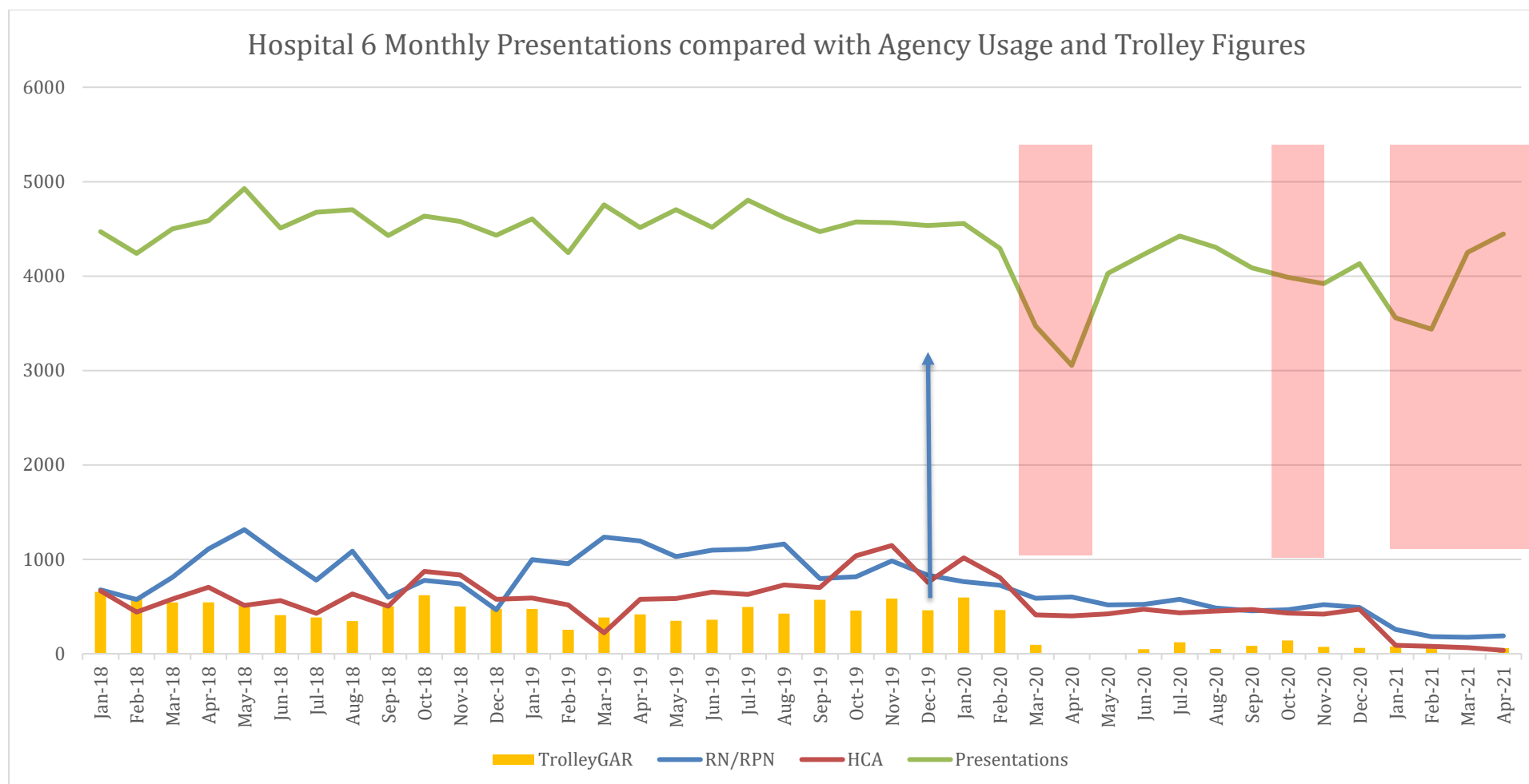


Figure 4.2.2.3: Hospital 6 agency use per month in hours compared with monthly presentations and Trolley figures. Time staffing adjustments commenced. Note: The majority of agency usage are allocated to patients where a decision to admit has been made i.e. bordered patients.

### **4.3 Economics**

Data provided by the pilot sites on WTEs for RNs and HCAs, along with the agency hours allowed for the estimation of staff costs associated with the introduction of the *Pilot Framework*, in particular the staff adjustments across the three EDs and one injury unit.

#### *4.2.3.1 Costings*

The adjustment cost was calculated based on the change in whole-time equivalent (WTE) posts in RNs and HCAs from 2018 to 2021. These changes were considered a funded adjustments in staff. Table 4.2.3.1 shows the basis of the estimation for calculating the cost of the adjustments. Data on the exact point each staff member are employed is not currently available thus, using the HSE consolidated salary scale (2020), the mid-point of the scale was selected for nurses, while Band 3 was selected for HCAs for the purpose of estimating the cost of the changes to staffing. It should be noted that these costs are based on the proposed changes to staffing and, at the time of the report, all

the proposed complement may not be in place. In addition, it should be noted that this period of data collection was also impacted upon by the advent of the Covid-19 pandemic.

Table 4.2.3.1: Basis of calculations for adjustments costs

Basis of Calculation <sup>1</sup>	Basic €	Premia (20%) €	Earnings €	PRSI (11.05%) €	Annual Cost €	Cost per month €
Nurse (Mid-point)	38,546	7,709	46,255	5,111	51,366	4280.5
HCA (Band 3)	30,832	6,166	36,998	4,088	41086	3423.83

<sup>1</sup>Source: HSE Consolidated salary scale, 2020

Table 4.2.3.2 shows the annual estimated cost of the adjustment per hospital based on the recommended WTE from the NHpPP Model when existing WTE and conversion from agency are accounted for.

Table 4.2.3.2: Costings of Staff Changes

Projected Totals	2018 Recommended WTE <sup>1</sup>	WTE Change <sup>2</sup>	WTE RN Change <sup>2</sup>	WTE HCA Change <sup>2</sup>	Agency Conversion <sup>3</sup>	RN Agency Conversion <sup>3</sup>	HCA Agency Conversion <sup>3</sup>	WTE to fund <sup>4</sup>	RN WTE to fund <sup>4</sup>	HCA WTE to fund <sup>4</sup>	Cost €
Hospital 4	89.7	6.5	5.53	0.98	10	8.5	1.5	0.0	0.0	0.0	0
Hospital 5	47.53	8.5	7.23	1.27	5.4	4.59	0.81	3.1	2.64	0.46	154,505.8
Hospital 6	105.48	28.5	24.23	4.27	10	8.5	1.5	18.5	15.73	2.77	921,795.4
Hospital 7	-	2.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	82,172
<b>Total</b>											<b>1,158,473.2</b>

<sup>1</sup> As per NHpPP Model

<sup>2</sup> Current – recommended WTE

<sup>3</sup> Conversion of existing agency spend

<sup>4</sup> This is based on agency conversion to WTE posts.

Table 4.2.3.3: Agency costings for each emergency department from 2018 to 2020

Total Cost	Hospital 4			Hospital 5			Hospital 6		
	2018 €	2019 €	2020 €	2018 €	2019 €	2020 €	2018 €	2019 €	2020 €
RN	978,779.36	1,036,509.01	661,565.22	456,477.12	520,453.08	337,266.66	478,486.87	306,223.43	302,276.81
HCA	219,238.04	370,327.28	388,257.71	19,847.52	48,040.02	1,804.32	274,783.65	138,074.09	213,905.90
Total	1,198,017.04	1,406,836.29	1,049,822.93	476,324.64	568,493.10	339,070.32	753,270.52	444,927.52	516,182.71
Average Cost per Month									
RN	81,564.95	86,375.75	55,130.44	38,039.76	43,371.09	28,105.55	39,873.91	25,518.62	25,189.73
HCA	18,269.84	30,860.61	32,354.81	1,653.96	4,003.34	150.35	22,898.64	11,506.17	17,825.49
Total	99,834.79	117,236.36	87,485.25	39,693.72	47,374.43	28,255.91	62,772.61	37,024.70	43,015.22

\*The majority of agency staff are allocated to care for patients who a decision to admit has been made but are awaiting a bed in ED \*\*January to March 2020

#### 4.2.3.2 Agency Cost

The cost of agency staff was calculated based on the total hours of agency employed and multiplied by the average hourly cost of employing an agency RN or HCA as appropriate. Average agency costs were not available for the individual hospitals. Therefore, the average hourly cost was calculated based on the National agency agreement, using the average of the different shift. The 7<sup>th</sup> point was used for this average for RNs and the 5<sup>th</sup> point for HCAs, see Appendix B for calculation. It is important to note that the majority of agency staff allocated to the emergency floor, in particular HCAs, are allocated to patients who have been admitted but are waiting on a bed (boarded patients). It should be noted that hospitals, at this stage, do not distinguish agency costs for these cohorts and are identified as a cost to ED.

Hospital 4's cost of agency staffing decreased over the duration of the research; this was particularly evident in the agency required by staff nurse grades reducing from an average of €81,564 per month in 2018 (prior to the staffing adjustments), to €55,130 in 2020 (following the adjustments). HCA costings over the same period of time increased in line with a higher proportion of patients who had completed their ED process of care but were waiting in the ED to be admitted to a bed. Overall, agency spend decreased from €1,198,017.04 in 2018 (prior to the adjustments) to €1,049,822.93 in 2020 (following the staff adjustments) a decrease in spending on agency staff of 32%.

Hospital 5 also decreased their average monthly agency spend on RNs from €38,039 in 2018 (prior to the adjustments) to €28,105 in 2020 (following the staff adjustments). Although the overall agency costs increased from 2018 to 2019, they reduced substantially following the staff adjustments in 2020. Overall, following the introduction of the staffing adjustments agency spend fell from €39,693.72 in 2018 to €28,255.91 in 2020, a decrease in agency costs of 29%.

Hospital 6 had a decrease in monthly RN agency spend between 2018 (prior to the adjustments) and 2020 (following the adjustments), decreasing from an average of €39,873 in 2018 to €25,189 in 2020 (following the adjustments). There was also a decrease in agency HCA costs following the staffing adjustments with the average monthly costs decreasing from €22,898 in 2018 to €17,825 in 2020. Overall, Hospital 6's agency costs decreased €753,270 in 2018 (prior to the adjustments) to €516,182 in 2020, a decrease of 34% in agency costs (see Table 4.2.3.3).

Overall, total agency costs in the three pilot sites decreased from €2,427,614.20 in 2018 (prior to the adjustments) to €1,905,075.96 in 2020 (following the adjustments), an overall 22% decrease in agency spend.



At individual hospital level, the reduction in agency is greater than the adjustment costs in Hospitals 4 and 5. However, the adjustment spend outweighs the agency savings in Hospitals 6 and 7 (no agency in hospital 7). Therefore, despite the savings accruing from the reduction in agency staff usage between 2019 and 2020 (€515,181), on aggregate it is not sufficient, at this stage, to cover the annual cost of the adjustment (€1.17 million). To achieve this, a further 27% reduction in agency staff from 2019 levels (equivalent to €653,760) would be required (See Table 4.2.3.4). It is of note that agency levels in ED are, to a large extent, determined by the number of patients who have completed their ED process of care but are awaiting to be admitted to a bed.

Table 4.2.3.4: Summary of Costs

	2019 Agency €	Agency €	2020 Adjustment €	Total Investment €	Net Effect €
Total Cost					
Hospital 4	1,406,836.29	1,049,822.93	-	1,049,822.93	-357,013.36
Hospital 5	568,493.10	339,070.32	155,980.79	495,051.11	-73,441.99
Hospital 6	444,927.52	516,182.71	925,821.45	1,442,004.16	997,076.64
Hospital 7	-	-	87,138.81	87,138.81	87,138.81
Total	2,420,256.91	1,905,075.96	1,168,941	3,074,017.01	653,760.10

#### *4.2.3.3 Summary of Costs*

The overall cost was also calculated based on the cost of the changes to staffing in place to date and the agency cost. As staff have been employed on a phased basis, the associated costs are calculated from January 2020.

Overall, it was noted that agency costs decreased over the period of the research years with the most significant reductions noted following the introduction of the staffing adjustments reducing emergency departments' reliance on agency staff to provide care. Agency costs include those staff allocated both to the ED and to care for patients who a decision to admit has been made but are waiting in ED. In particular, the high level of staff required to care for boarded patients is the main driver of agency costs in EDs.

## **4.4 Emergency Departments' Administrative Data – Patient Outcomes**

Report 2 outlined the results from administrative data collected from the three pilot emergency departments reflective of the period between 1<sup>st</sup> January 2018 and 31<sup>st</sup> March 2020 inclusive. The administrative systems utilised by the hospitals' information and communications technology departments (ICTs) included iSOFT, iPMS and Patient Centre. This report extended the data collection period for hospitals 4, 5 and 6 and the injury unit (Hospital 7) adding data from March 2020 to 30<sup>th</sup> April 2021. The data is presented in a monthly format to account for seasonal variation in ED utilisation when comparing time periods.

This longitudinal approach to administrative data was enacted to present a comprehensive overview and to consider seasonal variation within the EDs. Whilst the data is taken from the hospitals' administrative systems and was compiled with hospitals' information and communication staff collaboration, the purpose for this report is to present the utilisation of administration data as a means of examining outcomes associated with nurse staffing. Further analysis was undertaken matching nurse staffing on a daily basis with the outcomes outlined below.

The administrative systems within the pilot hospitals provided data on the following domains:

- Patient Demographics.
- Patient Attendances including new attendances and returns.
- Number of patients Leaving Without Being Seen (LWBS).
- Numbers of Patients Admitted.
- Wait Times including:
  - Patient Experience Time (PET).
  - Time to Triage (TTT).
  - Time from triage to time to be seen by a decision maker.
  - ED Registration to time to be seen by a decision maker.
  - ED Care Time (EDCT).

### **4.4.1 Patient Demographics**

#### **4.4.1.1 Number of Presentations**

Overall, there were 443,158 patient presentations in the three pilot EDs recorded for the duration of the study – January 2018 to April 2021. The demographic profile of patients attending the EDs, and the IU are outlined by hospital.

#### ***Hospital 4***

Overall, 171,745 presentations were recorded in Hospital 4 from January 2018 to April 2021, equating to an average of 4,293.62 presentations per month over the data

collection period<sup>22</sup>. Monthly presentation figures increased month on month over the data collection period with a substantial increase noted in September 2019 (Table 4.4.1.1). Presentations initially fell in March 2020, with 3,348 presentations coinciding with the onset of the Covid-19 pandemic in Ireland; however, presentations increased in May 2020. While presentations dropped at the outbreak of the pandemic in Ireland, this did not persist throughout the rest of the year as presentation rates fluctuated according to the stage of lockdown.

Scheduled returns within 42 days of the patient's last time of departure from the ED equated to 2.6-4.6% of patients in Hospital 4. Those who returned unscheduled to the ED within 28 days of their last departure were labelled as 'other returns', accounting for approximately 4.4-12.6% of presentations each month. Less than 3% of presentations each month were recorded as patients who were returning within 28 days of their last departure from the ED, having been admitted on their last attendance. This figure stood at less than 1% of overall presentations each month when just looking at those who returned within 7 days of their last departure from the ED, having been admitted.

The proportion of patients admitted from the ED each month ranged from 26.8%-46% of presentations. The month with the lowest average number of admission of patients was recorded in March 2020, down 1% on the previous month for 2019 and 1.5% from 2018.

As would be expected, patients triaged as 'Immediate' represented the smallest triage category each month, not exceeding 2% of presentations over the study period. Moving in increasing share of presentations, 'Non-Urgent' patients accounted for 4% of presentations each month. The 'Standard' and 'Very Urgent' triage categories were, in varying order month to month, the second and third largest triage categories. Those triaged as 'Standard' accounted for between 8-21% of presentations each month throughout the study period. The 'Urgent' triage category represented the largest proportion of patients each month, accounting for approximately 50% of presentations.

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<sup>22</sup> Note Hospital 4 consists of an adult and paediatric ED; for the purpose of this report, only adult attendances are reported. A full breakdown of the presentations, including paediatric attendances, is available in Appendix I.

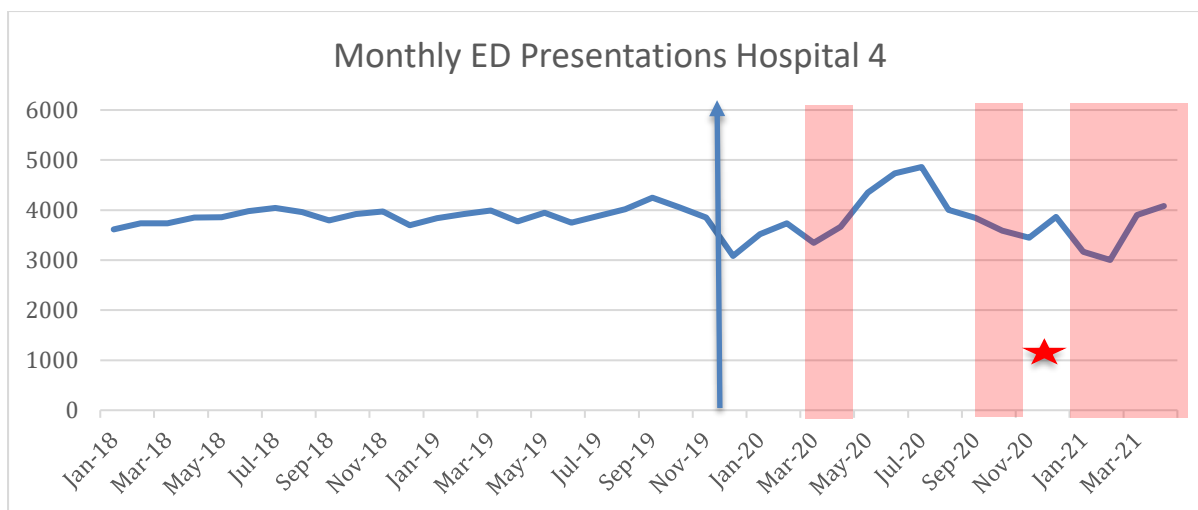


Figure 4.4.1.1: Presentations to the ED (Hospital 4) of all patients by month, with periods where the country was under levels of lockdown restrictions highlighted. → Time of staffing adjustments. ★ Note in Hospital 4 a new Rapid Assessment Triage Treatment Area (RASTTA) unit which involved the rapid assessment of patients was opened within the ED in late 2020 early 2021. This new unit had no impact on presentations to the ED or traditional triage pathway.

## Hospital 5

Overall, 97,643 presentations were recorded in Hospital 5 from January 2018 to April 2021, equating to an average of 2,441 presentations per month over the data collection period. The highest monthly presentation figures in 2018 and 2019 were recorded in May, at 2,780 and 2,749 respectively. Monthly presentation figures fell below 2,000 on four occasions over the data collection period, March-April 2020 (onset of the pandemic), and January-February 2021 (post-Christmas lockdown), coinciding with periods of increasing Covid-19 cases in the country (Figure 4.4.1.2). April 2020 saw the lowest monthly presentations of the study period, with 1,790 patient presentations. While presentations dropped sharply at the outbreak of the pandemic in Ireland, this did not persist throughout the rest of the year as presentation rates fluctuated. Patient presentation figures for June 2020 were the highest recorded for that month in the study period, while September 2020 figures were higher than those for 2018. Following the drop in presentations in early 2021, presentation figures rose to near pre-pandemic levels from March onwards, with figures for April 2019 and April 2021 approximately similar at 2,670 presentations. Table 4.4.1.2 outlines the presentations month by month for the duration of the study period.

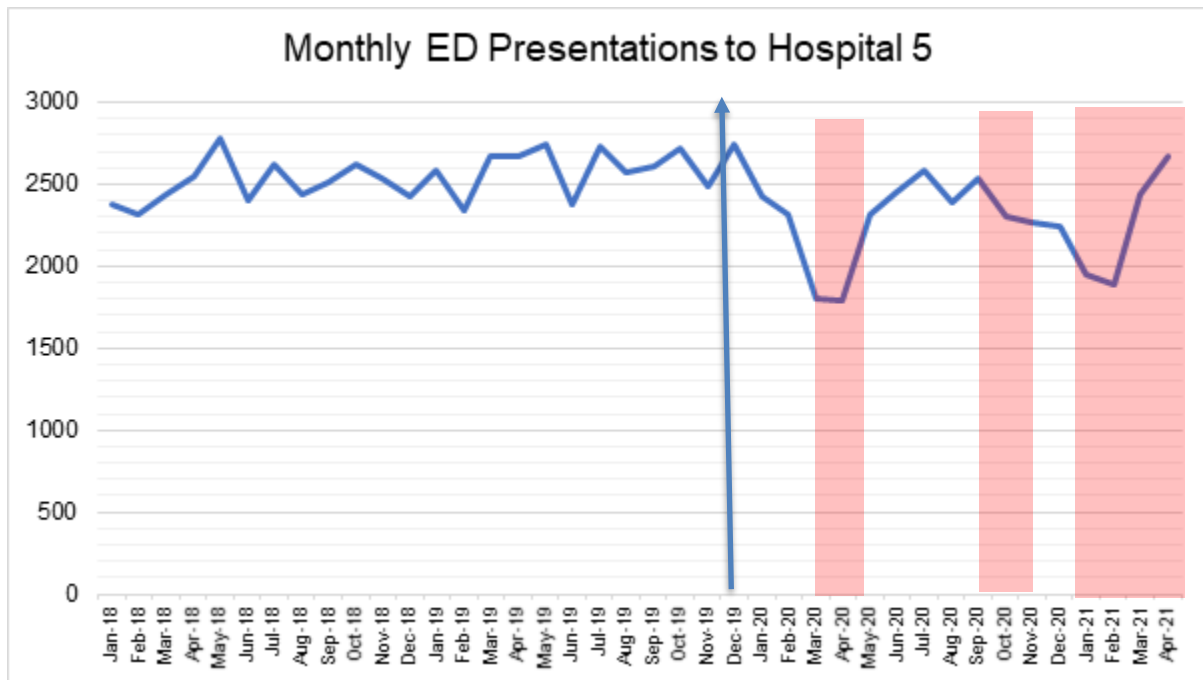



Figure 4.4.1.2: Presentations to the ED (Hospital 5) of all patients by month, with periods where the country was under levels of lockdown restrictions highlighted.  Time staffing adjustments commenced.

## Hospital 6

As Hospital 6 presented data for both the ED unit and a rapid assessment clinic, this data was separated out with only the ED data presented below. Overall, from the 1<sup>st</sup> January 2018 up to and including 30<sup>th</sup> April 2021, 173,770 patient presentations were recorded in the ED in Hospital 6 in the study (Figure 4.4.1.3). Overall, 54,686 attendances were recorded in 2018, 54,905 attendances were recorded in 2019, and 48,488 attendances were recorded in 2020 with 15,691 attendances recorded up to 30<sup>th</sup> April in 2021. Table 4.4.1.3 outlines the overall ED presentation figures by month for Hospital 6.

Patient attendances aged 75 years of age or over was also analysed. Patients  $\geq 75$  years of age accounted for 13.7% (N=23,849) of attendances within the study period. When looking at monthly data, this proportion ranged from 12.2-15.3% of presentations. There was an increase in the proportion of presentations aged 75 and older in the 12 months following the outbreak of Covid-19 in Ireland (March 2020 - February 2021), rising to 14.1% of presentations from 13.5% of presentations in the 12 months preceding the pandemic.

There were 4,344 monthly presentations on average across the data collection period. Monthly presentation figures for those aged 75 and older ranged from 432 to 689, with 596 presentations on average per month. May 2019 saw the highest number of presentations per month, with 4,927 presentations. The lowest recorded number of monthly presentations was 3,054, recorded in April 2020, the first full month in which the highest level of lockdown policies were put in place. This represented a 32.3%

decrease from 2019 figures for the same month. The lowest number of presentations for each respective month was recorded in the period March 2020 to February 2021, corresponding to the first data collection period for each month following the outbreak of the pandemic in Ireland. Months, where ED presentation figures were below 4,000, coincided with the three 'waves' of Covid-19 cases in Ireland, March-April 2020, October-November 2020, and January-February 2021, and the consequent lockdown policies put in place. Figure 4.4.1.3 shows the monthly presentation figures for both the overall patient population and those aged 75 and older, with the periods in which the strictest lockdown restrictions were in place nationwide highlighted in red.

Though the introduction of subsequent lockdown measures did coincide with a reduction in monthly presentation figures, the data showed that the extent of the decrease was not as severe as was evident during the first phase of lockdown restrictions. The data further showed that the drop in monthly presentations was not sustained throughout the lockdown periods, with monthly presentations rising over the course of each lockdown phase. This was evident in the data for April 2021, which showed that presentations had returned to near pre-pandemic levels, with 4,445 presentations recorded, despite lockdown restrictions still in place nationwide at that time. Figure 4.4.1.3 shows the presentations to the ED (Hospital 6) of all patients and those  $\geq 75$  years by month, with periods where the country was under the highest-level lockdown restrictions highlighted.

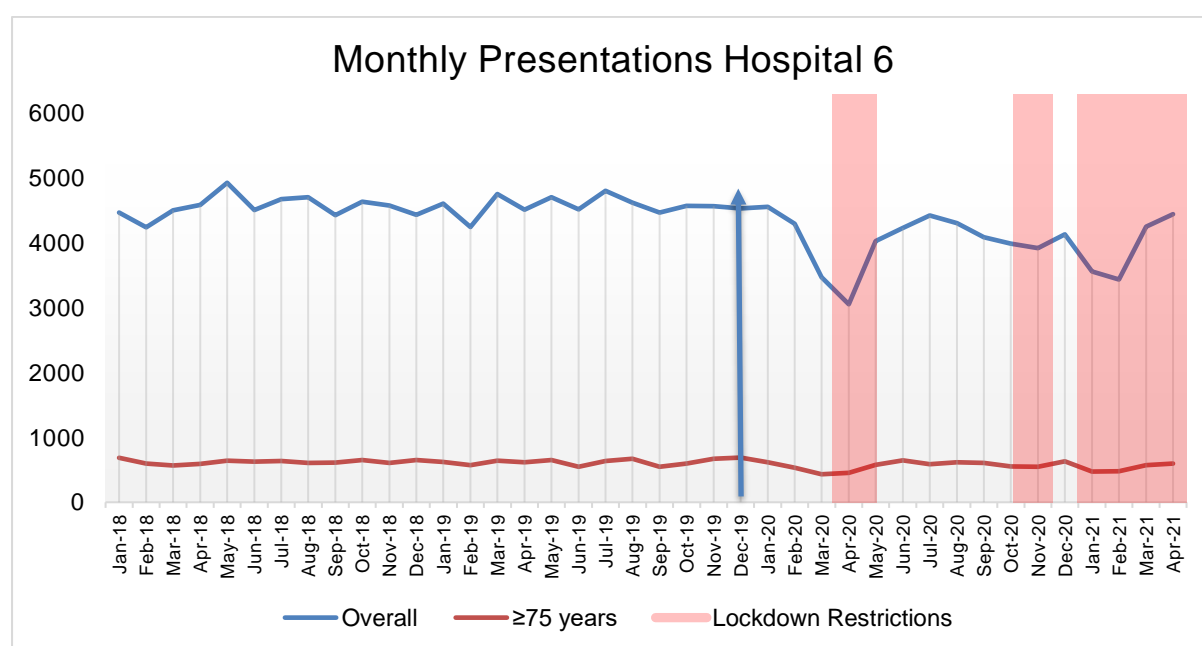


Figure 4.4.1.3: Presentations to the ED (Hospital 6) of all patients by month, with periods where the country was under levels of lockdown restrictions highlighted. → Time staffing adjustments commenced.

### **Hospital 7 (IU)**

Across the study period, 28,705 individual presentations were recorded in the injury unit in Hospital 7. This consisted of 8,721 presentations in 2018; 9,128 in 2019; 5,885 in 2020, and 4,971 presentations up to 30<sup>th</sup> April 2021.

New attendances accounted for over 98% of presentations each year. As with the emergency departments, return patients were divided in terms of scheduled returns and other returns. A total of nine scheduled returns (patients who were logged as 'For Follow-up Appointment' on their previous visit and who returned within 42 days of their last ED discharge) were recorded across the entire study period. Other returns were again defined as returns which were not scheduled, and which occurred within 28 days of a patient's last discharge from the IU; 121 (1.4%) other returns were recorded in 2018, 134 (1.5%) were recorded in 2019, 35 (1.9%) in 2020<sup>23</sup> and 98 (2.0%) in 2021 (Table 4.4.1.4).

Over the entire study period, there was one instance of a patient, having been admitted on their last presentation, returning non-scheduled within 28 days of their last IU discharge. Total returns were all re-attendances which occurred within 28 days of a patient's last discharge from the IU, accounting for less than 3% of presentations each year.

#### *4.4.1.2 Patient Profile*

##### ***Hospital 4***

The majority of patient presentations to Hospital 4 were male (51%) with an average age of 48.12 years with 106 years recorded as the highest age over the 40-month period. Over 75s equated to approximately 14% of presentations per month (Table 4.4.1.1).

Scheduled returns ranged from 2.6-4.1% each month with September 2019 indicating the highest number of scheduled return patients at 175 (4.1%). Unscheduled returns were classified based on the number of days they returned in <7, 8-28, >28 days. Unscheduled return less than 7 days remained below 5% for the entire study period (range 2.8-4.9%), with July 2019 recorded as having the highest number of unscheduled returns within 7 days (4.9%).

Manchester Triage categories were segregated to determine the number of patients presenting in each category: 1="Immediate" to 5="Non-Urgent". The largest cohort of patients were categorised as "Urgent", followed by "Standard" and then "Very Urgent". Monthly presentations classified as "Urgent" ranged from 42.1% to 57.1% per month, with patients being defined as category "Urgent" peaking in December 2018. Patients without a triage score accounted for less than 4% of all patients across the study period.

##### ***Hospital 5***

Over the data collection period, the majority of presentations were female (51.5%), and the average age was 42.48 years with the highest age recorded at 103 years. The proportion of patients who were aged 75 years and older ranged between 12.2-18.2% of presentations each month over the study period.

In relation types of attendances, approximately one in ten presentations to Hospital 5 each month were denoted as scheduled returns within 42 days of the patient's last

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<sup>23</sup> Until March 2020, as this data is not currently available beyond that



time of departure from the ED. Those who returned unscheduled to the ED within 28 days of their last departure were labelled as 'other returns', accounting for approximately 10% of presentations each month. Narrowing the scope to look at 'other returns' within 7 days, this cohort accounted for 2.2-5.0% of monthly presentations to the ED. Less than 5% of presentations each month were recorded as patients who were returning within 28 days of their last departure from the ED, having been admitted on their last attendance. This figure stood at less than 1% of overall presentations each month when examining those who only returned within 7 days of their last departure from the ED, having been admitted (Table 4.4.1.2).

Examining all returns to the ED (both scheduled and other returns), the data showed that between 9.2-14.1% of presentations each month to Hospital 5 were returning within 7 days of their last departure from the ED, while approximately one in five were returning within 28 days. Patients denoted as new attendances were those who were neither returning for scheduled care within 42 days nor labelled as 'other returns' within 28 days, amounting to approximately four-fifths of presentations each month.

Those triaged<sup>24</sup> as 'Immediate' represented the smallest triage category each month, not exceeding 1% of presentations over the study period. Moving in increasing share of presentations, 'Non-Urgent' patients accounted for 2-5% of presentations each month. The 'Standard' and 'Very Urgent' triage categories were, in varying order month to month, the second and third largest triage categories. Those triaged as 'Standard' accounted for between one-quarter and one-third of presentations each month throughout the study period. Those triaged as 'Very Urgent' represented approximately one-quarter of patients each month in 2018 and 2019, peaking at 27.9% of presentations in January 2019. The proportion of patients triaged as 'Very Urgent' remained relatively consistent as Covid-19 developed in Ireland, with 22.1% of patients triaged in this category in the 12 months following the outbreak in the country (March 2020-February 2021), compared with 22.3% presentations for the 12-month period pre-pandemic.

The 'Urgent' triage category represented the greatest proportion of patients each month, accounting for approximately 40% of presentations in 2018 and 2019. This proportion increased through 2020 and into 2021, reaching a peak of 49.6% of presentations in January 2021. Examining the 12 months before and after the outbreak of Covid-19, there was an increase in the proportion of 'Urgent' patients post-outbreak, at 46.1% of presentations, compared with 42.1% of presentations pre-outbreak.

The proportion of patients aged 75 years and older who were triaged as 'Very Urgent' or 'Urgent' each month ranged from 76.4-90.3% of presentations over the entire study period, with the 'Urgent' triage category consistently holding the greater share of presentations. Having ranged from 42.0-51.9% of presentations from the start of the data collection period through to March 2020, the proportion of patients aged 75 and older categorised as 'Urgent' did not move below 50.0% from April 2020 through to the end of the study period, reaching a peak of 57.4% of presentations in January 2021.

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<sup>24</sup> Manchester Triage Category

A greater proportion of those patients aged 75 and older were triaged as 'Immediate' when compared to the overall population, ranging from 0.3-2.4% of presentations over the entire study period. 'Standard' and 'Non-Urgent' presentations combined accounted for approximately one-fifth of presentations among the 75 years and older cohort each month.

## **Hospital 6**

Of the presentations in the overall study period, 81,335 (46.8%) were female and 92,409 (53.2%) were male<sup>25</sup>. The gender split was relatively consistent over the data collection period, with the majority of presentations each month being male, ranging from 50.6-57.5% of presentations. Among patients aged 75 and older, most presentations each month were female, accounting for 57.5% of presentations among this cohort across the data collection period (see Appendix C).

Patients ranged in age from 1-103<sup>26</sup> years, with a mean age of 48.28 years across the entire data collection period. A range of 46.49-50.79 years seen in the monthly mean age data. Table 4.4.1.3 outlines the patient demographics for Hospital 6.

A combined number of 173,770 patient attendances were seen in Hospital 6 over the data collection period. Attendances were a combination of both new presentations and returns, with approximately four-fifths of presentations (79.0-86.4%) each month reflective of new attendances. Table 4.4.1.3 outlines the breakdown of attendances in terms of new presentations and returns. Scheduled returns were defined as attendances that were coded by the hospitals as returns or following a previous ED attendance and which occurred within six weeks of the patient's last discharge from the ED. Other returns were defined as attendances that were not scheduled, and which occurred within 28 days of the patient's last discharge from the ED. Patients returning within 28 days who were recorded by the hospitals as a return patient or presenting following a previous ED attendance, but who had left without being seen or before treatment completion on their previous visit, were deemed to be other returns. Total returns referred to all re-attendances within 28 days of the patient's last discharge from the ED.

The proportion of patients per month being triaged as Manchester Triage Category 'Immediate' was consistent throughout the data collection period, accounting each month for less than 1% of overall presentations and approximately 1-2% of presentations of patients aged 75 and older. Patients categorised as 'Very Urgent' represented between one quarter and one-third of presentations each month, with an increase in patients triaged into this category following the outbreak of Covid-19 in Ireland. The proportion of 'Very Urgent' presentations for the period March 2020 to February 2021 was 27.9%, increasing from 24.5% for the 12 months pre-pandemic (see Table 4.4.1.3).

Patients triaged as 'Urgent' represented the largest triage category subset in every month of the study period, with all but three months having more than half of overall

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<sup>25</sup> The gender of less than one percent of presentations (n=26) was not recorded.

<sup>26</sup> It is of note that this ED does not normally treat paediatric patients.

presentations falling into this category. Those three months occurred as the country entered the first lockdown period, with the decreased proportion of 'Urgent' presentations coinciding with the increase in the proportion of 'Very Urgent' presentations at this time. The proportion of 'Urgent' presentations returned to pre-pandemic levels following the initial decrease at the onset, with data from September 2020 onwards approximately equivalent to the corresponding month of the previous year.

There was a decrease in the proportion of patients being triaged as 'Standard' and 'Non-Urgent' in the 12 months following the outbreak of Covid-19 in Ireland (March 2020 - February 2021), falling to 9.0% of overall presentations from 10.5% of presentations in the 12 months pre-pandemic. Patients recorded as "Not Triaged" accounted for less than 4% of all patients across the study period.

### ***Hospital 7***

In the injury unit, 14,556 (52.1%) male patients attended over the study period, while 13,387 (47.9%) patients were female<sup>27</sup>. The average age of patients was 37.54 across the study period, with ages ranging from less than one year to 101 years old. Examining the subset of patients who were aged 75 years and older, the proportion of such patients remained generally consistent each year, accounting for 7.0% (n=609) of all presentations in 2018, 7.1% (n=645) in 2019, falling to 3.6% (n=214) in 2020<sup>28</sup>.

As would be expected, the majority of patients in the IU were triage categories 'Standard' and 'Non-Urgent', which accounted for a combined percentage of 97.0% of presentations in 2018, 97.0% in 2019, and 97.2% in 2020, and 97.6% in 2021. The proportion of patients who were triage category 'Standard' varied slightly each year: 87.7% of presentations in 2018, 86.4% in 2019, 87.9% in 2020, and to 85.2% in 2021. Conversely, the proportion of patients who were in the triage category 'Non-Urgent' increased each year, rising from 9.1% in 2018, to 10.6% in 2019 and again to 16.7% in 2020, but decreased to 12.4% in 2021. Patient demographics are highlighted in Table 4.4.1.4 below.

#### ***4.4.1.3 Number of Patients Admitted***

### ***Hospital 4***

Over the 40-month period, between 26.8-46% of presentations were admitted in Hospital 4. An average of 50.6 patients were admitted from the ED per day across the study period. In 2018, an average of 51.23 patients were admitted per day. This decreased to 49.34 in 2019, 48.1 in 2020 and subsequently increased in 2021 to 53.72. The lowest admission rate recorded in August 2020, corresponding with lockdown restrictions, and associated with the Covid-19 pandemic and reduction in presentations to EDs during this time. Over 75s accounted for the largest cohort of admitted patients, equating to over 66% of patients per month. Patients within higher Manchester Triage categories were more likely to be admitted. In the "Immediate" and "Very Urgent" categories between 30-62% of patients were admitted (Table 4.4.1.1).

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<sup>27</sup> One patient's gender was not recorded.

<sup>28</sup> Please note, this breakdown of data was not available for 2021.

### ***Hospital 5***

Data showed that over the entire study period, the proportion of patients admitted from the ED each month ranged from 26.5-40.9% of presentations. An average of 25 patients were admitted from the ED per day in 2018. This increased to 31 patients on average in 2019, before reducing to 28 patients per day in 2020, and to 27 patients per day on average in 2021. Each month in Hospital 5, approximately two-thirds of patients aged 75 and older were admitted from the ED, amounting to approximately 8 patients per day over the data collection period (Table 4.4.1.2).

### ***Hospital 6***

Across the data collection period, a total of 47,603 patients (27.4%) were admitted from Hospital 6. Monthly data ranged from approximately one quarter to one third of presentations being admitted from the ED, with a maximum proportion of 37.5% (N=1,144) recorded in April 2020 (see Table 4.4.1.3). When examining the proportion of patients within each triage category who were admitted per month, the proportions were typically in line with acuity based on the patient's triage category, with a greater proportion of those triaged as 'Immediate' or 'Very Urgent' admitted than those in the other categories. In these categories, 30.4-76.2% and 42.7-60.7% of presentations respectively were admitted each month. Of those aged 75 years and over, a total of 13,328 patients were admitted during the study period. The proportion of those  $\geq 75$  years admitted each month ranged from 49.6-66.7% of such presentations, with the highest number of admissions of this cohort in an individual month recorded in January 2018, at 412 admissions (60.2%).

Hospital 6 averaged 39.15 admissions per day across the entire study period. In 2018, this average stood at 41.05 admissions per day, decreasing to 40.16 in 2019, and to 36.47 admissions per day in 2020. In 2021, data to the end of April showed an average of 38.45 patients admitted per day from the ED.

### ***Hospital 7***

A small proportion of patients were admitted to hospital following their IU attendance, 0.6% in 2018, 0.5% in 2019, 0.4% in 2020 and 0.6% in 2021. A slightly larger proportion of patients had to be transferred to another hospital following their IU attendance, 7.3% in 2018, 6.5% in 2019, 6.8% in 2020 and 5.7% in 2021 (Table 4.4.1.4).

A slightly higher proportion of patients aged 75 years plus were admitted or transferred to hospital compared to all other ages. Admissions accounted for 1.1% in 2018, 1.9% in 2019 with none recorded in 2020. Transfers to other hospitals made up 12.3% in 2018, 10.5% in 2019 and 15.0% in 2020 of attendees aged 75 years and over. Small proportions of patients aged over 75 years LWBS, 0.8% in 2018, 0.5% in 2019 and 0.9% in 2020 (Table 4.4.1.4).

Table 4.4.1.1: Demographic profile of patients attending the Emergency Department of Hospital 4

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Overall Presentations	18	3614	3733	3735	3853	3856	3978	4045	3961	3792	3918	3973	3697
	19	3841	3921	3991	3776	3949	3749	3880	4016	4248	4056	3850	3085
	20	3517	3738	3348	3663	4348	4732	4861	4004	3842	3586	3449	3865
	21	3169	3003	3903	4082								
Gender: Female Male Unknown - n (%)	18	1832(50.1) 1823(49.9)	1875 (51.2) 1858(49.8)	1837(49.2) 1898(50.8)	1864(48.4) 1969 (51.6)	1875(48.6) 1981(51.4)	1948(49) 2030(51)	1996(49.3) 2049(50.7)	1961(49.5) 2000 (50.5)	1871(49.3) 1921 (50.7)	1967(50.2) 1951 (48.9)	1967(49.5) 2006(50.5)	1907 (50.6) 1860 (49.4)
	19	1937 (50.4) 1905 (49.6)	1954 (49.8) 1967(50.2)	2002 (50.2) 1989(49.8)	1877(49.7) 1899(50.3)	1951 (49.4) 1998(50.6)	1892 (50.5) 1857(49.5)	1868 (48.1) 2012(51.9)	1971 (49.1) 2045(50.9)	2067 (41.3) 2181(58.7)	2002 (49.4) 2054(50.6)	1919 (49.8) 1931(50.2)	1835 (48.2) 1970(51.8)
	20	1683 (47.9) 1834(51.2)	1853(49.6) 1885 (50.4)	1565 (51.2) 1493(48.8)	1744 (49.7) 1759 (50.3)	1741 (48.9) 1814(51.02)	1645(49.6) 1673(50.4)	2488 (51) 2391 (49)	2483 (49.49) 2534 (50.5)	3017 (51) 2899 (49)	2484 (48.8) 2597(51.1)	2537 (50.09) 2526 (49.88)	2679 (51) 2575 (49)
	21	2197(50.9) 2112(49.01)	2083(50.0) 2083(50.0)	2859 (51.2) 2725 (48.8)	3049(50.9) 2930 (48.1)	-	-	-	-	-	-	-	-
Age at Admission Mean (SD)	18	51.79(23.85) 51.6(22.27)	49.8(22.03) 50.9(22.0)	51.4(22.13) 50.9(22.27)	49.9(21.85) 51.8(21.8)	49.8(22.4) 51.1(28.1)	50.4(21.8) 51.7(21.7)	49.7(21.7) 50.1(21.9)	50.4(21.6) 50.6(21.9)	50.4(23.3) 50.8(22.27)	48.5(22.26) 49.9(22.8)	49.6(22.2) 51.6(21.26)	50.0(21.9) 53.4(22.8)
	19	51.8(22.0) 51.67(22.16)	50.8(22.1) 50.76(21.9)	48.6(23.0) 49.45(22.89)	50.5(22.3) 51.2(21.3)	48.6(22.9) -	49.8(23.0) -	51.7(21.6) -	48.9(23.4) -	50.1(22.2) -	49.0(21.24) -	49.9(22.5) -	51.2(23.0) -
	20												
	21												
LWBS – n (%)	18	153(4.2)	252(6.8)	234(6.3)	269 (6.9)	250(6.2)	232(6.4)	194(4.8)	135(3.4)	163(4.3)	148(3.8)	185(4.6)	206(5.5)
	19	144(3.7)	196(5)	167(4.2)	130(3.4)	200(5.10)	155(4.1)	187(4.8)	193(4.8)	234(5.5)	199(4.9)	145(3.8)	191(5)
	20	114(3.2)	141(3.8)	42(1.4)	75(2.1)	156(4.3)	167 (5.0)	141 (2.9)	156(3.1)	193(3.3)	118(2.4)	73(1.4)	100(2.0)
	21	108 (2.5)	63(1.4)	90(1.7)	105(2.4)								
Admitted – n (%)	18	1627(46)	1560(41.8)	1531(41)	1583(41)	1571(40.7)	1609(40.4)	1615(39.9)	1635(41.3)	1604(42.3)	1539(39.3)	1604(40.4)	1582(42)
	19	1710(44.5)	1572(40.1)	1576(39.6)	1497(39.6)	1485(37.6)	1459(38.9)	1495(38.5)	1494(37.2)	1552(36.5)	1491(36.8)	1477(38.4)	1547(40.7)
	20	1476(42)	1545(41.3)	1208(39.5)	1311(37.41)	1451(40.8)	1344(40.5)	1401(28.7)	1345(26.8)	1778(30.1)	1624(34.8)	1702(33.6)	1735(34.2)
	21	1518(36)	1534(33.7)	1773(33.0)	1836(30.7)	-	-	-	-	-	-	-	-

Table 4.4.1.2: Demographic profile of patients attending the Emergency Department of Hospital 5

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Overall Presentations	18	2379	2317	2439	2546	2780	2403	2617	2442	2509	2624	2535	2427
	19	2581	2335	2668	2673	2749	2379	2734	2570	2613	2715	2493	2741
	20	2426	2310	1803	1790	2311	2454	2583	2388	2541	2308	2269	2247
	21	1955	1883	2433	2673								
N of Presentations ≥75 years - n (%)	18	376 (15.8)	386 (16.7)	410 (16.8)	381 (15.0)	373 (13.4)	358 (14.9)	379 (14.5)	338 (13.8)	379 (15.1)	391 (14.9)	339 (13.4)	359 (14.8)
	19	330 (12.8)	318 (13.6)	340 (12.7)	409 (15.3)	378 (13.8)	360 (15.1)	392 (14.3)	372 (14.5)	318 (12.2)	343 (12.6)	337 (13.5)	394 (14.4)
	20	356 (14.7)	335 (14.5)	264 (14.6)	249 (13.9)	362 (15.7)	351 (14.3)	382 (14.8)	352 (14.7)	344 (13.5)	331 (14.3)	303 (13.4)	385 (17.1)
	21	310 (15.9)	343 (18.2)	367 (15.1)	408 (15.3)								
Gender: Female Male - n (%)	18	1271 (53.4) 1108 (46.6)	1165 (50.3) 1152 (49.7)	1258 (51.6) 1181 (48.4)	1261 (49.5) 1285 (50.5)	1463 (52.6) 1317 (47.4)	1217 (50.6) 1186 (49.4)	1325 (50.6) 1292 (49.4)	1203 (49.3) 1239 (50.7)	1286 (51.3) 1223 (48.7)	1339 (51.0) 1285 (49.0)	1287 (50.8) 1248 (49.2)	1271 (52.4) 1156 (47.6)
	19	1328 (51.5) 1253 (48.5)	1201 (51.4) 1134 (48.6)	1418 (53.1) 1250 (46.9)	1338 (50.1) 1335 (49.9)	1444 (52.5) 1305 (47.5)	1169 (49.1) 1210 (50.9)	1365 (49.9) 1369 (50.1)	1311 (51.0) 1259 (49.0)	1340 (51.3) 1273 (48.7)	1398 (51.5) 1317 (48.5)	1218 (48.9) 1275 (51.1)	1442 (52.6) 1299 (47.4)
	20	1195 (49.3) 1231 (50.7)	1198 (51.9) 1112 (48.1)	895 (49.6) 908 (50.4)	933 (52.1) 857 (47.9)	1150 (49.8) 1161 (50.2)	1225 (49.9) 1229 (50.1)	1396 (54.0) 1187 (46.0)	1236 (51.8) 1152 (48.2)	1305 (51.4) 1236 (48.6)	1214 (52.6) 1094 (47.4)	1218 (53.7) 1051 (46.3)	1142 (50.8) 1105 (49.2)
	21	1069 (54.7) 884 (45.2)	1058 (56.2) 825 (43.8)	1325 (54.5) 1108 (45.5)	1433 (53.6) 1240 (46.4)	- -	- -	- -	- -	- -	- -	- -	- -
LWBS- n (%)	18	88 (3.7)	108 (4.7)	89 (3.6)	104 (4.1)	93 (3.3)	95 (4.0)	91 (3.5)	84 (3.4)	81 (3.2)	77 (2.9)	72 (2.8)	41 (1.7)
	19	85 (3.3)	48 (2.1)	61 (2.3)	70 (2.6)	63 (2.3)	65 (2.7)	83 (3.0)	77 (3.0)	85 (3.3)	78 (2.9)	77 (3.1)	76 (2.8)
	20	76 (3.1)	55 (2.4)	28 (1.6)	22 (1.2)	31 (1.3)	35 (1.4)	40 (1.5)	42 (1.8)	32 (1.3)	35 (1.5)	31 (1.4)	36 (1.6)
	21	35 (1.8)	26 (1.4)	33 (1.4)	50 (1.9)	-	-	-	-	-	-	-	-
Admitted – N(%)	18	786 (33.0)	682 (29.4)	714 (29.3)	674 (26.5)	802 (28.8)	726 (30.2)	722 (27.6)	677 (27.7)	786 (31.3)	774 (29.5)	906 (35.7)	894 (36.8)
	19	962 (37.3)	844 (36.1)	963 (36.1)	991 (37.1)	991 (36.0)	816 (34.3)	962 (35.2)	861 (33.5)	961 (36.8)	988 (36.4)	978 (39.2)	955 (34.8)
	20	943 (38.9)	945 (40.9)	687 (38.1)	694 (38.8)	851 (36.8)	904 (36.8)	921 (35.7)	835 (35.0)	923 (36.3)	844 (36.6)	808 (35.6)	868 (38.6)
	21	739 (37.8)	721 (38.3)	854 (35.1)	897 (33.6)								
≥75 years: Admitted – N(%)	18	252 (67.0)	231 (59.8)	247 (60.2)	208 (54.6)	207 (55.5)	215 (60.1)	205 (54.1)	192 (56.8)	228 (60.2)	227 (58.1)	222 (65.5)	243 (67.7)
	19	235 (71.2)	212 (66.7)	253 (74.4)	263 (64.3)	254 (67.2)	221 (61.4)	251 (64.0)	246 (66.1)	212 (66.7)	223 (65.0)	237 (70.3)	254 (64.5)

20	246 (69.1)	225 (67.2)	178 (67.4)	159 (63.9)	244 (67.4)	241 (68.7)	244 (63.9)	253 (71.9)	242 (70.3)	223 (67.4)	199 (65.7)	255 (66.2)
21	206 (66.5)	226 (65.9)	242 (65.9)	241 (59.1)								

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	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Overall Presentations	18	4469	4241	4501	4586	4927	4508	4676	4704	4429	4635	4578	4432
	19	4605	4247	4754	4513	4704	4515	4804	4622	4469	4573	4565	4534
	20	4557	4294	3471	3054	4028	4230	4424	4304	4088	3987	3920	4131
	21	3557	3438	4251	4445								
N of Presentations ≥75 years - N (%)	18	684 (15.3)	597 (14.1)	568 (12.6)	592 (12.9)	641 (13.0)	624 (13.8)	637 (13.6)	606 (12.9)	612 (13.8)	650 (14.0)	607 (13.3)	651 (14.7)
	19	622 (13.5)	574 (13.5)	641 (13.5)	619 (13.7)	649 (13.8)	549 (12.2)	635 (13.2)	670 (14.5)	545 (12.2)	596 (13.0)	673 (14.7)	689 (15.2)
	20	619 (13.6)	533 (12.4)	432 (12.4)	453 (14.8)	578 (14.3)	646 (15.3)	587 (13.3)	615 (14.3)	607 (14.8)	550 (13.8)	545 (13.9)	630 (15.3)
	21	474 (13.3)	480 (14.0)	574 (13.5)	595 (13.4)								
Age – Mean (SD)	18	48.36 (20.76)	47.63 (20.66)	46.49 (20.12)	47.31 (20.27)	47.67 (20.26)	47.97 (20.32)	47.60 (20.28)	47.88 (20.08)	47.84 (20.20)	47.67 (20.56)	47.46 (20.32)	48.82 (20.43)
	19	48.23 (20.10)	47.02 (20.50)	47.23 (20.30)	48.41 (20.10)	48.55 (20.00)	47.90 (19.80)	48.00 (19.9)	48.81 (20.30)	47.53 (19.90)	47.77 (20.20)	48.62 (20.70)	49.59 (20.60)
	20	48.38 (20.29)	47.49 (19.81)	47.13 (19.60)	50.79 (19.45)	50.23 (19.68)	50.25 (20.12)	48.39 (19.81)	48.42 (20.20)	49.28 (20.10)	48.84 (19.92)	48.79 (19.94)	49.45 (20.50)
	21	48.41 (19.75)	48.58 (20.08)	48.94 (19.87)	48.70 (19.93)								
Gender: Female Male Unknown - N (%)	18	2129 (47.6) 2340 (52.4)	2044 (48.2) 2197 (51.8)	2068 (45.9) 2433 (54.1)	2149 (46.9) 2437 (53.1)	2272 (46.1) 2655 (53.9)	2131 (47.3) 2377 (52.7)	2139 (45.7) 2537 (54.3)	2197 (46.7) 2507 (53.3)	2075 (46.9) 2354 (53.1)	2153 (46.5) 2482 (53.5)	2143 (46.8) 2435 (53.2)	2064 (46.6) 2367 (53.4) 1 (<0.1)
	19	2103 (45.7) 2502 (54.3)	2015 (47.4) 2232 (52.6)	2215 (46.6) 2539 (53.4)	2118 (46.9) 2395 (53.1)	2147 (45.6) 2557 (54.4)	2144 (47.5) 2371 (52.5)	2253 (46.9) 2551 (53.1)	2155 (46.6) 2466 (53.4) 1 (<0.1)	2089 (46.7) 2380 (53.3)	2208 (48.3) 2364 (51.7) 1 (<0.1)	2175 (47.6) 2390 (52.4)	2081 (45.9) 2453 (54.1)
	20	2102 (46.1) 2455 (53.9)	1943 (45.2) 2350 (54.7) 1 (<0.1)	1474 (42.5) 1997 (57.5)	1438 (47.1) 1616 (52.9)	1864 (46.3) 2163 (53.7) 1 (<0.1)	1981 (46.8) 2248 (53.1) 1 (<0.1)	2047 (46.3) 2375 (53.7) 2 (<0.1)	1988 (46.2) 2316 (53.8)	1951 (47.7) 2134 (52.2) 3 (0.1)	1867 (46.8) 2119 (53.1) 1 (<0.1)	1916 (48.9) 2002 (51.1) 2 (0.1)	1942 (47.0) 2188 (53.0) 1 (<0.1)
	21	1740 (48.9) 1815 (51.0) 2 (0.1)	1600 (46.5) 1834 (53.3) 4 (0.1)	2096 (49.3) 2151 (50.6) 4 (0.1)	2119 (47.7) 2325 (52.3) 1 (<0.1)								
	18	867 (19.4)	998 (23.5)	1007 (22.4)	1004 (21.9)	1092 (22.2)	888 (19.7)	942 (20.1)	905 (19.2)	973 (22.0)	943 (20.3)	947 (20.7)	1048 (23.6)
	19	944 (20.5)	816 (19.2)	1042 (21.9)	897 (19.9)	885 (18.8)	867 (19.2)	1015 (21.1)	1033 (22.3)	974 (21.8)	883 (19.3)	998 (21.9)	849 (18.7)
	20	842 (18.5)	860 (20.0)	474 (13.7)	145 (4.7)	281 (7.0)	263 (6.2)	380 (8.6)	468 (10.9)	380 (9.3)	320 (8.0)	289 (7.4)	359 (8.7)
	21	277 (7.8)	279 (8.1)	328 (7.7)	420 (9.4)								
Admitted - N (%)	18	1341 (30.0)	1196 (28.2)	1210 (26.9)	1224 (26.7)	1339 (27.2)	1168 (25.9)	1315 (28.1)	1253 (26.6)	1179 (26.6)	1274 (27.5)	1296 (28.3)	1190 (26.9)
	19	1282 (27.8)	1186 (27.9)	1228 (25.8)	1212 (26.9)	1267 (26.9)	1127 (25.0)	1255 (26.1)	1207 (26.1)	1155 (25.8)	1214 (26.5)	1223 (26.8)	1301 (28.7)
	20	1196 (26.2)	1066 (24.8)	1167 (33.6)	1144 (37.5)	1151 (28.6)	1102 (26.1)	1062 (24.0)	1093 (25.4)	1082 (26.5)	1016 (25.5)	1056 (26.9)	1212 (29.3)
	21	1165 (32.8)	1041 (30.3)	1258 (29.6)	1150 (25.9)								
Admitted (≥75 years) - N (%)	18	412 (60.2)	343 (57.5)	336 (59.2)	330 (55.7)	350 (54.6)	331 (53.0)	357 (56.0)	335 (55.3)	322 (52.6)	390 (60.0)	364 (60.0)	367 (56.4)
	19	366 (58.8)	330 (57.5)	357 (55.7)	359 (58.0)	350 (53.9)	295 (53.7)	339 (53.4)	380 (56.7)	304 (55.8)	328 (55.0)	372 (55.3)	377 (54.7)
	20	340 (54.9)	289 (54.2)	272 (63.0)	299 (66.0)	332 (57.4)	346 (53.6)	295 (50.3)	305 (49.6)	313 (51.6)	296 (53.8)	277 (50.8)	348 (55.2)
	21	316 (66.7)	272 (56.7)	323 (56.3)	311 (52.3)								

Table 4.4.1.3: Demographic profile of patients attending the Emergency Department of Hospital 6



Table 4.4.1.4: Demographic profile of patients attending Hospital 7

	2018 (n = 8,721)	Hospital 7 2019 (n = 9,128)	2020* (n = 5885)	2021** (n = 4971)
Age in Years, mean (SD)	36.87 (22.74)	36.96 (22.91)	38.79 (22.87)^	-**
Gender, n (%)				
<i>Females</i>	4,152 (47.6)	4,360 (47.8)	2498 (48.8)^	2377 (47.8)
<i>Males</i>	4,569 (52.4)	4,768 (52.2)	2625 (51.2)^	2594 (52.2)
<i>Unknown</i>			1 (0.02)^	
Triage Category, n (%)				
<i>Immediate</i>	42 (0.5)	22 (0.2)	24 (0.4)	22 (0.4)
<i>Very Urgent</i>	22 (0.3)	33 (0.4)	21 (0.4)	14 (0.3)
<i>Urgent</i>	220 (2.5)	222 (2.4)	119 (2.2)	85 (1.7)
<i>Standard</i>	7,644 (87.7)	7,884 (86.4)	4825 (87.9)	4234 (85.2)
<i>Non-Urgent</i>	793 (9.1)	967 (10.6)	896 (16.3)	616 (12.4)
Aged ≥75 years, n (%)	609 (7.0)	645 (7.1)	214 (3.6)^	-

\*Incomplete data for 2020, values should be treated with caution

\*\*2021 figures reflective of the period 1<sup>st</sup> January 2021 – 31<sup>st</sup> July 2020

\*\*age data not available for 2021 period

^calculations are estimates of available data

#### **4.4.2 Emergency Department Patient Outcomes**

The administrative data from the four pilot sites was explored in terms of patient outcomes associated with nurse staffing. The data is presented in two time periods: January 2018 to November 2019 – baseline data (prior to the introduction of the *Pilot Framework*) and December 2019 to April 2021 (following the introduction of the *Pilot Framework*)<sup>29</sup>. As the lockdown restrictions for Covid-19 pandemic occurred in March 2020, time periods from this onward are compared to previous months where attendances and triage categories of patients were similar. This section describes each of the outcomes giving an overview of the data obtained from the administrative systems.

The administrative data provided key information in relation to patient wait times. The data presented patient arrival times to the department, departure times from the department, triage time, patient experience times (PET), treatment times, time waiting to be triaged, time waiting from being triaged to be seen by a decision maker, and the time the decision to admit was made. Due to the variability in the data, time data in this report is presented in the form of medians and interquartile ranges<sup>30</sup>.

For Hospital 7 (IU), patient outcomes including waiting times, such as Time to Triage and Patient Experience Times (PET), as well as outcomes such as admission and leaving without being seen are discussed in the section below for all patients and as well as those aged over 75 years of age and older. Triage to Seen by a decision maker was not extrapolated from the data as patients within the IU are usually triaged and seen relatively quickly hence these times are generally similar.

##### **4.4.2.1 Time to Triage (TTT)**

Time to triage (TTT) is dependent on the availability of nursing staff to assess a patient's triage level following registration or arrival by ambulance. It can be identified as an indicator of nurse staffing availability to assess patients at the point of arrival.

#### **Hospital 4 – Time to Triage (TTT)**

Median figures for TTT ranged from 0.21-0.30 hours in 2018, with a higher range of 0.23-0.33 hours in 2019. Data for 2020 (following the staffing adjustments, showed that median TTT fell to 0.26-0.31 hours. Data for June up to August 2020 showed that median TTT was consistent and lowest for that year and overall years which is consistent with the outbreak of Covid-19 in Ireland. In the months where lockdown policies were initiated, median monthly time to triage was also significantly lower at

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<sup>29</sup> Staffing changes began in December 2019; however, this needs to be considered in a period of adaptation of newly recruited staff. The Covid-19 pandemic commenced in March 2020 in Ireland.

<sup>30</sup> Some apparent outliers were identified in the data. These consisted of negative values and values exceeding 24 hours for 'Time to Triage', and values exceeding 48 hours for the variables 'Triage to be Seen', and 'ED Registration to be Seen'. Negative values and values greater than 120 hours or 360 hours for the variables 'ED Care Time' and 'Patient Experience Time' respectively were also deemed to be outliers. Such values were considered errors in the administrative data and were excluded from the analysis.

0.31 in March 2020 and 0.27 hours in April 2020. Overall, from January to April 2021, median monthly figures ranged from 0.15-0.21 hours. The highest median values for TTT were recorded in September 2019. Comparing April year on year shows a slight reduction in TTT from 2018 to 2019, 0.26 to 0.23 respectively. This increased in April 2020 to 0.27 but has decreased considerably in April 2021 at 0.15 hours. Overall, the median time to triage (TTT) as a proportion of hours for Hospital 4 was 0.24 in 2021 down from a median of 0.33 in previous years.

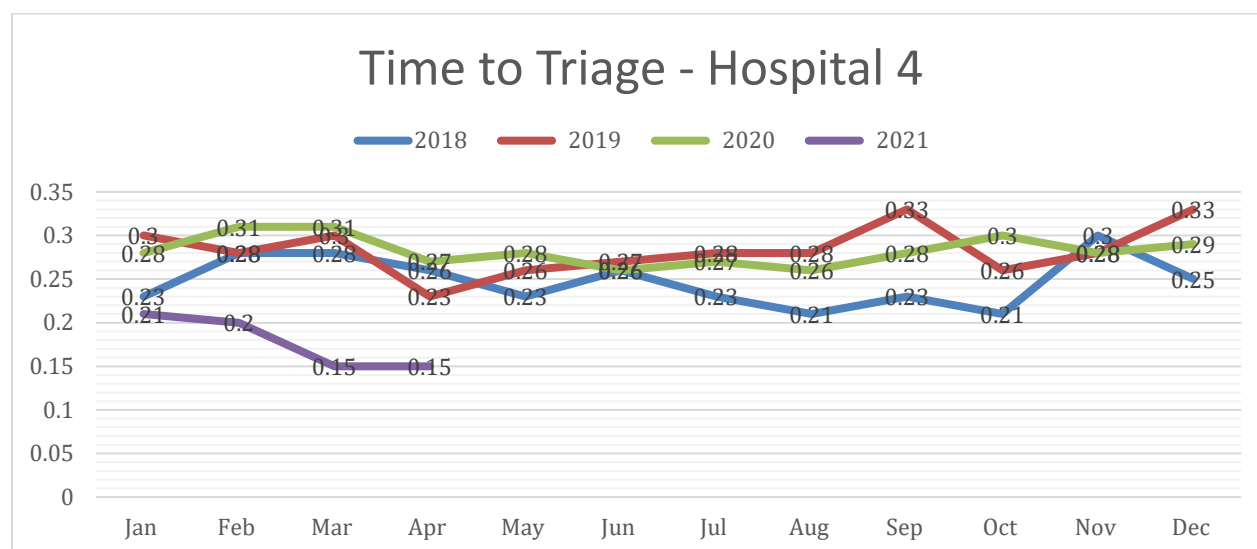


Figure 4.4.1.4: Time to Triage for Hospital 4 across the study period.

## Hospital 5

Monthly median figures for TTT ranged from 0.23-0.32 hours in 2018, with a higher range of 0.28-0.35 hours evident in monthly median figures for 2019. At the beginning of 2020, January figures (following staffing adjustments) showed that median TTT fell to 0.32 hours from 0.35 in 2019. Data for February 2020 showed that median TTT was consistent at approximately 0.32 hours each year up to the outbreak of Covid-19 in Ireland. Following the onset of the pandemic and the introduction of lockdown policies, a median monthly time to triage of 0.18 hours was reached in April 2020. Overall, from March 2020 to April 2021, median monthly figures ranged from 0.18-0.22 hours. The period June-September 2020 saw the lowest recorded median and upper quartile times for the respective months, with a level of presentations comparable to pre-pandemic levels.

Data for March 2021 showed that median TTT in 2021 was 0.20 hours, down from 0.23 hours in 2020 despite having 630 more presentations recorded. Similarly, median TTT in March 2021 was 33.3% lower than the corresponding figures for 2018 and 2019. Upper quartile data for March 2021 showed that 75% of patients were triaged within 0.33 hours of registration at the ED.

In April 2021, median time to triage was recorded at 0.22 hours, down from 0.32 hours for the same month in 2019, with equal presentations and similar triage categories. Similarly, upper quartile data for April 2021 was recorded at 0.38 hours, a decrease from the 0.50 hours recorded in April 2019.

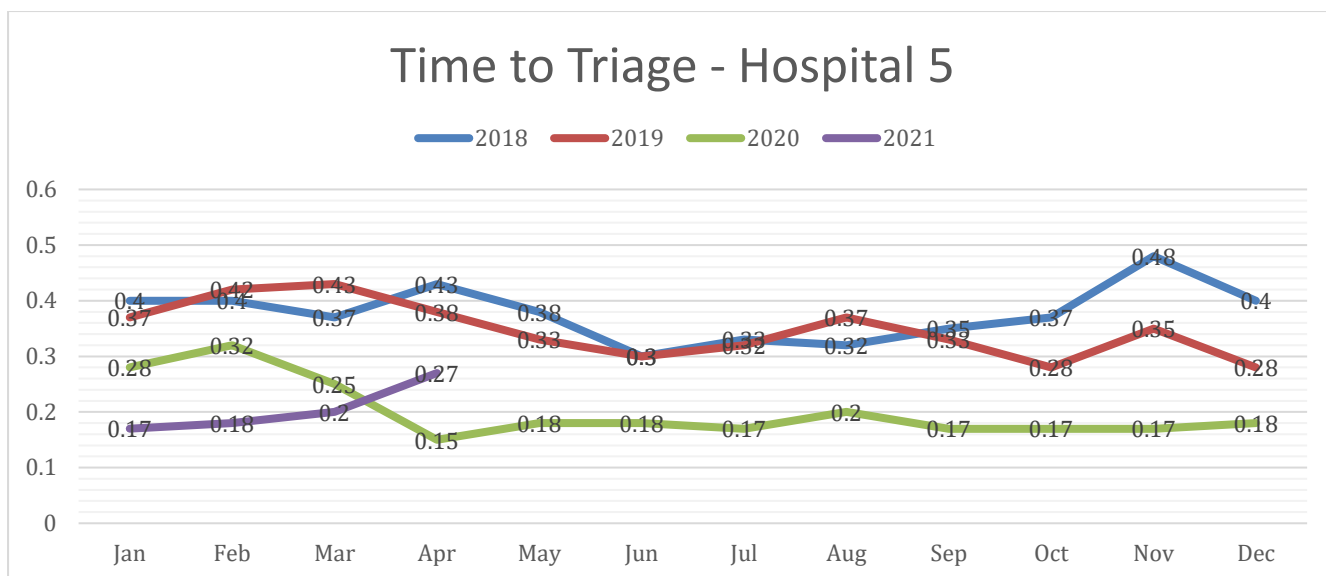


Figure 4.4.1.5: Time to Triage for Hospital 5 across the study period.

### **Hospital 6**

Median TTT per month in 2018 ranged from 0.30 hours to 0.48 hours, with lower median times evident during the summer months and higher median times in the winter. Data for 2019 initially showed a similar pattern in median TTT per month. However, from October 2019, as the staffing adjustments began to be implemented, monthly median TTT showed a decrease of 22.7-29.2% from the median TTT of the corresponding month of the previous year. This trend continued until February 2020 and the outbreak of the pandemic in Ireland, after which median TTT per month fell rapidly, dropping to 0.25 hours in March and 0.15 hours in April. However, as the pandemic developed and the country moved in and out strict lockdown restrictions, median TTT stabilised at the lower range of 0.17 hours to 0.20 hours in the months from May 2020 to March 2021. Median TTT increased slightly to 0.27 hours in April 2021 (following adjustments), however this time was 28.9% below the median TTT for April 2019 (prior to adjustments).

Interquartile range data in Table 4.4.2.3 shows that the highest upper quartile value of 0.88 hours was recorded in April and December 2018. In April 2021, this upper quartile value showed that 75% of patients were triaged in just over half an hour (0.52 hours) (Table 4.4.2.3).

Among patients aged 75 and older, median TTT followed a similar pattern to that of overall presentations, ranging from 0.28 hours to 0.38 hours in 2018 (see Appendix C). Monthly median TTT for the period October 2019 to February 2020 also showed a decrease when compared to the corresponding month of the previous year among this cohort (following staffing adjustments). As with the overall figures, median TTT per month did fall in March and April 2020, before stabilising at a range below pre-pandemic levels from May 2020 (see Figure 4.4.2.3).

Exploring median TTT by triage category, the sharp decrease in overall median TTT in April 2020 from previous years was not evident among those triaged as 'Immediate', with 2020 data equal to that of 2018 (0.22 hours). In April 2021, this median figure fell to 0.13 hours, with the lowest monthly median figures for this triage category recorded

in February and March 2021, with 50% of 'Immediate' presentations triaged within 0.08 hours. In the remaining triage categories, median TTT saw a decrease at the onset of the pandemic, before stabilising at a range below pre-pandemic levels.

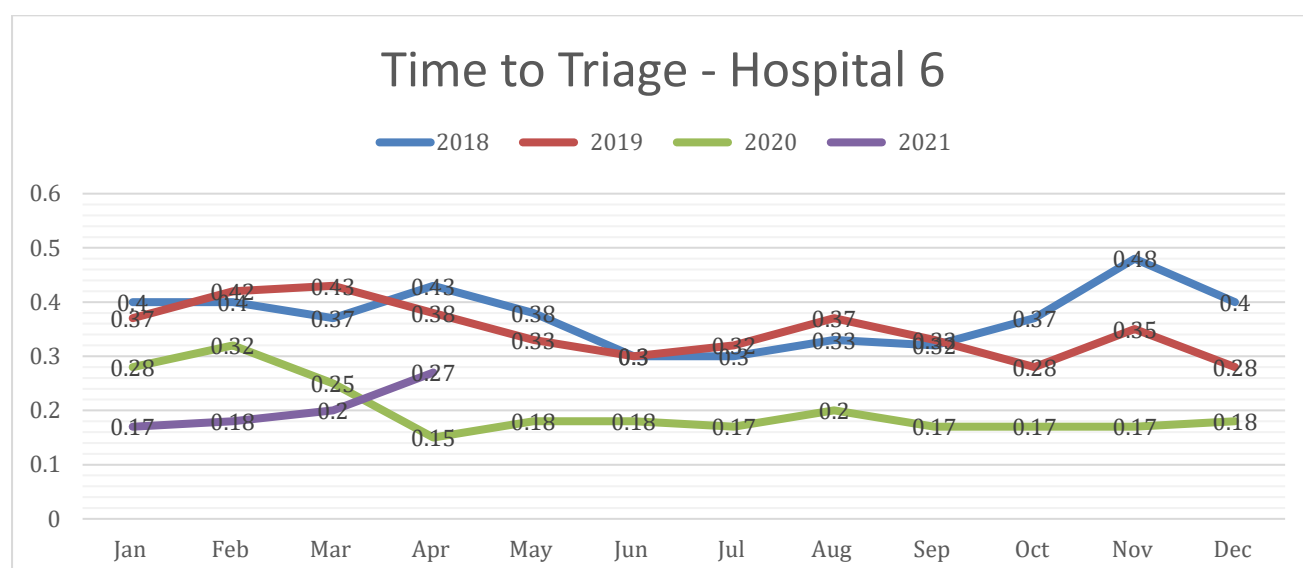


Figure 4.4.1.6: Time to Triage for Hospital 6 across the study period.

### **Hospital 7(IU)**

For Hospital 7, time to triage (TTT) across each year is relatively short at 0.30 hours in 2018, 0.28 hours in 2019 and 2020, and 0.20 hours in 2021. The average PET time in 2018 was 2.30 hours, dropping slightly to 2.26 hours in 2019 and further decreasing to 1.78 hours in 2020, and 1.77 in 2021. A large proportion of patients (94.7%-96.2%) across the four years had a PET time within 6 hours, while the majority had a PET time within 9 hours (97.6%-98.6%) (Table 4.4.2.4).

Time to Triage for patients over 75 years of age was relatively similar to all patients, 0.32 in 2018, 0.29 in 2019, and 0.26 in 2020. PET for patients over 75 years decreased across the four data collection times, from 2.59 hours in 2018, to 2.24 hours in 2019 and further decreased to 1.89 hours in 2020. In 2018, 93.9% of patients over 75 years had a PET within 6 hours, rising to 95.3% in 2019 and further to 99.0% in 2020. In total, 97.9% of patient had a PET within 9 hours in 2018, compared to 98.3% in 2019 and 100.0% in 2020.

#### **4.4.2.2 Triage to Be Seen**

Time from triage to be seen by a key decision maker can be determined by the number of medical as well as nursing staff. In relation to nursing, this can involve the provision of care from advanced nurse practitioners.

### **Hospital 4**

Time from triage to being seen by a decision maker over the entire study period was highest in April 2019 at 3.2 hours. The lowest median monthly time was recorded in January 2019 (both time periods prior to staffing adjustments). Following the staffing

adjustments, reductions were seen in median times in late 2020 early 2021 with data showing a range of 0.28-1.07 and 0.29-0.36 hours, respectively. Data for April 2021 showed improvements from its respective figures for the previous years, with median times falling to 0.31 hours from 0.41 hours in April 2020, 3.2 hours in April 2019 and 1.30 hours in April 2018.

### ***Hospital 5***

The highest median time from triage to being seen by a decision maker over the entire study period was in February 2018 at 1.15 hours. Figures for April and June of that year also showed median times in excess of one hour.

The highest median monthly time in 2019 was 0.92 hours recorded in January. As the staffing adjustments were put in place as the year progressed, reductions were seen in median times with October-December data showing a range of 0.50-0.58 hours. Data for January and February 2020 (following staffing adjustments) showed improvements from their respective figures for the previous year, with median times falling respectively to 0.57 hours from 0.92 hours and to 0.58 hours from 0.87 hours. Throughout the rest of 2020 and to the end of the data collection period, median times from triage to being seen by a decision maker ranged from 0.43-0.71 hours. April 2021 data showed an improvement of 0.15 hours from median data for the same month in 2019, despite an equal number of presentations.

Upper interquartile range data showed that February 2018 recorded the highest monthly value of that year at 2.13 hours, while January 2019 was the highest value of that year at 1.63 hours. In 2020, 75% of patients were seen within 0.98 hours of triage in January and within 1.12 hours in February. Data for the months of June to September showed that upper quartile times from triage to being seen by a decision maker ranged from 1.35-1.90 hours in 2018, but a lower range of 1.00-1.18 hours was recorded in 2020. Approximately 75% of patients in April 2021 (following staffing adjustments) waited 0.98 hours or less from triage to being seen by a decision maker, an improvement of 46.4% from the corresponding 2018 figure of 1.83 hours (prior to staffing adjustments).

### ***Hospital 6***

Median monthly wait times from being triaged to being seen by a decision maker ranged from 1.50 to 1.98 hours in 2018, and from 1.07 hours to 1.83 hours in 2019. December 2019 recorded the second lowest monthly median time to be seen of that year, at 1.10 hours, in contrast to December 2018, which had the third highest monthly median time of that year, at 1.87 hours. The median times for January and February 2020 remained below the 1.5-hour mark, at 1.35 and 1.42 hours respectively. Median times to be seen per month did not move above one hour following the outbreak of the pandemic, reaching a low of 0.38 hours in April 2020 (see Figure 4.4.2.3). Median figures rose gradually during the summer 2020 before stabilising at a range of 0.75-0.88 hours from August 2020 to April 2021.

Table 4.4.2.1 shows the highest monthly upper quartile time from triage to being seen by a decision maker was 5.39 hours in February 2018 for Hospital 6. The highest upper quartile time in 2019 was also recorded in February, at 5.28 hours. In 2020, following the adjustments to staffing in the ED, the upper quartile figure for February was 4.42 hours, 18.1% and 16.1% reductions respectively from the preceding years. In 2021, for quarter 1, the upper quartile figure for February was 2.00 hours, with the highest upper value range experienced in March 2021 still below 3 hours at 2.45 hours.

### ***Hospital 7***

Triage to be seen was not analysed for Hospital 7 as patients tend to be triaged and seen within the same time period in IUs. Thus, their triage to discharge and triage to seen tend to be similar unless the patient is admitted which only accounted for less than 1% of all patients.

#### ***4.4.2.3 ED Registration to Be Seen***

This data measures time from registration in the ED, through to time to triage and time seen by a key decision maker. The data presented here, therefore incorporated the data from time to triage and time from triage to be seen.

### ***Hospital 4***

The highest median times from registration to being seen by a decision maker for Hospital 4 was recorded in February 2019 with 3.10 hours. In 2020, following the implementation of the *Framework*, ED Registration to be Seen Time fell to 0.76 to 2.0 hours. Median times dropped to 2.0 hours as the pandemic response came into full effect in April 2020. Data for March and April 2021 showed reductions of over 1.32 hours and 1.27 hours, with similar presentation levels in 2018 and 2019.

As the staffing adjustments were implemented towards the end of 2019, November 2019 had a median of 1.67 hours with an upper quartile of 1.75, up from 1.35 hours in 2018, while wait times in 2020 and 2021 were approximately 1 hour less than the corresponding 2018 figures.

### ***Hospital 5***

The months of January and February recorded the two highest median times from registration to being seen by a decision maker in both 2018 and 2019, with February highest in 2018 at 1.55 hours and January highest in 2019 at 1.38 hours. In 2020, following the implementation of the *Framework*, these figures had fallen below one hour to 0.92 hours and 0.97 hours in January and February respectively. This was continuing a trend beginning in October 2019, where median wait times to be seen to the end of the year ranged from 0.87-0.95 hours.

Median times dropped to 0.67 hours as the pandemic response came into full effect in April 2020. However, as the country moved in and out of lockdown restrictions throughout the rest of the year and monthly presentations reached comparable pre-pandemic levels, median wait times from registration to being seen by a decision

maker rose but stabilised at a level below one hour. Data for March and April showed reductions of 0.25 hours and 0.42 hours in 2021 from their baseline peaks in 2018, with similar presentation levels.

Eight months of 2018 recorded upper quartile wait times to be seen of over two hours, peaking at 2.57 hours in February. January 2019 was the only month of that year to have a time in excess of two hours, at 2.10 hours. As the staffing adjustments were implemented towards the end of 2019, upper quartile data reached a low of 1.23 hours in November, down from 2.03 hours in 2018, while wait times in January and February 2020 were approximately one hour less than the corresponding 2018 figures. Following the sharp decrease in wait times during the first implementation of lockdown restrictions, upper quartile times stabilised at a range of 1.10-1.49 hours from June 2020 onwards.

### ***Hospital 6***

The median time per month from registration at the ED to being seen by a decision maker was consistently above two hours from the start of the data collection period to April 2019, with a highest median time of 2.52 hours recorded in April 2018 (see Table 4.4.2.3). From May 2019 onwards, median times did not exceed the two-hour mark. Data for the months October 2019 to February 2020 (following staffing adjustments) showed that the median time from registration to being seen was lower than figures for the corresponding months of the preceding year/s, with the median times more than 20% lower than 2018 figures. Following the outbreak of the pandemic, median monthly times fell below one hour, reaching a low of 0.61 hours in April 2020 before returning to a range of approximately one hour (0.95-1.13) at the end of that year and into 2021 (see Figure 4.4.2.3). A median time of 1.32 hours recorded in April 2021 (following staffing adjustments) represented a 47.7% decrease from the 2018 time for that month with approximately the same level of presentations.

Interquartile range data for times from arrival to being seen by a decision maker showed that 75% of patients were seen within 4.55-5.87 hours of arrival in 2018. This monthly figure fell below 4 hours for the first time in the data collection period in October 2019, with three-quarters of patients seen within 3.93 hours, down from 4.97 hours in October 2018. Decreases of one hour or more from the corresponding month of the preceding year were also recorded in December 2019 (4.00 hours) and January 2020 (4.43 hours). The highest upper quartile figure in 2018 was recorded in February at 5.87 hours, while the highest figure in 2019 was recorded in January at 5.63 hours. 2020 figures for January and February amounted to 23.2% and 18.0% reductions from their respective peaks.

As with the median figures, upper quartile times began to fall from March 2020, with figures from April to July of that year ranging from 1.07-1.68 hours, before moving into a range of 2-3 hours until the end of the data collection period. Figures for March and April 2021 showed a decrease of 53.8% and 46.8% respectively from 2018 values.



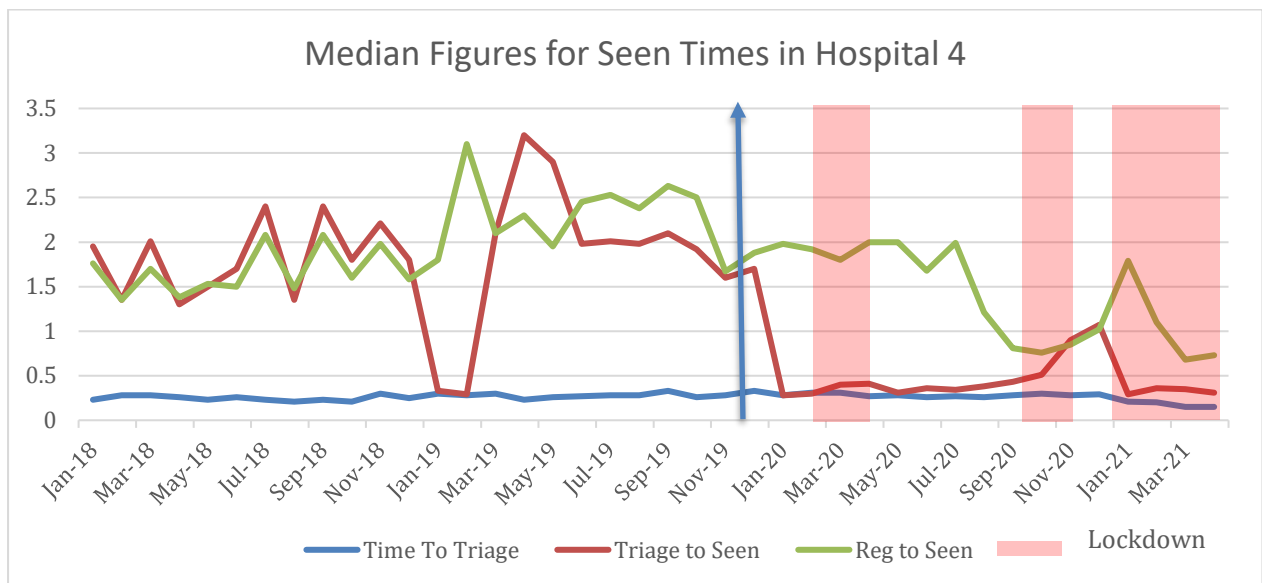


Figure 4.4.2.1: shows median times to be seen per month. Time to Triage remained relatively stable across the study period at less than 0.25 minutes. In January 2020 following the onset of the Covid-19 pandemic median values decreased substantially with Triage to Seen (TTS) falling to less than 0.30, Registration to Seen saw a steady decline in time decreasing substantially in July 2020 to less than 1 hour but increasing again in January 2021. — Time of staffing adjustments.

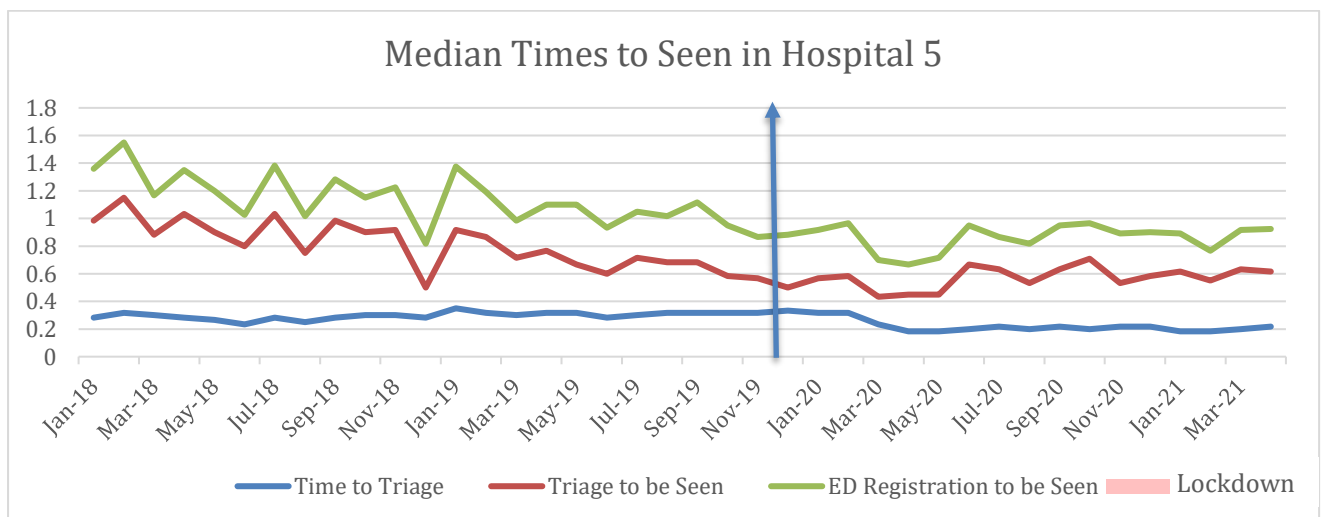


Figure 4.4.2.2: shows median times from ED Registration to being seen per month. Across the data collection period Hospital 5 TTT remained relatively stable. Triage to Seen and Registration to seen saw noticeable peaks and troughs throughout the 40-month period. — Time staffing adjustments commenced.

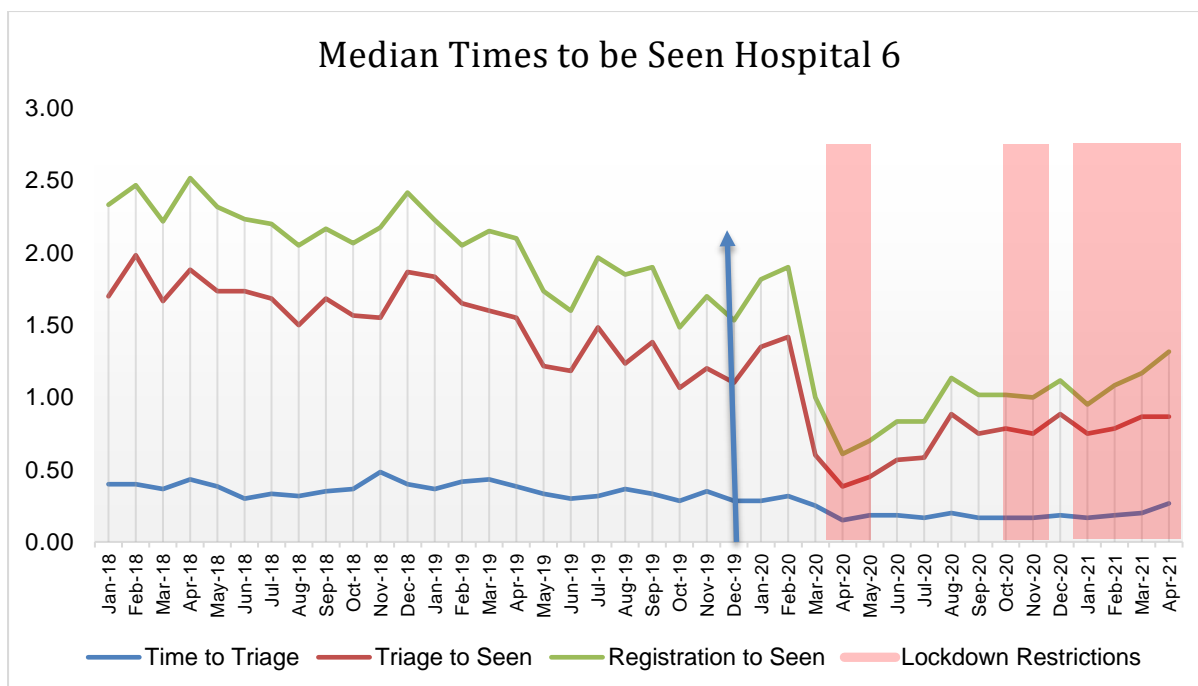


Figure 4.4.2.3: shows median times from ED Registration to being seen per month. In March 2020 following the onset of the Covid-19 pandemic median values decreased substantially with TTT falling to less than 0.30, Triage to Seen and Registration to Seen both decreasing to less than 1 hour. → Time staffing adjustments commenced.

#### 4.4.2.4 ED Care Time (EDCT)

This was calculated as the time from registration in the ED up to the time of a decision to admit/discharge. This time is exclusive of the time that patients were boarding<sup>31</sup> in the emergency department. Although there are a number of factors that can impact on ED care time such as access to key decision makers and ED capacity, nurses have a role in preparing patients for discharge or admission to a ward. In addition, nurses are also central in the administration of treatments that can progress the patient flow through the ED.

#### Hospital 4

In Hospital 4, median values indicate that ED Care Time has decreased year on year with 2021 seeing patient presentations return to pre pandemic levels. In 2018, median ED care time ranged from 5.05-5.70. In 2019, ED care values increased to a range of 5.25-6.15, this fell in 2020 to less than 6 hours, with March 2020 (beginning of the pandemic in Ireland) recording the lowest values for ED care times across the study period. The year 2021 saw an increase in ED care time with these returning to those evident in 2018 at 5.02-7.88. The highest figure for ED care time was recorded in January 2021. In relation to April 2020 (second month of lockdown) this was down significantly from other years at 5.20 hours compared to 5.70 hours in April 2018, 5.25 hours in April 2019 and 5.47 hours in 2021.

<sup>31</sup> Boarding is the time from decision to admit to when the patient left the ED for a bed on the ward.

Median monthly ED care time for non-admitted patients ranged from 8.68-12.39 hours in 2018. A lower range of 4.5-10.5 hours was recorded in 2019. Data for 2020 showed ED care time ranging from 5.45-10.4 hours remaining relatively stable. With April 2020 recorded as the peak month that year for ED care time at 10.4. Median monthly ED care time showed that March 2018 recorded the highest ED care time with April 2019 reflective of the lowest ED care time. Similarly, data for March and April 2021 showed median ED care times almost an hour less than 2018 figures.

Median ED care times for those who were not admitted from the ED were generally lower than that of those admitted across the data collection period. Median ED care times for those not admitted in April 2021 decreased from 2018 to 2019 from 8.81 to 4.5 respectively, however April 2020 saw an increase to 10.4 hours. Median ED Care Times for non-admitted patients reduced in April 2021 almost reaching pre pandemic levels at 7.10 hours. Overall, the trend for non-admitted patients, following staffing adjustments was on a downward trajectory (Figure 4.4.2.4).

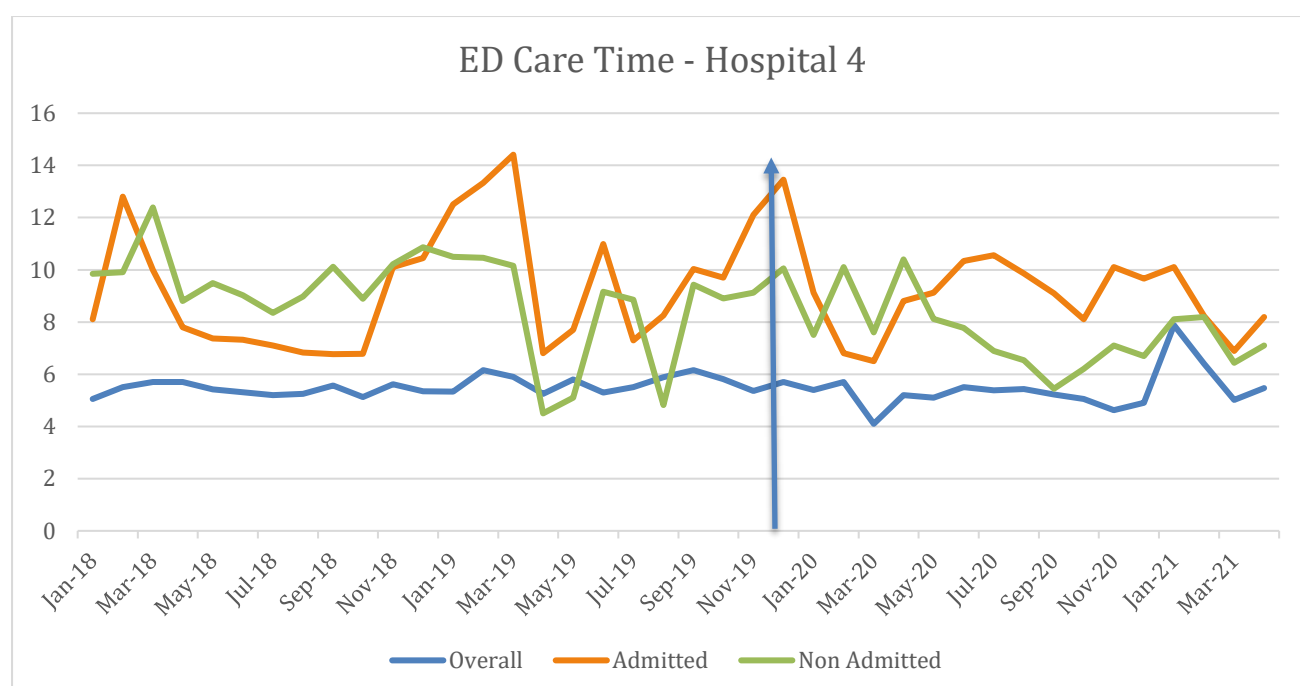


Figure 4.4.2.4: shows the ED care time for overall patients, admitted patients, and non-admitted patients in Hospital 4 over the 40-month period. ED Care for admitted patients was generally higher than ED care for non-admitted patients. → Time staffing adjustments commenced.

## Hospital 5

In Hospital 5, median monthly ED care time ranged from 3.83-5.02 hours in 2018. A lower range of 3.42-4.33 hours was recorded in 2019. Data for January and February 2020 was respectively 0.59 hours and 1.09 hours lower than the corresponding baseline peaks (2018).

Median monthly ED care time fell below three hours at the onset of the pandemic in Ireland, with 2.97 hours recorded in April 2020. For the months June-September, as presentations returned to pre-pandemic levels, data showed that the lowest median time for each month were recorded in 2020. Similarly, data for March and April 2021

showed median ED care times almost an hour less than 2018 figures. This was also seen when looking at the median monthly ED care time of those aged 75 years and older.

Upper quartile data showed that 75% of patients had an ED care time of 8.63 hours or less in January 2018. This figure had reduced to 75% of patients having an ED care time of 7.64 hours or less in 2020. A greater improvement was seen in data for February 2018 (prior to the adjustment), with 8.27 hours recorded reducing to 6.40 hours in February 2020 (following adjustment). Similarly, March and April 2021 upper quartile times were 1.67-1.68 hours less (following adjustment) than the corresponding monthly figures in 2018 (prior to the adjustment).

Among those admitted from the ED, median ED care times ranged from 4.69-6.82 hours across 2018 and 2019 (prior to the adjustment). April and May 2020 saw median ED care times fall below four hours, before increasing to 4.48 hours in June, the lowest median ED care time recorded for admitted patients for that month in the study period. Monthly lows were also recorded in July and August 2020, with median times of 4.60 hours and 5.23 hours respectively. Median ED care times for those admitted from Hospital 5 varied around 5 hours through the end of 2020 and into 2021.

Median ED care times for those who were not admitted from the ED were generally lower than that of those admitted across the data collection period (Figure 4.4.2.5). The two highest median monthly times were recorded in January and February 2018, at 4.43 hours and 4.38 hours respectively. Following the staffing adjustments, the corresponding figures for 2020 showed times of 3.53 hours and 3.35 hours. As the pandemic took hold in Ireland, median ED care times for those not admitted from the ED fell to 2.58 hours in April 2020. However, as presentations increased to pre-pandemic levels through June-September 2020 (following adjustment), median times ranged from 2.70-2.93 hours, the lowest times recorded for those months over the study period. Similarly, median ED care times for those not admitted in March and April 2021 were below their baseline peaks, recorded at 3.25 hours and 3.30 hours respectively.

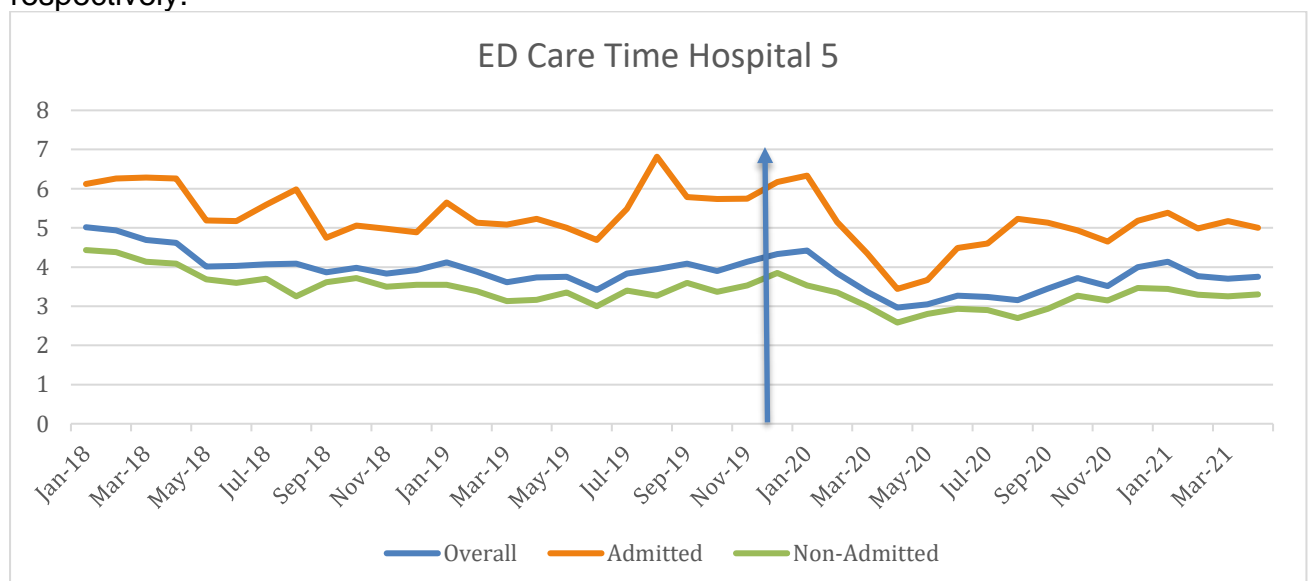



Figure 4.4.2.5: shows ED Care times per month for Hospital 5 for overall, admitted and non-admitted patients. 2019 saw the highest range of ED care times with an evident decrease

noted in February and March 2020 (following staff adjustments)<sup>32</sup>.  Time staffing adjustments commenced.

## **Hospital 6**

Median monthly data for 2018 showed that 50% of patients were discharged or admitted from the ED within 5.27-6.27 hours, while 2019 median data showed a broader range of 5.13-6.55 hours (see Table 4.4.2.1). As with ED registration to be seen times, the highest monthly median value in 2018 was recorded in February, while the January 2019 figure was the highest median value of that year. Following the implementation of the *Pilot Framework* and staffing adjustments, median figures for the first two months of 2020 were both below their respective pre-staffing adjustment peaks. Throughout the remainder of 2020 and to the end of the data collection period, following an initial sharp decrease in April 2020, median ED care was approximately 4-5 hours each month. Upper quartile data showed that in April 2021, 75% of patients had been discharged or admitted within 6.55 hours (following adjustments), a decrease of at least three hours from the corresponding figure in 2018 (9.76 hours) and 2019 (9.85 hours).

When looking at the ED care times of admitted and non-admitted presentations, the median ED care time of patients who were admitted was typically greater each month. Median ED care times per month of those admitted ranged from 5.20-6.85 hours across 2018 and 2019, while median times for non-admitted patients ranged from 5.10-6.48 over the same period. Through 2020 and to the end of the data collection period, median times for non-admitted patients stabilised around 4 hours. Median times of those admitted from the ED peaked in January and August 2020, at 7.22 and 6.82 hours respectively, before levelling off in the 4-5-hour range at the end of the study period. A median ED care time of 4.33 hours was recorded for both admitted and non-admitted patients in April 2021 (Figure 4.4.2.6).

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<sup>32</sup> It should be noted that Covid-19 restrictions commenced in March 2020.

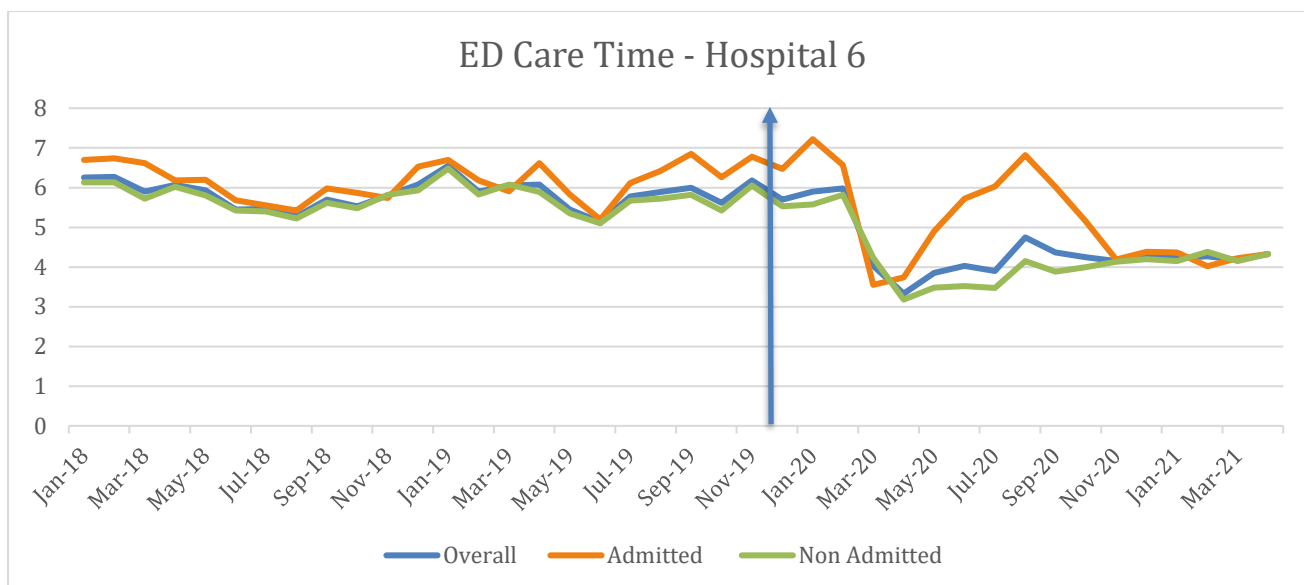


Figure 4.4.2.6: shows ED Care time per month for Hospital 6 for overall, admitted and non-admitted patients. → Time staffing adjustments commenced.

## Hospital 7

As patients are not usually admitted to wards following presentation at an IU, this ED Care Time data was not extrapolated from Hospital 7. Over the course of the data collection period while a small proportion of patients were admitted to hospital following their IU attendance, this accounted for less than 1% across 2018, 2019, 2020 and 2021. With a slightly larger proportion of patients being transferred to another hospital following their IU attendance, 7.3% in 2018, 6.5% in 2019, 6.8% in 2020 and 5.7% in 2021.

### 4.4.2.6 Patient Experience Time (PET)<sup>33</sup>

Patient Experience Time (PET) was defined as the time from registration at the ED to time of departure from the ED, inclusive of time spent as a boarded patient following the decision to admit. As well as being influenced by staffing resources (both nursing and medical) it is also impacted on by bed availability, number of presentations to the ED at any one time and triage category of the presenting patient. Tables 4.4.2.4-6 outline the PET data for Hospitals 4,5 and 6.

## Hospital 4

Median PET values for Hospital 4 ranged from 4.46 hours to 7.7 hours across the study period. February 2019 recorded the highest median PET. March 2020 recorded the lowest median PET value at down 3.02 hours from the same month in the previous year<sup>34</sup>. From April 2020 to September 2020 (following adjustment), data shows that median values were at their lowest dropping by between 12.26-26% from the corresponding months of 2019. The highest monthly ED PET was in March 2019

<sup>33</sup> Although examined here, it should be noted that bed availability in a hospital is a strong determinant of PET in EDs.

<sup>34</sup> Commencement of the Covid-19 pandemic restrictions.

recorded as 7.48 hours. ED PET median values over the 40-month period appear to improve with 2021 data showing that PET as being consistent across the 4 months averaging 6.3 hours (see Table 4.4.2.4).

ED PET times were generally higher for admitted patients<sup>35</sup> in comparison to non-admitted patients. With admitted patients averaging 7.8 hours and non-admitted averaging 4.5 hours. March 2020 was the lowest recorded median value for PET for admitted patients down almost 3 hours on the same month of the previous year and 2 hours on March 2018 data. January 2021 to April 2021 median PET scores were 7 hours. There was a noticeable decrease in PET during the pandemic which coincided with lockdown restrictions.

The proportion of patients with an ED PET of six hours or less, represented a large range of 50.1-65.0% in 2018 and 2019. This proportion increased to 72.7% of presentations in April 2020 as presentation figures dropped. However, as presentations returned to pre-pandemic levels, the proportion of patients with an ED PET within six hours ranged from 50.5-.60.8% of presentations each month within Hospital 4. Overall, average PET fell following the introduction of the Framework; however, his needs to be considered following the impact of the restrictions related to Covid-19.

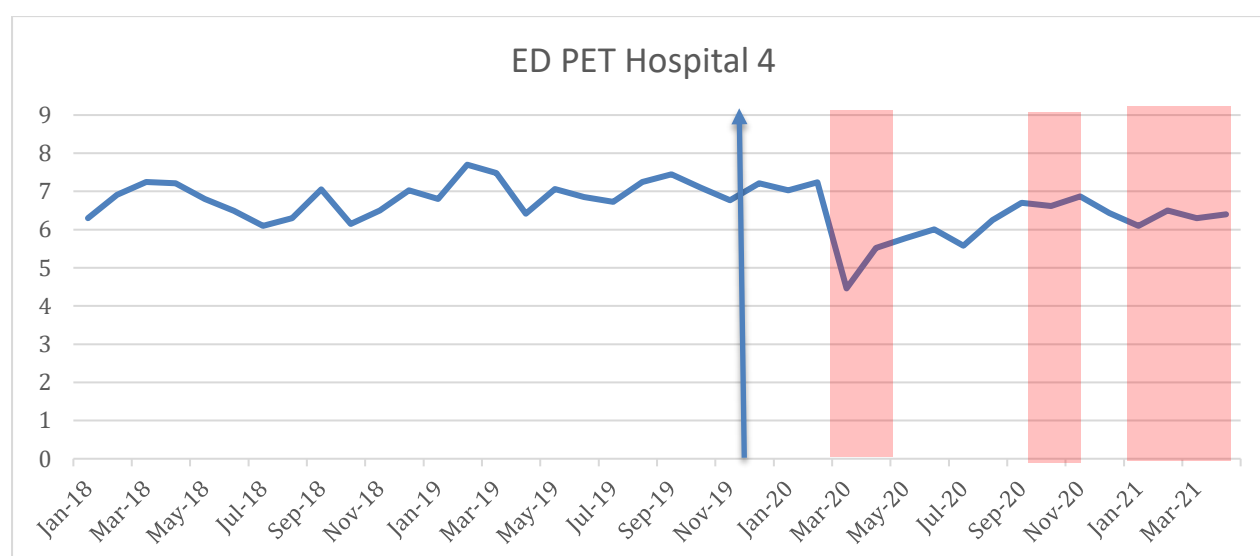


Figure 4.4.2.7: shows the ED PET for Hospital 4 during the duration of the study period. From January 2020 onwards, ED PET decreased with a noticeable decrease in March 2020 coinciding with the Covid-19 pandemic. → Time staffing adjustments commenced.

## Hospital 5

As with ED care time, the highest monthly median PET times of the data collection period were recorded in January (5.35 hours) and February (5.32 hours) 2018. In 2020, these median times had reduced to 4.43 hours and 3.85 hours respectively. Overall, median times in 2018 ranged from 3.88-5.35 hours, while 2019 data showed a lower range of 3.43-4.33 hours. Median ED PET fell to 2.97 hours in April 2020,

<sup>35</sup> This is generally due to a patient who has completed his/her/their ED care waiting to be admitted to a bed in the hospital.



before entering a range of 3.17-3.45 hours for June-September 2020, all of which were the lowest median PET recorded for the respective months, with presentation levels comparable to pre-pandemic figures.

As presentations increased in March and April 2021 (following adjustment) having fallen below 2,000 per month at the beginning of the year, monthly median ED PET remained below baseline peaks, with March seeing a 27.0% decrease in 2021 from the corresponding 2018 figure, while April recorded a 23.7% decrease in median ED PET over the same period.

Median monthly ED PET figures were generally higher for admitted patients than for non-admitted. For admitted patients, through 2018 and 2019, median ED PET ranged from 4.75-8.93 hours. This peak of 8.93 hours was recorded in February 2018 (prior to adjustment), a figure which reduced by almost 4 hours to 5.15 hours in February 2020 (following adjustment) following the implementation of the Framework. Median ED PET dropped to 3.44 hours in April 2020. The corresponding figure for April 2021 (following adjustment) was recorded at 5.00 hours, a 41.7% decrease from April 2018 despite 127 more presentations. Similarly, with a comparable number of presentations, median ED PET in March 2021 (following adjustment) was 40.0% lower than the corresponding figure in 2018 (prior to adjustment) (Table 4.4.2.5).

Non-admitted patients recorded median monthly ED PET ranging from 3.27-4.55 hours in 2018 and 3.00-3.85 hours in 2019. At the beginning of 2020, prior to the onset of the pandemic and following the staffing adjustments, median ED PET for non-admitted patients recorded in January and February were over an hour less than the respective 2018 peaks for those months. Median ED PET fell to 2.58 hours in April 2020 as lockdown policies came into effect nationwide, however, this figure remained below three hours through to September 2020 (following adjustment), even as lockdown restrictions were eased, and presentations returned to pre-pandemic levels. Median figures through to the end of the data collection period ranged from 3.15-3.51 hours, below baseline figures for each respective month.

Examining data on the proportion of patients with an ED PET of six hours or less, monthly data showed a large range of 54.1-76.0% in 2018 and 2019. This proportion increased to 85.7% of presentations in April 2020 as presentation figures dropped. However, as presentations returned to pre-pandemic levels, the proportion of patients with an ED PET within six hours settled at a higher range of 70.5-78.8% of presentations each month.

The proportions of those aged 75 years and older with an ED PET within 6 hours followed a similar pattern as the overall cohort, with a wide range of 30.6-60.0% of presentations each month in 2018 and 2019, before improving through 2020, stabilising at a higher range of 46.5-63.0% from June 2020 through to the end of the data collection period.

This pre-staffing adjustments variability was also evident when looking at patients with an ED PET of nine hours or less, ranging from 68.6-91.4% of presentations each month in 2018 and 2019. Following the jump in this proportion as the first phase of Covid-19 took hold in Ireland, data from June 2020 to April 2021 showed that this proportion stabilised at a higher level than pre-pandemic levels, with 87.3-92.9% of



presentations each month recorded as having departed from the ED in nine hours or less.

Between 48.2% and 86.4% of patients aged 75 and older departed the ED within 9 hours of registration each month in 2018 and 2019. As the country moved in and out of lockdown restrictions throughout 2020, this proportion stabilised at a higher level with a reduced spread, with 79.4-87.5% of presentations aged 75 and older recording an ED PET of nine hours or less.

The proportion of patients with an ED PET of 24 hours or less ranged from 87.2-99.6% in 2018. This proportion increased to almost all patients each month through to the end of the data collection period, with a minimum rate of 99.0% recorded over this period. Among those aged 75 years and older, approximately four-fifths of presentations had an ED PET of 24 hours or less at the outset of the study. As with the overall patient population, at least 99.0% of presentations among those aged 75 and older departed the ED within 24 hours of registration.

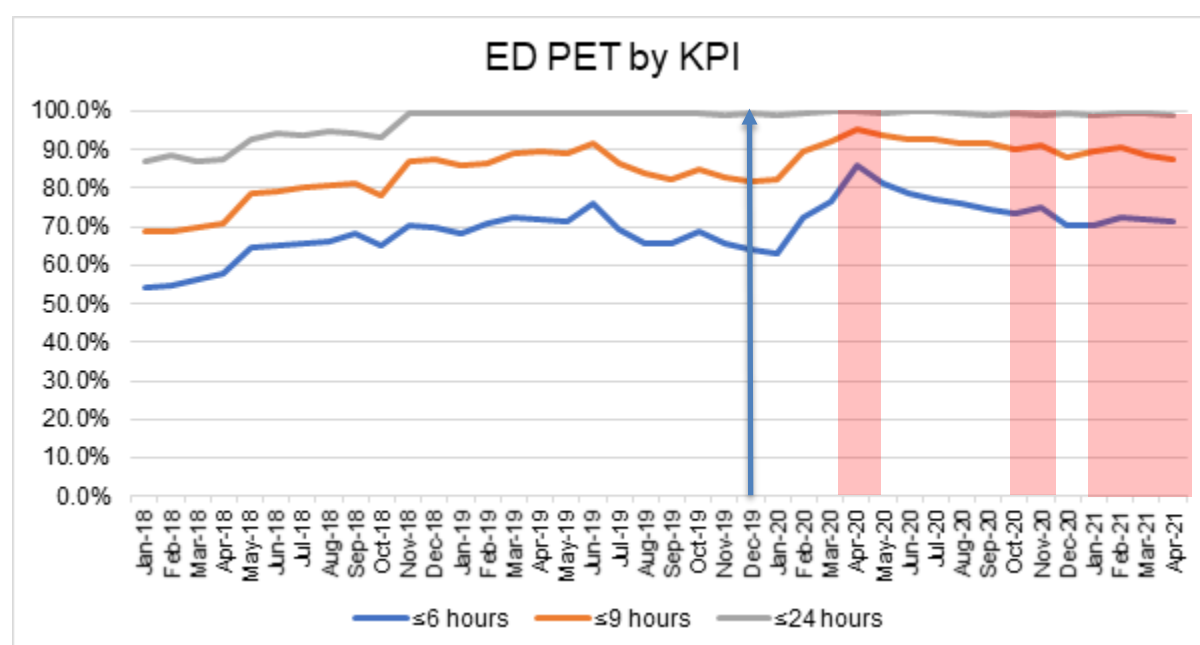



Figure 4.4.2.8: shows the ED PET for Hospital 5 during the duration of the study period categorised as less than or equal to 6 hours, 9 hours, 24 hours. The proportion of patients whose ED PET improved increased following the introduction of the staffing adjustments; however, this is in the context of the Covid-19 pandemic (higher scores are better).  Time staffing adjustments commenced.

## Hospital 6

Across 2018 and 2019 (prior to adjustments), monthly median ED PET ranged from 6.40-8.50 hours (see Table 4.4.2.3). Data for January and February 2020 (following adjustment) showed median times below their respective peak median times in the preceding years, with January 2020 median times decreased by over an hour from the corresponding 2019 value. Coinciding with the first phase of lockdown restrictions,

median ED PET fell below 5 hours for April-July 2020, before reaching a subsequent range of 5.35-6.20 hours from August 2020 through to the end of the data collection period (Table 4.4.2.6).

Key performance indicators within the ED setting are the proportion of presentations with an ED PET within 6, 9, and 24 hours. Prior to the staffing adjustments, 36.5-47.3% of patients had an ED PET of 6 hours or less, 52.4-65.5% had times of 9 hours or less, and 86.0-94.4% were discharge from the ED within 24 hours of registration. Following the initial introduction of lockdown restrictions and the corresponding reduction in ED presentations, these proportions rose on all three metrics. However, as the country moved in and out of full lockdown restrictions, the proportion of presentations recording an ED PET within 6, 9, and 24 hours remained above pre-pandemic levels, even as monthly presentation figures approached a comparable level (following adjustment). Figure 4.4.2.9 demonstrates that on all three metrics respectively, the lowest monthly proportion following the outbreak of the pandemic remained above the highest monthly proportion pre-pandemic.

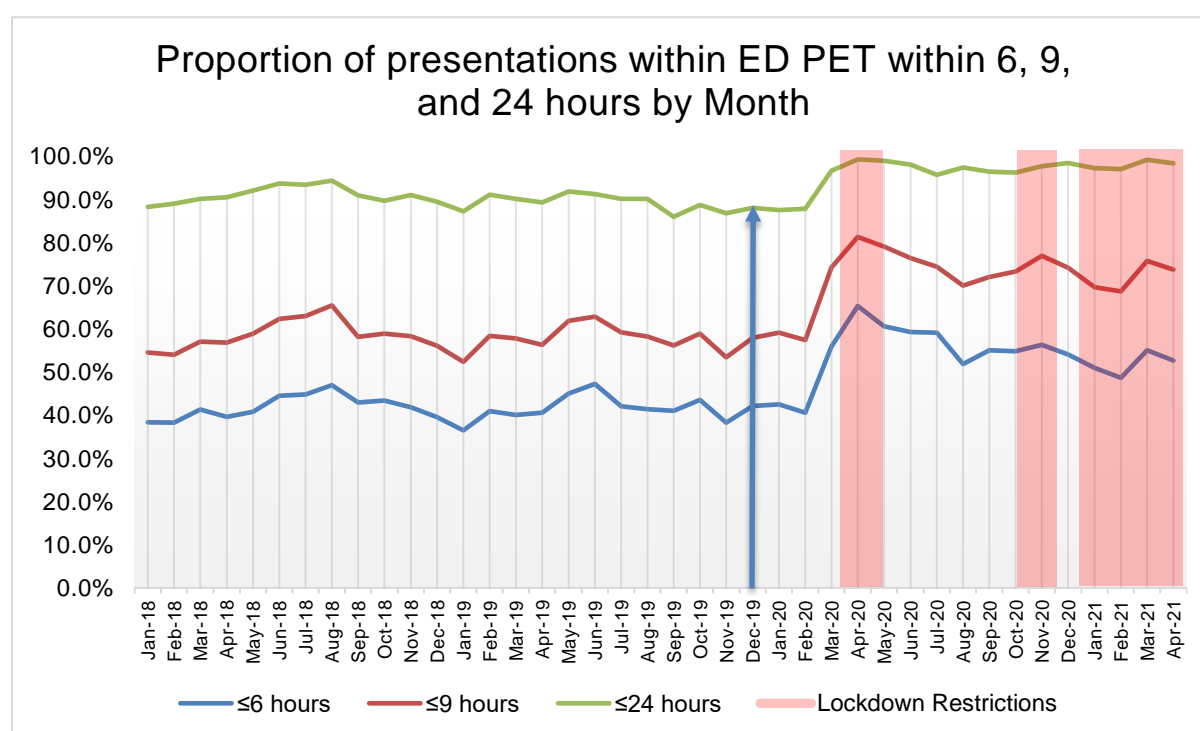



Figure 4.4.2.9: shows the ED PET for Hospital 6 during the duration of the study period categorised as less than or equal to 6 hours, 9 hours, 24 hours. In February 2020 the proportion of patients whose ED PET improved increased following the introduction of the staffing adjustments; however, this is in the context of the Covid-19 pandemic (higher scores are better).  Time staffing adjustments commenced.

#### 4.4.2.7 Leaving Without Being Seen

Previous evidence has demonstrated that leaving an emergency department without being seen is one of the strongest associations with nurse staffing.

### Hospital 4

Within Hospital 4, leaving without being seen (LWBS) was defined as patients who had left the department without seeing a doctor or had absconded. Patients who LWBS accounted for between 1.4-6.9% of patients across the study period. This equated to 201 patients per month on average in 2018, 178 patients in 2019 (prior to adjustment), 123 patients in 2020 and 91.5 patients up to April 2021 (following adjustment). April 2018 saw the highest figure for those patients who LWBS. In 2021, monthly data shows that in March LWBS increased to 1.7% (N=90) however while LWBS remained relatively stable, a noticeable reduction in LWBS was evident during the remainder of the year (Table 4.4.1.1).

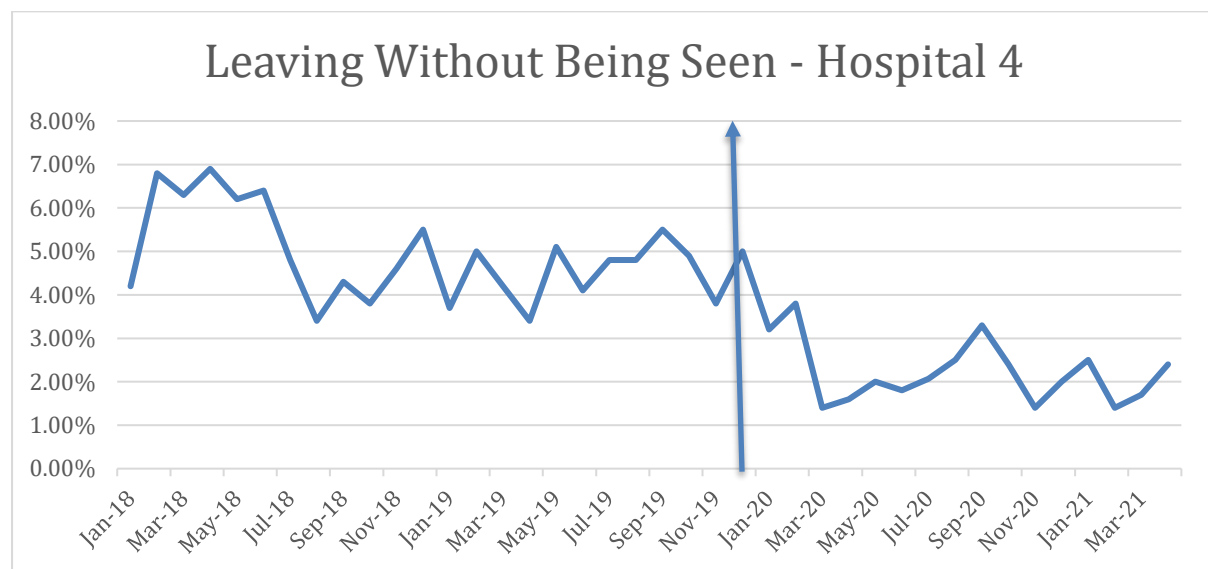


Figure 4.4.3.3: LWBS for Hospital 4.  Time staffing adjustment commenced

## Hospital 5

Those patients who were recorded in the administrative system as having left the department or as not having been seen by the doctor were logged as leaving without being seen. The monthly proportion of patients LWBS exceeded 4% on three occasions over the study period, namely February, April, and June 2018, with the highest proportion of patients LWBS in an individual month recorded in February 2018, at 4.7%. In early 2020, following the staffing adjustments in Hospital 5 and prior to the onset of the pandemic, LWBS figures for January and February had decreased from their baseline peaks; 3.1% of patients were logged as LWBS in January 2020, down from 3.7% in 2018, while February 2020 saw 2.4% of patients LWBS. Throughout the rest of the year, monthly proportions remained below 2%. Data for June and September 2020 was reduced by more than half from 2018 figures, respectively falling to 1.4% from 4.0% and to 1.3% from 3.2%. This drop in LWBS for these months was recorded though presentations increased for those months in 2020 when compared with 2018. With an equal number of presentations, the proportion of patients LWBS in April 2021 dropped to 1.9% from 2.6% in April 2019 (Table 4.4.1.2).

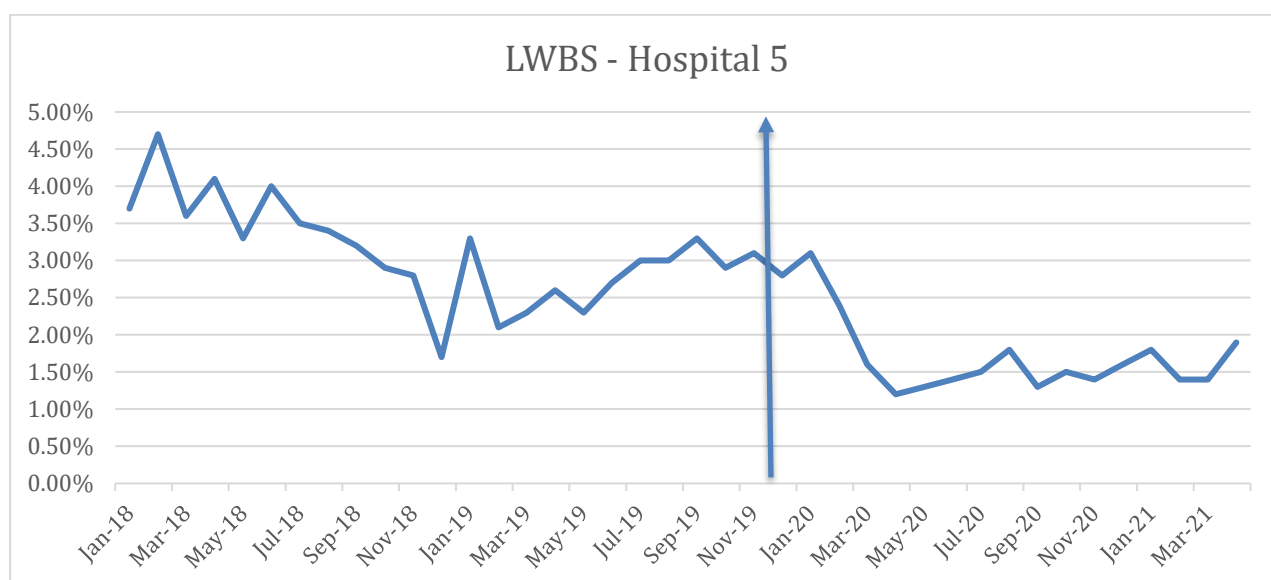


Figure 4.4.3.2: LWBS for Hospital 5. → Time staffing adjustment commenced

## Hospital 6

Each of the pilot sites classified Leaving Without Being Seen (LWBS) slightly differently. In Hospital 6, LWBS referred to self-discharging patients or patients who left before treatment commencement or completion. These definitions were collated under the heading LWBS (Table 4.4.1.1). In 2018, 21.2% (N=11,614) of patients were noted as LWBS in Hospital 6. This proportion decreased to 20.4% (N=11,203) in 2019 (prior to staffing adjustments), to 10.4% (N=5,061) in 2020, and to 8.3% (N=1,304) in 2021 (following staffing adjustments). While the proportion of patients LWBS is high in Hospital 6, this is consistent with the patient profile and the high level of return attendances as seen in Table 4.6.1.2.

Monthly data for 2018 showed that the proportion of patients LWBS was relatively consistent throughout the year, with a range of 19.2-23.6% of presentations. 2019

figures showed a lower range, with 18.7-22.3% of presentations LWBS each month. The proportion of patients LWBS in January and February 2020 was lower than their respective peaks in the preceding year yet remained around one-fifth of presentations. LWBS figures dropped sharply following the introduction of lockdown restrictions in Ireland, as people were encouraged to stay at home and avoid hospitals except in the case of emergencies. This was evident in LWBS figures for this ED falling to 4.7% of presentations in April 2020. However, as lockdown restrictions were lifted and reinstated throughout 2020 and into 2021, LWBS figures remained below pre-pandemic levels, with each month recording a proportion of patients LWBS less than half of their peak figures before the outbreak of the virus in Ireland.

LWBS was less evident among patient aged 75 and older, accounting for 2.4-5.4% of presentations each month across 2018 and 2019. This figure dropped below 1% in April 2020, with the monthly proportion of this cohort of patients LWBS remaining below 1.8% through to the end of the data collection period.

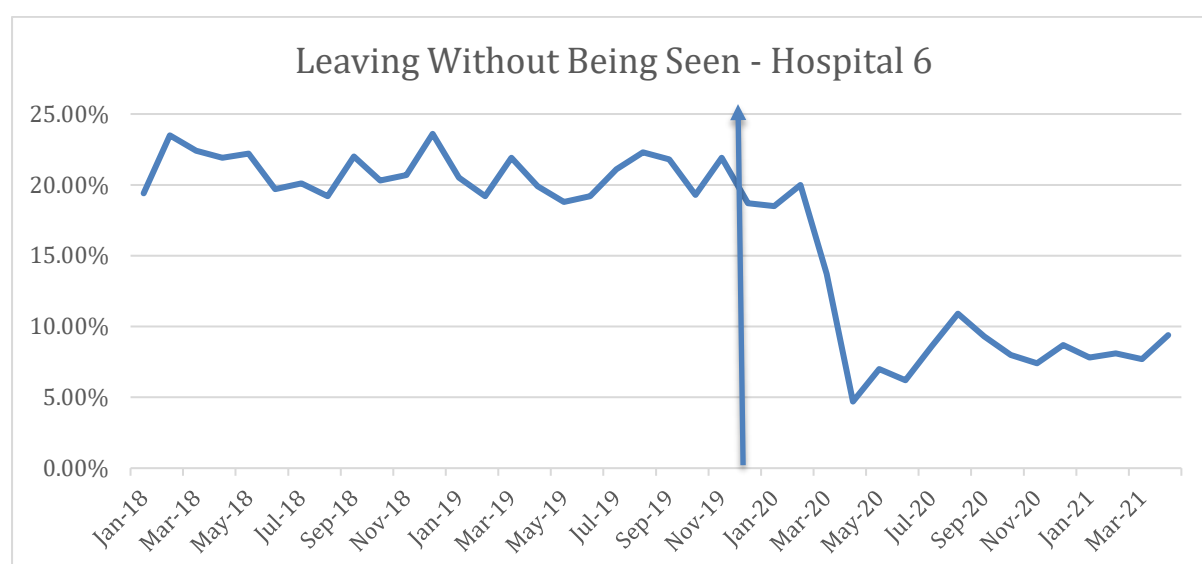


Figure 4.4.3.3 LWBS for Hospital 6.  Time staffing adjustment commenced

## Hospital 7

Leaving without being seen (LWBS) is an all-encompassing term to account for patients who self-discharged against medical advice, left the department before treatment completion or left the department prior to treatment commencement. The percentage of patients LWBS was small across each year of the project in the IU, 1.1% in 2018, 0.5% in 2019 (prior to adjustments), 0.3% in 2020 and 0.2% in 2021 (following the adjustments).

Table 4.4.2.1: Emergency Department Patient Outcomes (Hospital 4)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Time to Triage – Median (IQR)	18	0.23(0.11-0.41)	0.28(0.15-0.51)	0.28(0.15-0.55)	0.26(0.11-0.46)	0.23(0.11-0.43)	0.26(0.13-0.46)	0.23(0.11-0.45)	0.21(0.11-0.40)	0.23(0.11-0.43)	0.21(0.11-0.40)	0.30(0.15-0.51)	0.25(0.13-0.46)
	19	0.30(0.15-0.58)	0.28(0.13-0.53)	0.30(0.15-0.55)	0.23(0.11-0.43)	0.26(0.11-0.49)	0.27(0.14-0.50)	0.28(0.11-0.49)	0.28(0.15-0.51)	0.33(0.13-0.61)	0.26(0.15-0.53)	0.28(0.15-0.53)	0.33(0.15-0.63)
	20	0.28(0.13-0.53)	0.31(0.15-0.61)	0.31(0.10-0.51)	0.27(0.15-0.49)	0.28(0.11-0.55)	0.26(0.12-0.51)	0.27(0.14-0.44)	0.26(0.12-0.41)	0.28(0.11-0.48)	0.30(0.14-0.44)	0.28(0.13-0.51)	0.29(0.11-0.50)
	21	0.21(0.13-0.41)	0.20(0.12-0.42)	0.15(0.8-0.25)	0.15(0.8-0.26)								
Triage to be Seen – Median (IQR)	18	1.95(0.15-1.95)	1.35(1.35-1.99)	2.01(0.15-2.01)	1.3(0.1-2.0)	1.5(0.13-1.89)	1.7(0.11-2.3)	2.4(0.15-3.0)	1.35(0.15-2.29)	2.4(0.16-3.1)	1.8(0.15-2.1)	2.21(0.18-3.4)	1.8(0.15-2.2)
	19	0.23(0.16-0.34)	0.29(0.20-0.41)	2.1(0.13-2.9)	3.2(0.18-3.9)	2.9(0.14-3.1)	1.98(0.10-3.5)	2.01(0.10-3.0)	1.98(0.13-2.7)	2.1(0.11-3.4)	1.92(0.17-2.5)	1.6(0.16-1.99)	1.7 (0.16-2.1)
	20	0.28(0.13-0.53)	0.30(0.16-0.44)	0.4(0.33-0.68)	0.41(0.31-1.7)	0.31(0.29-0.56)	0.36(0.32-0.83)	0.34(0.30-0.76)	0.38(0.33-1.01)	0.43(0.31-1.18)	0.51(0.33-0.89)	0.9(0.51-1.13)	1.07(0.52-1.23)
	21	0.29(0.14-0.61)	0.36(0.20-1.2)	0.35(0.22-0.51)	0.31(0.21-0.68)	-	-	-					
Registr ation to be Seen – Median (IQR)	18	1.76(0.43-1.76)	1.35(0.50-1.88)	1.70(0.45-2.00)	1.38(0.45-2.05)	1.53(0.41-1.58)	1.50(0.45-1.60)	2.08(0.45-2.98)	1.48(0.42-1.75)	2.08(0.45-2.19)	1.60(0.40-1.89)	1.98(0.53-2.10)	1.58(0.43-1.72)
	19	1.80(0.53-2.10)	3.10(0.51-3.61)	2.10(0.53-3.01)	2.3(0.12-3.43)	1.95(0.53-2.10)	2.45(0.8-2.98)	2.53(0.5-2.89)	2.38(0.58-3.1)	2.63(0.61-3.01)	2.5(0.58-2.8)	1.67(0.5-1.75)	1.88(0.58-1.92)
	20	1.98(0.64-5.20)	1.92(0.63-4.89)	1.80(0.70-1.92)	2.0(0.54-2.16)	2.0(0.45-2.16)	1.68(0.53-1.89)	1.99(0.63-2.12)	1.21(0.54-1.56)	0.81(0.65-1.89)	0.76(0.53-1.21)	0.85(0.61-1.12)	1.02(0.45-1.89)
	21	1.79(0.51-1.99)	1.10(0.75-1.80)	0.68(0.43-1.89)	0.73(0.41-1.01)	-	-						
ED Care – Median (IQR)	18	5.05(2.83-5.05)	5.5(3.0-8.5)	5.7(3.2-9.0)	5.7(3.07-9.05)	5.42(3.06-8.58)	5.31(2.98-8.23)	5.20(3.20-7.75)	5.25(3.04-7.87)	5.57(3.13-8.49)	5.13(3.03-7.90)	5.62(3.18-8.41)	5.35(3.6-8.26)
	19	5.33(3.03-8.05)	6.15(3.5-9.01)	5.9(3.25-5.93)	5.25(3.15-7.88)	5.8(3.45-8.53)	5.3(3.01-8.1)	5.5(3.16-8.1)	5.89(3.46-8.87)	6.15(3.6-9.05)	5.81(3.49-8.42)	5.36(3.21-8.27)	5.7(3.99-13.7)
	20	5.4(3.2-5.6)	5.7(3.3-8.5)	4.1(2.35-6.58)	5.2(3.1-7.2)	5.1(3.5-6.72)	5.5(4.1-7.1)	5.38(3.52-6.24)	5.43(3.61-6.12)	5.23(2.8-9.8)	5.05(2.7-9.3)	4.62(2.47-8.38)	4.9(2.58-9.23)
	21	7.88(2.57-9.22)	6.4(2.5-7.7)	5.02(2.7-9.0)	5.47(3.08-9.67)								
ED Care Admitt ed	18	8.1(6.1-10.9)	12.8(5.2-12.8)	9.99(7.85-12.9)	7.8(5.2-12.7)	7.37(5.52-9.14)	7.329(4.35-9.10)	7.10(6.1-10.33)	6.83(5.54-9.18)	6.77(4.59-8.89)	6.78(4.53-12.10)	10.1(7.46-15.11)	10.45(6.22-10.88)
	19	12.51(5.85-12.68)	13.33(7.6-13.56)	11.41(7.3-13.1)	6.8(5.1-7.2)	7.7(5.1-8.2)	10.99(4.42-11.12)	7.3(4.5-9.2)	8.25(5.66-10.33)	10.03(8.53-17.12)	9.7(7.77-10.88)	12.1(7.26-10.2)	13.45(7.15-14.88)

– Median (IQR)	20	9.13(4.61-10.33)	6.8(4.2-9.1)	6.5(5.65-7.82)	8.8(5.33-12.98)	9.12(6.4-13.1)	10.34(5.1-12.78)	10.56(3.56-15.1)	9.86(4.10-16.31)	9.1(4.6-12.6)	8.10(4.6-11.1)	10.1(6.34-15.1)	9.66(5.67-16.88)
	21	10.1(5.1-11.3)	8.23(5.1-10.1)	6.89(5.1-8.9)	8.19(4.77-10.1)								
ED Care Not Admitted – Median (IQR)	18	9.85(4.40-9.85)	9.91(4.50-9.91)	12.39(4.6-12.9)	8.81(4.65-11.25)	9.49(4.55-9.89)	9.03(4.48-9.76)	8.35(4.35-8.95)	8.98(4.38-9.10)	10.12(4.90-10.22)	8.68(4.27-9.12)	10.21(4.57-10.89)	10.86(5.15-11.23)
	19	10.5(5.01-10.7)	10.46(7.6-13.1)	10.16(5.05-11.1)	4.50(4.20-8.79)	5.1(4.83-10.1)	9.16(4.38-10.22)	8.86(4.68-10.1)	4.81(4.1-9.28)	9.43(4.95-10.1)	8.9(4.15-9.2)	9.12(4.34-10.31)	10.06(4.75-10.81)
	20	7.51(6.96-8.12)	10.1(4.91-11.1)	7.60(3.21-8.79)	10.40(6.8-11.1)	8.12(4.5-10.2)	7.77(4.62-9.89)	6.98(5.10-9.08)	6.54(4.89-10.1)	5.45(4.78-8.79)	6.20(3.12-7.88)	7.1(5.4-9.2)	6.69(4.3-7.45)
	21	8.11(5.45-9.18)	8.19(4.11-10.23)	6.44(4.11-8.10)	7.10(3.21-8.45)	-	-	-	-	-			

Table 4.4.2.2: Emergency Department Patient Outcomes (Hospital 5)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Time to Triage – Media n (IQR)	18	0.28 (0.18 - 0.47)	0.32 (0.22 - 0.52)	0.30 (0.20 - 0.47)	0.28 (0.18 - 0.45)	0.27 (0.18 - 0.43)	0.23 (0.17 - 0.37)	0.28 (0.18 - 0.45)	0.25 (0.17 - 0.38)	0.28 (0.18 - 0.45)	0.30 (0.18 - 0.47)	0.30 (0.18 - 0.50)	0.28 (0.18 - 0.43)
	19	0.35 (0.22 - 0.57)	0.32 (0.20 - 0.47)	0.30 (0.18 - 0.47)	0.32 (0.18 - 0.50)	0.32 (0.20 - 0.48)	0.28 (0.18 - 0.45)	0.30 (0.18 - 0.47)	0.32 (0.20 - 0.52)	0.32 (0.20 - 0.50)	0.32 (0.20 - 0.50)	0.32 (0.20 - 0.50)	0.33 (0.20 - 0.53)
	20	0.32 (0.20 - 0.50)	0.32 (0.20 - 0.47)	0.23 (0.15 - 0.38)	0.18 (0.12 - 0.30)	0.18 (0.12 - 0.32)	0.20 (0.12 - 0.35)	0.22 (0.12 - 0.35)	0.20 (0.12 - 0.33)	0.22 (0.13 - 0.35)	0.20 (0.13 - 0.33)	0.22 (0.13 - 0.35)	0.22 (0.13 - 0.35)
	21	0.18 (0.12 - 0.30)	0.18 (0.12 - 0.30)	0.20 (0.12 - 0.33)	0.22 (0.13 - 0.38)								
Triage to be Seen – Media n (IQR)	18	0.98 (0.45 - 1.84)	1.15 (0.62 - 2.13)	0.88 (0.45 - 1.63)	1.03 (0.50 - 1.83)	0.90 (0.42 - 1.68)	0.80 (0.40 - 1.84)	1.03 (0.57 - 1.90)	0.75 (0.38 - 1.35)	0.98 (0.47 - 1.55)	0.90 (0.38 - 1.73)	0.92 (0.38 - 1.59)	0.50 (0.27 - 1.00)
	19	0.92 (0.48 - 1.63)	0.87 (0.43 - 1.45)	0.72 (0.40 - 1.31)	0.77 (0.39 - 1.31)	0.67 (0.33 - 1.28)	0.60 (0.33 - 0.95)	0.72 (0.33 - 1.16)	0.68 (0.28 - 1.30)	0.68 (0.30 - 1.34)	0.58 (0.30 - 1.20)	0.57 (0.22 - 0.93)	0.50 (0.27 - 0.95)
	20	0.57 (0.28 - 0.98)	0.58 (0.27 - 1.12)	0.43 (0.22 - 0.86)	0.45 (0.20 - 0.83)	0.45 (0.23 - 0.82)	0.67 (0.37 - 1.10)	0.63 (0.34 - 1.18)	0.53 (0.27 - 1.00)	0.63 (0.33 - 1.04)	0.71 (0.40 - 1.15)	0.53 (0.24 - 1.03)	0.58 (0.31 - 0.99)
	21	0.62 (0.30 - 1.02)	0.55 (0.27 - 0.87)	0.63 (0.30 - 1.13)	0.62 (0.32 - 0.98)	-	-	-	-	-	-	-	-
Regist ration to be Seen – Media n (IQR)	18	1.36 (0.79 - 2.31)	1.55 (0.91 - 2.57)	1.17 (0.72 - 2.08)	1.35 (0.73 - 2.23)	1.20 (0.63 - 1.97)	1.03 (0.67 - 2.13)	1.38 (0.85 - 2.30)	1.02 (0.63 - 1.70)	1.28 (0.75 - 1.83)	1.15 (0.73 - 2.07)	1.23 (0.69 - 2.03)	0.82 (0.55 - 1.28)
	19	1.38 (0.80 - 2.10)	1.19 (0.75 - 1.83)	0.98 (0.70 - 1.62)	1.10 (0.67 - 1.74)	1.10 (0.68 - 1.75)	0.93 (0.58 - 1.29)	1.05 (0.68 - 1.48)	1.02 (0.70 - 1.65)	1.12 (0.67 - 1.67)	0.95 (0.57 - 1.52)	0.87 (0.51 - 1.23)	0.88 (0.57 - 1.42)
	20	0.92 (0.57 - 1.37)	0.97 (0.65 - 1.51)	0.70 (0.46 - 1.12)	0.67 (0.35 - 1.08)	0.72 (0.47 - 1.11)	0.95 (0.61 - 1.42)	0.87 (0.58 - 1.49)	0.82 (0.52 - 1.28)	0.95 (0.62 - 1.37)	0.97 (0.63 - 1.43)	0.89 (0.50 - 1.32)	0.90 (0.55 - 1.28)
	21	0.89 (0.52 - 1.28)	0.77 (0.48 - 1.10)	0.92 (0.52 - 1.42)	0.93 (0.57 - 1.36)								

ED Care – Media n (IQR)	18	5.02 (2.65 - 8.63)	4.93 (2.81 - 8.27)	4.69 (2.60 - 8.09)	4.62 (2.60 - 8.22)	4.02 (2.20 - 6.67)	4.03 (2.05 - 7.05)	4.07 (2.38 - 6.69)	4.08 (2.20 - 6.53)	3.87 (1.96 - 6.44)	3.98 (2.18 - 7.03)	3.83 (2.18 - 6.52)	3.93 (2.07 - 6.69)
	19	4.12 (2.30 - 6.89)	3.88 (2.03 - 6.50)	3.62 (1.87 - 6.25)	3.73 (1.90 - 6.43)	3.75 (1.95 - 6.41)	3.42 (1.80 - 5.88)	3.83 (1.91 - 6.82)	3.95 (2.05 - 7.20)	4.08 (1.92 - 7.52)	3.90 (1.93 - 6.94)	4.13 (1.97 - 7.25)	4.33 (2.12 - 7.65)
	20	4.43 (2.02 - 7.64)	3.84 (1.88 - 6.40)	3.37 (1.57 - 5.78)	2.97 (1.53 - 4.78)	3.05 (1.67 - 5.13)	3.27 (1.73 - 5.57)	3.23 (1.75 - 5.77)	3.16 (1.65 - 5.85)	3.45 (1.83 - 6.03)	3.72 (1.88 - 6.17)	3.52 (1.77 - 6.03)	4.00 (1.92 - 6.53)
	21	4.13 (1.95 - 6.65)	3.77 (1.88 - 6.27)	3.70 (1.82 - 6.42)	3.75 (1.92 - 6.55)								
ED Care Admitt ed – Media n (IQR)	18	6.13 (2.90 - 9.29)	6.26 (3.76 - 9.54)	6.28 (3.68 - 8.98)	6.26 (3.70 - 9.70)	5.19 (2.63 - 7.97)	5.18 (2.42 - 7.58)	5.59 (3.26 - 8.02)	5.98 (4.12 - 8.14)	4.75 (1.37 - 7.63)	5.06 (2.05 - 8.11)	4.98 (2.35 - 7.69)	4.88 (1.90 - 7.63)
	19	5.65 (2.66 - 8)	5.13 (2.17 - 7.71)	5.08 (1.95 - 7.68)	5.23 (2.02 - 7.80)	5.00 (1.58 - 7.47)	4.69 (1.87 - 6.90)	5.48 (1.48 - 8.64)	6.82 (3.10 - 9.94)	5.78 (1.56 - 9.10)	5.73 (1.73 - 8.78)	5.74 (2.20 - 8.72)	6.17 (2.20 - 9.42)
	20	6.33 (2.88 - 9.45)	5.15 (1.71 - 7.74)	4.35 (1.43 - 6.95)	3.44 (1.33 - 5.58)	3.67 (1.35 - 6.32)	4.48 (1.35 - 6.82)	4.60 (1.25 - 7.20)	5.23 (1.62 - 7.45)	5.13 (2.22 - 7.42)	4.93 (1.76 - 6.98)	4.65 (1.40 - 7.13)	5.18 (1.74 - 7.65)
	21	5.38 (1.98 - 7.87)	4.98 (1.38 - 7.37)	5.18 (1.50 - 7.78)	5.00 (1.74 - 7.72)								
ED Care Not Ad mitted – Media n (IQR)	18	4.43 (2.57 - 7.90)	4.38 (2.63 - 7.70)	4.13 (2.40 - 7.22)	4.08 (2.42 - 7.52)	3.68 (2.12 - 6.07)	3.60 (1.97 - 6.67)	3.70 (2.22 - 5.93)	3.25 (1.90 - 5.63)	3.62 (2.08 - 5.77)	3.72 (2.22 - 6.42)	3.50 (2.16 - 5.65)	3.55 (2.10 - 5.82)
	19	3.55 (2.22 - 5.65)	3.38 (2.02 - 5.68)	3.13 (1.87 - 5.17)	3.17 (1.88 - 5.15)	3.35 (2.03 - 5.55)	3.00 (1.78 - 5.02)	3.40 (2.00 - 5.70)	3.27 (1.97 - 5.53)	3.60 (2.03 - 6.05)	3.37 (2.00 - 5.50)	3.53 (1.93 - 6.02)	3.85 (2.10 - 6.27)
	20	3.53 (1.83 - 6.13)	3.35 (1.95 - 5.25)	3.00 (1.62 - 4.91)	2.58 (1.55 - 4.30)	2.80 (1.75 - 4.43)	2.93 (1.80 - 4.70)	2.90 (1.82 - 4.69)	2.70 (1.65 - 4.48)	2.93 (1.75 - 4.83)	3.27 (1.90 - 5.17)	3.15 (1.87 - 5.25)	3.47 (1.93 - 5.57)
	21	3.44 (1.95 - 5.48)	3.29 (2 - 5.30)	3.25 (1.85 - 5.33)	3.30 (1.94 - 5.61)								



Table 4.4.2.3: Emergency Department Patient Outcomes (Hospital 6)

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Time to Triage – Median (IQR)	18	0.40 (0.18-0.82)	0.40 (0.18-0.77)	0.37 (0.15-0.77)	0.43 (0.18-0.88)	0.38 (0.17-0.78)	0.30 (0.15-0.65)	0.33 (0.15-0.63)	0.32 (0.13-0.65)	0.35 (0.17-0.63)	0.37 (0.17-0.73)	0.48 (0.20-0.87)	0.40 (0.17-0.88)
	19	0.37 (0.17-0.80)	0.42 (0.18-0.85)	0.43 (0.18-0.80)	0.38 (0.17-0.80)	0.33 (0.15-0.70)	0.30 (0.15-0.58)	0.32 (0.15-0.67)	0.37 (0.17-0.80)	0.33 (0.15-0.73)	0.28 (0.13-0.53)	0.35 (0.17-0.73)	0.28 (0.13-0.58)
	20	0.28 (0.13-0.57)	0.32 (0.15-0.67)	0.25 (0.12-0.52)	0.15 (0.08-0.28)	0.18 (0.08-0.32)	0.18 (0.10-0.33)	0.17 (0.09-0.32)	0.20 (0.10-0.37)	0.17 (0.08-0.32)	0.17 (0.08-0.30)	0.17 (0.08-0.32)	0.18 (0.08-0.35)
	21	0.17 (0.08-0.30)	0.18 (0.10-0.35)	0.20 (0.10-0.38)	0.27 (0.13-0.52)								
Triage to be Seen – Median (IQR)	18	1.70 (0.60-4.63)	1.98 (0.63-5.39)	1.67 (0.55-4.90)	1.88 (0.60-4.78)	1.73 (0.62-4.76)	1.73 (0.58-4.48)	1.68 (0.62-4.85)	1.50 (0.55-4.10)	1.68 (0.60-4.88)	1.57 (0.52-4.48)	1.55 (0.52-4.67)	1.87 (0.58-4.83)
	19	1.83 (0.57-5.25)	1.65 (0.57-5.28)	1.60 (0.48-4.90)	1.55 (0.52-4.37)	1.22 (0.42-4.11)	1.18 (0.38-3.78)	1.48 (0.47-4.58)	1.23 (0.40-4.55)	1.38 (0.42-4.10)	1.07 (0.35-3.48)	1.20 (0.38-4.52)	1.10 (0.35-3.57)
	20	1.35 (0.42-3.93)	1.42 (0.43-4.42)	0.60 (0.25-1.82)	0.38 (0.18-0.80)	0.45 (0.22-1.03)	0.57 (0.25-1.38)	0.58 (0.27-1.40)	0.88 (0.33-2.47)	0.75 (0.30-1.88)	0.78 (0.32-2.12)	0.75 (0.28-1.94)	0.88 (0.30-2.37)
	21	0.75 (0.28-1.92)	0.78 (0.32-2.00)	0.87 (0.28-2.25)	0.87 (0.30-2.45)								
Registration to be Seen – Median (IQR)	18	2.33 (1.07-5.17)	2.47 (1.03-5.87)	2.22 (0.97-5.48)	2.52 (1.10-5.33)	2.32 (1.02-5.28)	2.23 (0.97-4.83)	2.20 (1.00-5.30)	2.05 (0.92-4.55)	2.17 (0.98-5.43)	2.07 (0.90-4.97)	2.18 (1.03-5.33)	2.42 (1.03-5.38)
	19	2.23 (0.90-5.63)	2.05 (0.84-5.48)	2.15 (0.90-5.44)	2.10 (0.92-4.90)	1.73 (0.80-4.62)	1.60 (0.70-4.20)	1.97 (0.85-5.05)	1.85 (0.80-5.12)	1.90 (0.80-4.63)	1.48 (0.67-3.93)	1.70 (0.70-4.98)	1.53 (0.68-4.00)
	20	1.82 (0.75-4.43)	1.90 (0.82-4.81)	1.00 (0.52-2.17)	0.61 (0.35-1.07)	0.70 (0.42-1.32)	0.83 (0.47-1.68)	0.83 (0.47-1.63)	1.13 (0.55-2.73)	1.02 (0.52-2.15)	1.02 (0.53-2.30)	1.00 (0.50-2.20)	1.12 (0.52-2.60)
	21	0.95 (0.48-2.10)	1.08 (0.53-2.27)	1.17 (0.53-2.53)	1.32 (0.62-2.83)								
ED Care – Median (IQR)	18	6.25 (3.17-10.17)	6.27 (3.03-10.37)	5.90 (2.88-9.93)	6.07 (3.04-9.76)	5.93 (2.95-9.52)	5.45 (2.83-8.83)	5.46 (2.68-8.92)	5.27 (2.61-8.53)	5.70 (2.87-9.43)	5.53 (2.82-9.32)	5.80 (2.87-9.57)	6.08 (3.05-10.10)
	19	6.55 (3.27-10.84)	5.90 (2.98-9.83)	6.05 (3.15-9.83)	6.08 (3.08-9.85)	5.45 (2.78-8.73)	5.13 (2.62-8.45)	5.78 (2.82-9.37)	5.89 (2.87-9.51)	6.00 (3.03-10.18)	5.62 (2.78-9.25)	6.18 (2.93-10.43)	5.70 (2.95-9.47)
	20	5.90 (3.03-9.55)	5.98 (3.08-9.58)	4.03 (1.90-7.03)	3.33 (1.28-5.37)	3.85 (2.10-5.95)	4.03 (2.05-6.35)	3.90 (1.98-6.32)	4.75 (2.55-7.40)	4.37 (2.47-6.62)	4.25 (2.45-6.35)	4.15 (2.35-6.23)	4.27 (2.32-6.37)
	21	4.22 (2.28-6.30)	4.27 (2.55-6.45)	4.18 (2.40-6.18)	4.33 (2.47-6.55)								
ED Care Admitted – Median (IQR)	18	6.70 (2.76-10.27)	6.74 (2.54-10.62)	6.62 (2.83-10.33)	6.18 (2.75-10.00)	6.20 (2.88-9.93)	5.68 (2.43-9.05)	5.55 (2.20-9.45)	5.42 (2.09-8.73)	5.98 (2.48-9.30)	5.87 (2.21-9.42)	5.74 (2.27-9.62)	6.53 (2.80-10.29)
	19	6.70 (2.80-10.90)	6.18 (2.18-10.43)	5.91 (2.47-9.79)	6.62 (2.66-10.36)	5.83 (2.32-9.17)	5.20 (1.95-8.28)	6.12 (2.13-9.80)	6.42 (2.50-9.95)	6.85 (2.47-10.75)	6.26 (2.45-9.91)	6.78 (2.52-10.53)	6.47 (2.58-10.41)
	20	7.22 (2.85-11.11)	6.57 (3.02-10.25)	3.55 (1.32-6.75)	3.74 (0.95-6.20)	4.90 (3.03-7.27)	5.72 (3.52-8.12)	6.03 (3.55-8.82)	6.82 (4.33-9.48)	6.02 (3.83-8.62)	5.15 (3.18-7.31)	4.19 (2.30-6.33)	4.38 (2.40-6.45)
	21	4.37 (2.37-6.33)	4.02 (2.36-6.02)	4.22 (2.40-6.20)	4.33 (2.30-6.40)								

Table 4.4.2.3 (continued): Emergency Department Patient Outcomes

		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ED Care Not Admitted – Median (IQR)	18		6.13 (3.33- 10.10)	6.13 (3.20- 10.25)	5.72 (2.91- 9.70)	6.02 (3.14- 9.68)	5.80 (3.00- 9.42)	5.42 (2.93- 8.80)	5.40 (2.80- 8.72)	5.22 (2.82- 8.48)	5.62 (3.03- 9.48)	5.48 (3.00- 9.27)	5.82 (3.09- 9.55)	5.93 (3.17- 9.98)
	19		6.48 (3.40- 10.80)	5.83 (3.22- 9.62)	6.08 (3.35- 9.84)	5.89 (3.20- 9.73)	5.35 (2.93- 8.55)	5.10 (2.77- 8.52)	5.67 (3.00- 9.25)	5.72 (2.98- 9.32)	5.82 (3.12- 9.92)	5.42 (2.85- 9.03)	6.05 (3.00- 10.42)	5.53 (3.03- 9.06)
	20		5.58 (3.08- 8.85)	5.82 (3.10- 9.42)	4.23 (2.22- 7.18)	3.18 (1.37- 4.88)	3.48 (1.77- 5.42)	3.52 (1.62- 5.60)	3.47 (1.73- 5.43)	4.15 (2.15- 6.49)	3.88 (2.18- 5.90)	4.00 (2.27- 6.02)	4.13 (2.37- 6.17)	4.20 (2.27- 6.28)
	21		4.15 (2.23- 6.30)	4.38 (2.62- 6.63)	4.15 (2.40- 6.18)	4.33 (2.50- 6.65)								

Table 4.4.2.4: Emergency Department Patient Experience Time (Hospital 4)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ED PET - Median (IQR)	18	6.3(3.41- 12.93)	6.91(3.6- 13.8)	7.25(3.81- 13.9)	7.21(3.7- 13.54)	6.8(3.5-12.15)	6.49(3.51- 11.6)	6.1(3.69-10.8)	6.3(3.6-10.96)	7.05(3.78- 12.56)	6.15(3.55 -10.93)	6.5(3.69- 10.16)	7.03(3.51- 13.35)
	19	6.8(3.65- 12.45)	7.7(.21- 14.39)	7.48(4.0-14.1)	6.42(3.76- 12.06)	7.06(4.1- 11.91)	6.85(3.68- 12.75)	6.73(3.8-12.37)	7.25(4.13- 14.31)	7.45(4.13- 13.25)	7.1(4.13- 13.35)	6.77(3.74- 13.54)	7.21(3.99- 13.7)
	20	7.03(3.85- -13.9)	7.24(3.98 -15.09)	4.46(2.51- 7.47)	5.52(3.45- 7.44)	5.77(3.65- 7.89)	6.01(3.65- 7.65)	5.58(3.59-7.6)	6.25(3.45- 7.99)	6.7(3.89-7.15)	6.62(3.56 -7.65)	6.87(3.44- 7.98)	6.43(3.65- 7.57)
	21	6.1(3.5- 12.2)	6.5(3.75- 10.5)	6.3(3.51- 12.39)	6.4(3.68- 10.12)								
ED PET Admitted - Median (IQR)	18	8.82 (4.01 - 10.32)	9.12 (4.33 - 11.42)	7.89 (2.04 - 8.65)	8.98 (5.76 - 9.25)	7.34 (3.04 - 10.90)	9.10 (2.56 - 10.25)	9.56 (3.54 - 12.35)	10.11 (4.56 - 13.90)	10.45 (1.37 - 10.95)	11.83 (2.11 - 12.31)	10.91 (2.45 - 12.07)	10.68 (2.04 - 12.86)
	19	8.63 (3.06 - 9.52)	8.16 (2.33 - 10.80)	8.56 (1.95 - 10.77)	8.12 (2.02 - 10.83)	8.08 (1.58 - 10.55)	8.12 (1.89 - 10.93)	8.51 (1.48 - 8.70)	6.88 (3.10 - 10.01)	8.91 (1.57 - 9.18)	6.78 (1.74 - 8.88)	5.98 (2.20 - 8.77)	6.34 (2.20 - 9.43)
	20	7.14 (5.81 - 9.50)	7.32 (1.71 - 7.74)	6.97 (1.43 - 8.97)	6.56 (1.33 - 8.58)	5.09 (1.37 - 8.32)	5.58 (1.35 - 9.83)	5.66 (1.25 - 8.23)	6.1 (1.62 - 8.45)	5.23 (2.22 - 8.42)	5.93 (1.76 - 7.98)	5.15 (1.40 - 8.13)	5.34 (1.74 - 8.65)
	21	8.43 (2.18 - 7.93)	7.43 (2.36 - 6.58)	6.12 (3.50 - 6.23)	6.11 (3.73 - 7.75)								
ED PET Not Admitted - Median (IQR)	18	6.62 (3.09- 11.33)	6.15 (3.37- 11.27)	6.30 (3.43- 11.05)	6.54 (3.42- 11.70)	6.47 (3.06- 10.92)	6.25 (3.54- 10.75)	5.88 (3.98- 10.68)	5.89 (3.08- 11.24)	6.26 (3.85- 11.65)	5.87 (3.94- 11.45)	6.43 (3.56- 10.22)	6.54 (3.42- 11.62)
	19	6.95 (3.77- 11.45)	6.65 (3.70- 10.72)	6.68 (3.73- 10.98)	6.67 (3.43- 10.88)	5.80 (3.87- 9.32)	5.57 (3.03- 9.65)	6.47 (3.89- 10.34)	6.66 (3.36- 10.78)	6.35 (3.45- 11.20)	5.85 (3.15- 10.24)	6.84 (3.43- 11.97)	6.17 (3.59- 10.65)
	20	6.18 (3.45- 9.02)	6.24 (3. 53- 10.76)	4.67 (2.40- 7.92)	3.59 (2.08- 5.15)	3.81 (2.92- 5.88)	3.77 (1.96- 6.15)	3.69 (1.78- 6.33)	4.89 (2.33- 7.45)	4.54 (2.54- 6.80)	4.51 (2.67- 6.78)	4.65 (2.89- 6.98)	5.27 (3.78- 6.98)
	21	4.53 (2.57- 8.18)	4.18 (3.52- 7.15)	4.47 (2.68- 7.54)	4.89 (2.76- 7.55)								

Table 4.4.2.5: Emergency Department Patient Experience Time (Hospital 5)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ED PET - Median (IQR)	18	5.35 (2.68 - 11.68)	5.32 (2.85 - 11.08)	5.07 (2.66 - 11.25)	4.92 (2.61 - 10.82)	4.22 (2.22 - 8.08)	4.15 (2.07 - 7.85)	4.22 (2.38 - 7.60)	4.21 (2.20 - 7.48)	3.97 (1.97 - 7.38)	4.08 (2.22 - 8.18)	3.88 (2.20 - 6.65)	4.00 (2.08 - 6.78)
	19	4.13 (2.30 - 6.98)	3.92 (2.05 - 6.53)	3.65 (1.87 - 6.27)	3.75 (1.90 - 6.51)	3.75 (1.95 - 6.47)	3.43 (1.81 - 5.90)	3.85 (1.92 - 6.82)	3.95 (2.05 - 7.22)	4.10 (1.93 - 7.60)	3.91 (1.93 - 6.97)	4.17 (1.97 - 7.26)	4.33 (2.12 - 7.67)
	20	4.43 (2.02 - 7.65)	3.85 (1.88 - 6.40)	3.37 (1.57 - 5.80)	2.97 (1.53 - 4.78)	3.05 (1.67 - 5.13)	3.27 (1.73 - 5.57)	3.23 (1.75 - 5.77)	3.17 (1.65 - 5.87)	3.45 (1.83 - 6.03)	3.72 (1.88 - 6.17)	3.52 (1.77 - 6.03)	4.00 (1.92 - 6.53)
	21	4.13 (1.95 - 6.65)	3.77 (1.88 - 6.27)	3.70 (1.82 - 6.43)	3.75 (1.92 - 6.55)								
ED PET Admitted - Median (IQR)	18	7.92 (3.31 - 16.32)	8.93 (4.38 - 20.22)	8.68 (4.26 - 19.25)	8.58 (4.10 - 20.24)	6.33 (3.04 - 10.90)	5.90 (2.66 - 9.25)	6.70 (3.54 - 11.35)	7.27 (4.56 - 11.90)	5.69 (1.37 - 10.95)	6.03 (2.11 - 12.31)	5.30 (2.45 - 8.07)	5.18 (2.04 - 7.86)
	19	5.75 (2.66 - 8.32)	5.27 (2.19 - 7.80)	5.22 (1.95 - 7.77)	5.30 (2.02 - 7.83)	5.08 (1.58 - 7.55)	4.75 (1.89 - 6.93)	5.51 (1.48 - 8.70)	6.88 (3.10 - 10.01)	5.90 (1.57 - 9.18)	5.78 (1.74 - 8.88)	5.78 (2.20 - 8.77)	6.22 (2.20 - 9.43)
	20	6.37 (2.90 - 9.50)	5.15 (1.71 - 7.74)	4.35 (1.43 - 6.95)	3.44 (1.33 - 5.58)	3.67 (1.37 - 6.32)	4.48 (1.35 - 6.83)	4.62 (1.25 - 7.23)	5.25 (1.62 - 7.45)	5.13 (2.22 - 7.42)	4.93 (1.76 - 6.98)	4.65 (1.40 - 7.13)	5.18 (1.74 - 7.65)
	21	5.43 (1.98 - 7.92)	5 (1.38 - 7.37)	5.21 (1.50 - 7.79)	5.00 (1.74 - 7.72)								
ED PET Not Admitted - Median (IQR)	18	4.55 (2.57 - 9.13)	4.47 (2.65 - 8.58)	4.23 (2.42 - 8.35)	4.16 (2.42 - 8.16)	3.72 (2.12 - 6.49)	3.60 (1.97 - 6.88)	3.75 (2.23 - 6.18)	3.27 (1.90 - 5.78)	3.63 (2.08 - 5.92)	3.73 (2.22 - 6.78)	3.50 (2.16 - 5.64)	3.55 (2.10 - 5.82)
	19	3.55 (2.22 - 5.65)	3.38 (2.02 - 5.68)	3.13 (1.87 - 5.17)	3.17 (1.88 - 5.15)	3.35 (2.03 - 5.55)	3.00 (1.78 - 5.02)	3.40 (2.00 - 5.70)	3.27 (1.97 - 5.53)	3.61 (2.03 - 6.05)	3.37 (2.00 - 5.50)	3.53 (1.93 - 6.03)	3.85 (2.10 - 6.27)
	20	3.53 (1.83 - 6.13)	3.35 (1.95 - 5.25)	3.00 (1.63 - 4.91)	2.58 (1.55 - 4.30)	2.80 (1.75 - 4.43)	2.93 (1.80 - 4.70)	2.90 (1.82 - 4.69)	2.70 (1.65 - 4.48)	2.93 (1.75 - 4.83)	3.27 (1.90 - 5.17)	3.15 (1.87 - 5.25)	3.47 (1.93 - 5.57)
	21	3.44 (1.95 - 5.48)	3.29 (2.00 - 5.30)	3.25 (1.85 - 5.33)	3.30 (1.94 - 5.61)								
ED PET ≤6 hours - N (%)	18	1286 (54.1)	1271 (54.9)	1376 (56.4)	1468 (57.7)	1802 (64.8)	1562 (65.0)	1712 (65.4)	1617 (66.2)	1708 (68.1)	1708 (65.1)	1784 (70.4)	1690 (69.6)
	19	1760 (68.2)	1652 (70.7)	1939 (72.7)	1920 (71.8)	1968 (71.6)	1807 (76.0)	1899 (69.5)	1681 (65.4)	1722 (65.9)	1863 (68.6)	1641 (65.8)	1758 (64.1)
	20	1534 (63.2)	1674 (72.5)	1384 (76.8)	1534 (85.7)	1882 (81.4)	1933 (78.8)	1991 (77.1)	1819 (76.2)	1897 (74.7)	1700 (73.7)	1699 (74.9)	1586 (70.6)

	21	1378 (70.5)	1363 (72.4)	1753 (72.1)	1907 (71.3)								
ED PET ≤9 hours - N (%)	18	1632 (68.6)	1592 (68.7)	1702 (69.8)	1800 (70.7)	2181 (78.5)	1903 (79.2)	2103 (80.4)	1977 (81.0)	2033 (81.0)	2045 (77.9)	2204 (86.9)	2124 (87.5)
	19	2217 (85.9)	2022 (86.6)	2376 (89.1)	2389 (89.4)	2453 (89.2)	2175 (91.4)	2370 (86.7)	2153 (83.8)	2148 (82.2)	2312 (85.2)	2066 (82.9)	2242 (81.8)
	20	1996 (82.3)	2065 (89.4)	1660 (92.1)	1710 (95.5)	2170 (93.9)	2279 (92.9)	2391 (92.6)	2192 (91.8)	2335 (91.9)	2086 (90.4)	2067 (91.1)	1973 (87.8)
	21	1753 (89.7)	1707 (90.7)	2152 (88.5)	2333 (87.3)								
ED PET ≤24 hours - N (%)	18	2074 (87.2)	2054 (88.6)	2128 (87.2)	2222 (87.3)	2583 (92.9)	2265 (94.3)	2458 (93.9)	2313 (94.7)	2363 (94.2)	2453 (93.5)	2525 (99.6)	2415 (99.5)
	19	2564 (99.3)	2320 (99.4)	2660 (99.7)	2663 (99.6)	2728 (99.2)	2371 (99.7)	2718 (99.4)	2553 (99.3)	2596 (99.3)	2700 (99.4)	2468 (99.0)	2726 (99.5)
	20	2401 (99.0)	2304 (99.7)	1799 (99.8)	1786 (99.8)	2305 (99.7)	2449 (99.8)	2578 (99.8)	2381 (99.7)	2520 (99.2)	2292 (99.3)	2250 (99.2)	2238 (99.6)
	21	1939 (99.2)	1877 (99.7)	2419 (99.4)	2650 (99.1)								

Table 4.4.2.6: Emergency Department Patient Experience Time (Hospital 6)

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ED PET - Median (IQR)	18	8.02 (4.03-14.90)	8.10 (3.88-15.27)	7.52 (3.52-14.20)	7.74 (3.70-13.65)	7.40 (3.68-13.37)	6.85 (3.48-11.97)	6.72 (3.28-12.25)	6.47 (3.22-10.95)	7.27 (3.57-13.55)	7.25 (3.47-13.75)	7.35 (3.52-13.38)	7.73 (3.85-14.74)
	19	8.50 (4.13-15.82)	7.45 (3.75-13.68)	7.57 (3.90-13.87)	7.65 (3.73-14.37)	6.78 (3.35-12.65)	6.40 (3.18-12.67)	7.32 (3.50-13.15)	7.46 (3.58-13.95)	7.58 (3.70-15.45)	7.10 (3.45-13.48)	8.22 (3.78-15.80)	7.28 (3.68-14.32)
	20	7.27 (3.67-14.22)	7.57 (3.80-14.57)	5.15 (2.38-9.13)	4.12 (1.62-7.65)	4.97 (2.72-8.18)	4.95 (2.60-8.58)	4.82 (2.48-9.12)	5.73 (3.15-10.13)	5.35 (2.97-9.75)	5.48 (3.12-9.50)	5.35 (3.05-8.63)	5.57 (3.08-9.17)
	21	5.87 (3.25-10.13)	6.20 (3.50-10.46)	5.45 (3.16-8.90)	5.68 (3.18-9.25)								
ED PET Admitted - Median (IQR)	18	15.53 (6.80-26.40)	15.93 (6.60-25.95)	14.68 (6.64-25.33)	14.35 (6.54-24.99)	13.75 (6.41-23.22)	12.25 (5.33-21.85)	11.58 (4.60-20.53)	11.10 (4.18-19.98)	14.54 (6.25-24.75)	14.97 (6.07-25.92)	13.55 (4.87-23.98)	15.32 (6.40-25.69)
	19	17.27 (7.57-27.38)	13.15 (5.85-23.47)	14.83 (5.52-26.30)	16.63 (6.77-26.40)	13.73 (5.18-23.15)	14.07 (4.62-24.90)	15.48 (5.63-26.81)	15.23 (6.15-26.54)	20.30 (7.12-31.40)	16.72 (6.83-27.62)	18.37 (7.23-31.20)	16.65 (7.50-27.93)
	20	18.88 (8.22-30.62)	17.73 (8.03-29.22)	6.83 (2.28-12.13)	6.97 (2.07-10.20)	8.77 (6.15-11.55)	9.87 (6.87-13.48)	11.73 (8.09-18.60)	11.38 (7.87-16.10)	11.27 (8.05-16.60)	11.63 (7.82-18.36)	9.4 (5.88-14.45)	9.58 (6.25-13.31)
	21	10.40 (6.63-14.81)	10.82 (6.68-16.48)	8.98 (5.65-12.02)	9.95 (6.36-14.13)								
ED PET Not Admitted - Median (IQR)	18	6.64 (3.69-11.27)	6.75 (3.57-11.50)	6.25 (3.18-11.05)	6.60 (3.42-10.70)	6.37 (3.32-10.42)	5.95 (3.25-9.75)	5.92 (3.17-9.68)	5.63 (3.08-9.17)	6.06 (3.35-10.65)	5.95 (3.29-10.45)	6.38 (3.32-10.62)	6.50 (3.52-11.52)
	19	7.05 (3.73-11.95)	6.36 (3.57-10.70)	6.68 (3.73-10.98)	6.39 (3.43-10.88)	5.80 (3.17-9.70)	5.57 (3.03-9.65)	6.25 (3.38-10.40)	6.38 (3.30-10.55)	6.35 (3.45-11.20)	5.85 (3.15-10.24)	6.84 (3.43-11.97)	5.97 (3.25-10.07)
	20	5.98 (3.34-9.92)	6.28 (3.43-10.57)	4.67 (2.40-7.92)	3.47 (1.58-5.45)	3.82 (1.92-5.93)	3.78 (1.88-6.08)	3.78 (1.90-6.20)	4.57 (2.42-7.37)	4.22 (2.40-6.53)	4.42 (2.58-6.69)	4.48 (2.69-6.78)	4.57 (2.60-6.92)
	21	4.63 (2.57-7.18)	4.98 (3.02-7.85)	4.58 (2.73-7.02)	4.84 (2.83-7.43)								
ED PET ≤6 hours - N (%)	18	1714 (38.4)	1624 (38.3)	1861 (41.3)	1818 (39.6)	2010 (40.8)	2008 (44.5)	2095 (44.8)	2210 (47.0)	1902 (42.9)	2012 (43.4)	1915 (41.8)	1755 (39.6)
	19	1681 (36.5)	1741 (41.0)	1904 (40.1)	1834 (40.6)	2118 (45.0)	2135 (47.3)	2023 (42.1)	1915 (41.4)	1834 (41.0)	1994 (43.6)	1747 (38.3)	1912 (42.2)
	20	1938 (42.5)	1743 (40.6)	1942 (55.9)	1995 (65.3)	2444 (60.7)	2510 (59.3)	2616 (59.1)	2233 (51.9)	2252 (55.1)	2186 (54.8)	2207 (56.3)	2235 (54.1)
	21	1814 (51.0)	1675 (48.7)	2341 (55.1)	2342 (52.7)								
ED PET ≤9 hours - N (%)	18	2438 (54.6)	2291 (54.0)	2569 (57.1)	2607 (56.8)	2904 (58.9)	2811 (62.4)	2946 (63.0)	3080 (65.5)	2576 (58.2)	2731 (58.9)	2670 (58.3)	2488 (56.1)
	19	2413 (52.4)	2481 (58.4)	2748 (57.8)	2544 (56.4)	2911 (61.9)	2839 (62.9)	2844 (59.2)	2693 (58.3)	2510 (56.2)	2695 (58.9)	2440 (53.5)	2627 (57.9)
	20	2695 (59.1)	2468 (57.5)	2579 (74.3)	2484 (81.3)	3186 (79.1)	3233 (76.4)	3293 (74.4)	3017 (70.1)	2947 (72.1)	2924 (73.3)	3016 (76.9)	3067 (74.2)
	21	2480 (69.7)	2363 (68.7)	3221 (75.8)	3278 (73.7)								
ED PET ≤24 hours - N (%)	18	3947 (88.3)	3776 (89.0)	4057 (90.1)	4153 (90.6)	4537 (92.1)	4224 (93.7)	4370 (93.5)	4440 (94.4)	4030 (91.0)	4160 (89.8)	4170 (91.1)	3968 (89.5)
	19	4019 (87.3)	3872 (91.2)	4285 (90.1)	4034 (89.4)	4323 (91.9)	4123 (91.3)	4332 (90.2)	4168 (90.2)	3844 (86.0)	4060 (88.8)	3964 (86.8)	3994 (88.1)
	20	3991 (87.6)	3772 (87.8)	3357 (96.7)	3033 (99.3)	3987 (99.0)	4149 (98.1)	4236 (95.8)	4195 (97.5)	3945 (96.5)	3837 (96.2)	3832 (97.8)	4069 (98.5)
	21	3460 (97.3)	3338 (97.1)	4218 (99.2)	4375 (98.4)								

Figures 4.4.2.4 to 4.4.8 demonstrate the outcomes time to triage, and ED care time compared to staffing demand; that is the nurse staffing complement required based on patients' triage scores rather than the number of presentations alone. It can be seen that post the changes and, for the most part during the Covid-19 pandemic, patient acuity and dependency levels were at or above those prior to the implementation of the Framework and pre-Covid-19. In Hospital, despite an increase in staffing requirements, time to triage remained stable and then reduced. This was similar to ED care time with the exception of a spike in January 2021. Hospital 5 also saw a gradual increase in patient acuity and dependency levels post Covid-19 but with the staffing adjustments in place did not see an associated increase in time to triage levels. Hospital 45 did show a slight increase in ED care time associated with increasing patient demand, but this remained below the levels seen prior to the implementation of the pilot recommendations in the Framework. As with the other pilot EDs, Hospital 6 had a decrease in patient demand during the first wave of the Covid-19 pandemic, but this increased over time and levels were comparable to those measured pre-pandemic. Time to triage and ED care time post the implementation of the Framework (Time 2), despite similar nursing hours per patient presentation remained below those measured pre the implementation of the recommendations in the Framework (Time 2).

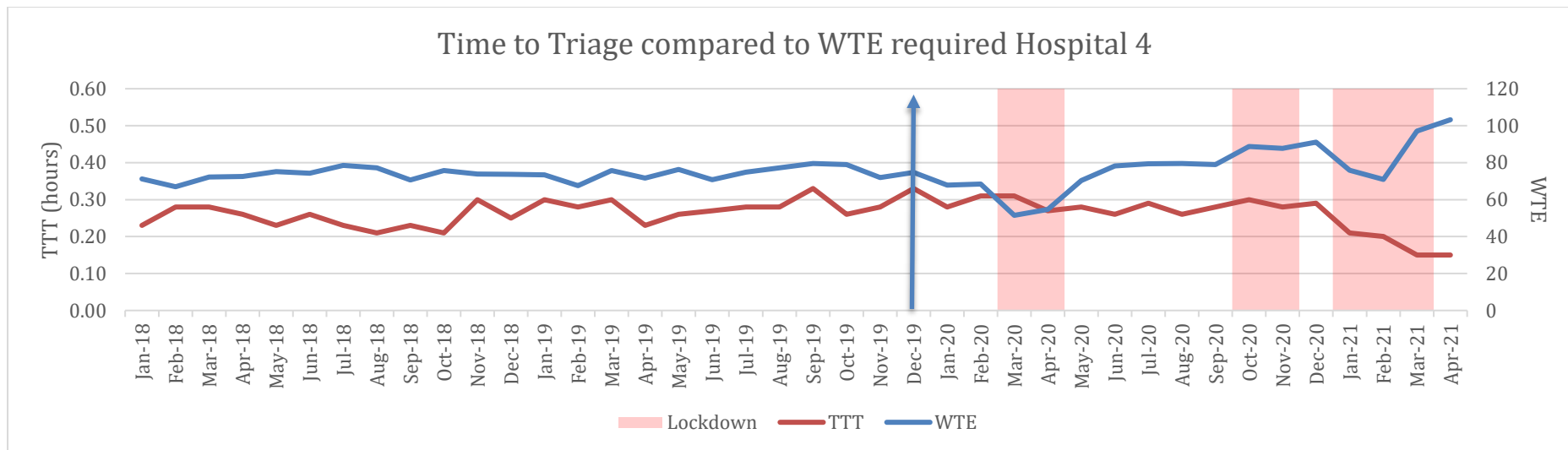


Figure 4.4.3.4: TTT compared with WTE required for Hospital 4. → Time staffing adjustment commenced.

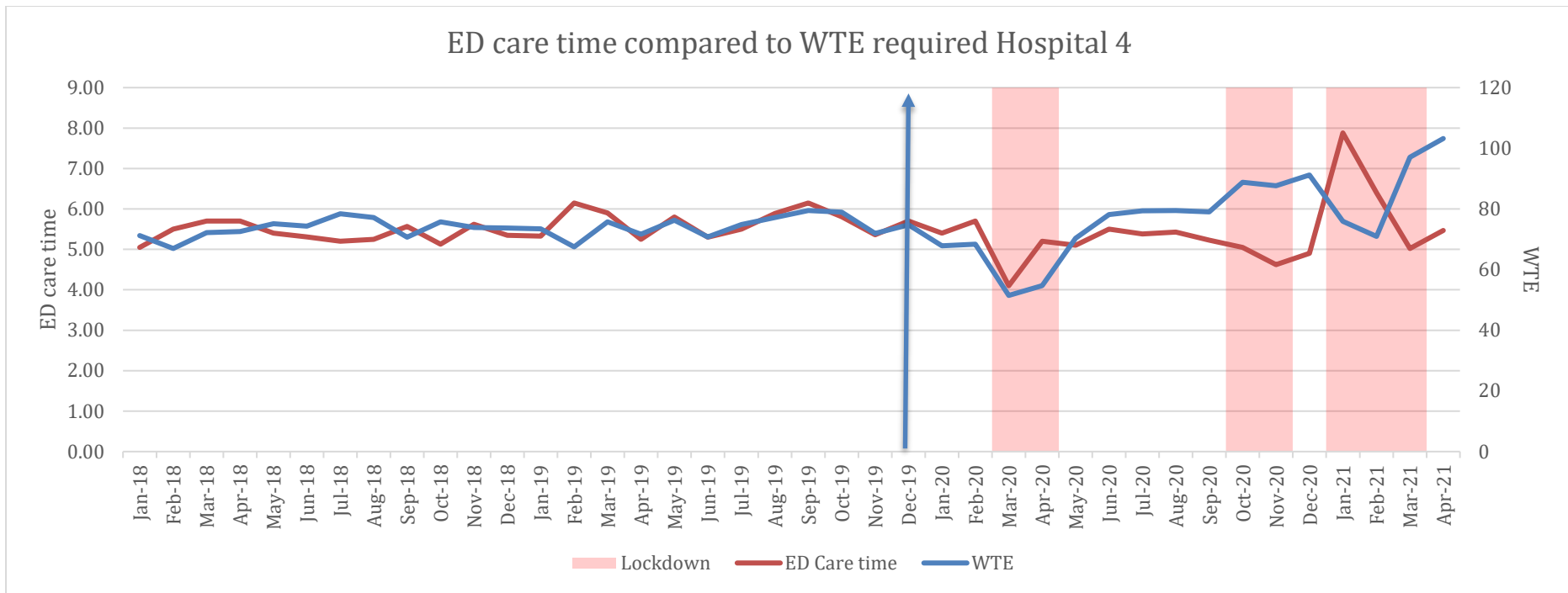


Figure 4.4.4.5: ED Care Time compared with WTE for Hospital 4.  Time staffing adjustment commenced.



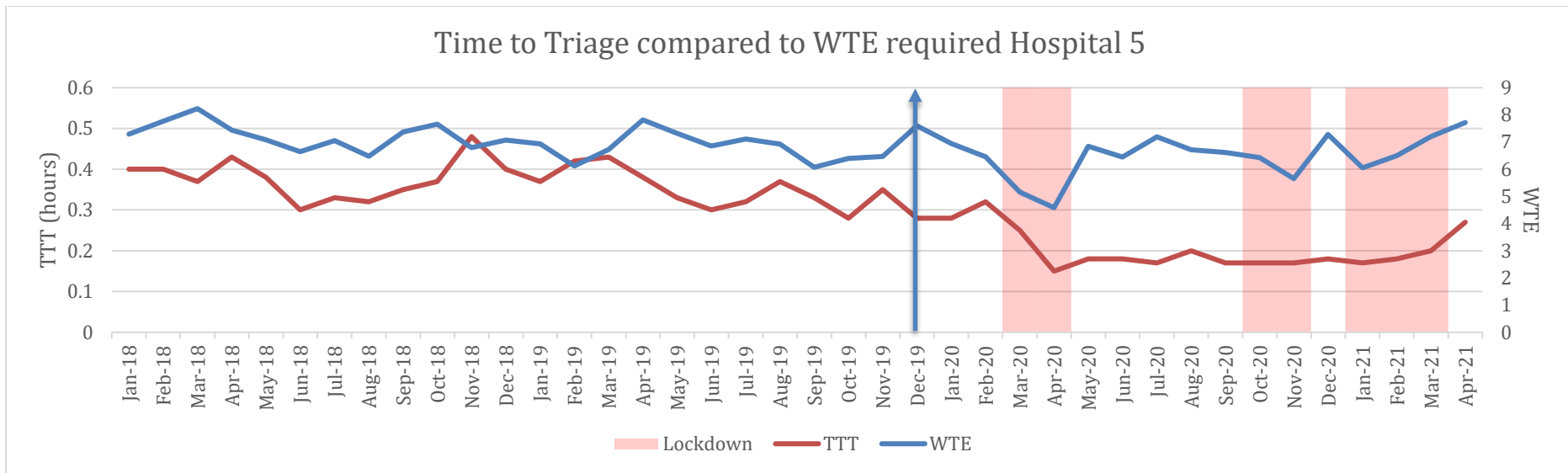



Figure 4.4.4.5: TTT compared with WTE or Hospital 5.  Time staffing adjustment commenced.

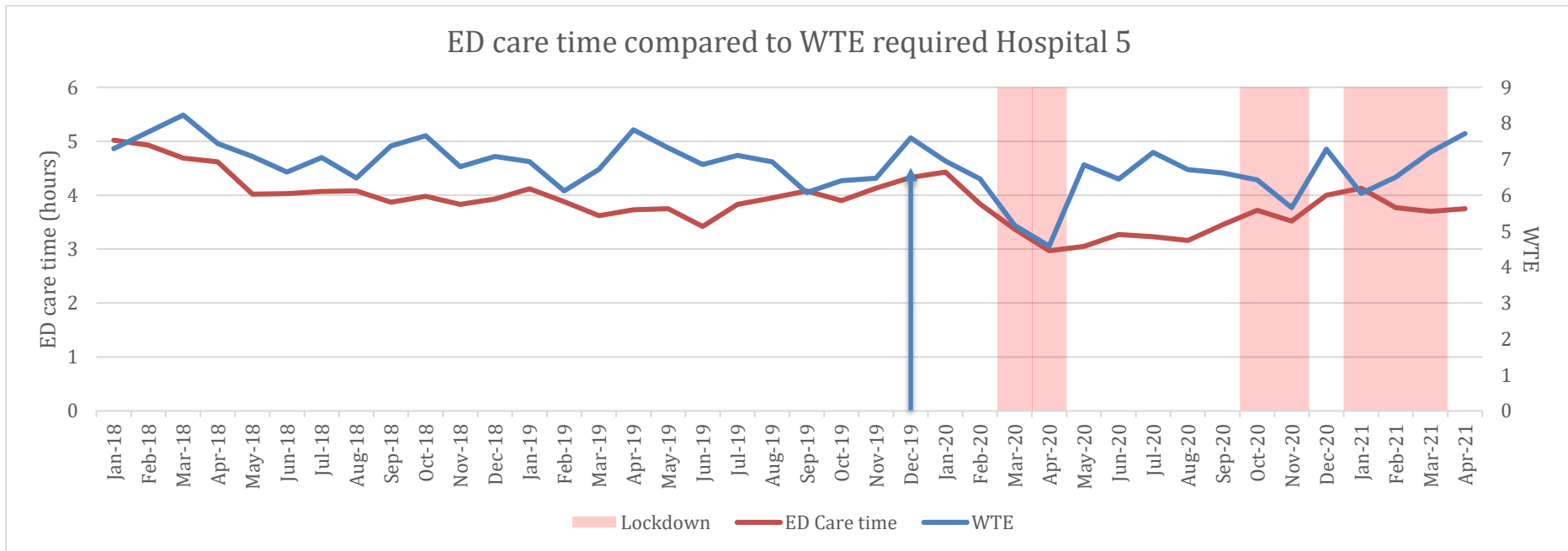



Figure 4.4.4.6: ED Care Time compared with WTE for Hospital 5.  Time staffing adjustment commenced.

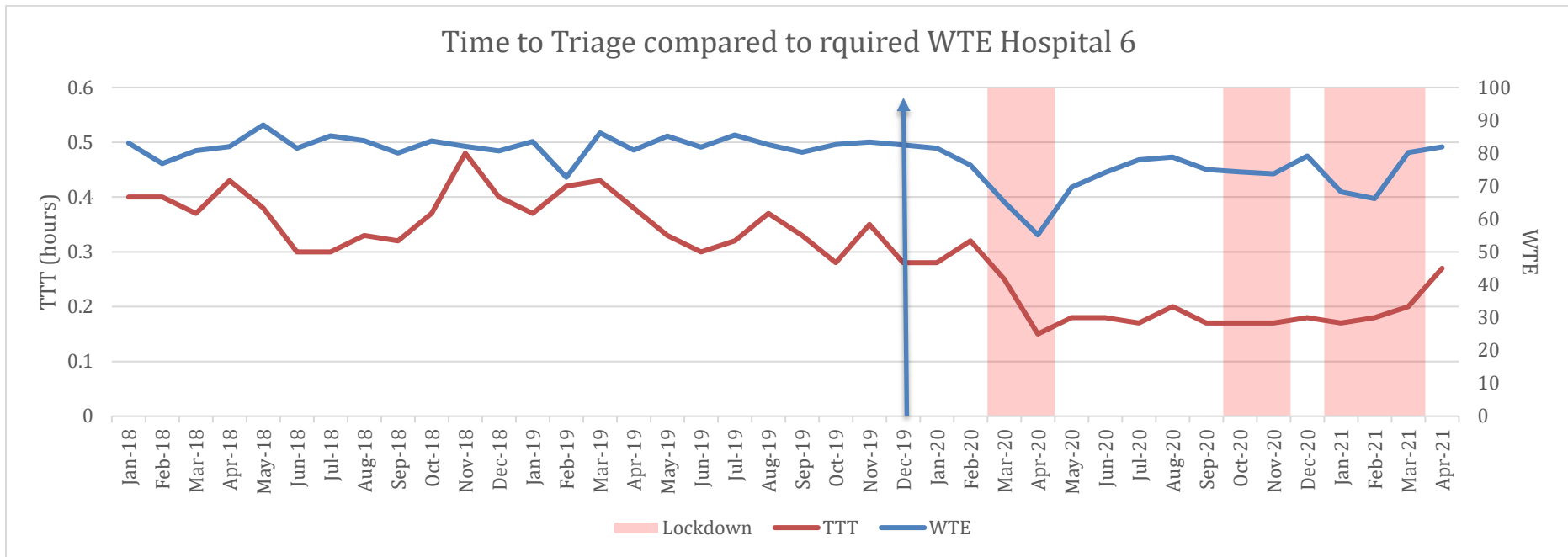


Figure 4.4.4.7: TTT compared with WTE Hospital 6.  Time staffing adjustments commenced.

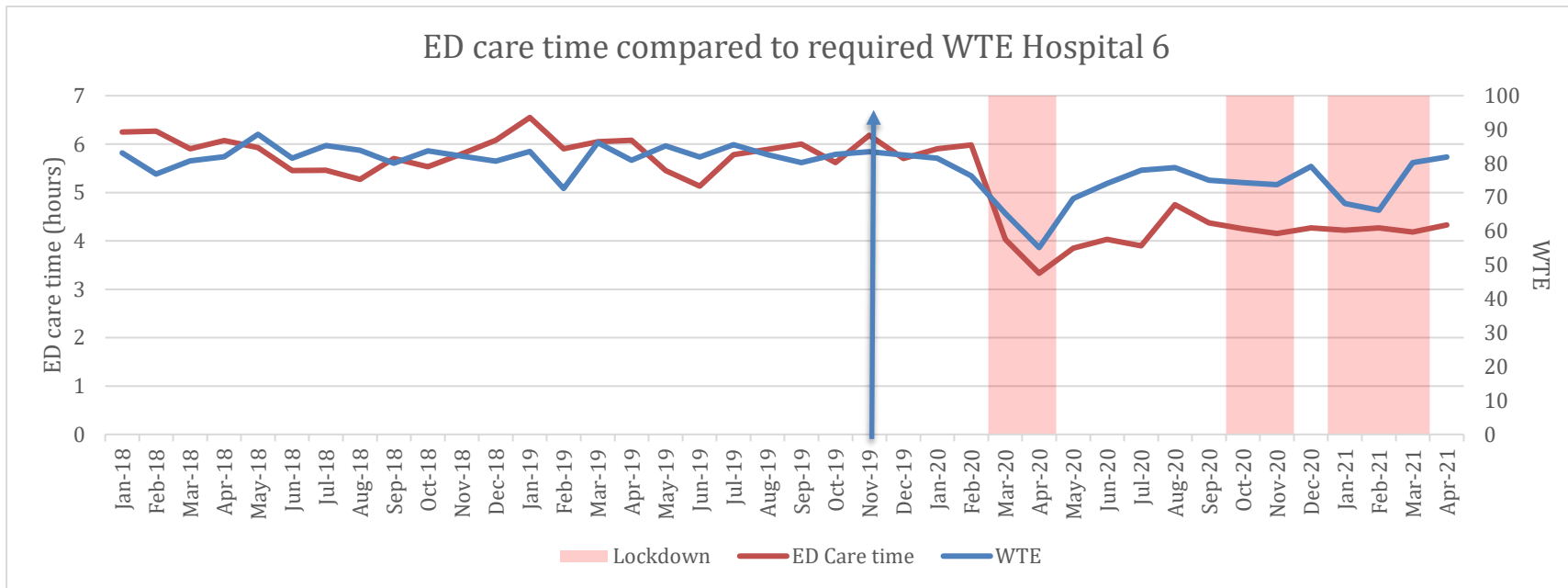


Figure 4.4.4.8: ED Care Time compared with WTE Hospital 6. → Time staffing adjustments commenced.

#### 4.4.3 Conclusion

In summary, the majority of patients who presented at the ED in Hospital 4, 5 and 6 across the period of research were male. Those aged 75 and older accounted for over 14% of presentations to the EDs. Approximately 80% of presentations to the EDs were new presentations. Approximately 30% of all patients who presented at the EDs across the data collection period were admitted, with this percentage increasing to over 55% of patients  $\geq 75$  years.

The influence of the Covid-19 pandemic was evident in the data, with the outbreak of the pandemic coinciding with notable variation in almost all the variables analysed. This was particularly evident in the number of people presenting to the EDs. However, as the pandemic and public health response developed throughout 2020 and into 2021, ED presentations in the pilot sites returned to near pre-pandemic levels.

Following the adjustment of staffing levels, positive indications when comparing monthly data across the years of the study period were evident in a number of key variables.

Following an initial sharp decrease at the time of the outbreak of Covid-19, median wait times from ED registration to being seen by a decision maker stabilised at ranges lower than pre-pandemic levels as ED presentations increased. In time to triage, triage to being seen by a decision maker, and ED registration to being seen by a decision maker, positive signs were also evident in the lower median values for the period October 2019-February 2020 when compared against the respective months of the previous year. This period coincides with the incremental implementation of the staffing adjustments, prior to the outbreak of Covid-19 in Ireland.

This trend of stabilising at a level below pre-pandemic levels following an initial decline was also evident in the ED Care, ED PET, and Trolley Time variables. LWBS figures also declined at the onset of the pandemic, yet as ED presentations returned to near pre-pandemic levels, the proportion of patients LWBS remained well below figures for 2018 and 2019 (prior to the introduction of the *Pilot Framework*).

In conclusion, the administrative data in this report provided a comprehensive overview of the emergency departments and the injury unit. This longitudinal approach allowed for the examination of changes to key variables in the ED over time, in particular the patient outcomes associated with nurse staffing. The data presented in this report is representative of a period of 40 months (January 2018-April 2021). The implementation of staffing adjustments identified as required under the NHpPP model began in month 22 of the period of research, with month 27 the first full month of data following the onset of the pandemic in Ireland occurring in Ireland.

Through the use of administrative data, key insights were provided into the impact of the staffing adjustments and Covid-19 in the emergency department. The results of the administrative data presented in this report show positive signs for the impact of the staffing adjustments to Hospital 4, 5 and 6 as, in the midst of a pandemic and all the associated protocols, staff in the ED were able to deliver faster emergency care to a comparable level of patients which may not have been feasible had the initial staff

adjustments based on the *Framework* recommendations not been employed. Administrative data continuing to present a viable means of assessing emergency department outcomes in relation to staffing over time, within a future context.

## **4.5 Nursing and Healthcare Assistants Staff Survey (Time 1 and Time 2)**

Staff across the three Emergency Departments (hospitals 4, 5 and 6) and the Injury Unit (Hospital 7), including clinical nurse managers (CNMs), staff nurses (RNs) and healthcare assistants (HCAs), were surveyed at baseline (Time 1) and again at Time 2 following the implementation of the recommendations in the *Pilot Framework* and staffing adjustments. A further survey, Time 3, was completed in September 2021 and was put in place to measure the impact that the Covid-19 pandemic was having on staff. Cross-sectional data for the IU was collected at three time points: in October 2018 (Time 1) and again in February 2020 (Time 2), and August/September 2021 (Time 3).

In order to address Objective 7 of this report and to present the impact of Covid-19 on staff outcomes within an Emergency Department setting, results from Time 1 and Time 2 are presented in this section (Section 4), with results from Time 3 (during the Covid-19 pandemic) presented in Section 5 below.

### **4.5.1 Demographics and Education**

The overall response rate at Time 1 was 59.2% and at Time 2 was 43.2%. Hospital 5 had a high response rate at Time 1 and Time 2 (>71%), while Hospital 4 had the lowest response rates at both time points (T1=53.1%; T2=51.1%). For the IU, the response rates for both Time 1 and Time 2 were 76.7% and 80.8%, respectively.

The demographic profile of the respondents is outlined in Table 4.5.1.1. At Time 1, the majority of respondents were RNs (67.2%) with CNMs comprising 21.9% of the staffing cohort. At Time 2, the largest cohort of respondents were RN grade (63.2%), 26.5% were CNM grade and HCAs accounted for 10.3% of responses. In Time 1 and Time 2 the majority of staff held full-time contracts and had been working in their current unit for approximately 6 years. The majority of respondents were female (Time 1: 80.9%, Time 2: 77.4%) and with an average of approximately 12 years' experience as a Registered Nurse (RN) or Healthcare Assistant (HCA). The majority of the sample had completed degree level education (87.0% in Time 1 and 88.3% in Time 2). Of those surveyed, 44.4% had a specialist qualification in emergency nursing at Time 1, increasing slightly to 46.1% in Time 2.

For the IU, at Time 1, the majority of respondents were RN grade (94.1%), with CNMs comprising 1% of the staff cohort. At Time 2, RNs comprised of 71.4% of respondents, CNMs 19% and HCAs represented 9.5% of respondents. At Time 1, the majority of staff had full time contracts and were employed in their current unit for over 4 years; this was also the case in Time 2, where over 90% were employed on a full-time basis with an average of over 6 years on their current unit. Respondents were mostly female (Time 1: 87.5%; Time 2: 85.7%), with an average of over 20 years' experience as a nurse (RN) at both Time 1 and Time 2. The majority of staff were educated to degree level at both time points. Of those surveyed, 23.8% at both Time 1 and Time 2 held a specialist qualification in emergency nursing.

Staff also provided details of the country of nursing pre-registration training. In Time 1, 33.6% received their nursing accreditation overseas, mainly in the UK (36.2%) or

India (25.5%). In Time 2, 35.6% of nurses reported that they received their pre-registration training overseas, with the Philippines (33.3%) indicated as the overseas' country for pre-registration accreditation, followed by the UK (22.9%). At Time 1, and 2, over half of respondents worked 12-hour day shifts, (50.5%, 61.1% respectively)

For Hospital 7 (IU) at Time 1, 52.9% of respondents stated they had received their training overseas with the UK indicated as the country where this was most attained. Similarly, at Time 2, of the staff who indicated that they had received their pre-registration training overseas, this was again predominantly in the UK (47.6%). Staff were also asked about their shift type (see Table 4.5.1.2). Most respondents indicated at that the shifts most frequently worked were 12-hour day shifts across the two time points (73.3%, 66.7% respectively). This is reflective of the IU as the vast majority of care is provided on a day basis from 8am to 8pm.

Table: 4.5.1.1: Profile of respondents

	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
	(n = 51)	(n = 47)	(n = 43)	(n = 38)	(n = 43)	(n = 50)	(n = 137)	(n = 135)
<b>Response rate, %</b>	53.1	51.1	73.3	73.1	69.7	60.9	43.2	59.2
<b>Job Title, n (%)</b>								
<b>CNM</b>	7 (13.7)	7 (15.2)	13 (30.2)	14 (36.8)	10 (23.3)	15 (28.8)	30 (21.9)	36 (26.5)
<b>RN</b>	38 (74.5)	30 (65.2)	24 (55.8)	22 (57.9)	30 (69.8)	34 (65.4)	92 (67.2)	86 (63.2)
<b>HCA</b>	6 (11.8)	9 (19.6)	6 (14.0)	2 (5.3)	3 (7.0)	3 (5.8)	15 (10.9)	14 (10.3)
<b>Nursing Qualifications (RNs), n (%)</b>								
<b>Registered nurse – cert.</b>								
<b>Registered</b>	2 (4.4)	0 (0.0)	4 (10.8)	4 (11.1)	1 (2.5)	2 (4.4)	7 (5.7)	6 (5.0)
<b>nurse – diploma</b>	5 (11.1)	1 (2.6)	3 (8.1)	6 (16.7)	1 (2.5)	1 (2.2)	9 (7.4)	8 (6.6)
<b>Registered</b>	19 (42.2)	20 (51.3)	11 (29.7)	11 (30.6)	19 (47.5)	20 (44.4)	49 (40.2)	51 (42.1)
<b>nurse – degree</b>								
<b>Post-graduate</b>	4 (8.9)	2 (5.1)	3 (8.1)	4 (11.1)	1 (2.5)	3 (6.7)	8 (6.6)	9 (7.4)
<b>certificate</b>								
<b>Post-graduate</b>	11 (24.4)	11 (28.2)	15 (40.5)	9 (25.0)	14 (35.0)	17 (37.8)	40 (32.8)	38 (31.4)
<b>diploma</b>								
<b>Masters in</b>	4 (8.9)	5 (12.8)	1 (2.7)	2 (5.6)	4 (10.0)	2 (4.4)	9 (7.4)	9 (7.4)
<b>Nursing</b>								
<b>Specialist qualification in emergency nursing, n (%)</b>								
<b>Yes</b>	19 (41.3)	16 (40.0)	17 (44.7)	15 (40.5)	19 (47.5)	28 (54.9)	55 (44.4)	59 (46.1)
<b>No</b>	25 (54.4)	23 (57.5)	19 (50.0)	21 (56.3)	21 (52.5)	19 (37.3)	65 (52.4)	63 (49.2)
<b>FETAC level 5 (HCA only)</b>	4 (80.0)	6 (75.0)	5 (100.0)	2 (100.0)	3 (100.0)	3 (100.0)	12 (92.3)	11 (84.6)
<b>Working Contract, n (%)</b>								



<b>Full-time</b>	42 (84.0)	40 (87.0)	34 (79.0)	30 (78.9)	37 (86.0)	41 (83.7)	113 (83.1)	111 (83.5)
<b>Part-time</b>	8 (16.0)	6 (13.0)	3 (6.9)	6 (15.8)	4 (9.3)	7 (14.3)	15 (11.0)	19 (14.3)
<b>Agency</b>	0 (0.0)	0 (0.0)	5 (11.6)	0 (0.0)	0 (0.0)	0 (0.0)	5 (3.7)	0 (0.0)
<b>Other</b>	0 (0.0)	0 (0.0)	1 (2.3)	2 (5.3)	2 (4.6)	1 (2.0)	3 (2.2)	3 (2.3)
<b>Gender, n (%)</b>								
<b>Female</b>	41 (82.0)	35 (76.1)	35 (81.4)	29 (76.3)	34 (79.1)	39 (79.6)	110 (80.9)	103 (77.4)
<b>Male</b>	9 (18.0)	11 (23.9)	8 (18.6)	9 (23.7)	9 (20.9)	10 (20.4)	26 (19.1)	30 (22.6)
<b>Years as a nurse/HCA mean (SD)</b>								
<b>As Nurse/HCA</b>	12.40 (10.39)	10.82 (8.46)	14.27 (8.58)	14.04 (8.55)	9.06 (7.28)	10.40 (7.18)	11.93 (9.10)	11.59 (8.14)
<b>Current</b>	6.96 (8.14)	6.78 (7.20)	6.95 (6.71)	8.22 (7.82)	5.33 (6.45)	6.32 (7.15)	6.46 (7.17)	7.01 (7.34)
<b>Hospital</b>								
<b>Current Unit</b>	6.65 (8.03)	6.24 (6.87)	5.47 (5.56)	6.88 (6.61)	4.20 (6.21)	5.21 (6.62)	5.51 (6.78)	6.03 (6.68)
<b>Agency</b>	1.21 (1.50)	1.60 (1.48)	3.30 (2.00)	3.00 (0.00)	1.56 (1.26)	1.69 (1.40)	2.19 (1.90)	1.79 (1.34)

Table: 4.5.1.1: (continued) Profile of respondents IU Hospital 7

Characteristic	Time 1 (n =17)	Time 2 (n=21)
Response rate, %	76.7	80.8
<b>Job Title, n (%)</b>		
CNM	1 (5.9)	4 (19.0)
RN	16 (94.1)	15 (71.4)
HCA	0 (0.0)	2 (9.5)
<b>Nursing Qualifications, n (%)</b>		
<b>RN only</b>		
Registered nurse – cert.	3 (20.0)	3 (14.3)
Registered nurse – diploma	1 (6.7)	2 (9.5)
Registered nurse – degree	2 (13.3)	4 (19.0)
Post-graduate certificate	2 (13.3)	2 (9.5)
Post-graduate diploma	7 (46.7)	6 (28.6)
Masters in Nursing	0 (0.0)	2 (9.5)

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<i>Specialist qualification in emergency nursing, n (%)</i>		
Yes	4 (23.5)	5 (23.8)
No	12 (70.6)	14 (66.7)
FETAC level 5 (HCA only)	-	
<i>Working Contract, n (%)</i>		
Full-time	13 (81.2)	19 (90.5)
Part-time	3 (18.7)	2 (9.5)
Agency	0 (0.0)	0 (0.0)
Other	0 (0.0)	0 (0.0)
<i>Gender, n (%)</i>		
Female	14 (87.5)	18 (85.7)
Male	2 (12.5)	3 (14.3)
<i>Years as a nurse/HCA</i>		
mean (SD)		
As Nurse/HCA	20.49 (8.92)	22.85 (12.58)
Current Hospital	6.89 (6.99)	11.28 (10.40)
Current Unit	3.84 (4.28)	6.18 (9.46)

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Table: 4.5.1.2: Profile of respondents' shift type

N (%)	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 135)	Time 2 (n = 135)
Day Shift (8 hours)	1 (2.0)	2 (4.5)	2 (4.7)	2 (4.0)	3 (7.0)	2 (4.1)	6 (4.4)	6 (4.6)
Day Shift (12 Hours)	25 (51.0)	27 (61.4)	19 (44.2)	19 (50.0)	24 (55.8)	34 (69.4)	68 (50.4)	80 (61.1)
Night shift (12 hours)	23 (46.9)	15 (34.1)	19 (44.2)	15 (39.5)	16 (37.2)	13 (26.5)	58 (43.0)	43 (32.8)
Other	0 (0.0)	0 (0.0)	3 (7.0)	2 (5.3)	0 (0.0)	0 (0.0)	3 (2.2)	2 (1.5)

Table: 4.5.1.2: (continued) Profile of respondents' shift type - Hospital 7

	Time 1 (n = 15)	Time 2 (n=21)
Day Shift (8 hours)	2 (13.3)	3 (14.3)
Day Shift (12 Hours)	11 (73.3)	14 (66.7)
Other	2 (13.3)	4(19.04)

#### **4.5.2 Nursing Staff-to-Patient Ratios**

Respondents were asked to self-report the minimum, maximum and average number of patients they had direct responsibility for on their most recent shift. Table 4.5.2.1 outlines the nurse-to-patient ratio reported by RNs and HCAs both before (Time 1) and following (Time 2) the introduction of the *Pilot Framework*.

In Time 1, an average of 14.87 patients per nurse per shift was reported with the average number of patients cared for, following staffing adjustments, decreasing to 11.27 at Time 2. A maximum patient caseload of 18.31 patients per shift was found across the three hospitals at Time 1, decreasing to 15.24 in Time 2. The minimum number of patients cared for also decreased from Time 1 (9.89) to Time 2 (7.05). Hospital 4 reported a high average patient caseload of 21.17 in Time 1, which decreased to 14.38 in Time 2. Hospital 5 decreased from 8.09 patients on average in Time 1 to 7.44 patients in Time 2. Similarly, Hospital 6 decreased from an average patient caseload of 12.29 patients to 11.05 patients in Time 2.

At Time 1, RNs on day shift (RN responses only) were responsible for an average of 12.36 patients per shift, while RNs on night shift had an average of 15.47 patients per shift. At Time 2, the average patient caseload for the day shift and night shift decreased (day shift=11.18; night shift=7.74). Hospital 6 also decreased in ratios from 10.42 to 9.39 (from Time 1 to Time 2) during the day shift. Moreover, Hospital 5 saw a slight increase in ratios during the day shift, increasing from 7.00 to 8.78 (Time 1 to Time 2).

In Hospital 7 for Time 1, an average of 9.11 patients per nurse per shift was reported, this increased to an average of 12.25 at Time 2. A maximum patient caseload of 12.83 patients per shift was found within the IU at Time 1, again this increased to 15.19 in Time 2. The minimum number of patients cared for by respondents within the IU also increased from Time 1 (6.00) to Time 2 (10.68).

As previously stated, while the IU does not operate overnight these may be patients who were awaiting transfer to other wards/units/departments or whose treatment lapsed into night-time shifts within the IU. At Time 1, RNs on day shift were responsible for an average of 10.57 patients per shift, while RNs on night shift had an average of 1.00 patient per shift. At Time 2, the average patient caseload for the day shift and night shift increased to 13.86 on day shift and 8.00 patients on night shifts. However, it should be noted that of the staff who responded, none worked a full night shift.

Table: 4.5.2.1: Number of Patients Cared for by Nurses and HCAs at Time 1 and Time 2 (EDs 4, 5 and 6)

	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 37)	Time 1 (n = 43)	Time 2 (n = 47)	Time 1 (n = 135)	Time 2 (n = 131)
<b>Minimum patients</b>	13.22 (17.10)	8.82 (16.03)	5.49 (7.43)	4.25 (3.06)	9.14 (13.23)	7.47 (12.19)	9.89 (14.15)	7.05 (12.20)
<b>Maximum patients</b>	26.31 (32.26)	20.30 (21.34)	8.92 (7.46)	9.11 (6.93)	15.98 (21.12)	14.98 (19.96)	18.31 (25.15)	15.24 (18.28)
<b>Average patients</b>	21.17 (31.06)	14.38 (19.69)	8.09 (7.74)	7.44 (5.21)	12.29 (15.69)	11.05 (14.06)	14.87 (22.82)	11.27 (14.99)
<b>Ave Patients per RN, day shift</b>	18.14 (17.66)	14.94 (23.80)	7.00 (2.39)	8.78 (6.51)	10.42 (15.49)	9.39 (11.67)	12.36 (14.94)	11.18 (16.24)
<b>Ave Patients per RN, night shift</b>	26.13 (43.58)	12.38 (10.71)	6.29 (3.37)	5.33 (2.19)	8.62 (3.59)	5.50 (3.94)	15.47 (29.99)	7.74 (7.32)

Table: 4.5.2.1: (continued) Number of Patients Cared for by Nurses and HCAs at Time 1 and Time 2 (IU)

Ratios, mean (SD)	Time 1 (n = 13)	Time 2 (n=7)
<b>Minimum patients</b>	6.00 (3.30)	10.68 (10.17)
<b>Maximum patients</b>	12.83 (9.79)	15.19 (11.59)
<b>Average patients</b>	9.11 (7.29)	12.25 (7.95)
<b>Ave Patients per RN per shift Day Shift</b>	10.57 (7.52)	13.86 (9.05)
<b>Ave Patients per RN per shift Night Shift</b>	1.00 (0.00)	8.00 (0.00)

### **4.5.3 Nursing Work Index**

The Nursing Work Index (NWI) (Lake, 2002) was employed to assess characteristics of the nursing work environment. The NWI is composed of 31 items across five subscales: Nurse Participation in Hospital Affairs; Nursing Foundations for Quality of Care; Nurse Manager Ability, Leadership, and Support of Nurses; Staffing and Resource Adequacy and Collegial Nurse-Doctor Relations. Each item was scored on a scale of 1 to 4 where 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree. A mean for each subscale was calculated to facilitate comparisons across the subscales. Higher scores were indicative of a positive work environment with a mean of 2.5 considered a neutral midpoint on the 4-point scale.

All five domains of the NWI saw improvements in the overall average scores from Time 1 to Time 2. The mean of each subscale can be seen in Table 4.5.3.1 at hospital level and overall, for all three hospitals for Time 1 and Time 2. For Time 1, the highest scores were reported for Nurse Manager, Leadership and Support, while in Time 2 the highest scores were seen for Collegial Nurse-Doctor Relations. The lowest scores were consistently reported for Staffing and Resource Adequacy across all three hospitals and at both time points; however, scores on this domain improved at Time 2.

In baseline data, Hospital 4 had the greatest increase in overall scores from Time 1 to Time 2. While Staffing and Resource Adequacy had a low mean score of 1.73 in Time 1, this was the greatest increase from Time 1 to Time 2 (mean 2.26). The highest score in Hospital 4 was for Collegial Nurse-Doctor Relations at 3.17 at Time 1 and 3.22 at Time 2; the three remaining subscales were scored between 2.37 and 2.64 at Time 1 and 2.74 and 2.89 at Time 2.

Hospital 5 remained relatively stable from Time 1 (2.36) to Time 2 (2.38) for Nurse Participation in Hospital Affairs. This was also apparent for Staffing and Resource Adequacy (Time 1 = 1.94, Time 2 = 1.98). The remaining three subscales Nursing Foundations for Quality of Care (2.52 to 2.61), Nurse Manager Ability, Leadership and Support (2.41 to 2.57) and Collegial Nurse-Doctor Relations (2.52 to 2.74) all increased slightly from Time 1 to Time 2.

Hospital 6 also reported an increase in each of the subscales from Time 1 to Time 2. Nurse Participation in Hospital Affairs and Nursing Foundation for Quality of Care remained relatively similar with very slight increases of 0.05 and 0.03 points respectively. Nurse Manager Ability and Leadership increased from 2.88 in Time 1 to 2.99 in Time 2, while Collegial Nurse-Doctor Relations increased from 3.08 to 3.35, from Time 1 to Time 2. The subscale Staffing and Resource Adequacy showed the largest increase of 0.61 points from 1.65 in Time 1 to 2.26 in Time 2.

Hospital 7 (IU) for Time 1, the highest scores were reported for Collegial Nurse-Doctor Relations, while in Time 2 the highest scores were reported for Nursing Foundations for Quality of Care. The lowest scores reported on the NWI at Time 1 was for Staffing and Resource Adequacy (2.21); however, increased by 0.54 points to 2.75 at Time 2, with the lowest scores at Time 2 being reported for Nurse Participation in Hospital Affairs (2.61).

At Time 2, the IU saw a decrease in scores for three items on the NWI: Nurse Participation in Hospital Affairs, Nurse Manager Ability, Leadership, and Support of Nurses and Collegial Nurse-Doctor Relations all decreased slightly at Time 2. However, Staffing and Resource Adequacy considerably increased as well as Nursing Foundations for Quality of Care (increased by 0.25) from Time 1 to Time 2. It also should be noted that both Time 1 and Time 2 cross-sectional data from staff were above the mid-point values for the NWI and were quite positive prior to the introduction of the Framework except for Staffing and Resource Adequacy which saw an improvement when Time 2 is compared to Time 1.

Table: 4.5.3.1: Nursing Work Index Scores for EDs at Time 1 and Time 2

NWI, mean (SD) RN responses only	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
	(n = 44)	(n = 39)	(n = 37)	(n = 36)	(n = 39)	(n = 47)	(n = 135)	(n = 122)
Nurse Participation in Hospital Affairs	2.37 (0.45)	2.74 (0.54)	2.36 (0.46)	2.38 (0.57)	2.74 (0.86)	2.79 (0.57)	2.49 (0.64)	2.65 (0.57)
Nursing Foundations for Quality of Care	2.54 (0.40)	2.81 (0.44)	2.52 (0.44)	2.61 (0.48)	2.69 (0.74)	2.72 (0.49)	2.59 (0.55)	2.72 (0.48)
Nurse Manager Ability, Leadership, and Support of Nurses	2.64 (0.55)	2.89 (0.54)	2.41 (0.47)	2.57 (0.59)	2.88 (0.49)	2.99 (0.53)	2.65 (0.53)	2.83 (0.57)
Staffing and Resource Adequacy	1.73 (0.75)	2.26 (0.54)	1.94 (0.60)	1.98 (0.60)	1.65 (0.66)	2.26 (0.73)	1.77 (0.77)	2.17 (0.65)
Collegial Nurse-Doctor Relations	3.17 (0.46)	3.22 (0.43)	2.52 (0.51)	2.74 (0.52)	3.08 (0.56)	3.35 (0.44)	2.94 (0.58)	3.13 (0.53)

Table: 4.5.3.1: (continued) Nursing Work Index Scores for the IU at Time 1 and Time 2 - Hospital 7

NWI, mean (SD)	Time 1 (n=14)	Time 2 (n=21)
Nurse Participation in Hospital Affairs	2.68 (0.28)	2.61 (0.33)
Nursing Foundations for Quality of Care	2.77 (0.38)	3.04 (0.25)
Nurse Manager Ability, Leadership, and Support of Nurses	2.95 (0.35)	2.87 (0.43)
Staffing and Resource Adequacy	2.21 (0.50)	2.75 (0.56)
Collegial Nurse-Doctor Relations	3.05 (0.39)	3.02 (0.36)



#### 4.5.4 Time Availability and Quality of Care

Single item measures were used to assess staff (RNs and HCAs) perceptions of time available to deliver care, additional time required to deliver care and the quality of care delivered on the last shift worked both before (Time 1) and following the introduction (Time 2) of the *Pilot Framework*.

RNs and HCAs were asked to rate the time available to them to deliver care on their last shift on a 3-point scale ranging from “less time than usual” to “more time than usual.” At Time 1, the majority of staff (44.4%) reported having “less time than usual” available to them to provide care on their last shift while 43.0% of staff reported having the “same amount of time as usual” available to provide care to patients on their last shift. At Time 2, over half of staff (59.7%) reported that they had “about the same time as usual” available to them to provide care, while 29.1% of staff reported having “less time than usual” to provide patient care during their last shift. Table 4.5.4.1 shows results for Time 1, and 2. During baseline, 35.3% of staff in Hospital 4 indicated that they had “less time than usual” while 47.1% indicated they had the “same amount of time”, which increased to 60.9% reporting the “same amount of time” as usual and 29.1% reporting “less time than usual” during Time 2. Likewise, those reporting the “same amount of time as usual” returned to baseline figures (48.6%). The proportion of staff reporting “less time than usual” in Hospital 5 decreased from 51.2% to 36.8%, with more staff indicating that they had the “same amount of time” in Time 2 (57.9%) compared to Time 1 (39.5%). Hospital 6 followed a similar pattern to Hospital 5 between Time 1 and 2, with a decrease from 50.0% in Time 1 to 30.0% in Time 2 for “less time than usual”. Subsequently, Time 2 saw an increase from 40.5% to 60.0% of respondents in Hospital 6 indicating that they had the “same amount of time as usual” to deliver care. However,

Staff were asked to make an approximation regarding how much more time they required in order to provide necessary care to patients as per their nursing care plan on a 6-point scale ranging from “No more time needed” to “Greater than 60 minutes.” At Time 1, 94.8% of staff reported that they required additional time to provide patient care across all Emergency Departments. There was a slight decrease to 90.8% of staff indicated that they required additional time to provide patient care in Time 2. The majority of staff in reported that they required an additional 15 to 30 minutes per shift to provide the quality of care as detailed in their nursing care plans across (44.0%, 48.9%, respectively). In Hospital 4, 5.9% of respondents indicated that no extra time was needed, which increased to 11.1% in Time 2. In Hospital 5, 7.1% of staff indicated that they required no extra time in Time 1, however this dropped to 0.0% in Time 2. Only 2.4% of staff in Hospital 6 indicated that they required no extra time to deliver care at Time 1, which increased to 14.3% at Time 2.

Staff were asked to rate the quality of care provided on their last shift on a 4-point scale ranging from “poor” to “excellent.” The majority of staff across all Emergency Departments rated the quality of care provided on their last shift as either “good” (Time 1: 43.7%, Time 2: 50.7%) or “fair” (Time 1: 39.3%, Time 2: 32.1%). While the majority of respondents reported ‘fair’ quality of care after ‘good’ quality of care, this decreased by 7.2% between Time points. Those who reported excellent quality of care doubled from 8.1% in Time 1 to 16.4% in Time 2. In Hospital 4, ratings of “good” quality of care

increased by 15.2% from Time 1 to Time 2. Respondents reporting “excellent” quality of care, saw an increase of 3.2% evident between Time 1 and Time 2 which continued to increase by 1.5%. Hospital 5 reported a continued decreased in ratings of “good” from Time 1 (48.8%) to Time 2 (39.5%). However, an 8.2% increase in ratings of “excellent” was seen from Time 1 to Time 2. Hospital 6’s self-reported quality of care increased from Time 1 to Time 2, with the quality of care rated as “good” increasing by 13% and “excellent” increasing by 12.5%. However, Quality of Care rating of “good” decreased 11.9%, and “excellent” ratings decreased by 1.8%.

A single-item measure asked staff to give the Emergency Department in which they work an overall grade for patient safety on a 5-point scale ranging from “failing” to “excellent.” At Time 1, the majority of staff gave their Emergency Department a grade of “acceptable” (37.5%) for patient safety, which remained stable at Time 2 (36.1%). Combined, a total of 12.5% of staff grading their Emergency Department as either “very good” or “excellent” in its provision of patient safety during Time 1; this increased to 29.4% in Time 2. Each hospital showed an increase in “excellent” ratings of patient’s safety by at least 5% from Time 1 to Time 2 (Hospital 4=5%; Hospital 5=5.3%; Hospital 6=5.8%).

Staff were asked to reflect on the quality of patient care provided in the last 6 months in their department and state on a scale whether it had “deteriorated,” “remained the same,” or “improved”. At Time 1, 45.5% of staff stated that the quality of care provided in their Emergency Department “remained the same” which decreased slightly to 40.9% in Time 2. While 50.0% of staff indicated that quality of care provided had “deteriorated” in Time 1, there was a shift in Time 2 to 40.2% (compared to 4.5% in Time 1) of staff stating that the quality of care had “improved” in the last 6 months, and 18.2% stating that care had “deteriorated”. While each hospital showed a substantial increase in “improved” ratings of quality of care over the last 6 months, Hospital 4 had the largest increase from 4.1% in Time 1 to 48.9% in Time 2. This is followed closely by Hospital 6 (Time 1=4.8%; Time 2=42.0%), and finally Hospital 5 (Time 1=4.8%; Time 2=27.0%). While there was a decrease in “improved” ratings of quality of care across all hospitals, Hospital 4 continued to have a higher “improved” ratings of quality of care from baseline (15.9% increase).

For the IU in Hospital 7, at Time 1, a third of staff (33.3%) reported having “less time than usual” available to them to provide care on their last shift, which decreased to 14.3% of staff in T2. Staff were asked to make an approximation regarding how much more time they required in order to provide necessary care to patients as per their nursing care plan on a 6-point scale ranging from “No more time needed” to “Greater than 60 minutes.” At Time 1, 85.7% of staff reported that they required additional time to provide patient care across all Emergency Departments. This decreased to 76.2% of staff indicating that they required additional time to provide patient care in Time 2. The majority of staff in Time 1 (35.7%) reported that they required an additional 15 to 30 minutes per shift to provide the quality of care as detailed in their nursing care plans, which increased to 42.9% in Time 2.

Staff were asked to rate the quality of care provided on their last shift on a 4-point scale ranging from “poor” to “excellent.” The majority of staff across the IU rated the quality of care provided on their last shift as either “good” (Time 1: 66.7% Time 2: 47.6%) or “excellent” (Time 1: 20.0%, Time 2: 33.3%).

A single-item measure asked staff to give the IU in which they work an overall grade for patient safety on a 5-point scale ranging from “failing” to “excellent.” At Time 1, the majority of staff gave their Emergency Department a grade of “acceptable” (50.0%) for patient safety, which decreased to 38.1% in Time 2. The majority of staff reported patient safety as “very good” in Time 2 (42.9%). Combined, a total of 42.9% of staff graded their IU as either “very good” or “excellent” in its provision of patient safety during Time 1; this increased to 61.9% in Time 2.

Staff were asked to reflect on the quality of patient care provided in the last 6 months in their department and state on a scale whether it had “deteriorated,” “remained the same,” or “improved”. At Time 1, 80.0% of staff stated that the quality of care provided in their Emergency Department “remained the same” which decreased to 52.4% in Time 2 and increased to 85.7% in time 3. Staff reporting “deteriorated” quality of care remained consistent between Time 1 and Time 2 (13.3%; 14.3%).

Table: 4.5.4.1: Respondents' Perceptions of Time Availability and Quality of Care at Time 1 and Time 2 (Emergency Departments)

Quality of care, n (%)	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n=47)	Time 1 (n = 43)	Time 2 (n=38)	Time 1 (n = 43)	Time 2 (n=50)	Time 1 (n = 135)	Time 2 (n = 135)
<b>Time available to deliver care</b>								
<i>Less time than usual</i>	18 (35.3)	10 (21.7)	22 (51.2)	14 (36.8)	21 (50.0)	15 (30.0)	60 (44.4)	39 (29.1)
<i>Same amount of time</i>	24 (47.1)	28 (60.9)	17 (39.5)	22 (57.9)	17 (40.5)	30 (60.0)	58 (43.0)	80 (59.7)
<i>More time than usual</i>	9 (17.6)	8 (17.4)	4 (9.3)	2 (5.3)	4 (9.5)	5 (10.0)	17 (12.6)	15 (11.2)
<b>Additional time needed</b>								
<i>No more time needed</i>	3 (5.9)	5 (11.1)	3 (7.1)	0 (0.0)	1 (2.4)	7 (14.3)	7 (5.2)	12 (9.1)
<i>Less than 15 minutes</i>	11 (21.6)	9 (20.0)	4 (9.5)	8 (21.1)	2 (4.9)	4 (8.2)	17 (12.7)	21 (15.9)
<i>15 to 30 minutes</i>	24 (4.1)	22 (48.9)	20 (47.6)	20 (52.6)	15(36.6)	16 (32.7)	59 (44.0)	58 (43.9)
<i>31 to 45 minutes</i>	5 (9.8)	5 (11.1)	5 (11.9)	3 (7.9)	12 (29.3)	10 (20.4)	22 (16.4)	18 (13.6)
<i>46 to 60 minutes</i>	2 (3.9)	1 (2.2)	6 (14.3)	4 (10.5)	5 (12.2)	5 (10.2)	13 (9.7)	10 (7.6)
<i>Greater than 60 minutes</i>	6 (11.8)	3 (6.7)	4 (9.5)	3 (7.9)	6 (14.6)	7 (14.3)	16 (11.9)	13 (9.8)
<b>Quality of care</b>								
<i>Poor</i>	5 (10.0)	0 (0.0)	3 (7.0)	1 (2.6)	4 (9.5)	1 (2.0)	12 (8.9)	2 (1.5)
<i>Fair</i>	14 (28.0)	9 (19.6)	18 (41.9)	18 (47.4)	21 (50.0)	16 (32.0)	53 (39.3)	43 (32.1)
<i>Good</i>	25 (50.0)	30 (65.2)	21 (48.8)	15 (39.5)	13 (31.0)	22 (44.0)	59 (43.7)	67 (50.0)
<i>Excellent</i>	6 (12.0)	7 (15.2)	1 (2.3)	4 (10.5)	4 (9.5)	11 (22.0)	11 (8.1)	22 (16.4)
<b>Grade of patient safety</b>								
<i>Failing</i>	15 (29.4)	1 (2.2)	9 (20.9)	8 (21.1)	11 (26.2)	0 (0.0)	35 (25.7)	9 (6.8)
<i>Poor</i>	11 (21.6)	12(26.1)	10 (23.3)	11 (28.9)	12 (28.6)	14 (28.6)	33 (24.3)	37 (27.8)
<i>Acceptable</i>	18 (35.3)	14 (30.4)	19 (44.2)	13 (34.2)	14 (33.3)	21 (42.9)	51 (37.5)	48 (36.1)

<b>Very good</b>	4 (7.8)	14 (30.4)	5 (11.6)	4 (10.5)	4 (9.5)	10 (20.4)	13 (9.6)	28 (21.1)
<b>Excellent</b>	3 (5.9)	5 (10.9)	0 (0.0)	2 (5.3)	1 (2.4)	4 (8.2)	4 (2.9)	11 (8.3)
<b>Quality of care, last 6 months</b>								
<b>Deteriorated</b>	23 (46.9)	8 (17.8)	22 (52.4)	11 (29.7)	21 (51.2)	6 (12.0)	66 (50.0)	25 (18.9)
<b>Remained the same</b>	24 (49.0)	15 (33.3)	18 (42.9)	16 (43.2)	18 (43.9)	23 (46.0)	60 (45.5)	54 (40.9)
<b>Improved</b>	2 (4.1)	22 (48.9)	2 (4.8)	10 (27.0)	2 (4.9)	21 (42.0)	6 (4.5)	53 (40.2)

Table: 4.5.4.1: (continued) Respondents' Perceptions of Time Availability and Quality of Care at Time 1 and Time 2 (Injury Unit)

Quality of care, n (%)	Time 1 (n = 17)	Time 2 (n = 21)
<b>Time available to deliver care</b>		
Less time than usual	5 (33.3)	3 (14.3)
Same amount of time	9 (60.0)	16 (76.2)
More time than usual	1 (6.7)	2 (9.5)
<b>Additional time needed</b>		
No more time needed	2 (14.3)	5 (23.8)
Less than 15 minutes	4 (28.6)	5 (23.8)
15 to 30 minutes	5 (35.7)	9 (42.9)
31 to 45 minutes	2 (14.3)	1 (4.8)
46 to 60 minutes	0 (0.0)	1 (4.8)
Greater than 60 minutes	1 (7.1)	0 (0.0)
<b>Quality of care</b>		
Poor	0 (0.0)	0 (0.0)
Fair	2 (13.3)	4 (19.0)
Good	10 (66.7)	10 (47.6)
Excellent	3 (20.0)	7 (33.3)
<b>Grade of patient safety</b>		
Failing	0 (0.0)	0 (0.0)
Poor	1 (7.1)	0 (0.0)

<b>Acceptable</b>	7 (50.0)	8 (38.1)
<b>Very good</b>	2 (14.3)	9 (42.9)
<b>Excellent</b>	4 (28.6)	4 (19.0)
 <i><b>Quality of care, last 6 months</b></i>		
<b>Deteriorated</b>	2 (13.3)	3 (14.3)
<b>Remained the same</b>	12 (80.0)	11 (52.4)
<b>Improved</b>	1 (6.7)	7 (33.3)

#### **4.5.5 Care Left Undone and Delayed**

The data reported on care left undone events (CLUEs) and care delayed (CD) are derived from respondents with registered nurse qualification only (including CNMs) as many of these tasks are specific to the RN role. Nurses were asked to identify care activities which had been necessary but left undone and/or delayed on their most recent shift due to lack of time.

The mean number of items of care left undone and the number of shifts where at least one item of care was left undone is reported in Table 4.5.5.1 at a total level and across each separate Emergency Department. Baseline measurements showed 78.8% of nurses reported that at least one item of care was left undone in Time 1 and 72.5% in Time 2. Overall, baseline measurements revealed that, in Time 1 an average of 3.32 necessary care activities were left undone per shift due to a lack of time to complete these tasks, whereas Time 2 this reduced to, on average, 2.76 activities left undone. The number of items of care left undone in Hospitals 5 (2.75 to 2.78) remained relatively unchanged between Time 1 and 2. Hospital 6 reported 3.05 items of care left undone in Time 1 with a brief decrease in Time 2 (2.80). Hospital 4 had the greatest change in activities left undone between the two time points, showing a decrease from 4.05 in Time 1 to 2.68 in Time 2.

The mean number of necessary care activities which were delayed per shift and the number of shifts where at least one care activity was delayed are displayed in Table 4.5.5.2. In Time 1, 94.2% of nurses reported that the provision of at least one item of necessary care was delayed during their last shift. This decreased to 89.2% of nurses reporting at least one item of care delayed in Time 2. Baseline reports by nurses revealed that in Time 1, on average, a total of 9.95 care tasks per shift were delayed which decreased to 7.32 in Time 2. During Time 1, Hospital 5 reported 10.67 items of Care Delayed which reduced to 9.28 in Time 2. However, this continued to increase past baseline figures to 11.15. Hospital 6 showed a larger decrease in items delayed, dropping from 9.58 items in Time 1 to 6.94 in Time 2. Hospital 4 had the largest change, showing a decrease from 9.66 activities delayed in Time 1 to 6.24 in Time 2.

A single item also assessed if staff meal breaks had been missed or delayed due to lack of time (Table 4.5.5.3). In Time 1, the majority of staff reported having missed or delayed meal breaks on their most recent shift (40.7% and 36.6% respectively). While the percentage of staff reporting missed meal break decreased in Time 2 (21.8%), the percentage of staff that reported having a delayed meal break increased (47.1%). A small proportion (Time 1 = 8.1%, Time 2 = 6.7%) reported that they had both a missed and a delayed meal break. In Time 1, 14.6% reported neither a missed nor delayed meal break on their last shift, which increased to 24.4% in Time 2. Hospital 4 and 6 showed an increase in staff reporting neither missed nor delayed breaks (H4: 6.7% to 18.4%; H6: 5.0% to 32.6%), with hospital 6 showing the largest change of a 27.6% increase between the two time points. Hospital 5 showed a decrease in staff reporting neither missed or delayed meal breaks from Time 1 (34.2%) to Time 2 (20.2%).

Across all Emergency Departments, the items of care most frequently reported as left undone in Time 1 were educating patients and their families (51.7%), oral hygiene care (51.6%), and engaging in comfort talk with patients and/or their families (42.5%).

Similarly, educating patients and/or their families (45.8%), oral hygiene (42.5%), and comfort talk with patients and/or their families (42.5%) were reported as activities most frequently left undone in Time 2. Finally, educating patients and/or families (55.9%), Providing comfort/ talking with patients (52.9%), and Adequate monitoring/ recording of nutritional/ hydration status (35.9%). The items of care reported as least frequently left undone across all three Emergency Departments for Time 1 were the provision of medications on time (4.2%), pain management (3.3%) and the monitoring of deteriorating patients (5.8%). Pain management (0.8%; 3.0%), administration of patient medications on time (1.7%; 4.5%), and observation of vital signs (4.2%; 6.1%) were the least reported as left undone for Time 2. See Tables 4.5.5.3 and 4.5.5.4 for frequencies of Care Left Undone and Care Delayed.

Baseline measurements for the IU in Hospital 7 showed 36.4% of nurses reported that at least one item of care was left undone in Time 1, which decreased dramatically to 15.8% in Time 2. Overall, baseline measurements revealed that, in Time 1 an average of 1.36 necessary care activities were left undone per shift due to a lack of time to complete these tasks, whereas Time 2 reported, on average, 0.21 activities left undone.

The mean number of necessary care activities which were delayed per shift and the number of shifts where at least one care activity was delayed are displayed in Table 4.5.5.3-4. In Time 1, 81.8% of nurses reported that the provision of at least one item of necessary care was delayed during their last shift. This decreased to 63.2% of nurses reporting at least one item of care delayed in Time 2. Baseline reports by nurses revealed that in Time 1, on average, a total of 4.73 care tasks per shift were delayed which decreased to 2.79 in Time 2.

Across the IU, the items of care most frequently reported as left undone in Time 1 were providing comfort talk/ talking with patients (36.4%), and oral hygiene care (27.3%). For Time 2 items that were reported as undone decreased from Time 1. Adequate patient surveillance, providing comfort talk/ talking with patients, education patients and/or families, and oral hygiene were reported as the only activities left undone at 5.3%.



Table: 4.5.5.1: Care left undone and care delayed in Emergency Departments – Time 1 and Time 2

Missed Care	Hospital 4		Hospital 5		Hospital 6		Total	
RN responses only	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
	(n = 44)	(n = 47)	(n = 37)	(n = 38)	(n = 39)	(n = 50)	(n = 135)	(n = 135)
Number of activities undone, mean (SD)	4.05 (3.06)	2.68 (3.28)	2.75 (3.48)	2.78 (2.75)	3.05 (2.48)	2.80 (2.66)	3.32 (3.05)	2.76 (2.87)
Shifts with at least one item undone, n (%)	38 (88.4)	27 (71.1)	22 (61.1)	27 (75.0)	33 (84.6)	33 (71.7)	93 (78.8)	87 (72.5)
Number of activities delayed, mean (SD)	9.66 (4.18)	6.24 (4.25)	10.67 (5.01)	9.28 (4.86)	9.58 (3.76)	6.72 (4.17)	9.95 (4.32)	7.32 (4.54)
Shifts with at least one item delayed, n (%)	42 (95.5)	32 (84.2)	33 (89.2)	34 (94.4)	38 (97.4)	41 (89.1)	113 (94.2)	107 (89.2)

Table 4.5.5.1: (continued) Care left undone and care delayed – Time 1 and Time 2 – Hospital 7 (Injury Unit)

Missed Care		
RN responses only		
	Time 1 (n = 17)	Time2 (n = 21)
Number of activities undone, mean (SD)	1.36 (2.54)	0.21 (0.54)
Shifts with at least one item undone, n (%)	4 (36.4)	3 (15.8)
Number of activities delayed, mean (SD)	4.73 (3.74)	2.79 (3.10)
Shifts with at least one item delayed, n (%)	9 (81.8)	12 (63.2)

Table 4.5.5.2: Missed and/or Delayed meal breaks in Emergency Departments – Time 1 and Time 2

Meal Breaks	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 44)	Time 2 (n = 47)	Time 1 (n = 37)	Time 2 (n = 38)	Time 1 (n = 39)	Time 2 (n = 50)	Time 1 (n = 135)	Time 2 (n = 135)
RN responses only								
Meal break missed, n (%)	21 (46.7)	11 (28.9)	14 (36.8)	8 (22.9)	15 (37.5)	7 (15.2)	50 (40.7)	26 (21.8)
Meal break delayed, n (%)	11 (24.4)	17 (44.7)	11 (28.9)	18 (51.4)	23 (57.5)	21 (45.7)	45 (36.6)	56 (47.1)
Missed and delayed, n (%)	10 (22.2)	3 (7.9)	0 (0.0)	2 (5.7)	0 (0.0)	3 (6.5)	10 (8.1)	8 (6.7)
Neither missed nor delayed, n (%)	3 (6.7)	7 (18.4)	13 (34.2)	7 (20.2)	2 (5.0)	15 (32.6)	18 (14.6)	29 (24.4)

Table 4.5.5.2: (continued) Missed and/or delayed meal breaks – Time 1 and Time 2 – Hospital 7 (Injury Unit)

Meal Breaks		
RN responses only		
	Time 1 (n = 17)	Time 2 (n = 21)
Meal break missed, n (%)	3 (21.4)	1 (5.0)
Meal break delayed, n (%)	7 (50)	7 (35.0)
Missed and delayed, n (%)	0 (0.0)	0 (0.0)
Neither missed nor delayed, n (%)	4 (28.6)	12 (60.0)

In Hospital 4, the activities with most frequently left undone was educating patients and/or families, oral hygiene, and adequate monitoring/ recording of nutritional/ hydration status in time 1. This varied only slightly in Time 2 with providing comfort/ talking with patients replacing adequate monitoring/ recording of nutritional/ hydration status as frequently left undone. Across Hospitals 5 and 6, the highest activities left undone were For Time 1, and 2 were oral hygiene, educating patients and/or families and providing comfort/ talking with patients (see Table 4.5.5.3).

Table 4.5.5.4 presents a breakdown of the frequency of care delayed per hospital. The activities with the highest delay rates in hospital for included vital signs observation (79.5%), administration of medication (72.5%), and adequate monitoring/ recording of nutritional/ hydration status (58.3%) in Time 1. Supporting patients with physical needs (65.8%), recording clinical practice/ developing and updating nursing care documentation (50.0%), and adequate patient surveillance (50.0%) had the highest delay rates for Time 2. Recording clinical practice/ developing and updating nursing care documentation (83.8%), monitoring of deteriorating patients (81.1%), and pain management (78.4%) were reported as activities with the highest delay rates in Hospital 5 during Time 1. For Time 2, recording clinical practice/ developing and updating nursing care documentation remained the highest for delay rates (77.8%) along with vital sign observations (77.8%), followed by supporting patients with physical needs (75.0%). Similarly, recording clinical practice/ developing and updating nursing care documentation had the highest delay rates in Hospital 6 for both Time 1 (82.1%) and Time 2 (78.3%), followed by vital signs observation (79.5%) and supporting patients with physical needs (76.9%) for Time 1, and Adequate monitoring/ recording of nutritional/ hydration status (74.2%) and supporting patients with physical needs (73.3%) for Time 2. In general, both hospitals reported an overall decrease in activities delayed between Time 1 and Time 2. Hospital 6 reported no increase in delay of activities, and Hospital 5 only had a small increase in delay rates for vital sign observations (Time 1 = 75.1%; Time 2 = 77.8%) and discharge (Time 1 = 54.1%; Time 2 = 61.1%).

Table 4.5.5.3: Number and frequency of each item of care left undone in Times 1 and 2 – Emergency Departments.

Care Left Undone RN responses only	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 44)	Time 2 (n = 47)	Time 1 (n = 37)	Time 2 (n = 38)	Time 1 (n = 39)	Time 2 (n = 50)	Time 1 (n = 135)	Time 2 (n = 135)
Adequate patient surveillance	12 (27.3)	8 (21.1)	6 (16.2)	9 (25.0)	8 (20.5)	13 (27.7)	26 (21.7)	30 (24.8)
Adequate/ regular monitoring of deteriorating patients	3 (6.8)	3 (7.9)	2 (5.4)	2 (5.6)	2 (5.1)	1 (2.2)	7 (5.8)	6 (5.0)
Vital sign observations	4 (9.1)	5 (13.2)	3 (8.1)	0 (0.0)	1 (2.6)	0 (0.0)	8 (6.7)	5 (4.2)
Administration of patient medications on time	3 (6.8)	2 (5.3)	1 (2.7)	0 (0.0)	1 (2.6)	0 (0.0)	5 (4.2)	2 (1.7)
Supporting patients with physical needs	12 (27.3)	2 (5.3)	4 (10.8)	3 (8.3)	5 (12.8)	7 (15.2)	21 (17.5)	12 (10.0)
Recording clinical practice/ developing and updating nursing care documentation	9 (20.5)	5 (13.2)	3 (8.1)	2 (5.6)	4 (10.3)	2 (4.3)	16 (13.3)	9 (7.4)
Adequate monitoring/ recording of nutritional/ hydration status	18 (41.9)	9 (23.7)	9 (25.0)	10 (27.8)	9 (23.1)	11 (23.9)	36 (30.0)	30 (25.0)
Providing comfort/ talking with patients	18 (40.9)	16 (34.8)	15 (40.5)	19 (52.8)	18 (43.6)	16 (34.8)	51 (42.5)	51 (42.5)
Educating patients and/or families	26 (59.1)	16 (42.1)	17 (45.9)	17 (47.2)	19 (48.7)	22 (47.8)	62 (51.7)	55 (45.8)
Pain assessment	4 (9.1)	1 (2.6)	3 (8.1)	3 (8.3)	3 (7.7)	3 (6.5)	10 (8.3)	7 (5.8)
Pain management	3 (6.8)	1 (2.6)	1 (2.7)	0 (0.0)	0 (0)	0 (0.0)	4 (3.3)	1 (0.8)
Planning care	9 (20.5)	4 (11.1)	6 (16.2)	4 (11.1)	8 (20.5)	13 (27.7)	23 (19.2)	21 (17.4)
Preparing patients and families for discharge	14 (31.8)	7 (18.4)	9 (24.3)	5 (13.9)	12 (30.8)	12 (26.1)	35 (29.2)	24 (20.0)

Skin care and/or assessment of pressure ulcers	5 (11.4)	6 (12.8)	3 (8.1)	5 (13.9)	4 (10.3)	4 (8.7)	12 (10.0)	15 (12.5)
Undertaking procedures/ treatments e.g. wound care	6 (13.6)	3 (7.9)	5 (13.5)	5 (13.9)	4 (10.3)	4 (8.7)	15 (12.5)	12 (10.0)
Oral Hygiene	29 (65.9)	14 (36.8)	13 (35.1)	16 (44.4)	20 (51.3)	21 (45.7)	62 (51.6)	51 (42.5)

Table 4.5.5.3: (continued) Care Left Undone Events Hospital 7 – Injury Unit

RN responses only n (%)	Time 1 (n = 17)	Time 2 (n = 21)
Adequate patient surveillance	1 (9.1)	1 (5.3)
Adequate/ regular monitoring of deteriorating patients	0 (0.0)	0 (0.0)
Vital sign observations	0 (0.0)	0 (0.0)
Administration of patient medications on time	0 (0.0)	0 (0.0)
Supporting patients with physical needs	2 (18.2)	0 (0.0)
Recording clinical practice/ developing and updating nursing care documentation	0 (0.0)	0 (0.0)
Adequate monitoring/ recording of nutritional/ hydration status	2 (18.2)	0 (0.0)
Providing comfort/ talking with patients	4 (36.4)	1 (5.3)
Educating patients and/or families	1 (9.1)	1 (5.3)
Pain assessment	0 (0.0)	0 (0.0)
Pain management	1 (9.1)	0 (0.0)
Planning care	0 (0.0)	0 (0.0)

Preparing patients and families for discharge	0 (0.0)	0 (0.0)
Skin care and/or assessment of pressure ulcers	1 (9.1)	0 (0.0)
Undertaking procedures/ treatments e.g. wound care	0 (0.0)	0 (0.0)
Oral Hygiene	3 (27.3)	1 (5.3)

Table 4.5.5.4: Number and frequency of each item of care delayed in Times 1 and 2 – Emergency Departments

Care Delayed RN responses only	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 44)	Time 2 (n = 47)	Time 1 (n = 37)	Time 2 (n = 38)	Time 1 (n = 39)	Time 2 (n = 50)	Time 1 (n = 135)	Time 2 (n = 135)
Adequate patient surveillance	28 (63.6)	19 (50.0)	28 (75.7)	22 (61.1)	22 (56.4)	21 (44.7)	78 (65.0)	62 (51.2)
Adequate/ regular monitoring of deteriorating patients	34 (77.3)	15 (39.5)	30 (81.1)	22 (61.1)	25 (64.1)	18 (39.1)	89 (74.2)	55 (45.8)
Vital sign observations	35 (79.5)	16 (42.1)	28 (75.7)	28 (77.8)	31 (79.5)	24 (52.2)	94 (78.3)	68 (56.7)
Administration of patient medications on time	34 (77.3)	17 (44.7)	28 (75.7)	25 (69.4)	25 (64.1)	19 (41.3)	87 (72.5)	61 (50.8)
Supporting patients with physical needs	30 (68.2)	25 (65.8)	28 (75.7)	27 (75.0)	30 (76.9)	28 (60.9)	88 (73.3)	80 (66.7)
Recording clinical practice/ developing and updating nursing care documentation	31 (70.5)	19 (50.0)	31 (83.8)	28 (77.8)	32 (82.1)	34 (72.3)	94 (78.3)	81 (66.9)
Adequate monitoring/ recording of nutritional/ hydration status	21 (47.7)	15 (39.5)	25 (67.6)	16 (44.4)	24 (61.5)	17 (37.0)	70 (58.3)	48 (40.0)

Providing comfort/ talking with patients	21 (47.7)	14 (36.8)	18 (48.6)	11 (30.6)	21 (53.8)	21 (45.7)	60 (50.0)	46 (38.3)
Educating patients and/or families	13 (29.5)	6 (15.8)	12 (32.4)	11 (30.6)	14 (35.9)	9 (19.6)	39 (32.5)	26 (21.7)
Pain assessment	30 (68.2)	14 (36.8)	23 (62.2)	20 (55.6)	24 (61.5)	17 (37.0)	77 (64.2)	51 (42.5)
Pain management	31 (70.5)	12 (31.6)	29 (78.4)	22 (61.1)	26 (66.7)	21 (45.7)	86 (71.7)	55 (45.8)
Planning care	26 (59.1)	12 (31.6)	23 (62.2)	22 (61.1)	19 (48.7)	13 (27.7)	68 (56.7)	47 (38.8)
Preparing patients and families for discharge	21 (47.7)	10 (26.3)	20 (54.1)	22 (61.1)	15 (38.5)	14 (30.4)	56 (46.7)	46 (38.3)
Skin care and/or assessment of pressure ulcers	33 (75.0)	16 (42.1)	27 (73.0)	21 (58.3)	27 (69.2)	21 (45.7)	87 (72.5)	58 (48.3)
Undertaking procedures/ treatments e.g. wound care	28 (63.6)	16 (42.1)	27 (73.0)	23 (63.9)	26 (66.7)	25 (54.3)	81 (67.5)	64 (53.3)
Oral Hygiene	9 (20.5)	11 (28.9)	18 (48.6)	12 (33.3)	10 (25.6)	10 (21.7)	37 (30.8)	33 (27.5)

Table 4.5.5.4: (continued) Number and frequency of each item of care delayed in Hospital 7 – Injury Unit

<b>RN responses only n (%)</b>	<b>Time 1 (n=17)</b>	<b>Time 2 (n=21)</b>
Adequate patient surveillance	7 (63.6)	7 (36.8)
Adequate/ regular monitoring of deteriorating patients	3 (27.3)	2 (10.5)
Vital sign observations	2 (18.2)	4 (21.1)
Administration of patient medications on time	5 (45.5)	4 (21.1)
Supporting patients with physical needs	2 (18.2)	8 (42.1)
Recording clinical practice/ developing and updating nursing care documentation	7 (63.6)	4 (21.1)
Adequate monitoring/ recording of nutritional/ hydration status	1 (9.1)	1 (5.3)
Providing comfort/ talking with patients	3 (27.3)	3 (15.8)
Educating patients and/or families	5 (45.5)	5 (26.3)

Pain assessment	2 (18.2)	0 (0.0)
Pain management	2 (18.2)	1 (5.3)
Planning care	3 (27.3)	0 (0.0)
Preparing patients and families for discharge	2 (18.2)	2 (10.5)
Skin care and/or assessment of pressure ulcers	1 (9.1)	3 (15.8)
Undertaking procedures/ treatments e.g. wound care	7 (63.6)	7 (36.8)
Oral Hygiene	0 (0.0)	2 (10.5)

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#### **4.5.6 Job Satisfaction and Intention to Leave**

The respondents' level of job satisfaction by hospital, ranging from very dissatisfied to very satisfied is displayed in Table 4.5.6.1.

Overall job satisfaction increased from 54.4% of staff reporting being either satisfied or very satisfied with their current job in Time 1 to 80.0% in Time 2. Hospital 4 reported that 51% of staff in total were satisfied or very satisfied with their job in Time 1 which increased to 76.6% in Time 2. In addition, two-thirds of staff reported that they were satisfied with being a nurse in Time 1, which increased to 90.0% in Time 2. Hospital 5 reported that 59.6% of staff reported being satisfied or very satisfied with their current job in Time 1, which increased to 68.5% in Time 2. Staff who reported being satisfied or very satisfied with being a nurse remained relatively stable in Hospital 5 from Time 1 (74.4%) to Time 2 (75.3%). Hospital 6 had a substantial increase in staff who reported being satisfied or very satisfied from Time 1 (53.5%) to Time 2 (92.0%). In Time 1, 72.1% of staff reported being satisfied or very satisfied with being a nurse, which increased slightly to 78.0% in Time 2.

Staff recommending the department to a colleague remained relatively similar from baseline to Time 2. The majority (Time 1 = 69.3%; Time 2 = 73.7%) of respondents would "definitely" or "probably" recommend their department to family or friends should they require hospital care, with a slight increase between Time 1, and 2,. Hospital 6 had the highest rate of respondents recommending their unit to a Colleague at Time 1 (58.1%).

Overall intention to leave remained relatively stable from Time 1 to Time 2. In Time 1, 55.2% of staff reported they would probably or definitely not leave. There was a slight decrease in intention to leave in Time 2 (45.6%) however, 75% of respondents who had intended to leave indicated it was due to job dissatisfaction. The vast majority intended to stay within the nursing career when pursuing a new job across all three time points. In Time 1, just under half (44.2%) of respondents for Hospital 5 and 6 reported intention to "definitely" or "probably" leave in the future. Time 2 saw a reduction to 36.8% in staff's intention to leave in Hospital 5, while Hospital 6 increased to 50.0% of staff reporting that they "probably" or "definitely" would leave. In Time 1, Intention to leave was reported by under half of staff in Hospital 5 and 6 (47.8%) (see Table 4.5.6.1)

Within the IU, the majority of staff in the IU were either satisfied (64.3%;61.9%) or very satisfied (28.6%; 28.6%) in both Time 1 and Time 2 respectively. Only a small portion of the staff were dissatisfied in Time 1 (7.1%), which only increased slightly to 9.7% in Time 2. As previously mentioned, given the specific healthcare climate under which the data was collected caution should be noted with interpreting this.

In Time 1, 100% of staff reported they would probably or definitely recommend the unit to a colleague as a good place to work with a slight this decreased to 95.3% of staff recommending the unit to a colleague at Time 2. However, 100% of staff stated that they would probably or definitely recommend the unit to family/friends across both time points.

Of the staff in the IU, 15.4% reported they would probably leave their job, which increased to 23.8% in Time 2. Of those in Time 1 who indicated an intention to leave their job, 15.4% was due to job dissatisfaction in Time 1. This remained largely the same in Time 2 (14.3%). Of the respondents who intended to leave due to job dissatisfaction, half of them were leaving for nursing, but not in a hospital (50.0%), and the other half were leaving for nursing in another hospital (50.0%). In Time 2, the majority of staff (66.7%) intended to leave for nursing in another hospital, followed by a non-nursing career (33.3%).

Table: 4.5.6.1: Job satisfaction and intention to leave – Emergency Departments

	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 136)	Time 2 (n = 135)
<b>Satisfaction with current job</b>								
<i>Very dissatisfied</i>	6 (11.8)	1 (2.1)	5 (11.9)	2 (5.3)	5 (11.6)	0 (0.0)	16 (11.8)	3 (2.2)
<i>Dissatisfied</i>	19 (37.3)	10 (21.3)	12 (28.6)	10 (26.3)	15 (34.9)	4 (8.0)	46 (33.8)	24 (17.8)
<i>Satisfied</i>	23 (45.1)	29 (61.7)	23 (54.8)	21 (55.3)	20 (46.5)	38 (76.0)	66 (48.5)	88 (65.2)
<i>Very satisfied</i>	3 (5.9)	7 (14.9)	2 (4.8)	5 (13.2)	3 (7.0)	8 (16.0)	8 (5.9)	20 (14.8)
<b>Satisfaction with being a nurse</b>								
<i>Very dissatisfied</i>	1 (2.0)	0 (0.0)	4 (9.3)	3 (7.9)	2 (4.7)	1 (2.0)	7 (5.1)	4 (3.0)
<i>Dissatisfied</i>	15 (29.4)	5 (10.6)	7 (16.3)	6 (15.8)	3 (23.3)	10 (20.0)	32 (23.4)	21 (15.6)
<i>Satisfied</i>	17 (33.3)	24 (51.1)	21 (48.8)	23 (60.5)	5 (58.1)	30 (60.0)	64 (46.75)	77 (57.0)
<i>Very satisfied</i>	17 (33.3)	18 (38.3)	11 (25.6)	6 (15.8)	6 (14.0)	9 (18.0)	34 (24.8)	33 (24.4)
<b>Recommend unit to colleague</b>								
<i>Definitely no</i>	5 (9.8)	1 (2.1)	6 (7.1)	2 (5.3)	6 (14.0)	0 (0.0)	14 (10.3)	3 (2.2)
<i>Probably no</i>	18 (35.3)	9 (19.1)	19 (45.2)	14 (36.8)	12 (27.9)	7 (14.0)	49 (36.0)	30 (22.2)
<i>Probably yes</i>	23 (45.1)	24 (51.1)	17 (40.5)	19 (50.0)	20 (46.5)	28 (56.0)	60 (44.1)	71 (52.6)
<i>Definitely yes</i>	5 (9.8)	13 (27.7)	3 (7.1)	3 (7.9)	5 (11.6)	15 (30.0)	13 (9.6)	31 (23.0)
<b>Recommend unit to family/friends</b>								
<i>Definitely no</i>	1 (2.0)	1 (2.3)	4 (9.3)	3 (8.1)	1 (2.3)	0 (0.0)	6 (4.4)	4 (3.1)

<b><i>Probably no</i></b>	10 (19.6)	2 (4.5)	16 (37.2)	14 (37.8)	10 (23.3)	3 (6.0)	36 (26.3)	19 (14.5)
<b><i>Probably yes</i></b>	27 (52.9)	17 (38.6)	21 (48.8)	17 (45.9)	20 (46.5)	18 (36.0)	68 (49.6)	52 (38.7)
<b><i>Definitely yes</i></b>	13 (25.5)	24 (54.5)	2 (4.7)	3 (8.1)	12 (27.9)	29 (58.0)	27 (19.7)	56 (42.7)
<b>Feelings about future in hospital</b>								
<b><i>Definitely will leave</i></b>	4 (7.8)	7 (15.2)	3 (7.0)	1 (2.6)	2 (4.7)	2 (4.0)	9 (6.6)	10 (7.5)
<b><i>Probably will leave</i></b>	22 (43.1)	14 (30.4)	16 (37.2)	13 (34.2)	17 (39.5)	23 (46.0)	55 (40.1)	50 (37.3)
<b><i>Probably will not leave</i></b>	20 (39.2)	15 (32.6)	22 (51.2)	22 (57.9)	21 (48.8)	17 (34.0)	63 (46.0)	54 (40.3)
<b><i>Definitely will not leave</i></b>	5 (9.8)	10 (21.7)	2 (4.7)	2 (5.3)	3 (7.0)	8 (16.0)	10 (7.3)	20 (14.9)
<b>Leaving due to job dissatisfaction</b>								
<b><i>Leaving due to job dissatisfaction</i></b>	20 (39.2)	9 (75.0)	22 (51.2)	10 (52.6)	13 (30.2)	11 (84.6)	55 (40.1)	30 (68.2)
<b>Leaving for Nursing in another hospital</b>								
<b><i>Nursing in another hospital</i></b>	12 (54.5)	7 (36.8)	11 (52.4)	11 (52.4)	14 (66.7)	13 (56.5)	37 (57.8)	31 (49.2)
<b><i>Nursing, but not in a hospital</i></b>	6 (27.3)	5 (26.3)	7 (33.3)	5 (23.8)	6 (28.6)	6 (26.1)	19 (29.7)	16 (25.4)
<b><i>Non-Nursing</i></b>	4 (18.2)	7 (36.8)	3 (14.3)	5 (23.8)	1 (4.8)	4 (17.4)	8 (12.5)	16 (25.4)

Table: 4.5.6.1: (continued) Job satisfaction and intention to leave overall Hospital 7 – Injury Unit

n (%)	Time 1 (n = 17)	Time 2 (n = 21)
<i>Satisfaction with current job</i>		
Very dissatisfied	0 (0.0)	0 (0.0)
Dissatisfied	1 (7.1)	2 (9.5)
Satisfied	9 (64.3)	13 (61.9)
Very satisfied	4 (28.6)	6 (28.6)
<i>Satisfaction with being a nurse</i>		
Very dissatisfied	0 (0.0)	0 (0.0)
Dissatisfied	3 (23.1)	2 (9.5)
Satisfied	5 (38.5)	11 (52.4)
Very satisfied	5 (38.5)	8 (38.1)
<i>Recommend unit to colleague</i>		
Definitely no	0 (0.0)	0 (0.0)
Probably no	0 (0.0)	1 (4.8)
Probably yes	8 (57.1)	9 (42.9)
Definitely yes	6 (42.9)	11 (52.4)
<i>Recommend unit to family/friends</i>		
Definitely no	0 (0.0)	0 (0.0)
Probably no	0 (0.0)	0 (0.0)
Probably yes	5 (35.7)	6 (28.6)
Definitely yes	8 (57.1)	15 (71.4)
<i>Feelings about future in hospital</i>		
Definitely will leave	0 (0.0)	0 (0.01)
Probably will leave	2 (15.4)	5 (23.8)
Probably will not leave	5 (38.5)	10 (47.6)
Definitely will not leave	6 (46.2)	6 (28.6)
<i>Leave due to job dissatisfaction (yes)</i>	2 (15.4)	3 (14.3)

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<i>Leaving for</i>		
Nursing in another hospital	1 (50.0)	2 (66.7)
Nursing, but not in a hospital	1 (50.0)	0 (0.0)
Non-Nursing	0 (0.0)	1 (33.3)

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#### **4.5.7 Burnout**

The Maslach Burnout Inventory (MBI) (Maslach et al., 1996) was used to measure burnout in nursing staff. The MBI-Human Services Survey Medical Personnel (MBI-HSS MP) is composed of 22 items across three subscales: emotional exhaustion; depersonalisation; personal accomplishment. The emotional exhaustion subscale addresses feelings of being emotionally overextended by work. Depersonalization subscale assesses an impersonal response to recipients of care and personal accomplishment subscale measures feelings of competence and achievement in one's work. Items are measured on a 7-point scale of 0 to 6 (never = 0, to everyday = 6, see Table 4.5.7.1). High scores in emotional exhaustion and depersonalisation and low scores in personal accomplishment indicate burnout. A full break down of hospital scores can be found in Table 4.5.7.2.

Overall, emotional exhaustion showed the greatest improvement from Time 1 to Time 2, decreasing from 3.31 to 2.95. Overall scores on depersonalisation also decreased (i.e. improved) at Time 2, while levels of personal accomplishment remaining relatively stable for Time 1 and 2. At hospital level, Hospital 4 showed slightly high levels of emotional exhaustion in Time 1 (3.40), while depersonalisation had a lower score of 2.12 and personal accomplishment had a high score of 4.35. Scores slightly decreased at Time 2 with emotional exhaustion decreasing to 2.61, and depersonalisation to 1.52, while personal accomplishment remained largely unchanged (4.26). Hospital 5 slightly decreased on emotional exhaustion (3.02 in Time 1 to 2.96 in Time 2) but increased from 1.90 for depersonalisation in Time 1 to 2.27 in Time 2. Hospital 6 showed largely unchanged scores for emotional exhaustions and depersonalisation between Time 1 and Time 2 and a slight decrease for personal accomplishment (Table 4.5.7.2).

In Hospital 7 (IU) Emotional Exhaustion and depersonalisation were quite low in Time 1 (1.75; 1.42 respectively) and continued to decrease in Time 2 (0.82; 0.38). Overall, higher levels Personal Accomplishment were reported in the IU in Time 1 with a slight decrease in Time 2 (Time 1 = 5.02; Time 2 = 4.76).

Table: 4.5.7.1: Maslach burnout inventory scale

0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Everyday

Table: 4.5.7.2: Maslach burnout inventory scores – Emergency Departments

MBI	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 136)	Time 2 (n = 135)
<b>Emotional Exhaustion</b>	3.40 (1.58)	2.61 (1.32)	3.02 (1.21)	2.96 (1.27)	3.48 (1.31)	2.84 (1.18)	3.31 (1.34)	2.79 (1.25)
<b>Depersonalisation</b>	2.12 (1.44)	1.52 (1.18)	1.90 (1.29)	2.27 (1.35)	2.54 (1.37)	2.09 (1.30)	2.19 (1.39)	1.94 (1.30)
<b>Personal Accomplishment</b>	4.35 (1.04)	4.26 (0.89)	4.27 (0.96)	4.02 (1.09)	4.34 (1.04)	4.55 (0.88)	4.32 (1.01)	4.30 (0.97)

Table: 4.5.7.2: (continued) Maslach burnout inventory scores - Hospital 7 – Injury Unit

MBI mean, (SD)	Time 1 (n=13)	Time 2 (n=21)
<b>Emotional Exhaustion</b>	1.75 (1.13)	1.42 (1.22)
<b>Depersonalisation</b>	0.82 (0.97)	0.38 (0.40)
<b>Personal Accomplishment</b>	5.02 (1.87)	4.76 (1.07)



#### **4.5.8 Prevalence of Violence and Aggression**

The Conflict Tactics Scale is a 10-item scale developed by Straus (1979) and is most commonly used in family violence research. The scale has been adapted to suit the Emergency Department for the purpose of this study. Staff were asked to rate how often events occurred in the last three months, ranging from never to more than 10 times. The survey is divided into three subscales: physical, psychological and conflict. Table 4.5.8.1 displays the overall mistreatment experienced by staff, while Tables 4.5.8.2-4 show the breakdown of each subscale.

Overall, in Time 1, 76.5% of staff reported that they experienced a physical assault, 94.0% psychological/verbal mistreatment and 97.8% conflict with patients (conflict with family was removed for this analysis) over the last three months. Time 2 reported similar results with 74.2% of staff experienced physical assault, 93.3% experienced psychological/verbal mistreatment, and 94.7% experienced conflict with patients. In Time 1, the highest proportion for each mistreatment was experienced in Hospital 6 with a large majority reporting physical assault (83.3%), verbal mistreatments (97.6%) and conflict (100.0%). Hospital 6's prevalence for physical assault (78.0%; 89.7%), verbal mistreatment (90.0%; 100.0%) and conflict (96.0%; 100.0%) remained high at Time 2. While Hospital 4 rates of physical assault and conflict decreased by 4.4% and 4.6% respectively between Time 1 and Time 2. Verbal mistreatment remained largely consistent from Time 1 and Time 2.

The physical mistreatment of staff is displayed below in Table 4.5.8.2. Overall, in Time 1 more than half of respondents had a patient throw something at them (61.9%) and had been pushed, grabbed, shoved or pinched by a patient (60.4%) at least once; 53% of all respondents had also been slapped or hit at least once in the last 3 months. Furthermore, 45.5% of all respondents have been kicked or hit with their fist. Respondents for Time 2 reported a lower rate of physical mistreatment of staff, with 56.7% of respondents reported being pushed, grabbed, shoved or pinched by a patient, the same percentage report having something thrown at them, and 54.5% of all respondents have been slapped or hit at least once. Conversely, 49.2% reported being kicked which is an increase of 3.7% from Time 1.

The Psychological Prevalence of Violence and Aggression is reported in Table 4.4.8.3. In Time 1, 87.2% of respondents have been sworn at or insulted at least once in the last 3 months; 91.0% of respondents have been shouted at in anger; 66.4% of staff reported patients threatening to hit or throw something at them in the last 3 months. Respondents who reported being sworn at or insulted at least once decreased to 86.6% in Time 2. There was a slight increase in respondents being shouted at in anger (92.5%) and threatened by patients (69.4%).

Table 4.5.8.4 illustrates the level of conflict experienced by respondents. Altogether, 97.8% of respondents experienced patients arguing with them about waiting to be seen in Time 1. There was a slight decrease in respondents experiencing patients arguing with them about waiting times (94.7%) in Time 2. Likewise, the majority (82.7%) of respondents reported patients' complaints about care they had received for both Time 1 and Time 2 (Time 1=82.8%; Time 2=82.7%). Additionally, 83.6% of

respondents in Time 1, and 80.6% of respondents in Time 2 reported experiencing conflict with patient's visitors at least once in the last 3 months.

Overall, in Time 1, 35.7% of staff reported that they experienced a physical assault, 78.6% psychological/verbal mistreatment and 85.7% conflict with patients (conflict with family was removed for this analysis). Time 2 reported that 52.4% of staff experienced physical assault, 75.0% experienced psychological/verbal mistreatment, and 76.2% experienced conflict with patients. Physical assault increased to 57.1% along with verbal mistreatment (57.1%), and 100% of respondents reported conflict.

Overall, in Time 1 23.6% of respondents had a patient throw something at them, and 23.6% had been pushed, grabbed, shoved or pinched by a patient at least once; 23.5% of all respondents had also been slapped or hit at least once in the last 3 months. Furthermore, 23.6% of all respondents have been kicked or hit with their fist. Respondents for Time 2 reported a higher rate of physical mistreatment of staff, with 38.1% of respondents reported being pushed, grabbed, shoved or pinched by a patient, 23.8% report having something thrown at them, and 28.6 of all respondents have been slapped or hit at least once. Respondents who reported being kicked which has the largest increase in reported from Time 1 to Time 2, increasing by 19.2% ( $T2 = 42.8\%$ ).

In Time 1, 64.7% of respondents have been sworn at or insulted at least once in the last 3 months; 58.8% of respondents have been shouted at in anger; 29.5% of staff reported patients threatening to hit or throw something at them in the last 3 months. Respondents who reported being sworn at or insults at least once decreased to 57.1% in time 2. Likewise, there was a decrease in respondents who were threatened by patients in Time 2 ( $T2 = 25.0\%$ ). Finally, there was an increase in respondents that have been shouted at in anger to 71.5%.

Altogether, 64.7% of respondents experienced patients arguing with them about waiting to be seen in Time 1. There was an increase in respondents experiencing patients arguing with them about waiting times (76.1%) in Time 2. Likewise, over half of respondents reported patients' complaints about care they had received for both Time 1 and Time 2 ( $T1=58.8\%$ ;  $T2=57.2\%$ ). Additionally, 58.9% of respondents in Time 1 reported experiencing conflict with patient's visitors at least once in the last 3 months, which increased to 66.7% in Time 2.

Table: 4.5.8.1: Overall Mistreatment Experienced by staff – Emergency Departments

Overall	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 134)	Time 2 (n = 135)
<b>Physical assault</b>	33 (68.8)	29 (64.4)	33 (78.6)	30 (81.1)	35 (83.3)	39 (78.0)	101 (76.5)	98 (74.2)
<b>Verbal mistreatment</b>	45 (91.8)	42 (91.3)	39 (92.9)	38 (100.0)	41 (97.6)	45 (90.0)	125 (94.0)	125 (93.3)
<b>Conflict</b>	47 (95.9)	42 (91.3)	42 (97.7)	35 (97.2)	42 (100.0)	48 (96.0)	131 (97.8)	125 (94.7)

Table: 4.5.8.1: (continued) Overall Mistreatment Experienced by staff in Hospital 7 – Injury Unit

Overall	Hospital 7	
n (%)	Time 1 (n=17)	Time 2 (n=21)
<b>Physical assault</b>	5 (35.7)	11 (52.4)
<b>Verbal mistreatment</b>	11 (78.6)	15 (75.0)
<b>Conflict</b>	12 (85.7)	16 (76.2)

Table 4.5.8.2: Physical Prevalence of Violence and Aggression – Emergency Departments

Physical	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 134)	Time 2 (n = 135)
<b>Patient thrown something at you</b>								
<i>Never</i>	23 (46.9)	25 (54.3)	17 (39.5)	15 (39.5)	11 (26.2)	19 (38.0)	51 (38.1)	59 (44.0)
<i>Once</i>	11 (22.4)	9 (19.6)	14 (32.6)	8 (21.1)	10 (23.8)	7 (14.0)	35 (26.1)	24 (17.9)
<i>2-10 times</i>	12 (24.5)	9 (19.6)	12 (27.9)	14 (36.8)	18 (42.9)	22 (44.0)	42 (31.3)	45 (33.6)
<i>&gt;10 times</i>	3 (6.1)	3 (6.5)	0 (0.0)	1 (2.6)	3 (7.1)	2 (4.0)	6 (4.5)	6 (4.5)
<b>Patient slapped or hit you</b>								
<i>Never</i>	23 (46.9)	23 (50.0)	19 (44.2)	14 (36.8)	21 (50.0)	24 (48.0)	63 (47.0)	61 (45.5)
<i>Once</i>	4 (8.2)	7 (15.2)	9 (20.9)	10 (26.3)	7 (16.7)	10 (20.0)	20 (14.9)	27 (20.1)
<i>2-10 times</i>	18 (36.7)	12 (26.1)	13 (30.2)	12 (31.6)	12 (28.6)	14 (28.0)	43 (32.1)	38 (28.4)
<i>&gt;10 times</i>	4 (8.2)	4 (8.7)	2 (4.7)	2 (5.3)	2 (4.8)	2 (4.0)	8 (6.0)	8 (6.0)
<b>Patient kicked you or hit you with their fist</b>								
<i>Never</i>	29 (60.4)	26 (57.8)	21 (50.0)	13 (35.1)	22 (52.4)	28 (56.0)	72 (54.5)	67 (50.8)
<i>Once</i>	6 (12.5)	10 (22.2)	10 (23.8)	13 (35.1)	7 (16.7)	8 (16.0)	23 (17.4)	31 (23.5)
<i>2-10 times</i>	10 (20.8)	7 (15.6)	11 (26.2)	9 (24.3)	12 (28.6)	13 (26.0)	33 (25.0)	29 (22.0)
<i>&gt;10 times</i>	3 (6.3)	2 (4.4)	0 (0.0)	2 (5.4)	1 (2.4)	1 (2.0)	4 (3.0)	5 (3.8)
<b>Patient pushed, grabbed, shoved or pinched you</b>								

<b>Never</b>	23 (46.9)	21 (45.7)	15 (34.9)	16 (42.1)	15 (35.7)	21 (42.0)	53 (39.6)	58 (43.3)
<b>Once</b>	8 (16.3)	7 (15.2)	10 (23.3)	7 (18.4)	8 (19.0)	7 (14.0)	26 (19.4)	21 (15.7)
<b>2-10 times</b>	14 (28.6)	13 (28.3)	14 (32.6)	11 (28.9)	16 (38.1)	16 (32.0)	44 (32.8)	40 (29.9)
<b>&gt;10 times</b>	4 (8.2)	5 (10.9)	4 (9.3)	4 (10.5)	3 (7.1)	6 (12.0)	11 (8.2)	15 (11.2)

Table 4.5.8.2: (continued) Physical Prevalence of Violence and Aggression Hospital 7 – Injury Unit

Physical n (%)	Time 1 (n=17)	Time 2 (n=21)
<b><i>Patient thrown something at you</i></b>		
<b>Never</b>	10 (58.8)	16 (76.2)
<b>Once</b>	2 (11.8)	4 (19.0)
<b>2-10 times</b>	2 (11.8)	1 (4.8)
<b>&gt;10 times</b>	0 (0.0)	0 (0.0)
<b><i>Patient slapped or hit you</i></b>		
<b>Never</b>	10 (58.8)	15 (71.4)
<b>Once</b>	1 (5.9)	5 (23.8)
<b>2-10 times</b>	3 (17.6)	1 (4.8)
<b>&gt;10 times</b>	0 (0.0)	0 (0.0)
<b><i>Patient kicked you or hit you with their fist</i></b>		
<b>Never</b>	10 (58.8)	12 (57.1)
<b>Once</b>	1 (5.9)	7 (33.3)
<b>2-10 times</b>	2 (11.8)	2 (9.5)
<b>&gt;10 times</b>	1 (5.9)	0 (0.0)
<b><i>Patient pushed, grabbed, shoved or pinched you</i></b>		
<b>Never</b>	10 (58.8)	13 (61.9)
<b>Once</b>	1 (5.9)	6 (28.6)
<b>2-10 times</b>	1 (5.9)	2 (9.5)
<b>&gt;10 times</b>	2 (11.8)	0 (0.0)

Table 4.5.8.3: Psychological Prevalence of Violence and Aggression – Emergency Department

Psychologic al/ Verbal	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 134)	Time 2 (n = 135)
<b>Patient insulted or sworn at you</b>								
<i>Never</i>	8 (16.3)	11 (23.9)	5 (11.6)	0 (0.0)	4 (9.5)	7 (14.0)	17 (12.7)	18 (13.4)
<i>Once</i>	7 (14.3)	7 (15.2)	8 (18.6)	6 (15.8)	3 (7.1)	2 (4.0)	18 (13.4)	15 (11.2)
<i>2-10 times</i>	19 (38.8)	17 (37.0)	19 (44.2)	20 (52.6)	6 (14.3)	13 (26.0)	44 (32.8)	50 (37.3)
<i>&gt;10 times</i>	15 (30.6)	11 (23.9)	11 (25.6)	12 (31.6)	29 (69.0)	28 (56.0)	55 (41.0)	51 (38.1)
<b>Patient shouted at you in anger</b>								
<i>Never</i>	6 (12.2)	4 (8.7)	5 (11.9)	0 (0.0)	1 (2.4)	6 (12.0)	12 (9.0)	10 (7.5)
<i>Once</i>	11 (22.4)	7 (15.2)	6 (14.3)	5 (13.2)	5 (11.9)	4 (8.0)	22 (16.5)	16 (11.9)
<i>2-10 times</i>	13 (26.5)	25 (54.3)	19 (45.2)	22 (57.9)	6 (14.3)	11 (22.0)	38 (28.6)	58 (43.3)
<i>&gt;10 times</i>	19 (38.8)	10 (21.7)	12 (28.6)	11 (28.9)	30 (71.4)	29 (58.0)	61 (45.9)	50 (37.3)
<b>Patient threatened to hit or throw something at you</b>								
<i>Never</i>	19 (38.8)	17 (37.0)	16 (37.2)	10 (26.3)	10 (23.8)	14 (28.0)	45 (33.6)	41 (30.6)
<i>Once</i>	9 (18.4)	11 (23.9)	6 (14.0)	12 (31.6)	3 (7.1)	4 (8.0)	18 (13.4)	27 (20.1)
<i>2-10 times</i>	13 (26.5)	9 (19.6)	15 (34.9)	9 (23.7)	11 (26.2)	16 (32.0)	39 (29.1)	34 (25.4)
<i>&gt;10 times</i>	8 (16.3)	9 (19.6)	6 (14.0)	7 (18.4)	18 (42.9)	16 (32.0)	32 (23.9)	32 (23.9)

Table 4.5.8.3: (continued) Psychological Prevalence of Violence and Aggression Hospital 7 – Injury Unit

Psychological/Verbal n (%)	Time 1 (n=17)	Time 2 (n=21)
<b><i>Patient insulted or sworn at you</i></b>		
<b>Never</b>	3 (17.6)	9 (42.9)
<b>Once</b>	5 (29.4)	5 (23.8)
<b>2-10 times</b>	4 (23.5)	7 (33.3)
<b>&gt;10 times</b>	2 (11.8)	0 (0.0)
<b><i>Patient shouted at you in anger</i></b>		
<b>Never</b>	4 (23.5)	6 (28.6)
<b>Once</b>	4 (23.5)	6 (28.6)
<b>2-10 times</b>	4 (23.5)	9 (42.9)
<b>&gt;10 times</b>	2 (11.8)	0 (0.0)
<b><i>Patient threatened to hit or throw something at you</i></b>		
<b>Never</b>	9 (52.9)	15 (75.0)
<b>Once</b>	2 (11.8)	3 (15.0)
<b>2-10 times</b>	1 (5.9)	2 (10.0)
<b>&gt;10 times</b>	2 (11.8)	0 (0.0)

Table 4.5.8.4: Conflict – Emergency Departments

Conflict	Hospital 4		Hospital 5		Hospital 6		Total	
	Time 1 (n = 50)	Time 2 (n = 47)	Time 1 (n = 43)	Time 2 (n = 38)	Time 1 (n = 43)	Time 2 (n = 50)	Time 1 (n = 134)	Time 2 (n = 135)
<b>Patient argued with you about waiting to be seen</b>								
<b>Never</b>	2 (4.1)	4 (8.7)	1 (2.3)	1 (2.7)	0 (0.0)	2 (4.0)	3 (2.2)	7 (5.3)
<b>Once</b>	4 (8.2)	4 (8.7)	4 (9.3)	1 (2.7)	0 (0.0)	2 (4.0)	8 (6.0)	7 (5.3)
<b>2-10 times</b>	11 (22.4)	16 (34.8)	11 (25.6)	13 (35.1)	6 (14.3)	13 (26.0)	28 (20.9)	42 (31.6)
<b>&gt;10 times</b>	32 (65.3)	22 (47.8)	27 (62.8)	22 (59.5)	36 (85.7)	33 (66.0)	95 (70.9)	77 (57.9)

<b>Patient complained to you about their care</b>								
<i>Never</i>	8 (16.3)	14 (30.4)	11 (25.6)	3 (8.1)	4 (9.5)	6 (12.0)	23 (17.2)	23 (17.3)
<i>Once</i>	12 (24.5)	6 (13.0)	5 (11.6)	5 (13.5)	2 (4.8)	5 (10.0)	19 (14.1)	16 (12.0)
<i>2-10 times</i>	9 (18.4)	19 (41.3)	13 (30.2)	14 (37.8)	11 (26.2)	18 (36.0)	33 (24.6)	51 (38.3)
<i>&gt;10 times</i>	20 (40.8)	7 (15.2)	14 (32.6)	15 (40.5)	25 (59.5)	21 (42.0)	59 (44.0)	43 (32.2)
<b>Experienced conflict with a patient's visitor</b>								
<i>Never</i>	9 (18.4)	12 (26.1)	10 (23.3)	5 (13.2)	3 (7.1)	9 (18.0)	22 (16.4)	26 (19.4)
<i>Once</i>	4 (8.2)	8 (17.4)	5 (11.6)	4 (10.5)	2 (4.8)	6 (12.0)	11 (8.2)	18 (13.4)
<i>2-10 times</i>	16 (32.7)	18 (39.1)	12 (27.9)	16 (42.1)	14 (33.3)	11 (22.0)	42 (31.3)	45 (33.6)
<i>&gt;10 times</i>	20 (40.8)	8 (17.4)	16 (37.2)	13 (34.2)	23 (54.8)	24 (48.0)	59 (44.0)	45 (33.6)

Table 4.5.8.4: (continued) Conflict - Hospital 7 – Injury Unit

Conflict n (%)	Time 1 (n=17)	Time 2 (n=21)
<b><i>Patient argued with you about waiting to be seen</i></b>		
<i>Never</i>	3 (17.6)	5 (23.8)
<i>Once</i>	3 (17.6)	4 (19.0)
<i>2-10 times</i>	6 (35.3)	10 (47.6)
<i>&gt;10 times</i>	2 (11.8)	2 (9.5)
<b><i>Patient complained to you about their care</i></b>		
<i>Never</i>	4 (23.5)	9 (42.9)
<i>Once</i>	3 (17.6)	6 (28.6)
<i>2-10 times</i>	6 (35.3)	5 (23.8)
<i>&gt;10 times</i>	1 (5.9)	1 (4.8)
<b><i>Experienced conflict with a patient's visitor</i></b>		
<i>Never</i>	4 (23.5)	7 (33.3)
<i>Once</i>	2 (11.8)	5 (23.8)
<i>2-10 times</i>	6 (35.3)	8 (38.1)
<i>&gt;10 times</i>	2 (11.8)	1 (4.8)



### **4.5.9 Conclusion**

The profile of the respondents in each hospital was relatively similar. While self-report of nurse-to-patient ratios were obtained, these are based on how many patients an individual was caring for rather than how many the entire team were caring for. This is due to the issue of the ever-changing patient flow in ED and the difficulty around staff members being aware of this figure. However, the results are indicating some changes in the ratios following the introduction of the recommendations. Hospital 4 reported decreased ratios at Time 2, with Hospital 6 in particular showing a decrease in nurse-to-patient ratio for RNs only on day and night shifts

The results from the NWI are indicating some upwards trends in all four subscales. Both Hospital 4 and 6 showed increases on the subscales with Hospital 5 remaining relatively stable across the two time periods. Hospital 6 showed a substantial increase on scores of Staffing and Resource Adequacy following the introduction of the recommendations.

At hospital level, it is clear that Time 2 has substantially better ratings on quality of care, patient safety and quality of care over the last 6 months. However, this did not translate into fewer items of care being left undone or delayed with over 85% of shifts in both times having at least one item of care left undone and almost 90% for care delayed. However, the average number of care items left undone fell from Time 1 to Time 2. The number of items delayed remained higher than undone but showed a slight reduction from Time 1 to Time 2. Missed and/or delayed meal breaks were showing improvements from Time 1 to Time 2.

Job dissatisfaction was relatively high in Time 1 although substantial improvements were apparent in job satisfaction in Time 2 and the vast majority of staff were satisfied with the profession in general in both time-points. However, despite these improvements in job satisfaction, a large proportion stating that they intended to leave their job due to job dissatisfaction. Staff reported relatively high levels of emotional exhaustion in Time 1, which are beginning to improve in Time 2. Low levels of depersonalization were seen in Time 2; however, these scores increased in Hospital 5 but showed a slight decrease in Hospitals 4 and 6. However, the personal accomplishment scores remained relatively high indicating that staff take pride in their work.

High levels of physical, psychological, and verbal violence and aggression, along with similarly high levels of conflict, were experienced by the staff over the last 3 months in their work in both Time 1 and 2 with little change seen. Staff highlighted a number of issues in their qualitative comments including, the challenges of their environment, staffing and skill-mix, support and teamwork, workload, quality of care and missed care, and the fact that they are burned out and stressed. These issues were prevalent in both Time 1 and 2.

These levels of physical, psychological, and verbal violence in this report are similar to a number of international studies that have previously explored this area with nurses working in EDs. Prevalence of verbal abuse in studies undertaken in Australia, the US and Ireland are reported at 89.9% (Partridge & Affleck, 2017), 94.3% (Copeland & Henry, 2017), 81% (Ryan and Maguire 2006). Reports of physical assault and threats in international studies are also high with reports of physical assaults ranging from (35.8%) (Copeland & Henry, 2017) to 82.1% (May and Grubbs 2002). Overall, in the majority of studies reviewed, between 87% and 100% of ED nursing staff reported some form of violence and aggression from patients in their care (Partridge & Affleck, 2017; Copeland & Henry, 2017; Pich, Kable, & Hazelton, 2017; Ferri et al., 2020; Ryan & Maguire 2006; Crilly et al. 2004; May & Grubbs, 2002).

## 4.5 Summary of Results

Staffing and skill-mix adjustments were made in Hospital 5 and 6 based on the Nursing Hours per Patient Presentation (NHpPP) model with Hospital 4 having their agency usage converted to WTEs following Time 1. This approach based the staffing requirement on routinely collected data in the site. The impact of these adjustments, which were made in late 2019/early 2020, were initially evident in Time 2 follow up however, due to the process involved in employing staff within the role, the Taskforce noted the need to do a follow up report on the results to determine if the stabilisation in the workforce was observed. The recent cyber-attack also had notable implications on the data available for this report and the timeline of its compilation.

Administrative data was used to identify associations between staffing levels at two time points; Time 1 (prior to any staff changes been made) and Time 2 (following adjustments to staffing levels) these are discussed in previous reports. This included time to triage and patients leaving without being seen. Furthermore, the results from this extended time period, where administrative data and data pertaining to rosters as well as agency use demonstrate an improvement in staffing despite the recent Covid-19 outbreak. Key findings from this report show that even as staff delivered care amid a national pandemic, with monthly ED presentation figures comparable to pre-pandemic levels, patient outcomes such as time to triage, ED care, and leaving without being seen saw improved values following the staffing adjustments.

The cross-sectional data demonstrated that the profile of the respondents in each hospital was relatively similar. The results are indicating some changes in the ratios following the introduction of the recommendations. Hospital 4 reported decreased ratios at Time 2, with Hospital 6 in particular showing a decrease in nurse-to-patient ratio for RNs only on day and night shifts. The results from the NWI are indicating some upwards trends in all four subscales. In particular, Hospital 6 showed a substantial increase on scores of Staffing and Resource Adequacy following the introduction of the recommendations. At Time 2 better ratings on quality of care, patient safety and quality of care over the last 6 months was observed. However, this did not translate into fewer items of care being left undone or delayed with over 85% of shifts in Time 2 having at least one item of care left undone and almost 90% for care delayed.

Job dissatisfaction was relatively high all time periods with a large proportion stating that they intended to leave their job due to job dissatisfaction. Staff reported relatively high levels of emotional exhaustion in Time 1, which improved in Time 2. High levels of physical, psychological, and verbal violence and aggression, along with similarly high levels of conflict, were experienced by the staff over the last 3 months in their work in both Time 1 and 2 with little change seen. Staff highlighted a number of issues in their qualitative comments including, the challenges of their environment, staffing and skill-mix, support and teamwork, workload, quality of care and missed care, and the fact that they are burned out and stressed.

Overall, the staff data indicate a number of issues in Time 1 and 2, most of which can be related to staffing resources and availability of time, however many of these outcomes improved or were improving during Time 2.

## **Section 5**

# **Impact of Covid-19 on Staff Outcomes in Emergency Care Settings**

### **5.1 Introduction**

The recent Covid-19 (SARS-CoV-2) healthcare pandemic which had its first confirmed case in Ireland in February 2020 has placed significant burden on the Irish healthcare system. In particular, Emergency Department settings had to respond in a manner that had not previously been witnessed within Ireland. Globally, the provision of healthcare was hugely affected by the need for protective care pathways and Covid-19 streams to be implemented. As such, service reconfiguration and provision had to be adapted with calls for the public to only attend EDs where necessary and for Injury Units and GP services to be utilised where possible.

As such, many EDs saw a noticeable reduction in the number of presentations occurring in 2020 particularly during months where strict lockdown restrictions were in place. However, the triage category and acuteness of the patients presenting appears to have increased. As Ireland is now progressing beyond the initial peak of the outbreak and health care services are beginning to re-open, radical changes are needed to be made to the delivery of care to ensure that COVID-19 can be managed safely within Emergency Departments while allowing for pre-existing ED level care to be provided. One of the main challenges appears to be coping with crowded EDs where boarded patients are a common occurrence and an infectious airborne disease such as Covid-19.

Sless et al. (2021) identifies the concern over the apparent decline in emergency department (ED) attendances and the resultant health legacy. The findings suggest that the combination of government-imposed restrictions and perceived risk of attending an ED during a pandemic may contribute to reduced attendances. Public confidence in EDs is necessary to reduce collateral damage caused by failure to seek medical attention during a pandemic; adequate infrastructure to allow social distancing and isolation capacity in EDs is a necessity.

### **5.2 Covid-19 and Emergency Care Settings**

The COVID-19 pandemic had a profound effect on the services across the healthcare sector but notably has been defined as a contributing factor to the long-established problem of health care burnout (Sheehan et al. 2021). In some instances, rates of burnout have been reported to be as high as 74% with average burnout rates estimated to be between 13-27%. (Sheehan et al. 2021).

In addition to this, international evidence suggest that job satisfaction rates have also been hugely affected due to the Covid 19 pandemic with 150 ED staff with different roles and skill sets and 87% staff claimed, the COVID-19 crisis changed their clinical practice and behaviour (Qureshi and Comia, 2021).

Literature has shown that COVID-19 has affected burnout levels, job satisfaction, and turnover rates within EDs, with burnout being the most widely reported effect of COVID-19 in EDs (Jose et al., 2020; Chor et al., 2020; Rodriguez et al., 2021; Sheehan et al., 2021; Labrague & Santos, 2021; Mirzaei et al., 2021). The Maslach Burnout inventory, and The Oldenburg Burnout Inventory were used to assess burnout among HCW in North India, Singapore, the U.S, and Ireland (Jose et al., 2020; Chor et al., 2020; Rodrigues et al., 2021; Sheehan et al., 2021). In North India and Singapore,

Nurses experienced moderate to severe burnout since the start of the pandemic (Jose et al., 2020; Chor et al., 2020). It should also be noted that Jose and colleagues reported a correlation between burnout and resilience. In a national sample in the U.S just under half of nursing staff reported feeling burnout more strongly (46%). In addition to burnout, Rodriguez and colleagues (2021), and Mirzaei et al., (2021) screened ED staff for risk of PTSD. Mirzaei et al. (2021) reported a mean score of 36.96 (scores range from 0-88) for ED nurses. In addition, Rodriguez et al. (2021) found that nursing staff had the highest rate of positive screening for PTSD (23% compared to 18% of physicians and 18% of nonclinical staff).

On the other hand, a study from Ireland assessed burnout in two hospitals and compared burnout rates to another study carried out prior to COVID-19. Sheehan et al. (2021) reported burnout in 74% of staff across the two hospitals (n = 99, with a response rate of 30%), with exhaustion being the highest rated component of burnout (2.59). Moreover, nurses had the highest rate of burnout than any other HCW within the ED, after phlebotomists (100%) (RN = 77%; physicians = 76%; physiotherapist = 50%; radiographers = 0%, paramedics = 75% and auxiliary staff = 75%. While Sheehan's paper reported high rates of burnout, comparing these results with Chernoff et al. (2016) paper has shown that – despite COVID-19 – there has been no change in rates of burnout (74% and 75% respectively). However, there has been an increase in exhaustion from 2.42 in Chernoff et al. (2016) paper and 2.59 reported by Sheehan et al (2021). Despite the constant strain and threat of exposure frontline staff experienced, COVID-19 has not affected the ED burnout scores reported. This study restates what is already known; almost three quarters of ED staff experience significant levels of burnout in Ireland and that HCW are exhausted; the mean exhaustion level seen here is higher than any previously recorded to their knowledge (Sheehan et al., 2021).

Job satisfaction and turnover was another effect examined under the context of COVID-19 context. Labrague and Santos (2020) examined the influence of fear of COVID-19 on nurses' psychological distress, work satisfaction and intention to leave their organisation. Nurses apprehension of COVID-19 was measured using 'The Fear of COVID-19 Scale'. Scores within this scale ranged from 7 to 35, higher scores indicating greater fear of COVID-19 (Labrague & Santos, 2020). In addition, The Job-Related Stress Scale (JSS), The Job Satisfaction Index (JSI), and two single-item measure to assess turnover intention. The mean score of Fear of COVID-19 was 19.92, which was above midpoint. In this study, fear scores were higher for part time staff and staff who had not attended COVID-19 training (Labrague & Santos, 2020). Increased Fear of COVID-19 were also associated with increased psychological distress measure, decreased job satisfaction, and increased organisational and professional turnover intention among frontline nurses (Labrague & Santos, 2020). Likewise, Mirzaei et al. (2021) reported that nurses experienced turnover intention (41.73, scaled between 15 – 75). Higher turnover intention scores were positively related to PTSD, general health, job demand, and Job strain. The results of the present study revealed that job stressors during the COVID-19 outbreak shape nurses' attitudes towards their jobs and can cause turnover intention in nurses (Mirzaei et al., 2021).

With the above empirical evidence indicating the potential impact that Covid-19 can have on staff working in EDs, the research team collected cross-sectional data to determine the impact on staff outcomes as a result of the Covid-19 pandemic. These results are presented below.

### **5.3 Covid-19 and Agency Usage<sup>36</sup>**

Table 5.3.2.3 outlines the percentage of hours that were requested to cover shifts due to the Covid-19 pandemic for hospitals 5 and 6 (Note: this data was not available for Hospital 4). During the

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<sup>36</sup> Data on specific agency shifts that were requested to cover Covid-19 sick leave or related to the Covid-19 pandemic was not available for Hospital 4 at the time of this report.

pandemic, staff were re-deployed, and services were reconfigured to provide care to patients suspected or with a diagnosis of Covid-19. Therefore, a number of staff rosters were re-organised and presence of senior staff was increased. Due to the unpredictability of determining how many staff would be out sick or require self-isolation processes, protocols and infrastructures were reconfigured to meet the needs of patients. This often resulted in specifically designated care pathways for confirmed or suspected patients with Covid-19.

At the time of compiling this report, the Covid-19 pandemic was ongoing although as the vaccination programme rolled out, public health restrictions began to ease from the 17<sup>th</sup> of May 2021. Further easing of restrictions occurred on 2<sup>nd</sup> June 2021. Due to the profound impact that Covid-19 had on staffing and planning, this report also contains information on Covid-19 within hospitals 5 and 6 over the period from March 2020 up to April 2021. This type of data was not readily available from Hospital 4.

For Hospital 5, 480 hours (40 shifts) were requested in 2020 with 100 additional agency shifts (1,200 hours) requested to cover leave associated with Covid-19 in 2021. A breakdown of the requests for these shifts is only categorised as “Covid-19” and does not provide any specific details on the rationale behind the requests for staff to cover a shift. Other reasons for shift request were maternity leave (365 shifts, 4,380 hours), parental leave (5,232 hours), annual leave (4,536 hours), sick leave (not related to Covid-19 or defined as such) (4,260 hours), compassionate leave (3,648 hours) and study leave (2,448 hours).

A total of 157 additional shifts (1,884 hours) were requested to cover Covid-19 in Hospital 6 from March 2020 up to April 2021. Of these shifts, a total of 68 (816) shifts were either unfilled (due to a lack of agency staff or filled by agency staff. The remaining shifts were filled by the hospital’s own staffing complement. The main reasons reported for requesting staff for these for these shifts included: “*additional staff*”, “*self-isolation*”, “*sick leave due to Covid-19*”, “*awaiting result of Covid-19 test*” or “*identified as close contact and awaiting a test*” (see Figure 5.3.2.4). Table 5.3.2.3 shows the hours requested by grade. Figure 5.3.2.4 shows the number of additional shifts relating to Covid-19 and agency usage for the relevant month from March 2020 to April 2021. Note that other sick leave not categorised as being related to Covid-19 was also evident in this period from March 2020 to April 2021 and is not reflected in these figures.

### **5.3.1 Shift requests (Hospital 6)**

Due to the data collection processes available in Hospital 6, a comprehensive overview of the Covid-19 pandemic was available. The majority of shifts in Hospital 6 were requested to cover maternity leave, followed by vacancy posts for RNs (see Table 5.3.2.4). Although the Safe Staffing Framework accounts for maternity leave, there was a considerable number of short-term contracts that required cover. Below, Covid-19 agency related request have been segregated out so as to provide clarity on shifts that were needed for additional workload and shifts related to sick leave or self-isolation (Figure 5.3.2.4-6).

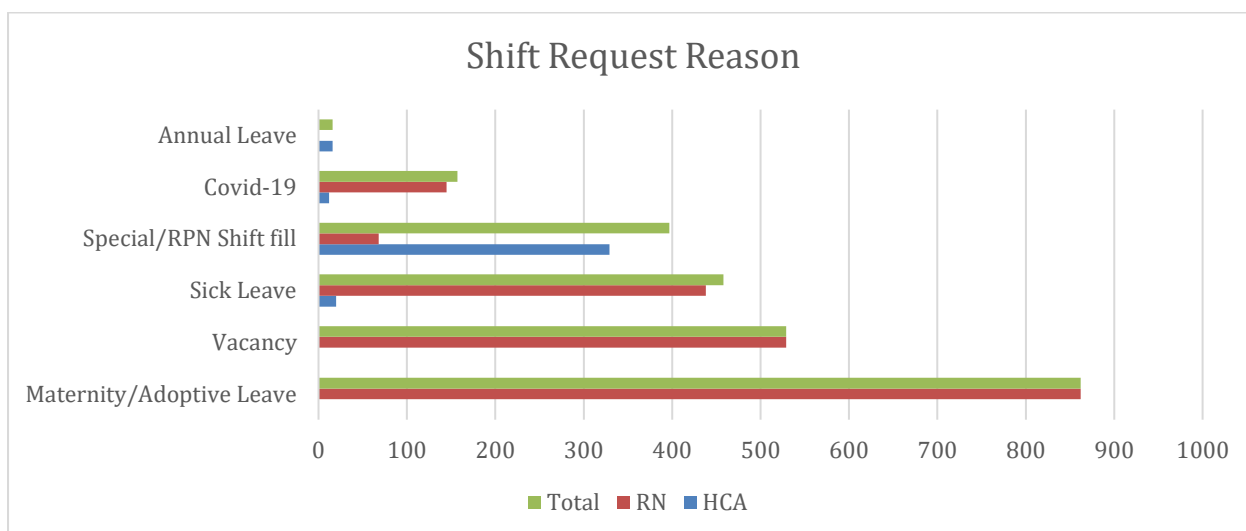


Figure 5.3.2.4: shows the number of shifts requested based on the reason. For RN grades most extra shifts were requested to cover maternity leave, followed by vacancy posts and then sick leave. For HCAs most shifts were requested to cover specializing or unfilled RPN shifts followed by sick leave and then annual leave.

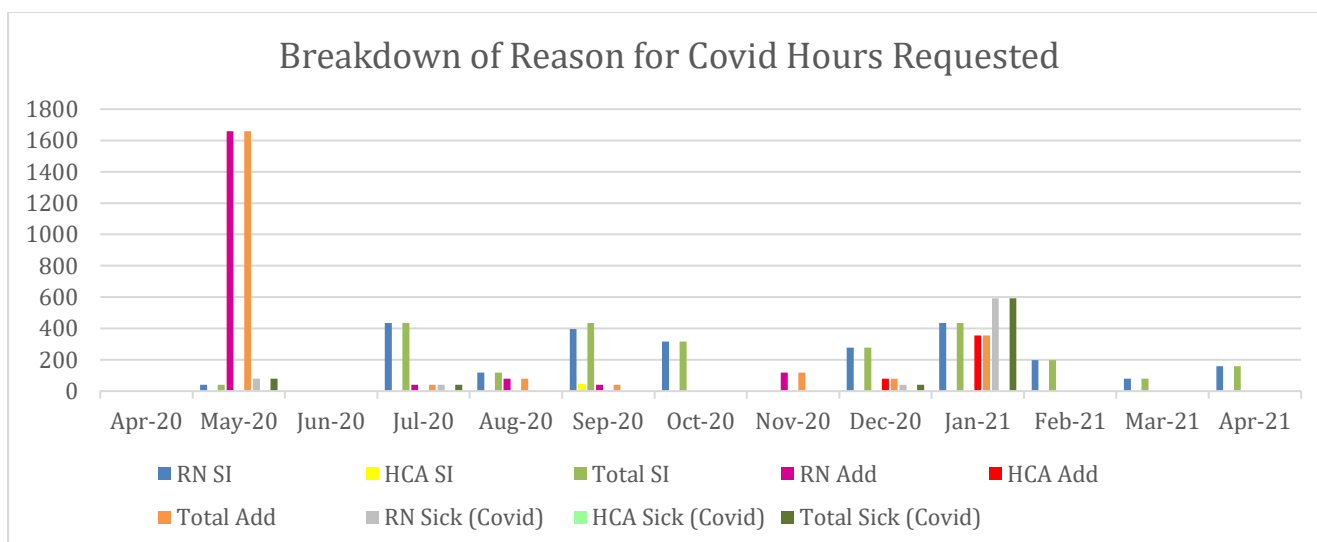


Figure 5.3.2.5: Reasons for extra Covid-19 shifts requested (Hospital 6)  
 RN=Registered Nurse, SI= Self-Isolation, ADD=Additional Staff, note sick leave here only refers to sick leave defined as Covid-19 sick leave on reason for request.

Table 5.3.2.4 shows the breakdown of reasons pertaining to Covid-19 for extra shift requests for Hospital 5 and 6. The majority of shifts in Hospital 6 were requested to cover RN grade for additional staff required for shift workload. May 2020 which was in the initial stages of the pandemic was the highest month for this. For Hospital 5, data was only available as an aggregated total and not divided into RN/HCA requests.

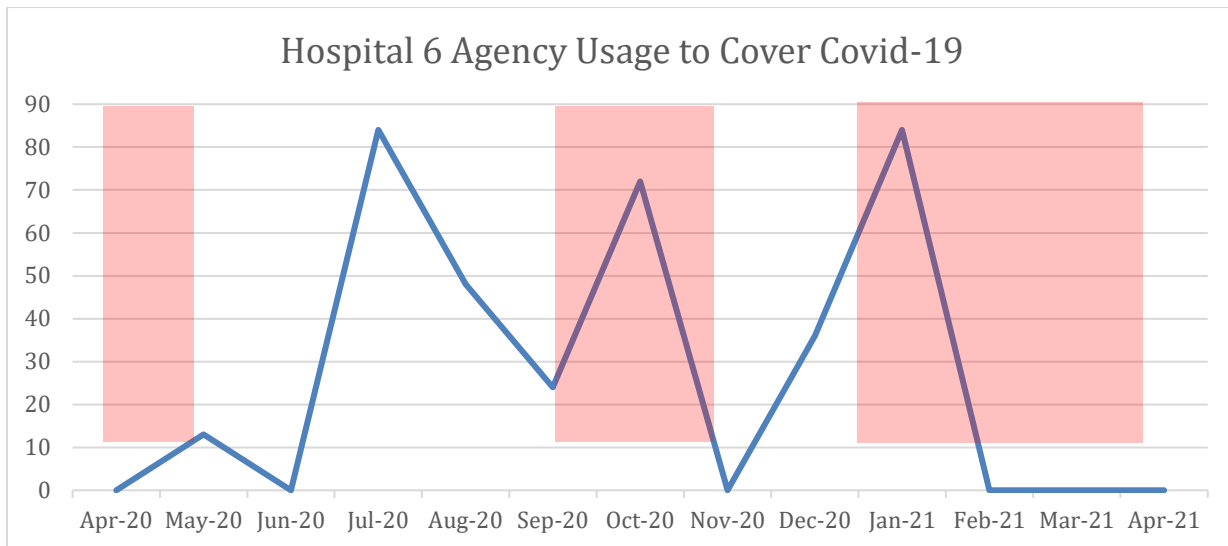


Figure 5.3.2.5: Agency hours used to cover Covid-19 requests in Hospital 6 over study duration. Note these figures relate solely to agency hours and Covid-19.

Table 5.3.2.4 Hours of additional agency hours requested due to Covid-19

	Hospital 6		Hospital 5	
	2020	2021**	2020	2021*
Total Hours	816	1935.5	480	1200
RN	3792	1777.5	-	-
HCA	118.5	355.5	-	-
Average hours per month				
RN	316	444.38	-	-
HCA	9.87	88.88	-	-
Conversion to WTE				
RN	1.87	2.63	-	-
HCA	0.06	0.53	-	-
Total	1.93	3.39	0.24	0.59

\*January 2021 to April 2021. Note data on specific grades requested to cover Covid-19 leave was not available for Hospital 5. No data on Covid-19 requests was available for Hospital 4.

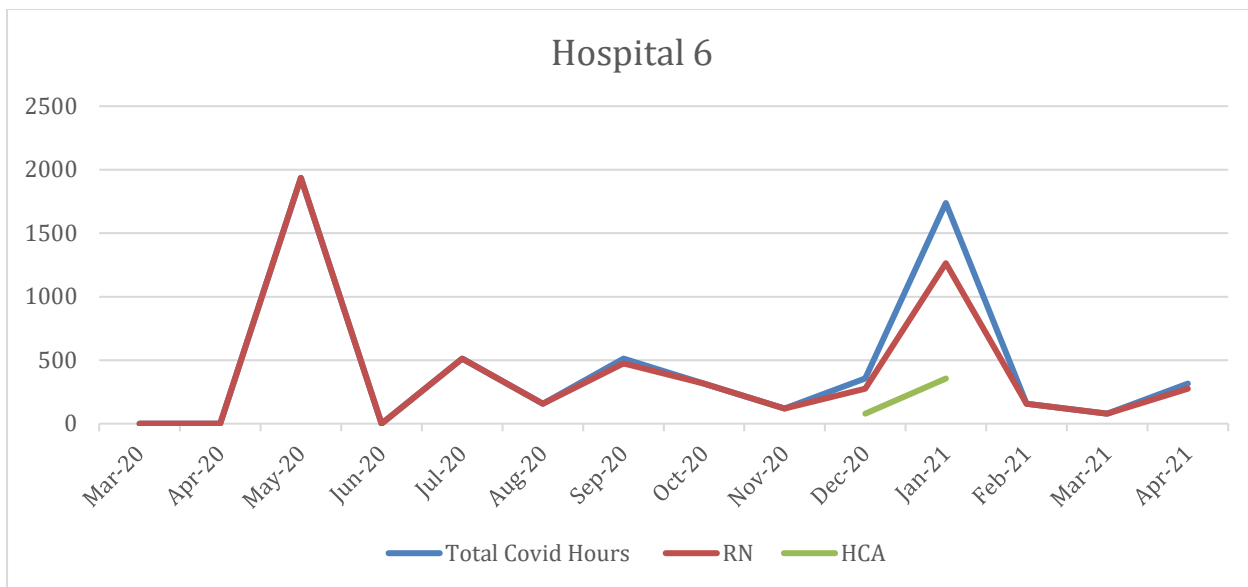


Figure 5.3.2.6: shows the total Covid-19 hours that were requested as well as the number of hours requested for RN and HCA grade staff for the duration of the study.

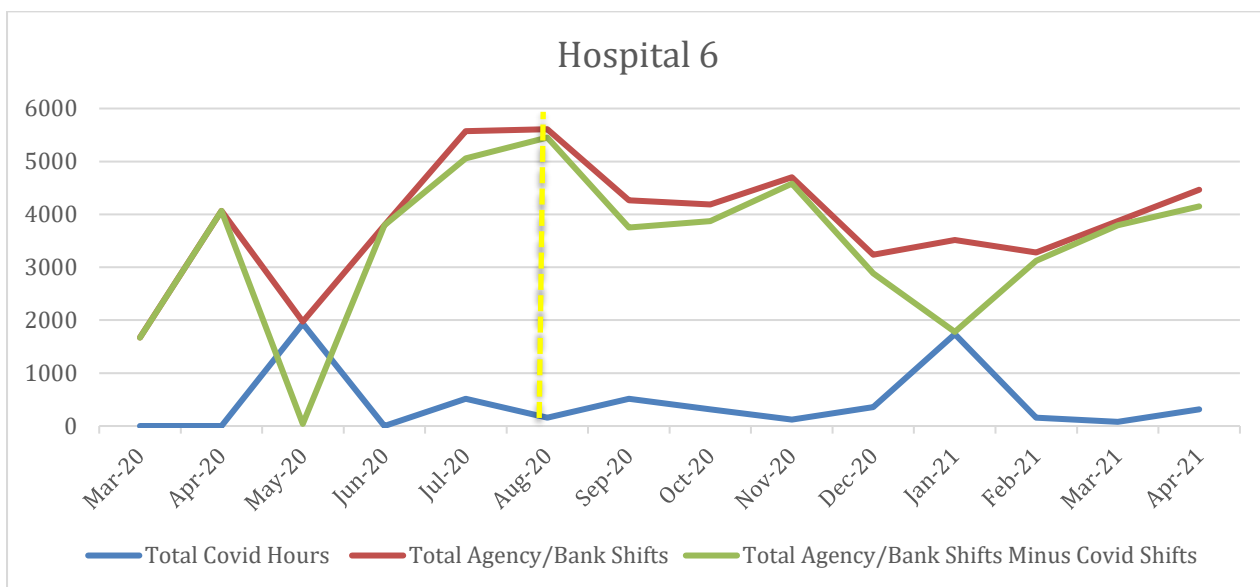


Figure 5.3.2.7: shows the number of hours of agency requested in Hospital 6. indicates the month in which the highest level of the required adjustments in staff was achieved in Hospital 6 with all but 1.27 RN post filled and no HCA post filled from the recommended adjustments.

Figure 5.3.2.7 shows that during the month of August 2020, the highest point within the staffing adjustments was achieved (yellow tab). This also corresponds with the peak in agency shift requests. It suggests that had their been no adjustments granted initially, in the latter part of 2019 early 2020 staff would not have been able to cope with the increased activity and surge that resulted from the pandemic.

## 5.4 Cross-Sectional Staff Survey

In addition to collecting cross-sectional data at Time 1 and Time 2, the research team also collected data from surveying staff at Time 3. This was conducted in September 2021, shortly after the Covid-19 pandemic had began in Ireland but when ED services were starting to return to pre-pandemic level functioning.



The results from the survey offer a key insight into ED staff outcomes during a national pandemic. The measures include: socio-demographics, nursing environment, burnout and job satisfaction, intention to leave/stay, experience of violence and aggression.

#### **5.4.1 Demographics and Education**

The overall response rate at Time 3 was lower than Time 1 and Time 2 (Time 1=43.2% Time 2=59.2% and Time 3=34.7%). For Time 3 Hospital 5 had the highest response rate (46%), with Hospital 4 having the lowest response rate (30.8%). It should be noted that the decrease in response rate for Time 3 may be attributed the timing of Time 3 survey distribution (during COVID-19 pandemic), and time restraints for survey submission (3-week turnaround time)

While the proportion of respondents that held Full-time contract remained high in Time 3 (84.7%), average length of time in current unit decreased to 5.5 years. Respondents were in large part female (74.5%) and with an average of almost 10.5 years' experience as a Registered Nurse (RN) or Healthcare Assistant (HCA) for in Time 3. The majority had completed degree level education, and this increased substantially from Time 1 to Time 3, 87.0% in Time 1 and 88.3% in Time 2, increasing to 93.4% in Time 3. Of those surveyed, those who had received a specialist qualification in emergency nursing decreased to 42.9% in Time 3 from 44.4% in Time 1 and 46.1% in Time 2.

In relation to country of pre-registration training, Time 3 had a similar trend to Time 1 and Time 2, with 36.4% of nurses reported that they received pre-registration education over-seas, 50.0% of which were in the Philippines, followed by the UK (22.2%). At Time 3, over two-thirds of respondents worked 12-hour day shifts, 71.9% (Table 5.4.1.1-4).

For Hospital 7, at Time 3, 57.1% of respondents were RNs, followed by 28.6% CNM, and 14.3% HCA. Over 100% of respondents held full-time contracts in Time 3. Respondents were mostly female (100%) with an average of 12 years' experience in Time 3. The majority of staff were educated to degree level. Of those surveyed, 16.7% of respondents held a specialist's qualifications in emergency nursing.

Staff were also asked to specify if they had received their pre-registration training in Ireland and if not to specify the country, they had received this training in. At Time 3, of the staff who indicated that they had received their pre-registration training overseas this was again predominantly in the UK (42.9%). Staff were also asked about their shift type (see Table 5.4.1.2). Most respondents indicated at that the shifts most commonly worked were 12-hour day shifts across all three time points (73.3%, 66.7% and 71.4% respectively). This is reflective of the IU as the vast majority of care is provided on a day basis from 8am to 8pm.

Table 5.4.1.1: Profile of Respondents

	<b>Hospital 4 Time 3 (n = 37)</b>	<b>Hospital 5 Time 3 (n = 23)</b>	<b>Hospital 6 Time 3 (n = 39)</b>	<b>Total Time 3 (n = 99)</b>
Response rate, %	30.8	46.0	43.3	34.7
Job Title, n (%)				
<i>CNM</i>	5 (13.5)	6 (25.0)	11 (28.3)	22 (22.0)
<i>RN</i>	16 (43.2)	15 (62.5)	24 (61.5)	55 (55.0)
<i>HCA</i>	16 (43.2)	3 (12.5)	4 (10.3)	23 (23.0)
Nursing Qualifications (RNs), n (%)				
<i>Registered nurse – cert.</i>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<i>Registered nurse – diploma</i>	2 (10.0)	2 (9.5)	1 (2.9)	5 (6.6)
<i>Registered nurse – degree</i>	11 (55.0)	13 (61.9)	14 (40.0)	38 (50.0)
<i>Post-graduate certificate</i>	2 (10.0)	1 (4.8)	2 (5.7)	5 (6.6)
<i>Post-graduate diploma</i>	3 (15.0)	4 (19.0)	14 (40.0)	21 (27.6)
<i>Masters in Nursing</i>	2 (10.0)	1 (4.8)	4 (11.4)	7 (9.2)
Educational Qualification, n (%)				
<i>No Formal Education</i>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<i>Junior Cert./Intermediate Cert.</i>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<i>Leaving Cert (or equivalent)</i>	14 (42.4)	7 (30.4)	21 (55.3)	42 (4)
<i>Vocational/Technical</i>	13 (39.4)	5 (21.7)	4 (10.5)	22 (23.4)
Qualification				
<i>Certificate (Third-level)</i>	0 (0.0)	2 (8.7)	1 (2.6)	3 (3.2)
<i>Diploma (Third-level)</i>	4 (12.1)	4 (17.4)	3 (7.9)	11 (11.7)
<i>Bachelor's Degree</i>	0 (0.0)	5 (21.7)	8 (21.1)	13 (13.8)
<i>Master's Degree</i>	2 (6.1)	0 (0.0)	1 (2.6)	3 (3.2)
<i>Doctoral Degree (e.g. PhD)</i>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Specialist qualification in emergency nursing, n (%)				
<i>Yes</i>	5 (25.0)	7 (33.3)	21 (58.3)	33 (42.9)
<i>No</i>	15 (75.0)	14 (66.7)	15 (41.7)	44 (57.1)
FETAC level 5 (HCA only)	11 (91.7)	3 (100.0)	4 (100.0)	18 (94.7)
Working Contract, n (%)				
<i>Full-time</i>	27 (77.1)	21 (87.5)	35 (89.7)	83 (84.7)
<i>Part-time</i>	3 (8.6)	3 (12.5)	4 (10.3)	10 (10.2)
<i>Agency</i>	5 (14.3)	0 (0.0)	0 (0.0)	5 (5.1)
<i>Other</i>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Gender, n (%)				
<i>Female</i>	29 (82.9)	14 (58.3)	30 (76.9)	73 (74.5)
<i>Male</i>	6 (17.1)	10 (41.7)	9 (23.1)	25 (25.5)
Years as a nurse/HCA mean (SD)				
<i>As Nurse/HCA</i>	8.43 (7.53)	12.35 (7.02)	11.34 (6.30)	10.57 (7.05)
<i>Current Hospital</i>	3.70 (4.36)	5.00 (3.46)	6.56 (6.78)	5.24 (5.44)
<i>Current Unit</i>	3.32 (4.55)	3.96 (2.83)	5.75 (5.96)	5.54 (4.94)
<i>Agency</i>	0.21 (0.25)	0.86 (0.99)	0.67 (1.07)	0.55 (1.26)

	<b>Hospital 4 Time 3 (n = 37)</b>	<b>Hospital 5 Time 3 (n = 23)</b>	<b>Hospital 6 Time 3 (n = 39)</b>	<b>Total Time 3 (n = 99)</b>
Received Pre-Reg training in Ireland, n (%)				
Yes	29 (80.6)	11 (45.8)	23 (59.0)	63 (63.6)
No	7 (19.4)	13 (54.2)	16 (41.0)	36 (36.4)
Countries				
UK	2 (28.6)	2 (15.4)	4 (25.0)	8 (22.2)
India	3 (42.9)	2 (15.4)	2 (12.5)	7 (19.4)
Other EU	1 (14.3)	0 (0.0)	1 (6.3)	2 (5.6)
Philippines	1 (14.3)	8 (33.3)	9 (56.3)	18 (50.0)
Other Worldwide	0 (0.0)	1 (7.7)	0 (0.0)	1 (2.8)

Table 5.4.1.2: Profile of Respondents Hospital 7

Characteristic	<b>Time 3 (n=7)</b>
Response rate, %	28.0
<i>Job Title, n (%)</i>	
CNM	2 (28.6)
RN	4 (57.1)
HCA	1 (14.3)
<i>Nursing Qualifications, n (%)</i>	
<i>RN only</i>	
Registered nurse – cert.	0 (0.0)
Registered nurse – diploma	0 (0.0)
Registered nurse – degree	2 (33.3)
Post-graduate certificate	1 (16.7)
Post-graduate diploma	2 (33.3)
Masters in Nursing	1 (16.7)
<i>Educational Qualification, n (%)</i>	
No Formal Education	0 (0.0)
Junior Cert./Intermediate Cert.	0 (0.0)
Leaving Cert (or equivalent)	4 (57.1)
Vocational/Technical	0 (0.0)
<i>Qualification</i>	
Certificate (Third-level)	0 (0.0)
Diploma (Third-level)	1 (14.3)
Bachelor's Degree	2 (23.6)
Master's Degree	0 (0.0)
Doctoral Degree (e.g. PhD)	0 (0.0)
<i>Specialist qualification in emergency nursing, n (%)</i>	
Yes	1 (16.7)
No	5 (88.3)
FETAC level 5 (HCA only)	
<i>Working Contract, n (%)</i>	
Full-time	7 (100.0)

Part-time	0 (0.0)
Agency	0 (0.0)
Other	0 (0.0)
<i>Gender, n (%)</i>	
Female	7 (100.0)
Male	0 (0.0)
<i>Years as a nurse/HCA</i>	
mean (SD)	
As Nurse/HCA	12.38 (8.85)
Current Hospital	8.16 (6.68)
Current Unit	3.80 (1.30)
Agency	0 (0.0)
<i>Received Pre-Reg training in Ireland, n (%)</i>	
Yes	3 (42.9)
No	4 (57.1)
<i>Countries</i>	
	3 (100.0)
UK	
India	0 (0.0)
Other EU	0 (0.0)
Philippines	0 (0.0)
Other Worldwide	0 (0.0)
Other (Missing/Not Stated)	0 (0.0)

Table: 5.4.1.3: Profile of respondents' shift type

N (%)	Hospital 4 Time 3 (n = 37)	Hospital 5 Time 3 (n = 23)	Hospital 6 Time 3 (n = 39)	Total Time 3 (n = 99)
Day Shift (8 hours)	1 (2.8)	0 (0.0)	1 (2.6)	2 (2.1)
Day Shift (12 Hours)	32 (88.9)	13 (59.1)	24 (63.2)	69 (71.9)
Night shift (12 hours)	3 (8.3)	8 (36.4)	13 (33.3)	24 (25.0)
Other	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.0)

Table: 5.4.1.4: Profile of respondents' shift type Hospital 7

	Time 3 (n=7)
Day Shift (8 hours)	1 (14.3)
Day Shift (12 Hours)	5 (71.4)
Night shift (12 hours)	0 (0.0)
Other	1 (14.3)

## 5.4.2 Nursing Staff-to-Patient Ratios

In Time 3, the ratio of patients per nurse per shift remained relatively similar to Time 1 and Time 2 (12.38 patients). A maximum patient caseload of 17.95 was reported in Time 3 lower than Time 1 but higher than Time 2. The minimum number of patients cared for also decreased from Time 1 (9.89) to Time 2 (7.05), but increased to figures similar to Time 1 in Time 3 (9.26).

For Time 3 there was a shift in caseload volume between day and night shift. RNs on day shift were responsible for 13.27 patients, compared to 8.75 patients during nightshifts. However, when looking at the average patient caseload per hospital, Hospital 4 saw a decrease in patients per nurse for the day shift from 18.14 (Time 1) to 12.55 (Time 3). Hospital 6 also decreased in ratios from 10.42 to 9.39 (from Time 1 to Time 2) during the day shift. However, this increased to 14.21 in Time 3. Moreover, Hospital 5 saw a slight increase in ratios during the day shift, increasing from 7.00 to 8.78 (Time 1 to Time 2), which remained constant for Time 3.

For Hospital 7, in Time 1, an average of 9.11 patients per nurse per shift was reported, this increased to an average of 12.25 at Time 2. And further to 13.14 in Time 3. A maximum patient caseload of 12.83 patients per shift was found within the IU at Time 1, again this increased to 15.19 in Time 2, and 17.14 in Time 3. The minimum number of patients cared for by respondents within the IU also increased from Time 1 (6.00) to Time 2 (10.68), with little difference from Time 2 and Time 3 (10.00). Note these figures may be reflective of the IU increasing in workload due Covid-19 and hence should be interpreted with caution.

As previously stated, while the IU does not operate overnight these may be patients who were awaiting transfer to other wards/units/departments or whose treatment lapsed into night-time shifts within the IU. At Time 1, RNs on day shift were responsible for an average of 10.57 patients per shift, while RNs on night shift had an average of 1.00 patient per shift. At Time 2, the average patient caseload for the day shift and night shift increased to 13.86 on day shift and 8.00 patients on night shifts. Finally, Time 3 reported an average of 13.14 patients during the day shift and no patients during the night shift. However, it should be noted that of the staff who responded, none worked during night shifts so this figure should be taken with caution.

While interpreting this data, it should be noted that this represents self-reported figures and represents the total number of patients cared for rather than on an hourly basis.

Table: 5.4.1.5: Number of Patients Cared for by Nurses and HCAs

	<b>Hospital 4</b>	<b>Hospital 5</b>	<b>Hospital 6</b>	<b>Total</b>
	<b>Time 3</b>	<b>Time 3</b>	<b>Time 3</b>	<b>Time 3</b>
	(n = 37)	(n = 23)	(n= 39)	(n = 99)
Minimum patients	10.73 (14.85)	8.71 (9.18)	8.28 (13.67)	9.26 (13.04)
Maximum patients	22.56 (20.51)	14.96 (20.45)	15.40 (17.57)	17.95 (19.57)
Average patients	13.58 (13.40)	12.04 (12.34)	11.47 (15.77)	12.38 (13.98)
Ave Patients per RN, day shift	12.55 (12.79)	13.27 (13.94)	14.21 (19.39)	13.27 (15.31)
Ave Patients per RN, night shift	12.33 (2.08)	10.50 (10.04)	6.85 (3.11)	8.75 (6.40)

Table: 5.4.1.6: Number of Patients Cared for by Nurses and HCAs Hospital 7

<b>Ratios, mean (SD)</b>	<b>Time 3 (n=7)</b>
Minimum patients	10.00 (10.30)
Maximum patients	17.14 (12.71)
Average patients	13.14 (12.92)

Ave Patients per RN per shift Day Shift	13.14 (12.92)
Ave Patients per RN per shift Night Shift	0 (0.0)

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### 5.4.3 Nursing Work Index

All five domains of the NWI saw improvements in the overall average scores from Time 1 to Time 2. The mean of each subscale can be seen in Table 5.4.1.7 at hospital level and overall, for all three hospitals for Time 3. Scores were lowest for Time 3 across all 3 data collection time points. For Time 1, the highest scores were reported for Nurse Manager, Leadership and Support, while in Time 2 and Time 3 the highest scores were seen for Collegial Nurse-Doctor Relations. The lowest scores were consistently reported for Staffing and Resource Adequacy across all three hospitals and all time points.

Taking into account the overall decrease in scores for Time 3, Collegial Nurse-Doctor Relations had the smallest change in scores and remained relatively high for Time 3 (3.29). Nurse Manager Ability, Leadership, and Support of Nurses subscale had the greatest change from Time 2 to Time 3 (2.89 to 2.29). However, Staffing and Resource Adequacy remained the lowest scoring subscale.

With consideration for the overall decrease in NWI scores for Time 3, Nurse Participation in Hospital Affairs, Nursing Foundations for Quality of Care, and Nurse Manager Ability, Leadership, and Support of Nurses had the smallest shift in scores (by 0.14). Staffing and Resource Adequacy had the greatest decrease in scores (1.98 to 1.65), and also remained the lowest scoring subscale. Similar to previous time points, Collegial Nurse-Doctor Relations remained the highest scoring subscale.

For Time 3, Nursing Foundations for Quality of Care had the smallest change in scores (0.07), while Staffing and Resource Adequacy had the biggest decrease in score (2.26 to 1.74) and remained the lowest scoring subscale. Like previous hospitals, Collegial Nurse-Doctor Relations remained the highest scoring subscale for Hospital 6 in Time 3.

In relation to Hospital 7, for Time 3, Nursing Foundations for Quality of Care was the highest reported score with the NWI. The lowest scores reported on the NWI at Time 1 was for Staffing and Resource Adequacy (2.21). This increased by 0.54 to 2.75 at Time 2, with the lowest scores at Time 2 being reported for Nurse Participation in Hospital Affairs (2.61). However, Staffing and Resource Adequacy returned to the lowest NWI score in Time 3 (2.08).

Interestingly, at Time 3 every item increased bar Nurse Manager Ability, Leadership, and Support of Nurses (decreased from 2.87 to 2.37) and Staff and Resource adequacy (decreased from 2.75 to 2.08). Again, caution should be noted with interpreting, these figures given the small reductions in scores. NWI index items remained above midpoint for Time 3 bar the two items mentioned previously.

Table: 5.4.1.7: Nursing Work Index

NWI, mean (SD)	Hospital 4	Hospital 5	Hospital 6	Total
RN responses only	Time 3	Time 3	Time 3	Time 3
	(n = 37)	(n = 23)	(n = 39)	(n = 99)
Nurse Participation in Hospital Affairs	2.49 (0.81)	2.24 (0.54)	2.38 (0.56)	2.37 (0.63)
Nursing Foundations for Quality of Care	2.58 (0.63)	2.47 (0.55)	2.65 (0.38)	2.58 (0.50)
Nurse Manager Ability, Leadership, and Support of Nurses	2.29 (0.66)	2.43 (0.66)	2.50 (0.64)	2.54 (0.65)
Staffing and Resource Adequacy	1.73 (0.72)	1.65 (0.42)	1.74 (0.54)	1.71 (0.56)
Collegial Nurse-Doctor Relations	3.29 (0.73)	2.57 (0.68)	3.18 (0.41)	3.04 (0.65)

Table: 5.4.1.8: Nursing Work Index Hospital 7

NWI, mean (SD)	Time 3 (n=7)
Nurse Participation in Hospital Affairs	3.20 (2.13)
Nursing Foundations for Quality of Care	3.12 (1.44)
Nurse Manager Ability, Leadership, and Support of Nurses	2.37 (0.60)
Staffing and Resource Adequacy	2.08 (0.80)
Collegial Nurse-Doctor Relations	2.72 (0.57)

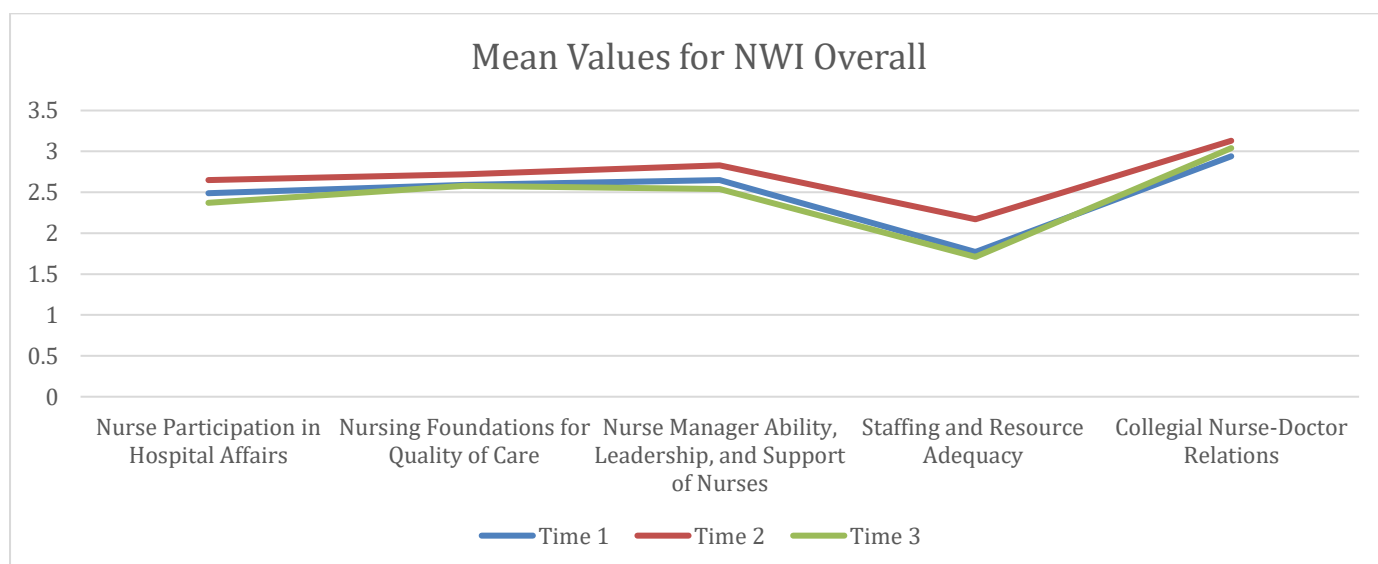


Figure 5.4.1.8: NWI mean values Overall for Time 1 (n=135), 2 (n=135) and 3 (n=99).

#### **5.4.4 Time Availability and Quality of Care**

Single item measures were used to assess staff (RNs and HCAs) perceptions of time available to deliver care, additional time required to deliver care and the quality of care delivered on the last shift worked.

Staff were asked to rate the time available to them to deliver care on their last shift on a 3-point scale ranging from “less time than usual” to “more time than usual.” At Time point 3, 56.1% of staff reported having “less time than usual” and 39.8% reported having the “same amount of time as usual”. Table 5.3.1.5 shows results for Time 3. During baseline, 35.3% of staff in Hospital 4 indicated that they had “less time than usual” while 47.1% indicated they had the “same amount of time”, which increased to 60.9% reporting the “same amount of time” as usual and 29.1% reporting “less time than usual” during Time 2. However, the proportion of staff reporting “less time than usual” increased to 48.6% in Time 3. Likewise, those reporting the “same amount of time as usual” returned to baseline figures (48.6%) at Time 3.

For Hospital 5, 79.2% of staff reported “less time than usual” and 16.7% “reported the same amount of time as usual” in Time 3. Hospital 6 followed a similar pattern to Hospital 5 between Time 1 and 2, with a decrease from 50.0% in Time 1 to 30.0% in Time 2 for “less time than usual”. Hospital 6 had minimal change to their frequencies for Time 3, with 48.7% of staff reporting “less time than usual” and a slightly larger increase of those reporting the “same amount of time as usual” (46.2%)

Staff were asked to make an approximation regarding how much more time they required in order to provide necessary care to patients as per their nursing care plan on a 6-point scale ranging from “No more time needed” to “Greater than 60 minutes.” At Time 3 96.9% of staff reported that they required additional time to deliver care. The majority of staff reported that they required an additional 15 to 30 minutes per shift to provide the quality of care as detailed in their nursing care plans across all three time points Time 1, Time 2 and Time 3 (44.0%, 48.9%, 57.1% respectively). In Hospital 4, 5.7% of respondents indicated that no extra time was needed, which decreased from 11.1% in Time 2, and 5.9% in Time 1. In Hospital 5, 7.1% of staff indicated that they required no extra time in Time 1, however this dropped to 0.0% in Time 2 and Time 3. Only 2.4% of staff in Hospital 6 indicated that they required no extra time to deliver care at Time 1, which increased to 14.3% at Time 2 and returned to 2.6% in Time 3.

Staff were asked to rate the quality of care provided on their last shift on a 4-point scale ranging from “poor” to “excellent.” The majority of staff across all Emergency Departments at Time 3 rated the quality of care provided on their last shift as either “good” (31.6%) or “fair” (44.9%). For Time 3 the majority of staff reported fair quality of care, followed by good quality of care. Those who reported excellent quality of care doubled from 8.1% in Time 1 to 16.4% in Time 2. However, this returned to 9.2% in Time 3. In Hospital 4, ratings of “good” quality of care decreased by 37.4% in Time 3. The most common reported Quality of Care for Time 3 was “fair” (30.6%). Conversely, respondents reporting “excellent” quality of care, saw an increase of 3.2% evident between Time 1 and Time 2 which continued to increase by 1.5% in Time 3. Hospital 5 reported a continued decreased in ratings of “good” from Time 1 (48.8%) to Time 3 (30.4%), inclusive of Time 2 (39.5%). However, an 8.2% increase in ratings of “excellent” was seen from Time 1 to Time 2, which decreased to 0.0% at Time 3. Hospital 6’s self-reported quality of care increased from Time 1 to Time 2, with the quality of care rated as “good” increasing by 13% and “excellent” increasing by 12.5%. However, Quality of Care rating of “good” decreased 11.9%, and “excellent” ratings decreased by 1.8%.

A single-item measure asked staff to give the Emergency Department in which they work an overall grade for patient safety on a 5-point scale ranging from “failing” to “excellent.” At Time 1, the majority of staff gave their Emergency Department a grade of “acceptable” (37.5%) for patient safety, which remained stable at Time 2 (36.1%), and Time 3 (31.3%). A total of 12.5% of staff grading their Emergency Department as either “very good” or “excellent” in its provision of patient safety during



Time 1; this increased to 29.4% in Time 2, however this decreased to 18.2% in Time 3. Each hospital showed an increase in “excellent” ratings of patient’s safety by at least 5% from Time 1 to Time 2 (Hospital 4=5%; Hospital 5=5.3%; Hospital 6=5.8%). Excellent rating increased by a further 3% in Hospital 5 but decreased by 8.2% in Time 3.

Staff were asked to reflect on the quality of patient care provided in the last 6 months in their department and state on a scale whether it had “deteriorated,” “remained the same,” or “improved”. At Time 1, 45.5% of staff stated that the quality of care provided in their Emergency Department “remained the same” which decreased slightly to 40.9% in Time 2 and continued to decrease in Time 3 (33.7%). While 50.0% of staff indicated that quality of care provided had “deteriorated” in Time 1, there was a shift in Time 2 to 40.2% (compared to 4.5% in Time 1) of staff stating that the quality of care had “improved” in the last 6 months, and 18.2% stating that care had “deteriorated”. However, this increased to 57.1% of respondents reporting deterioration in Time 3. While each hospital showed a substantial increase in “improved” ratings of quality of care over the last 6 months, Hospital 4 had the largest increase from 4.1% in Time 1 to 48.9% in Time 2. This is followed closely by Hospital 6 (Time 1=4.8%; Time 2=42.0%), and finally Hospital 5 (Time 1=4.8%; Time 2=27.0%). While there was a decrease in “improved” ratings of quality of care across all hospitals, hospital 4 continued to have an higher “improved” ratings of quality of care from baseline (15.9% increase). Conversely, both Hospital 5 and 6 reported an overall decrease from baseline to Time 3 in “improved” ratings (Hospital 5: .06%, Hospital 6: 2.3%).

For Hospital 7, in Time 3. 60.0% of staff reported having the “same amount of time” available to provide care to patients on their last shift in Time 1, which increased 76.2% in Time 2, and returned to 57.1% in Time 3.

At Time 1, 85.7% of staff reported that they required additional time to provide patient care across all Emergency Departments. This decreased to 76.2% of staff indicating that they required additional time to provide patient care in Time 2 and to 71.5% in Time 3. The majority of staff in Time 1 (35.7%) reported that they required an additional 15 to 30 minutes per shift to provide the quality of care as detailed in their nursing care plans, which increased to 42.9% in Time 2. However, there was an even split between staff reporting “no more time needed” (28.6%), “less than 15 minutes” (28.6%), and “15 to 30 minutes” (28.6%) in Time 3.

The majority of staff across the IU rated the quality of care provided on their last shift as either “good” (Time 1: 66.7% Time 2: 47.6% Time 3: 57.1%) or “excellent” (Time 1: 20.0%, Time 2: 33.3% Time 3: 28.6%). In Time 3 the majority of staff rates Patient safety as “very good” (57.1%), followed by “acceptable” (28.6%).

Staff were asked to reflect on the quality of patient care provided in the last 6 months in their department and state on a scale whether it had “deteriorated,” “remained the same,” or “improved”. At Time 1, 80.0% of staff stated that the quality of care provided in their Emergency Department “remained the same” which decreased to 52.4% in Time 2 and increased to 85.7% in Time 3. Staff reporting “deteriorated” quality of care remained consistent between Time 1 and Time 2 (13.3%; 14.3%). However, this dropped off in Time 3. While those reporting an “improved” quality of care increased dramatically from 6.7% in Time 1 to 33.3% in Time 2. However, this decreased to 14.3% in Time 3.

Table: 5.4.1.9: Quality of care

Quality of care, n (%)	Hospital 4 Time 3 (n = 37)	Hospital 5 Time 3 (n = 23)	Hospital 6 Time 3 (n = 39)	Total Time 3 (n = 99)
Time available to deliver care				
<i>Less time than usual</i>	17 (48.6)	19 (79.2)	19 (48.7)	55 (56.1)
<i>Same amount of time</i>	17 (48.6)	4 (16.7)	18 (46.2)	39 (39.8)
<i>More time than usual</i>	1 (2.9)	1 (4.2)	2 (5.1)	4 (4.1)
Additional time needed				
<i>No more time needed</i>	2 (5.7)	0 (0.0)	1 (2.6)	3 (3.1)
<i>Less than 15 minutes</i>	2 (5.7)	4 (16.7)	5 (13.2)	11 (11.3)
<i>15 to 30 minutes</i>	20 (57.1)	15 (62.5)	16 (42.1)	51 (52.6)
<i>31 to 45 minutes</i>	5 (14.3)	2 (8.3)	6 (15.8)	13 (13.4)
<i>46 to 60 minutes</i>	1 (2.9)	0 (0.0)	5 (13.2)	6 (6.2)
<i>Greater than 60 minutes</i>	5 (14.3)	3 (12.5)	5 (13.5)	13 (13.4)
Quality of care				
<i>Poor</i>	9 (25.0)	4 (17.4)	1 (2.6)	14 (14.3)
<i>Fair</i>	11 (30.6)	12 (52.2)	21 (53.8)	44 (44.9)
<i>Good</i>	10 (27.8)	7 (30.4)	14 (35.9)	31 (31.6)
<i>Excellent</i>	6 (16.7)	0 (0.0)	3 (7.7)	9 (9.2)
Grade of patient safety				
<i>Failing</i>	5 (13.9)	6 (25.0)	3 (7.7)	14 (14.1)
<i>Poor</i>	13 (36.1)	9 (37.5)	6 (15.4)	28 (28.3)
<i>Acceptable</i>	6 (16.7)	5 (20.8)	20 (51.3)	31 (31.3)
<i>Very good</i>	6 (16.7)	2 (8.3)	10 (25.6)	18 (18.2)
<i>Excellent</i>		2 (8.3)	0 (0.0)	8 (8.1)
Quality of care, last 6 months				
<i>Deteriorated</i>	13 (37.1)	17 (70.8)	26 (66.7)	56 (57.1)
<i>Remained the same</i>	15 (42.9)	6 (25.0)	12 (30.8)	33 (33.7)
<i>Improved</i>	7 (20.0)	1 (4.2)	1 (2.6)	9 (9.2)

Table: 5.4.2.1: Quality of care Hospital 7

Quality of care, n (%)	Time 3 (n=7)
<i>Time available to deliver care</i>	
<i>Less time than usual</i>	3 (42.9)
<i>Same amount of time</i>	4 (57.1)
<i>More time than usual</i>	0 (0.0)
<i>Additional time needed</i>	
<i>No more time needed</i>	2 (28.6)
<i>Less than 15 minutes</i>	2 (28.6)
<i>15 to 30 minutes</i>	2 (28.6)
<i>31 to 45 minutes</i>	1 (14.3)
<i>46 to 60 minutes</i>	0 (0.0)
<i>Greater than 60 minutes</i>	0 (0.0)
<i>Quality of care</i>	
<i>Poor</i>	0 (0.0)

Fair	1 (14.3)
Good	4(57.1)
Excellent	2 (28.6)
<i>Grade of patient safety</i>	
Failing	0 (0.0)
Poor	0 (0.0)
Acceptable	2 (28.6)
Very good	4 (57.1)
Excellent	1 (14.3)
<i>Quality of care, last 6 months</i>	
Deteriorated	0 (0.0)
Remained the same	6 (85.7)
Improved	1 (14.3)

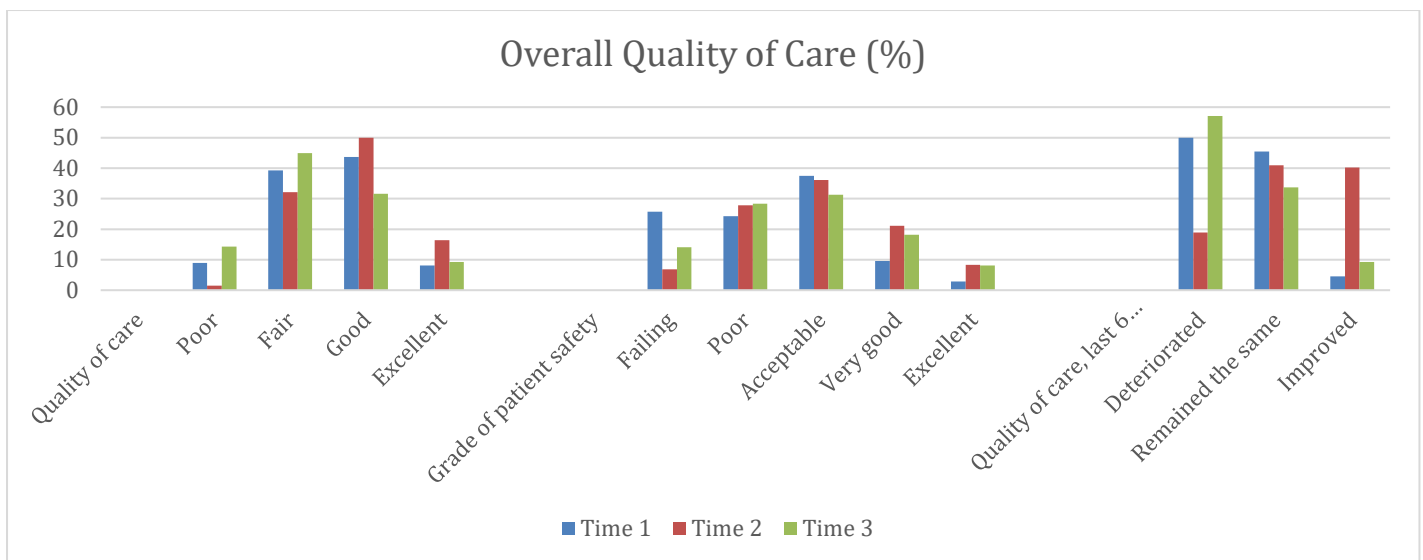


Figure 5.4.2.2: Quality of Care reported by staff in survey data from Time 1, 2 and 3.

### 5.4.5 Care Left Undone and Delayed

The data reported on care left undone events (CLUEs) and care delayed (CD) are derived from respondents with registered nurse qualification only (including CNMs) as many of these tasks are specific to the RN role. Nurses were asked to identify care activities which had been necessary but left undone and/or delayed on their most recent shift due to lack of time.

On average, 3.52 activities were left undone in Time 3. The number of items of care left undone in Hospitals 5 (2.75 to 2.78) remained relatively unchanged between Time 1 and 2, and slightly increased to 2.90 activities in Time 3. Hospital 6 remained relatively similar in Time 1 and Time 3 (3.05, 3.12 respectively) with a brief decrease in Time 2 (2.80). Hospital 4 had the greatest change in activities left undone between the two time points, showing a decrease from 4.05 in Time 1 to 2.68 in Time 2. However, this increased to 4.65 activities in Time 3.

The mean number of necessary care activities which were delayed per shift and the number of shifts where at least one care activity was delayed are displayed in Table 5.4.2.2. In Time 3, 95.5% of nurses reported that the provision of at least one item of necessary care was delayed during their last shift. This decreased to 89.2% of nurses reporting at least one item of care delayed in Time 2.

However, this return to frequencies similar to baseline in Time 1 (94.2%). On average the number of Items delays increased to 8.59 in Time 3, which is still lower than baseline figures (by 1.01).

A single item also assessed if staff meal breaks had been missed or delayed due to lack of time (Table 5.4.2.3). In Time 3 there was a larger increase in missed meal breaks than delayed (14.% increase, and 0.09% increase respectively). A small proportion (Time 1 = 8.1%, Time 2 = 6.7%, Time 3: 9.3%) reported that they had both a missed and a delayed meal break. In Time 1, 14.6% reported neither a missed nor delayed meal break on their last shift, which increased to 24.4% in Time 2, and decreased below baseline frequencies to 6.7% at Time 3. Hospital 4 and 6 showed an increase in staff reporting neither missed nor delayed breaks (Hospital4: 6.7% to 18.4%; Hospital 6: 5.0% to 32.6%), with Hospital 6 showing the largest change of a 27.6% increase between the two time points. All three hospital reported a decrease in neither missed or delayed breaks in Time 3 (Hospital 4: 10.0%; Hospital 5: 5.0%; Hospital 6: 5.7%)

Across all Emergency Departments, the items of care most frequently reported as left undone in Time 3 were providing comfort/talking with patients, educating patients, oral hygiene and adequate monitoring/recording of nutritional/hydration status as most frequently left undone. Across Hospitals 5 and 6, the highest activities left undone were For Time 1, 2, and 3 were oral hygiene, educating patients and/or families and providing comfort/ talking with patients. While Hospital 5 and 6 reported an increase in oral hygiene, providing comfort/talking with patients, educating patients, and adequate monitoring/recording of nutritional/hydration status, and educating patients from baseline to Time 3. Hospital 4 reported a decrease in Oral Hygiene (by 15.9%), adequate monitoring/recording of nutritional/hydration status (by 1.9%), and educating patients (14.1%), and an increase (of 14.1%) in providing comfort to patients.

Hospital 7 (IU) the mean number of necessary care activities which were undone or delayed per shift are displayed in Table 5.4.2.3. In Time 1, 81.8% of nurses reported that the provision of at least one item of necessary care was delayed during their last shift. This decreased to 63.2% of nurses reporting at least one item of care delayed in Time 2. Baseline reports by nurses revealed that in Time 1, on average, a total of 4.73 care tasks per shift were delayed which decreased to 2.79 in Time 2.

A single item also assessed if staff meal breaks had been missed or delayed due to lack of time (Table 5.4.2.4). The percentage of staff reporting missed, or delayed meal breaks decreased substantially in Time 2 to 40.0% but increased further to 66.7% in Time 3. No one within Time 1, 2, and 3 reported missed and delayed meal breaks.

Across the IU, the items of care most frequently reported as left undone in Time 3 were similar items to Time 1 and 2 left undone but at different frequencies. See Tables 5.4.2.4-9for frequencies of Care Left Undone and Care Delayed events.

Table: 5.4.2.2: Care left undone and care delayed

<b>Missed Care</b>				
RN responses only	<b>Time 3</b> (n = 37)	<b>Time 3</b> (n = 23)	<b>Time 3</b> (n = 39)	<b>Time 3</b> (n = 99)
Number of activities undone, mean (SD)	4.65 (4.83)	2.90 (2.36)	3.12 (2.61)	3.52 (3.41)
Shifts with at least one item undone, n (%)	14 (70.0)	15 (75.0)	23 (88.5)	52 (78.8)
Number of activities delayed, mean (SD)	8.90 (4.24)	11.15 (4.00)	8.59 (3.66)	9.46 (4.09)
Shifts with at least one item delayed, n (%)	18 (94.7)	19 (95.0)	26 (96.3)	63 (95.5)

Table: 5.4.2.3: Care left undone and care delayed Hospital 7

<b>CLUEs</b>	<b>Time 3 (n=7)</b>
Number of activities undone, mean (SD)	0.19 (0.34)
Shifts with at least one item undone, n (%)	3 (12.8)
Number of activities delayed, mean (SD)	2.91 (4.10)
Shifts with at least one item delayed, n (%)	10 (55.2)

Table 5.4.2.4: Missed and/or Delayed meal breaks

**Meal Breaks**

RN responses only

	<b>Time 3 (n = 37)</b>	<b>Time 3 (n = 23)</b>	<b>Time 3 (n = 39)</b>	<b>Total (n = 99)</b>
Meal break missed, n (%)	12 (60.0)	3 (15.0)	15 (37.5)	27 (36.0)
Meal break delayed, n (%)	3 (15.0)	15 (75.0)	23 (57.5)	36 (48.0)
Missed and Delayed, n (%)	3 (15.0)	1 (5.0)	0 (0.0)	7 (9.3)
Neither missed or delayed, n (%)	2 (10.0)	1 (5.0)	2 (5.0)	5 (6.7)

Table 5.4.2.5: Missed and/or Delayed meal breaks Hospital 7

	<b>Time 3 (n=6)</b>
Meal break missed, n (%)	1 (16.7)
Meal break delayed, n (%)	3 (50.0)
Missed and Delayed, n (%)	0 (0.0)
Neither missed or delayed, n (%)	2 (33.3)

Table 5.4.2.6: Number and frequency of each item of care left undone in Time 3.

Care Left Undone	Hospital 4 Time 3 (n = 37)	Hospital 5 Time 3 (n = 23)	Hospital 6 Time 3 (n = 39)	Total Time 3 (n = 99)
RN responses only				
Adequate patient surveillance	7 (35.0)	6 (30.0)	6 (21.4)	19 (27.9)
Adequate/ regular monitoring of deteriorating patients	6 (30.0)	2 (10.0)	0 (0.0)	8 (12.1)
Vital sign observations	4 (20.0)	1 (5.0)	0 (0.0)	4 (6.1)
Administration of patient medications on time	2 (10.0)	1 (5.0)	0 (0.0)	3 (4.5)
Supporting patients with physical needs	6 (30.0)	4 (20.0)	3 (11.5)	13 (19.7)
Recording clinical practice/ developing and updating nursing care documentation	3 (15.0)	2 (10.0)	2 (7.7)	7 (10.6)
Adequate monitoring/ recording of nutritional/ hydration status	8 (40.0)	6 (30.0)	10 (37.0)	24 (35.8)
Providing comfort/ talking with patients	11 (55.0)	9 (45.0)	16 (57.1)	36 (52.9)
Educating patients and/or families	9 (45.0)	12 (60.0)	17 (60.7)	38 (55.9)
Pain assessment	4 (20.0)	0 (0.0)	1 (3.8)	5 (7.6)
Pain management	2 (10.0)	0 (0.0)	0 (0.0)	2 (3.0)
Planning care	4 (20.0)	1 (5.0)	6 (22.2)	11 (16.4)
Preparing patients and families for discharge	7 (35.0)	6 (30.0)	10 (37.0)	23 (34.3)
Skin care and/or assessment of pressure ulcers	5 (25.0)	0 (0.0)	1 (3.8)	6 (9.1)
Undertaking procedures/ treatments e.g. wound care	5 (25.0)	1 (5.0)	4 (14.8)	10 (14.9)
Oral Hygiene	10 (50.0)	8 (40.0)	20 (64.5)	38 (53.5)

Table 5.4.2.7: Number and frequency of each item of care left undone in Time 3 Hospital 7.

RN responses only n (%)	Time 3 (n=7)
----------------------------	-----------------

Adequate patient surveillance	0 (0.0)
Adequate/ regular monitoring of deteriorating patients	0 (0.0)
Vital sign observations	0 (0.0)
Administration of patient medications on time	0 (0.0)
Supporting patients with physical needs	0 (0.0)
Recording clinical practice/ developing and updating nursing care documentation	1 (14.3)
Adequate monitoring/ recording of nutritional/ hydration status	2 (28.6)
Providing comfort/ talking with patients	2 (28.6)
Educating patients and/or families	1 (14.3)
Pain assessment	0 (0.0)
Pain management	0 (0.0)
Planning care	0 (0.0)
Preparing patients and families for discharge	0 (0.0)
Skin care and/or assessment of pressure ulcers	0 (0.0)
Undertaking procedures/ treatments e.g. wound care	0 (0.0)
Oral Hygiene	3 (42.9)

Table 5.4.2.8: Number and frequency of each item of care delayed in Time 3

Care Delayed	Hospital 4			Hospital 5			Hospital 6		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
RN responses only	(n = 44)	(n = 47)	(n = 37)	(n = 37)	(n = 38)	(n = 33)	(n = 39)	(n = 50)	(n = 33)
Adequate patient surveillance	28 (63.6)	19 (50.0)	13 (65.0)	28 (75.7)	22 (61.1)	12 (60.0)	22 (56.4)	21 (44.7)	22 (66.7)
Adequate/ regular monitoring of deteriorating patients	34 (77.3)	15 (39.5)	11 (57.9)	30 (81.1)	22 (61.1)	15 (75.0)	25 (64.1)	18 (39.1)	11 (66.7)
Vital sign observations	35 (79.5)	16 (42.1)	13 (65.0)	28 (75.7)	28 (77.8)	19 (95.0)	31 (79.5)	24 (52.2)	22 (66.7)
Administration of patient medications on time	34 (77.3)	17 (44.7)	16 (80.0)	28 (75.7)	25 (69.4)	17 (85.0)	25 (64.1)	19 (41.3)	22 (66.7)
Supporting patients with physical needs	30 (68.2)	25 (65.8)	13 (65.0)	28 (75.7)	27 (75.0)	15 (75.0)	30 (76.9)	28 (60.9)	22 (66.7)
Recording clinical practice/ developing and updating nursing care documentation	31 (70.5)	19 (50.0)	16 (80.0)	31 (83.8)	28 (77.8)	17 (85.0)	32 (82.1)	34 (72.3)	22 (66.7)
Adequate monitoring/ recording of nutritional/ hydration status	21 (47.7)	15 (39.5)	8 (40.0)	25 (67.6)	16 (44.4)	13 (65.0)	24 (61.5)	17 (37.0)	11 (66.7)
Providing comfort/ talking with patients	21 (47.7)	14 (36.8)	8 (40.0)	18 (48.6)	11 (30.6)	10 (50.0)	21 (53.8)	21 (45.7)	14 (66.7)



Educating patients and/or families	13 (29.5)	6 (15.8)	9 (45.0)	12 (32.4)	11 (30.6)	7 (35.0)	14 (35.9)	9 (19.6)	1 (4.5)
Pain assessment	30 (68.2)	14 (36.8)	8 (40.0)	23 (62.2)	20 (55.6)	16 (80.0)	24 (61.5)	17 (37.0)	2 (6.3)
Pain management	31 (70.5)	12 (31.6)	13 (65.0)	29 (78.4)	22 (61.1)	15 (75.0)	26 (66.7)	21 (45.7)	1 (5.3)
Planning care	26 (59.1)	12 (31.6)	12 (60.0)	23 (62.2)	22 (61.1)	15 (75.0)	19 (48.7)	13 (27.7)	1 (5.3)
Preparing patients and families for discharge	21 (47.7)	10 (26.3)	8 (40.0)	20 (54.1)	22 (61.1)	10 (50.0)	15 (38.5)	14 (30.4)	1 (4.5)
Skin care and/or assessment of pressure ulcers	33 (75.0)	16 (42.1)	10 (50.0)	27 (73.0)	21 (58.3)	17 (85.0)	27 (69.2)	21 (45.7)	2 (8.0)
Undertaking procedures/ treatments e.g. wound care	28 (63.6)	16 (42.1)	14 (70.0)	27 (73.0)	23 (63.9)	16 (80.0)	26 (66.7)	25 (54.3)	2 (6.3)
Oral Hygiene	9 (20.5)	11 (28.9)	7 (35.0)	18 (48.6)	12 (33.3)	9 (45.0)	10 (25.6)	10 (21.7)	0 (0.0)

Table 5.4.2.9: Number and frequency of each item of care delayed in Time 3  
Hospital 7

RN responses only  
n (%)

**Time 3**  
(n=7)

Adequate patient surveillance	6 (85.7)
Adequate/ regular monitoring of deteriorating patients	3 (42.9)
Vital sign observations	1 (14.3)
Administration of patient medications on time	1 (14.3)
Supporting patients with physical needs	4 (57.1)
Recording clinical practice/ developing and updating nursing care documentation	1 (14.3)
Adequate monitoring/ recording of nutritional/ hydration status	0 (0.0)
Providing comfort/ talking with patients	1 (14.3)
Educating patients and/or families	2 (28.6)
Pain assessment	2 (28.6)
Pain management	2 (28.6)
Planning care	2 (28.6)
Preparing patients and families for discharge	2 (28.6)
Skin care and/or assessment of pressure ulcers	2 (28.6)
Undertaking procedures/ treatments e.g. wound care	2 (28.6)
Oral Hygiene	1 (14.3)

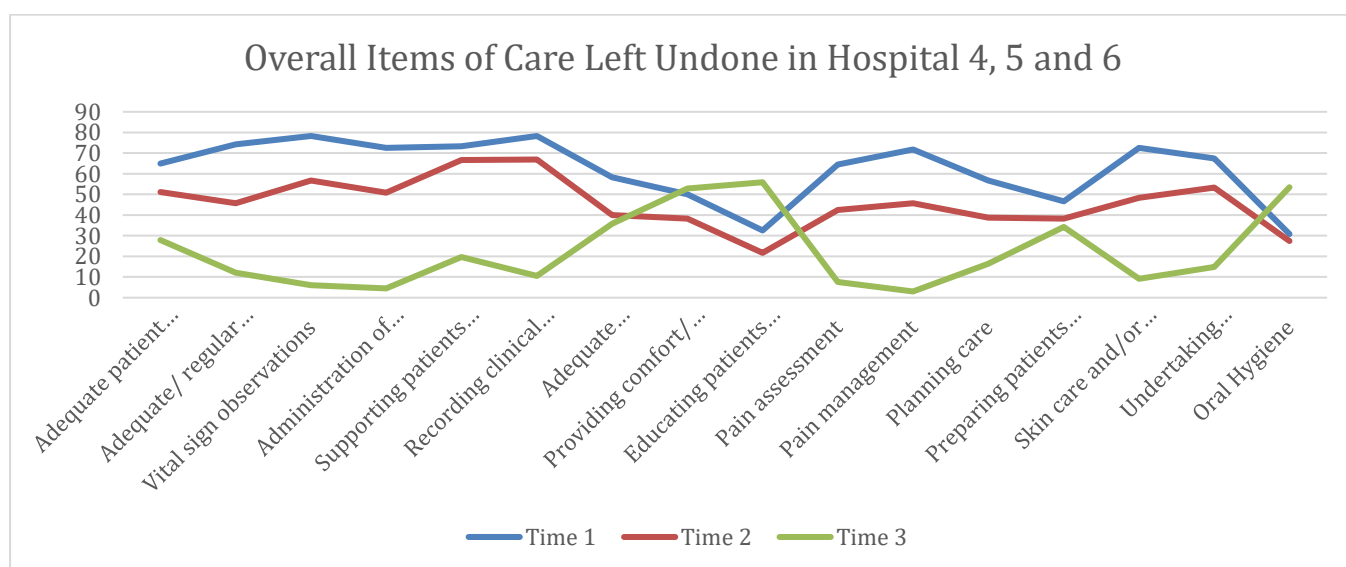


Figure 5.4.2.1: Overall Items of Care Left Undone represented as a % of staff reporting in survey data for Time 1 (n=135), Time 2 (n=135) and Time 3 (n=99).

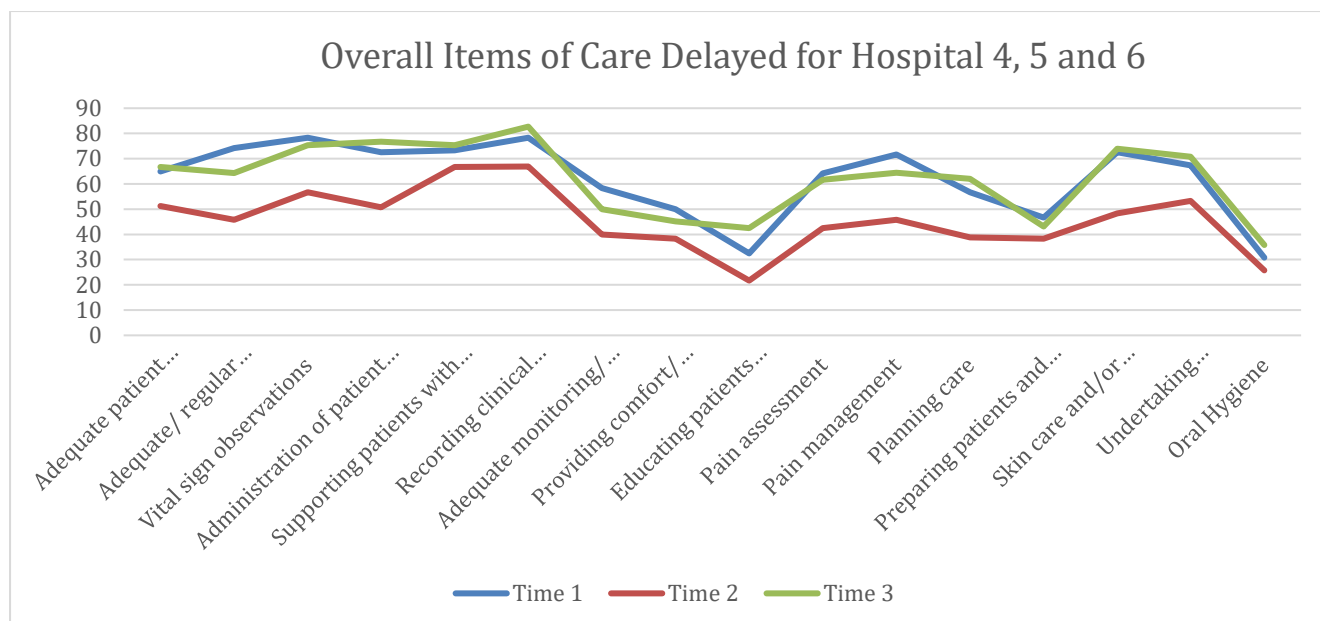


Figure 5.4.2.2: Items of Care Delayed Overall represented as a % of staff reporting in survey data for Time 1 (n=135), Time 2 (n=135) and Time 3 (n=99).

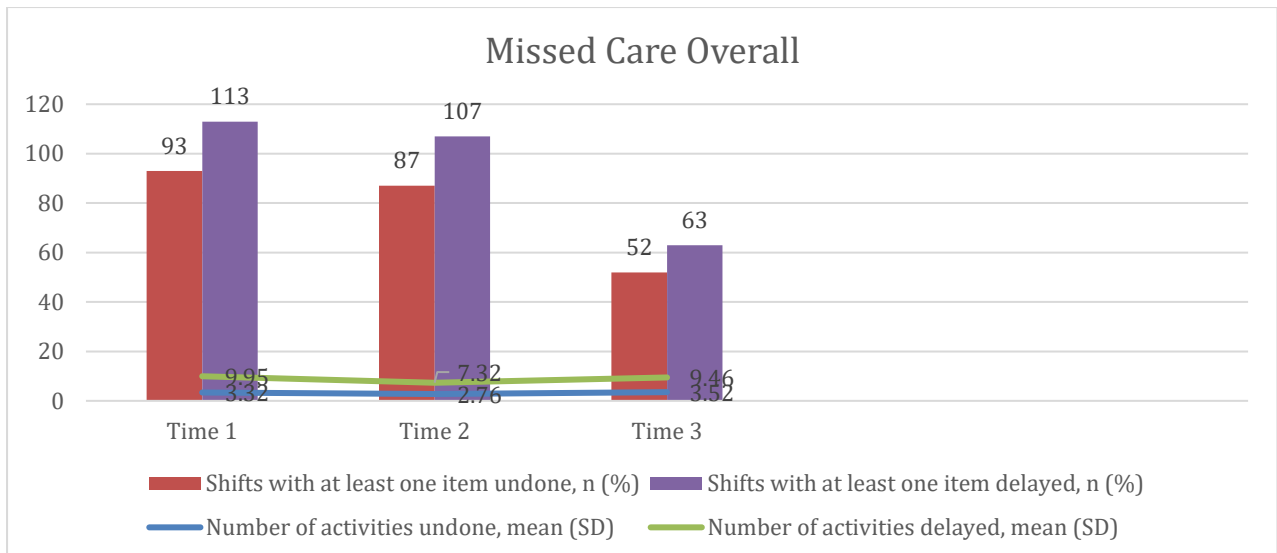


Figure 5.4.2.3: Overall Missed Care comparing Time 1, 2 and 3 data. It is evident that initially Time 2 saw a noticeable reduction in the number of items of care that were delayed/left undone however while this has increased in Time 3 it is still below Time 1 data.

### 5.5.6 Job Satisfaction and Intention to Leave

Satisfaction decreased in Time 3 back to 54.1%. Hospital 4 reported that 51% of staff in total were satisfied or very satisfied with their job in Time 1 which increased to 76.6% in Time 2; and remained largely similar in Time 3 (72.2%). In addition, two-thirds of staff reported that they were satisfied with being a nurse in Time 1, which increased to 90.0% in Time 2, with a slight decrease to 83.3% in Time 3. Hospital 5 reported that 59.6% of staff reported being satisfied or very satisfied with their current job in Time 1, which increased to 68.5% in Time 2, with a sharp decrease to 39.1% in Time 3. Staff who reported being satisfied or very satisfied with being a nurse remained relatively stable in Hospital 5 from Time 1 (74.4%) to Time 2 (75.3%). However, this decreased to 70.0% in Time 3. Hospital 6 had a substantial increase in staff who reported being satisfied or very satisfied from Time 1 (53.5%) to Time 2 (92.0%). However, like hospital 4 and 5 there was a sharp decrease to 46.1% in Time 3. In Time 1, 72.1% of staff reported being satisfied or very satisfied with being a nurse, which increased slightly to 78.0% in Time 2, and 84.6% in Time 3.

Staff recommending the department to a colleague remained relatively similar from baseline to Time 3 (T1 – 53.7%, T3 = 52%). The majority (Time 1 = 69.3%; Time 2 = 73.7%; Time 3 = 72.2%) of respondents would “definitely” or “probably” recommend their department to family or friends should they require hospital care, with a slight increase between Time 1, 2, and 3. Both Hospital 5 and Hospital 6 reported a slight decrease in respondents who would recommend their department to a friend between Time 1 and Time 3 (see table 4.4.6.1). Hospital 6 however, had the highest rates of respondents who would “definitely” or “probably” recommend their department to family or friends in Time 3 (92.1%), and was the only hospital to report an increase in frequency from Time 1 to Time 2 (74.4% to 92.1%). Hospital 6 had the highest rate of respondents recommending their unit to a Colleague at Time 1 (58.1%). However, this decreased to 53.9% in Time 3. Hospital 4 reported the highest frequency of staff recommending their department to a colleague in Time 3 (61.1%), and was the only hospital to report an increase between Time 1 and Time 3. Hospital 5 reported a

decrease of 12.9% between baseline and Time 3, with a brief increase between Time 1 and Time 2 (by 11.2%).

Overall intention to leave remained relatively stable from Time 1 to Time 2, with a slight decrease in Time 3. 53.3% of staff reported they would probably or definitely not leave in Time 1. In Time 2, 55.2% of staff reported they would probably or definitely not leave. With a slight decrease in Time 3 (47.4%). Of the staff in Hospital 4, 50.9% stated that they intended to leave their job, with 39.2% of these indicating this was due to job dissatisfaction. There was a slight decrease in intention to leave in Time 2 (45.6%) however, 75% of respondents who had intended to leave indicated it was due to job dissatisfaction. The highest frequency of Intention to leave was reported in Time 3 at 55.5% of staff reporting they would probably or definitely leave. Of those 70.6% intended to leave because of job dissatisfaction. The vast majority intended to stay within the nursing career when pursuing a new job across all three time points. In Time 1, just under half (44.2%) of respondents for Hospital 5 and 6 reported intention to “definitely” or “probably” leave in the future. Time 2 saw a reduction to 36.8% in staff’s intention to leave in Hospital 5, while Hospital 6 increased to 50.0% of staff reporting that they “probably” or “definitely” would leave. Like Time 1, Intention to leave was reported by under half of staff in Hospital 5 and 6 at Time 3 (47.8% and 39.4% respectively). Like Hospital 5 the majority of staff intended to stay within the nursing career in Hospital 5 and 6 across all three time points.

The majority of staff in the IU were either satisfied (64.3%;61.9%) or very satisfied (28.6%; 28.6%) in both Time 1 and Time 2. Time 3 was similar insofar that the majority of staff were Satisfied (71.4%), however no respondents reported feeling very satisfied.

In Time 1 and Time 3, 100% of staff reported they would probably or definitely recommend the unit to a colleague as a good place to work with a slight this decreased to 95.3% of staff recommending the unit to a colleague at Time 2. However, 100% of staff stated that they would probably or definitely recommend the unit to family/friends across all three time points.

Of the staff in the IU, 15.4% reported they would probably leave their job, which increased to 23.8% in Time 2 but returned to 14.3% in Time 3. Of those in Time 1 who indicated an intention to leave their job, 15.4% was due to job dissatisfaction in Time 1. This remained largely the same in Time 2 (14.3%). However, this increased to 50% in Time 3. Of the respondents who intended to leave due to job dissatisfaction, half of them were leaving for nursing, but not in a hospital (50.0%), and the other half were leaving for nursing in another hospital (50.0%). In Time 2, the majority of staff (66.7%) intended to leave for nursing in another hospital, followed by a non-nursing career (33.3%). In Time 3, majority of nurses intended to leave for a non-nursing career (42.9), followed by Nursing but not in a hospital (14.9%).

Table: 5.5.6.1: Job satisfaction and intention to leave

	Hospital 4			Hospital 5			Hospital 6			Total		
	Time 1 (n = 50)	Time 2 (n = 47)	Time 3 (n = 37)	Time 1 (n = 43)	Time 2 (n = 38)	Time 3 (n = 23)	Time 1 (n = 43)	Time 2 (n = 50)	Time 3 (n = 39)	Time 1 (n = 136)	Time 2 (n = 135)	Time 3 (n = 99)
Satisfaction with current job												
Very dissatisfied	6 (11.8)	1 (2.1)	4 (11.1)	5 (11.9)	2 (5.3)	2 (8.7)	5 (11.6)	0 (0.0)	6 (15.4)	16 (11.8)	3 (2.2)	12 (12.2)
Dissatisfied	19 (37.3)	10 (21.3)	6 (16.7)	12 (28.6)	10 (26.3)	12 (52.2)	15 (34.9)	4 (8.0)	15 (38.5)	46 (33.8)	24 (17.8)	33 (33.7)
Satisfied	23 (45.1)	29 (61.7)	21 (58.3)	23 (54.8)	21 (55.3)	8 (34.8)	20 (46.5)	38 (76.0)	13 (33.3)	66 (48.5)	88 (65.2)	42 (42.9)
Very satisfied	3 (5.9)	7 (14.9)	5 (13.9)	2 (4.8)	5 (13.2)	1 (4.3)	3 (7.0)	8 (16.0)	5 (12.8)	8 (5.9)	20 (14.8)	11 (11.2)
Satisfaction with being a nurse												
Very dissatisfied	1 (2.0)	0 (0.0)	2 (5.6)	4 (9.3)	3 (7.9)	1 (4.3)	2 (4.7)	1 (2.0)	3 (7.7)	7 (5.1)	4 (3.0)	6 (6.1)
Dissatisfied	15 (29.4)	5 (10.6)	4 (11.1)	7 (16.3)	6 (15.8)	7 (30.4)	3 (23.3)	10 (20.0)	3 (7.7)	32 (23.4)	21 (15.6)	14 (14.3)
Satisfied	17 (33.3)	24 (51.1)	22 (61.1)	21 (48.8)	23 (60.5)	11 (47.8)	5 (58.1)	30 (60.0)	27 (69.2)	64 (46.75)	77 (57.0)	60 (61.2)
Very satisfied	17 (33.3)	18 (38.3)	8 (22.2)	11 (25.6)	6 (15.8)	8 (22.2)	6 (14.0)	9 (18.0)	6 (15.4)	34 (24.8)	33 (24.4)	18 (18.4)
Recommend unit to colleague												
Definitely no	5 (9.8)	1 (2.1)	6 (16.7)	6 (7.1)	2 (5.3)	2 (8.7)	6 (14.0)	0 (0.0)	6 (15.4)	14 (10.3)	3 (2.2)	14 (14.3)
Probably no	18 (35.3)	9 (19.1)	8 (22.2)	19 (45.2)	14 (36.8)	13 (56.5)	12 (27.9)	7 (14.0)	12 (30.8)	49 (36.0)	30 (22.2)	33 (33.7)
Probably yes	23 (45.1)	24 (51.1)	13 (36.1)	17 (40.5)	19 (50.0)	5 (21.7)	20 (46.5)	28 (56.0)	18 (46.2)	60 (44.1)	71 (52.6)	36 (36.7)
Definitely yes	5 (9.8)	13 (27.7)	9 (25.0)	3 (7.1)	3 (7.9)	3 (13.0)	5 (11.6)	15 (30.0)	3 (7.7)	13 (9.6)	31 (23.0)	15 (15.3)
Recommend unit to family/friends												
Definitely no	1 (2.0)	1 (2.3)	6 (16.7)	4 (9.3)	3 (8.1)	4 (17.4)	1 (2.3)	0 (0.0)	0 (0.0)	6 (4.4)	4 (3.1)	10 (10.3)
Probably no	10 (19.6)	2 (4.5)	7 (19.4)	16 (37.2)	14 (37.8)	7 (30.4)	10 (23.3)	3 (6.0)	3 (7.9)	36 (26.3)	19 (14.5)	17 (17.5)
Probably yes	27 (52.9)	17 (38.6)	12 (33.3)	21 (48.8)	17 (45.9)	9 (39.1)	20 (46.5)	18 (36.0)	23 (60.5)	68 (49.6)	52 (38.7)	44 (45.4)
Definitely yes	13 (25.5)	24 (54.5)	11 (30.6)	2 (4.7)	3 (8.1)	3 (13.0)	12 (27.9)	29 (58.0)	12 (31.6)	27 (19.7)	56 (42.7)	26 (26.8)
Feelings about future in hospital												
Definitely will leave	4 (7.8)	7 (15.2)	7 (19.4)	3 (7.0)	1 (2.6)	3 (13.0)	2 (4.7)	2 (4.0)	7 (18.4)	9 (6.6)	10 (7.5)	17 (17.5)
Probably will leave	22 (43.1)	14 (30.4)	9 (25.0)	16 (37.2)	13 (34.2)	9 (39.1)	17 (39.5)	23 (46.0)	16 (42.1)	55 (40.1)	50 (37.3)	34 (35.1)
Probably will not leave	20 (39.2)	15 (32.6)	13 (36.1)	22 (51.2)	22 (57.9)	8 (34.8)	21 (48.8)	17 (34.0)	11 (28.9)	63 (46.0)	54 (40.3)	32 (33.0)
Definitely will not leave	5 (9.8)	10 (21.7)	7 (19.4)	2 (4.7)	2 (5.3)	3 (13.0)	3 (7.0)	8 (16.0)	4 (10.5)	10 (7.3)	20 (14.9)	14 (14.4)

Leaving due to job dissatisfaction	20 (39.2)	9 (75.0)	12 (70.6)/8 (50.0)	22 (51.2)	10 (52.6)	11 (91.7)/ 11 (91.7)	13 (30.2)	11 (84.6)	19 (90.5)/18 (78.3)	55 (40.1)	30 (68.2)	42 (84.0)/ 37 (72.5)
Leaving for												
Nursing in another hospital	12 (54.5)	7 (36.8)	11(64.7)	11 (52.4)	11 (52.4)	7 (53.8)	14 (66.7)	13 (56.5)	17(85.0)	37 (57.8)	31 (49.2)	35 (70.0)
Nursing, but not in a hospital	6 (27.3)	5 (26.3)	4 (23.5)	7 (33.3)	5 (23.8)	4 (30.8)	6 (28.6)	6 (26.1)	1 (5.0)	19 (29.7)	16 (25.4)	9 (18.0)
Non-Nursing	4 (18.2)	7 (36.8)	2 (11.8)	3 (14.3)	5 (23.8)	2 (15.4)	1 (4.8)	4 (17.4)	2 (10.0)	8 (12.5)	16 (25.4)	6 (12.0)

Table: 5.5.6.2: Job satisfaction and intention to leave Hospital 7

n (%)	Time 3 (n=7)
<i>Satisfaction with current job</i>	
Very dissatisfied	0 (0.0)
Dissatisfied	2 (28.6)
Satisfied	5 (71.4)
Very satisfied	0 (0.0)
<i>Satisfaction with being a nurse</i>	
Very dissatisfied	0 (0.0)
Dissatisfied	2 (28.6)
Satisfied	4 (57.1)
Very satisfied	0 (0.0)
	1 (14.3)
<i>Recommend unit to colleague</i>	
Definitely no	0 (0.0)
Probably no	0 (0.0)
Probably yes	5 (71.4)
Definitely yes	2 (28.6)
<i>Recommend unit to family/friends</i>	
Definitely no	0 (0.0)
Probably no	0 (0.0)
Probably yes	2 (28.6)
Definitely yes	5 (71.4)
<i>Feelings about future in hospital</i>	
Definitely will leave	0 (0.0)
Probably will leave	1 (14.3)
Probably will not leave	2 (28.6)
Definitely will not leave	4 (57.1)
Leave due to job dissatisfaction (yes)	1 (50.0)
<i>Leaving for</i>	
Nursing in another hospital	0 (0.0)
Nursing, but not in a hospital	1 (14.3)
Non-Nursing	3 (42.9)

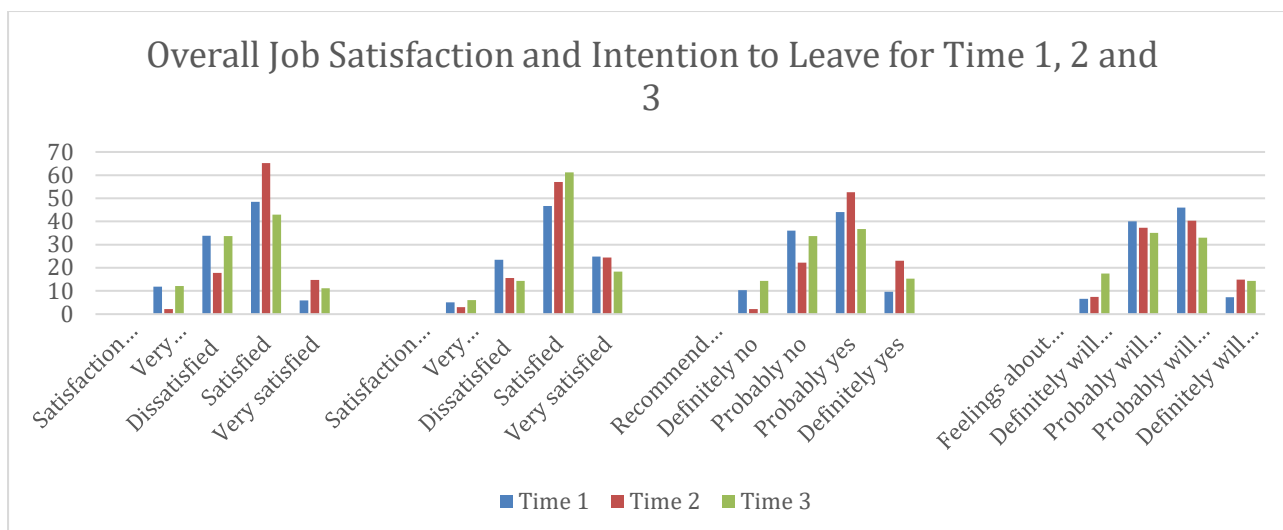


Figure 5.5.6.1: Overall job satisfaction and intention to leave represented as a % of staff survey responses for Time 1 (n=135), Time 2 (n=135) and Time 3 (n=99)



### **5.5.7 Burnout**

The Maslach Burnout Inventory (MBI) (Maslach et al., 1996) was used to measure burnout in nursing staff. The MBI-Human Services Survey Medical Personnel (MBI-HSS MP) is composed of 22 items across three subscales: emotional exhaustion; depersonalisation; personal accomplishment. The emotional exhaustion subscale addresses feelings of being emotionally overextended by work. depersonalization subscale assesses an impersonal response to recipients of care and personal accomplishment subscale measures feelings of competence and achievement in one's work. Items are measured on a 7-point scale of 0 to 6 (never = 0, to everyday = 6, see Table 5.5.7.1). High scores in emotional exhaustion and depersonalisation and low scores in personal accomplishment indicate burnout. A full break down of hospital scores can be found in Table 5.5.7.2.

Overall, emotional exhaustion showed the greatest improvement from Time 1 to Time 2, decreasing from 3.31 to 2.95. However, emotional exhaustion was highest at Time 3 (3.51). Overall scores on depersonalisation also decreased (i.e. improved) at Time 2, but like emotional exhaustion, had the highest score at Time 3 (2.47). while levels of personal accomplishment remaining relatively stable for Time 1 and 2, and decreased slightly in Time 3 (4.05). At hospital level, Hospital 4 showed slightly high levels of emotional exhaustion in Time 1 (3.40), while depersonalisation had a lower score of 2.12 and personal accomplishment had a high score of 4.35. Scores slightly decreased at Time 2 with emotional exhaustion decreasing to 2.61, and depersonalisation to 1.52, while personal accomplishment remained largely unchanged (4.26). For Time 3, depersonalisation remained the same from Time 1 to Time 3, emotional exhaustion reported a slight improvement from baseline (3.24), and personal accomplishment reported the biggest Improvement from baseline (3.98). Hospital 5 slightly decreased on emotional exhaustion (3.02 in Time 1 to 2.96 in Time 2) but increased from 1.90 for depersonalisation in Time 1 to 2.27 in Time 2. For time 3, emotional exhaustion and depersonalisation had increased from baseline (3.81 and 2.54), while personal accomplishment had decreased from baseline (3.96). Hospital 6 showed largely unchanged scores for emotional exhaustions and depersonalisation between Time 1 and Time 3 and a slight decrease of 0.17 for personal accomplishment.

For Hospital 7, Emotional Exhaustion and depersonalisation were quite low in Time 1 (1.75; 1.42 respectively) and continued to decrease in Time 2 (0.82; 0.38). Emotional exhaustion returned to baseline in Time 3, and depersonalisation was highest at Time 3 (1.05). Overall, higher levels Personal Accomplishment were reported in the IU in Time 1 with a slight decrease in Time 2 and 3 (Time 1 = 5.02; Time 2 = 4.76; Time 3 = 4.84).

Table: 5.5.7.1: Maslach burnout inventory scale

0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Everyday

Table: 5.5.7.2: Maslach burnout inventory scores overall

	Hospital 4 Time 3 (n = 37)	Hospital 5 Time 3 (n = 23)	Hospital 6 Time 3 (n = 39)	Total Time 3 (n = 99)
Emotional Exhaustion	3.24 (1.50)	3.81 (1.21)	3.60 (1.51)	3.51 (1.45)
Depersonalisation	2.12 (1.58)	2.54 (1.36)	2.75 (1.43)	2.47 (1.49)
Personal Accomplishment	3.98 (1.01)	3.96 (1.11)	4.17 (1.02)	4.05 (1.03)

Table: 5.5.7.3: Maslach burnout inventory scores overall Hospital 7

MBI mean, (SD)	Time 3 (n=7)
Emotional Exhaustion	1.75 (1.10)
Depersonalisation	0.89 (1.05)
Personal Accomplishment	4.84 (1.05)

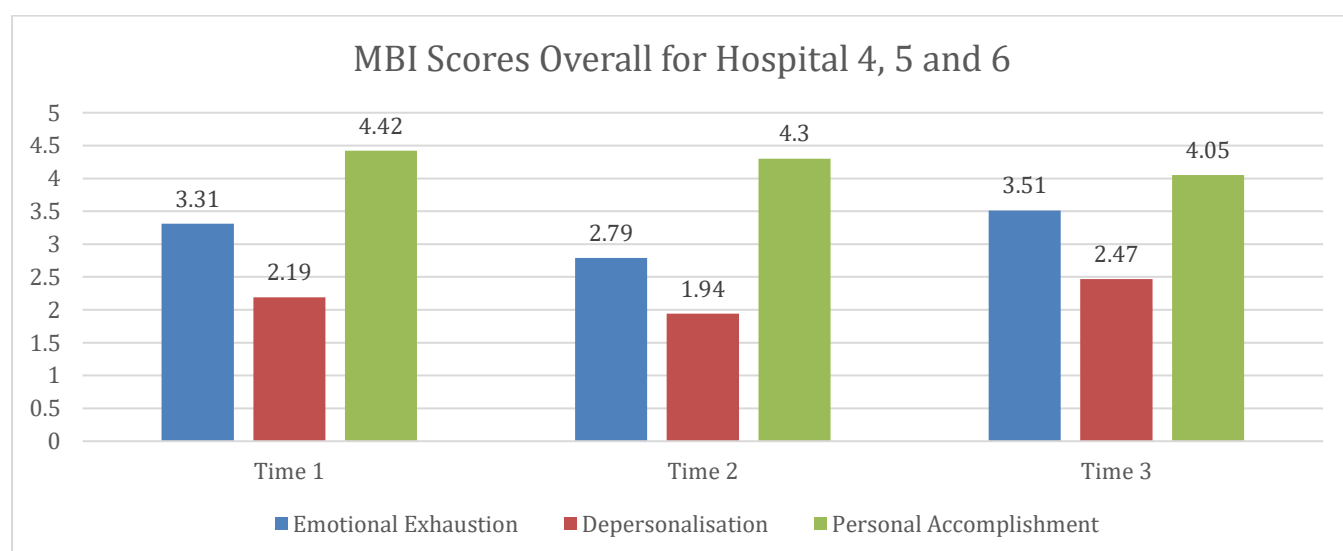


Figure 5.5.7.2: Mean values for MBI scores Overall comparing Time 1, 2 and 3.

### 5.5.8 Prevalence of Violence and Aggression

The Conflict Tactics Scale is a 10-item scale developed by Straus (1979) and is most commonly used in family violence research. The scale has been adapted to suit the Emergency Department for the purpose of this study. Staff were asked to rate how often events occurred in the last three months, ranging from never to more than 10

times. The survey is divided into three subscales: physical, psychological and conflict. Table 5.5.8.1 displays the overall mistreatment experienced by staff, while Tables 5.5.8.2-4 show the breakdown of each subscale.

Overall, in Time 1, 76.5% of staff reported that they experienced a physical assault, 94.0% psychological/verbal mistreatment and 97.8% conflict with patients (conflict with family was removed for this analysis) over the last three months. Time 2 reported similar results with 74.2% of staff experienced physical assault, 93.3% experienced psychological/verbal mistreatment, and 94.7% experienced conflict with patients. Finally, in Time 3 86.0% of staff reported experiencing physical assault, 97.0% reported psychological or verbal mistreatment, and 96.0% reported conflict with patients. In Time 1, the highest proportion for each mistreatment was experienced in Hospital 6 with a large majority reporting physical assault (83.3%), verbal mistreatments (97.6%) and conflict (100.0%). Hospital 6's prevalence for physical assault (78.0%; 89.7%), verbal mistreatment (90.0%; 100.0%) and conflict (96.0%; 100.0%)) remained high at Time 2 and Time 3. Overall, Hospital 5 reported increases in physical assaults (78.6% to 87.5%) and verbal mistreatment (92.9% to 95.8%), with a slight decrease recorded in conflict (97.7% to 95.8%) from Time 1 to Time 3. While Hospital 4 rates of physical assault and conflict decreased by 4.4% and 4.6% respectively between Time 1 and Time 2. There was an increase to 81.1% and 91.5% respectively in Time 3. Verbal mistreatment remained largely consistent from Time 1 and Time 2, with a slight increase to 94.6% in Time 3.

The physical mistreatment of staff is displayed below in Table 5.5.8.2. Overall, in Time 1 more than half of respondents had a patient throw something at them (61.9%) and had been pushed, grabbed, shoved or pinched by a patient (60.4%) at least once; 53% of all respondents had also been slapped or hit at least once in the last 3 months. Furthermore, 45.5% of all respondents have been kicked or hit with their fist. Respondents for Time 2 reported a lower rate of physical mistreatment of staff, with 56.7% of respondents reported being pushed, grabbed, shoved or pinched by a patient, the same percentage report having something thrown at them, and 54.5% of all respondents have been slapped or hit at least once. Conversely, 49.2% reported being kicked which is an increase of 3.7% from Time 1. Time 3 reported an increase in staff who had a patient throw something at them to 76%, had been pushed, grabbed, shoved or pinched by a patient to 70%, slapped at least once to 66.6%, and had been kicked or hit with their fist to 55%.

Psychological prevalence of aggression and violence reported an overall increase in Time 3. Those who reported being shouted at or insulted increased to 93%, those that have been shouted at in anger increased to 94.0%, and finally staff reported patients threatening them increased to 79.0%.

There was a slight decrease in respondents experiencing patients arguing with them about waiting times (94.7%) in Time 2, and this remained relatively the same in Time 3 (95.0). Likewise, the majority (82.7%) of respondents reported patients' complaints about care they had received for both Time 1 and Time 2 (Time 1=82.8%; Time 2=82.7%), which increased to 89.0% in Time 3. Additionally, 83.6% of respondents in Time 1, and 80.6% of respondents in Time 2 reported experiencing conflict with patient's visitors at least once in the last 3 months. However, this increased slightly to 83.3% in Time 3.

For Hospital 7, in Time 1, 35.7% of staff reported that they experienced a physical assault, 78.6% psychological/verbal mistreatment and 85.7% conflict with patients (conflict with family was removed for this analysis). Time 2 reported that 52.4% of staff experienced physical assault, 75.0% experienced psychological/verbal mistreatment, and 76.2% experienced conflict with patients. Physical assault increased to 57.1% along with verbal mistreatment (57.1%), and 100% of respondents reported conflict. While there was a decrease in staff reporting psychological/verbal mistreatment and conflict with patients from Time 1 to Time 3, there was a 21.4% increase in physical assault between the two time periods.

In Time 1 23.6% of respondents had a patient throw something at them, and 23.6% had been pushed, grabbed, shoved or pinched by a patient at least once; 23.5% of all respondents had also been slapped or hit at least once in the last 3 months. Furthermore, 23.6% of all respondents have been kicked or hit with their fist. Respondents for Time 2 reported a higher rate of physical mistreatment of staff, with 38.1% of respondents reported being pushed, grabbed, shoved or pinched by a patient, 23.8% report having something thrown at them, and 28.6 of all respondents have been slapped or hit at least once. Respondents who reported being kicked which has the largest increase in reported from Time 1 to Time 2, increasing by 19.2% ( $T2 = 42.8\%$ ). Time 3 reported the lowest rate of patients thrown something at them (14.3%) and patient pushed, grabbed, shoved or pinched (0.0%).

In Time 1, 64.7% of respondents have been sworn at or insulted at least once in the last 3 months; 58.8% of respondents have been shouted at in anger; 29.5% of staff reported patients threatening to hit or throw something at them in the last 3 months. Respondents who reported being sworn at or insults at least once decreased to 57.1% in time 2, and 57.2% in Time 3. Likewise, there was a decrease in respondents who were threatened by patients in Time 2 ( $T2 = 25.0\%$ ). However, this increase to 42.9% in Time 3. Finally, there was an increase in respondents that have been shouted at in anger to 71.5%, but returned to a similar figure to Time 1 and Time 3.

Altogether, 64.7% of respondents experienced patients arguing with them about waiting to be seen in Time 1. There was an increase in respondents experiencing patients arguing with them about waiting times (76.1%) in Time 2. Time 3 had the lowest report of staff who had patients arguing with them (51.5%). Likewise, over half of respondents reported patients' complaints about care they had received for both Time 1 and Time 2 ( $T1=58.8\%$ ;  $T2=57.2\%$ ), with a decrease of those who reported complaints about care to 28.6% in Time 3. Additionally, 58.9% of respondents in Time 1 reported experiencing conflict with patient's visitors at least once in the last 3 months, which increased to 66.7% in Time 2, and had the highest rate at Time 3 (71.5%).

Table: 5.5.8.1 Overall Mistreatment Experienced by staff

Overall	Hospital 4 Time 3 (n = 37)	Hospital 5 Time 3 (n = 23)	Hospital 6 Time 3 (n = 39)	Total Time 3 (n = 99)
<b>Physical assault</b>	30 (81.1)	21 (87.5)	35 (89.7%)	86 (86.0)
<b>Verbal mistreatment</b>	35 (94.6)	23 (95.8)	39 (100.0)	97 (97.0)
<b>Conflict</b>	34 (91.9)	23 (95.8)	39 (100.0)	96 (96.0)

Table: 5.5.8.1: (continued ) Overall Mistreatment Experienced by staff Hospital 7  
n (%)

	<b>Time 3 (n=7)</b>
Physical assault	4 (57.1)
Verbal mistreatment	4 (57.1)
Conflict	7 (100.0)

Table 5.5.8.2 Physical Prevalence of Violence and Aggression

<b>Physical</b>	<b>Hospital 4 Time 3 (n = 37)</b>	<b>Hospital 5 Time 3 (n = 23)</b>	<b>Hospital 6 Time 3 (n = 39)</b>	<b>Total Time 3 (n = 99)</b>
Patient thrown something at you				
<i>Never</i>	9 (24.3)	8 (33.3)	7 (17.9)	24 (24.0)
<i>Once</i>	15 (40.5)	6 (25.0)	9 (23.1)	30 (30.0)
<i>2-10 times</i>	12 (32.4)	9 (37.5)	18 (46.2)	39 (39.0)
<i>&gt;10 times</i>	9 (2.7)	1 (4.2)	4 (10.3)	6 (6.0)
Patient slapped or hit you				
<i>Never</i>	12 (32.4)	10 (41.7)	13 (33.3)	35 (35.0)
<i>Once</i>	6 (16.2)	5 (20.8)	11 (28.2)	22 (22.0)
<i>2-10 times</i>	18 (48.6)	7 (29.2)	12 (30.8)	37 (37.0)
<i>&gt;10 times</i>	1 (2.7)	2 (8.3)	2 (5.1)	5 (5.0)
Patient kicked you or hit you with their fist				
<i>Never</i>	17 (45.9)	8 (37.5)	19 (48.7)	45 (45.0)
<i>Once</i>	6 (16.2)	7 (29.2)	6 (15.4)	19 (19.0)
<i>2-10 times</i>	13 (35.1)	6 (25.0)	12 (30.8)	31 (31.0)
<i>&gt;10 times</i>	1 (2.7)	2 (8.3)	1 (2.6)	4 (4.0)
Patient pushed, grabbed, shoved or pinched you				
<i>Never</i>	10 (27.0)	7 (29.2)	13 (33.3)	30 (30.0)
<i>Once</i>	9 (24.3)	6 (25.0)	6 (15.4)	21 (21.0)
<i>2-10 times</i>	14 (37.8)	7 (29.2)	10 (25.6)	31 (31.0)
<i>&gt;10 times</i>	4 (10.8)	4 (16.7)	9 (23.1)	17 (17.0)

Table 5.5.8.3: Physical Prevalence of Violence and Aggression Hospital 7

<b>Physical n (%)</b>	<b>Time 3 (n=7)</b>
<i>Patient thrown something at you</i>	
Never	6 (85.7)
Once	1 (14.3)
2-10 times	0 (0.0)
>10 times	0 (0.0)
<i>Patient slapped or hit you</i>	
Never	4 (57.1)
Once	2 (28.6)
2-10 times	1 (14.3)
>10 times	0 (0.0)
<i>Patient kicked you or hit you with their fist</i>	
Never	5 (71.4)
Once	2 (28.6)
2-10 times	0 (0.0)
>10 times	0 (0.0)
<i>Patient pushed, grabbed, shoved or pinched you</i>	
Never	7 (100.0)
Once	0 (0.0)
2-10 times	0 (0.0)
>10 times	0 (0.0)

Table 5.5.8.4: Psychological Prevalence of Violence and Aggression

<b>Psychological/ Verbal</b>	<b>Hospital 4 Time 3 (n = 37)</b>	<b>Hospital 5 Time 3 (n= 23)</b>	<b>Hospital 6 Time 3 (n = 39)</b>	<b>Total Time 3 (n = 99)</b>
Patient insulted or sworn at you				
Never	3 (8.1)	3 (12.5)	1 (2.6)	7 (7.0)
Once	7 (18.9)	4 (16.7)	2 (5.1)	13 (13.0)
2-10 times	14 (37.8)	9 (37.5)	6 (15.4)	29 (29.0)
>10 times	13 (35.1)	8 (33.3)	29 (74.4))	50 (5.0)
Patient shouted at you in anger				
Never	4 (10.8)	2 (8.3)	9 (0.0)	6 (6.0)
Once	6 (16.2)	3 (12.5)	2 (5.1)	11 (11.0)
2-10 times	13 (35.1)	8 (33.3)	8 (20.5)	29 (29.0)
>10 times	13 (35.1)	11 (45.8)	28 (71.8)	52 (52.0)
Patient threatened to hit or throw something at you				
Never	12 (32.4)	4 (16.7)	5 (12.8)	21 (21.0)
Once	8 (21.6)	11 (45.8)	5 (12.8)	24 (24.0)
2-10 times	10 (27.0)	4 (16.7)	11 (28.2)	25 (25.0)
>10 times	7 (18.9)	5 (20.8)	17 (43.6)	29 (29.0)

Table 5.5.8.5: Psychological Prevalence of Violence and Aggression Hospital 7

<b>Psychological/Verbal n (%)</b>	<b>Time 3 (n=7)</b>
<i>Patient insulted or sworn at you</i>	
Never	3 (42.9)
Once	2 (28.6)
2-10 times	2(28.6)
>10 times	0 (0.0)
<i>Patient shouted at you in anger</i>	
Never	3 (42.9)
Once	2 (28.6)
2-10 times	2 (28.6)
>10 times	0 (0.0)
<i>Patient threatened to hit or throw something at you</i>	
Never	4 (57.1)
Once	3 (42.9)
2-10 times	0 (0.0)
>10 times	0 (0.0)

Table 5.5.8.6: Conflict Reported within Prevalence of Violence and Aggression

<b>Conflict</b>	<b>Hospital 4 Time 3 (n = 37)</b>	<b>Hospital 5 Time 3 (n = 23)</b>	<b>Hospital 6 Time 3 (n = 39)</b>	<b>Total Time 3 (n = 99)</b>
Patient argued with you about waiting to be seen				
Never	4 (10.8)	1 (4.2)	0 (0.0)	5 (5.0)
Once	3 (8.1)	0 (0.0)	1 (2.6)	4 (4.0)
2-10 times	8 (21.6)	5 (20.8)	2 (5.1)	15 (15.0)
>10 times	22 (59.5)	18 (75.0)	35 (89.7)	75 (75.0)
Patient complained to you about their care				
Never	4 (10.8)	4 (16.7)	3 (7.7)	11 (11.0)
Once	7 (18.9)	3 (12.5)	2 (5.1)	12 (12.0)
2-10 times	12 (32.4)	6 (25.0)	12 (30.8)	30 (30.0)
>10 times	13 (35.1)	11 (45.8)	21 (53.8)	45 (45.0)
Experienced conflict with a patient's visitor				
Never	9 (25.0)	3 (12.5)	4 (10.3)	16 (16.2)
Once	8 (22.2)	3 (12.5)	1 (2.6)	12 (12.1)
2-10 times	16 (44.4)	10 (41.7)	14 (35.9)	40 (40.4)
>10 times	3 (8.3)	8 (33.3)	19 (48.7)	30 (30.0)

Table 5.5.8.7: Conflict Reported within Prevalence of Violence and Aggression

Hospital 7

<b>Conflict n (%)</b>	<b>Time 3 (n=7)</b>
<i>Patient argued with you about waiting to be seen</i>	
Never	2 (28.6)
Once	1 (14.3)
2-10 times	2 (8.6)
>10 times	2 (28.6)
<i>Patient complained to you about their care</i>	
Never	5 (71.4)
Once	0 (0.0)
2-10 times	1 (14.3)
>10 times	1 (14.3)
<i>Experienced conflict with a patient's visitor</i>	
Never	2 (28.6)
Once	1 (14.3)
2-10 times	3 (42.9)
>10 times	1 (14.3)



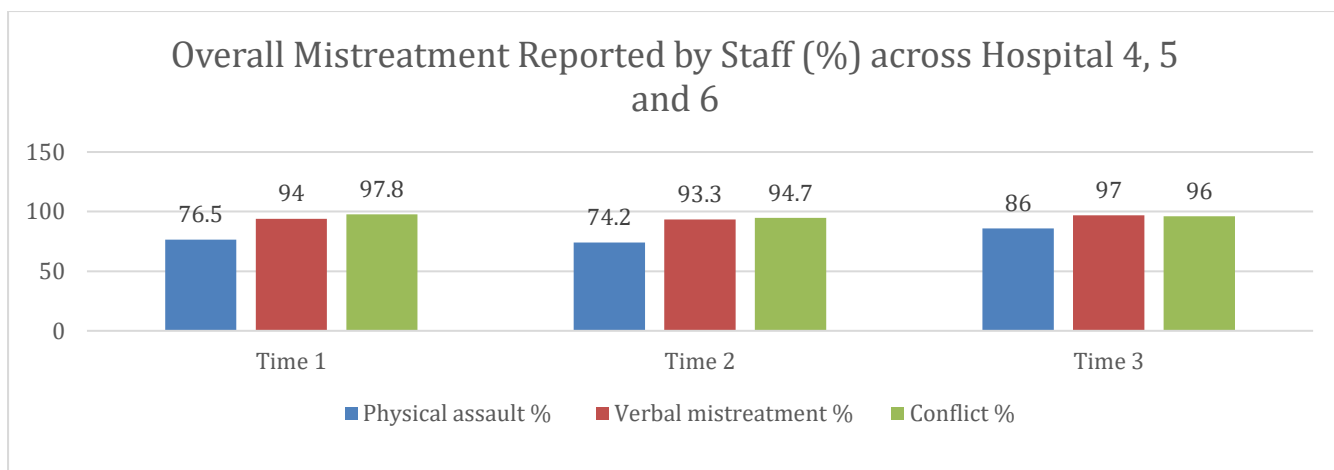


Figure 5.5.8.1: Overall Mistreatment reported by staff across Hospitals 4, 5 and 6 represented as a % for Time 1, 2 and 3.

## 5.6 Summary

The results from the cross-sectional data highlight a number of key issues for staff working in EDs during the Covid-19 pandemic and outlines its impact on staff. The demographic profile of participants remained relatively stable with the majority female (74.5%) and RN grade (77%). Nurse staff to patient ratios decreased from a maximum of 18.31 patients per shift at Time 1, decreasing to 15.24 in Time 2 and increasing slightly but still lower than 2018 to 17.95 in Time 3.

Four domains of the NWI saw reductions in the overall average scores from Time 1 to Time 3. With only Collegial Nurse Doctor Relations seeing an improvement from 2.94 to 3.04 however this was lower than what was evident at Time 2 (3.13). Nurse Manager Ability Leadership, and support of Nurses subscale reduced from Time 2 to Time 3. This may be due to a lack of opportunity to regularly share evidence-based information with staff during the pandemic, which can lead to more anxiety for the nurse (del Carmen Gimeneq-Espert 2020). Nurse Manager Ability Leadership, and support of Nurses subscale reduced from Time 2 to Time 3. This may be due to a lack of opportunity to regularly share evidence-based information with staff during the pandemic, which can lead to more anxiety for the nurse (del Carmen Gimeneq-Espert 2020). The amount of time available to provide care was also impacted on with 56.1% (an increase from Time 1 and Time 2) of staff indicating that they had “less time than usual” and under half (40.8%) of respondents indicating the quality of care provided as excellent or good with 14.3% indicating that it was poor. In addition to this over 57% of staff stated that the quality of care had deteriorated within the last 6 months.

The mean number of items of care left undone also increased from baseline measurements in Time 1 where on average 3.32 necessary care activities were left undone per shift whereas 3.52 activities of care left undone activities in Time 3. Items of care delayed reported at Time 3 were similar to those expressed in Time 1 and Time 2.

Job satisfaction decreased from 54.4% of staff reporting being either satisfied or very satisfied with their current job in Time 1 to 54.1% in Time 3. In Time 1, 72.1% of staff reported being satisfied or very satisfied with being a nurse, which increased slightly to 84.6% in Time 3. Staff recommending the department to a colleague remained relatively similar from baseline to Time 3 (T1 – 53.7%, T3 = 52%) with the majority (Time 1 = 69.3%; Time 2 = 73.7%; Time 3 = 72.2%) of respondents “definitely” or “probably” recommending their department to family or friends. Intention to leave remained relatively stable from Time 1 to Time 2 (53.3%), with a slight decrease in Time 3 (47.4%).

Burnout was seen as a significant impacting factor on intention to leave and job satisfaction. Overall, emotional exhaustion on the MBI showed the greatest improvement from Time 1 to Time 2, decreasing from 3.31 to 2.95. However, this was highest at Time 3 (3.51). Depersonalisation also decreased (i.e. improved) at Time 2, but like emotional exhaustion, had the highest score at Time 3 (2.47). while levels of personal accomplishment remained relatively stable for Time 1 and 2, and decreased slightly in Time 3 (4.05). Similar levels of emotional exhaustion, depersonalisation and

personal accomplishment were found in a cross-sectional study of ED nurses in North India in August 2020 (Jose et al 2020) clearly demonstrating the impact working during a pandemic had on ED nurses. Furthermore, a systematic review of studies conducted during 2020 found prevalence rates of 49.3%-58% for overall burnout with nurses at most risk (Gualano et al 2021). One included study showed number of shifts worked being associated with emotional exhaustion (de Wit et al 2020) with Chor et al (2020) finding ED staff who had been working in the department before the pandemic having higher rates of moderate to severe personal burnout in comparison to staff deployed from other areas.

Finally, in Time 3 86.0% of staff reported experiencing physical assault, 97.0% reported psychological or verbal mistreatment, and 96.0% reported conflict with patients. Similar levels of emotional exhaustion, depersonalisation and personal accomplishment were found in a cross-sectional study of ED nurses in North India in August 2020 (Jose et al 2020) clearly demonstrating the impact working during a pandemic had on ED nurses. Furthermore, a systematic review of studies conducted during 2020 found prevalence rates of 49.3%-58% for overall burnout with nurses at most risk (Gualano et al 2021). One included study showed number of shifts worked being associated with emotional exhaustion (de Wit et al 2020) with Chor et al (2020) finding ED staff who had been working in the department before the pandemic having higher rates of moderate to severe personal burnout in comparison to staff deployed from other areas.

## **5.7 Conclusion**

Overall, the results highlight the profound impact that a national pandemic has on staff working in EDs. Levels of missed care or care left undone were also higher combined with ratings of poorer care quality. Staff levels of job satisfaction were lower whereas levels of burnout most notably depersonalisation and emotional exhaustion were significantly higher. While intention to leave remained relatively unchanged.

## **Section 6**

### **Discussion, Conclusions**

#### **6.1 Introduction**

This section outlines a number of conclusions from the extension of the timeline for Hospital 4, 5, 6 and 7 research and highlights a number of recommendations for the Programme of Research in Safe Nurse Staffing. The data presented identifies that nursing staff are working in EDs which have high levels of demand for ED care, with challenges in patients waiting to be seen and waiting for decisions on being admitted or discharged. The results also exemplify the importance of adequate staffing within EDs particularly in light of the recent healthcare crisis.

#### **6.2 Calculating Staffing**

A number of approaches were used to determine safe staffing levels in ED in Phase 1 of the research; these included prospective measures (BEST) and the use of triage levels in administrative data as well as nurse: patient ratios. There was great variability in the outcomes from the methods used with the primary complicating factor the length of stay of patients in the ED and the challenge of capturing changing complexity and dependency over a period of time. In addition, the EDs were crowded during the data collection process.

Each of the different staffing methods used indicated that Hospital 6 was understaffed based on patient dependency levels and length of stay, with patients in Hospital 4, 5 and 6 having relatively high levels of dependency, greater acuity, longer PET times and a greater number of attendances than those of the other hospitals. For Hospital 7 (IU), the NHpPP model was not deemed as a suitable model however results from staffing data indicated the need for the allocation of 2 HCA grade staff.

The data from the administrative system provides an objective means in identifying required staffing levels; these are based on patients triage category level on admission to the ED; due to the long ALOS, this may skew the data as the patients will become stable and thus no longer require high levels of nursing care. Additionally, in EDs where a high number of patients with decision to admit but awaiting a bed are present (i.e. boarded patients) may also cause the result to be skewed. It is recommended that these patients are staffed separately under the WRC 2016 agreement. Thus, they would no longer require care from the core ED staff; however, there is a need to accurately identify the “time a decision to admit” was made from the administrative data. This may lead to an overestimation in some of the systems used, as patients remain in the ED for a period of time beyond their immediate emergency needs. The results from this study, suggests that the recommended that the Nursing Hours per Patient Presentation (NHpPP) approach is used to identify staffing levels in EDs in Ireland (see Appendix A for an example of the calculations required).

### 6.3 Staffing Data

The staffing data shows that from the time period before Covid-19 (pre-February 2020) workforce within Hospital 4, 5 and 6 EDs beginning to stabilise. Deficits were becoming less and the difference between RN and HCA staff shortages was reducing. As such, it highlights that when the adjustments of staff had occurred and during the 5 months pre-Covid (October 2019 to February 2020), some positive trends were beginning to be observed. As such, the recent Covid-19 pandemic which occurred in March 2020 impacted on staffing within the ED, with some staff being re-deployed to new Covid-19 care pathways and absenteeism significantly increasing to unprecedented levels. In order to further examine this, more longitudinal data analysis is required in a time period without the presence of a pandemic status to ensure a true and accurate reflection of the infrastructure and operation of the ED is determined. In addition to this, the recruitment of staff into posts was impacted on by the pandemic with delays in recruitment experienced in all of the pilot sites in the allocation and employment of staff. This is recognised as a significant limiting factor within the research.

Thus, achieving the required staffing adjustment has been impacted on. As such, Hospital 4, Hospital 5 and Hospital 6, were not able to meet the required staff adjustments recommended in the *Framework* although they did increase their workforce. It is worthy to note that interviewing and planned filling of these posts is currently underway with expected completion in the forthcoming months. In addition to this, some departments had to re-structure service delivery with others being impacted on by service reorganisation to manage the Covid-19 pandemic, as such new services were opened during this time period.

### 6.4 Administrative Data

The administrative/secondary data available provided a comprehensive overview of Hospital 4, 5 and 6 ED, although there were some challenges of note. It is apparent that outcomes associated with nurse staffing can be identified utilising the secondary data which provides a useful resource for measuring outcomes, particularly over a longitudinal period of time. For this report, certain key criteria have been focused including time to triage, wait to be seen, PET, ED care time. In addition to this, the data presented here is representative of data collected from January 2018 to April 2021, including staff rosters, vacancies and agency use. The results presented here offer a key insight into the emergency department of Hospital 4, 5 and 6 as the recommendations of the *Framework* were implemented, along with a visualisation of the effect of the outbreak of the Covid-19 pandemic. The variables identified in this report can be used to assess emergency department outcomes in relation to staffing over time.

Positive signs were evident in the data as to the impact of the implementation of the recommendations of the *Framework* on key patient outcomes in the ED. Following the staffing adjustments, monthly median figures for time to triage, wait times to be seen, ED Care times, and ED PET, all stabilised at ranges below that of baseline data, even after increasing from the sudden drop values at the onset of the pandemic. The

proportion of patients LWBS from the ED followed a similar pattern, stabilising at a lower level as ED presentations rose in 2021.

In conclusion, the administrative data provided a comprehensive overview of the emergency departments. The administrative data collected by the hospitals is a useful resource in measuring outcomes, particularly over a longitudinal period of time. Additionally, while the data presented here is representative of a period in excess of three years, the staffing changes occurred in late 2019 and early 2020 and continue during a worldwide pandemic. Therefore, the data should be interpreted with caution at this stage. Further examination of the data over an extended period of time would provide a greater depth and breadth of understanding of the data and the impact of staffing changes. In addition to this, comparison of the impact that the *Framework* has had on the other pilot EDs would also be beneficial. Nonetheless, the results presented here offer some initial promising positive trends, providing key insights into emergency departments within the Irish context. The data also presents a viable means of assessing emergency department outcomes in relation to staffing over time, within a future context and considers an international pandemic.

## **6.5 Cross-Sectional Data**

The cross-sectional data allowed for key insights into ED staffing and work environment to be attained. Data was collected from staff (RNs and HCAs) at three time points: baseline (Time 1), following adjustments to staffing (Time 2) and in late 2021 following the Covid-19 pandemic (Time3). The survey completed by staff measured a number of areas including demographics, education level, the number of patients being cared for by staff, the working environment, quality of care, care left undone or delayed, job satisfaction and intention to stay/leave, burnout and the prevalence of violence and aggression.

The demographic profile of participants was similar at the three time points and within the 3 ED sites with the vast majority of nursing staff indicating that they had been educated to degree level; were female; engaged in full time contracts and had over 6 years' experience. There was an increase in the number of staff who stated that they had received a specialist qualification in emergency nursing. Additionally, 12-hour shifts were the most predominant working pattern of staff within the EDs who responded.

Following the implementation of the pilot Framework, it was identified that there was an initial decrease in the average numbers of patients cared for by staff in Time 2 when compared to Time 1; this decreased from 14.87 to 11.27. In addition, there was a fall in the maximum number of patients cared for over this time period. The results from the survey collected during the Covid-19 pandemic also provide details of how staff cope with a national pandemic and the impact this has on staff outcomes. Many of the results observed in Time 2 have been sustained despite recent healthcare issues and the need for the ED setting to respond in an unprecedented manner.

## 6.6 Conclusion

This is the first study in Ireland to examine nurse staffing and related outcomes in EDs during a worldwide pandemic. There are challenges in accurately identifying safe staffing levels; however, administrative data offers a viable means in this regard. The administrative data collected identified variables that were used to measure the association between nurse staffing and patient outcomes such as leaving without been seen. The results identified in this addendum continue to report positive outcomes related to the introduction of the pilot *Framework*; however, there are challenges evident not least the recent presence of the Covid-19 outbreak which had a huge effect on the operations and staffing within EDs. While initial data is promising due to current healthcare trends further analysis is required to determine if outcomes identified from Time 2 are maintained in a non-pandemic environment. These include the further stabilisation of the ED workforce overtime and the need to continue collecting data to measure the long-term impact of the introduction of the *Framework*.

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## Appendix A

### NHPP Calculations – Hospital 4

2019	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %	Total replacement factor	Replacement WTE required	Total direct clinical WTE required
Immediate	439	6.13	2691.07	2028.00	1.33	0.20	0.00	0.20	0.27	1.6
V. Urgent	18247	3.83	69886.01	2028.00	3.44	0.20	0.00	0.20	0.69	4.13
Urgent	33775	2.33	78695.75	2028.00	38.8	0.20	0.00	0.20	7.76	46.56
Standard	13895	1.42	19730.9	2028.00	9.73	0.20	0.00	0.20	1.95	11.68
Non urgent	1665	0.58	965.7	2028.00	0.48	0.20	0.00	0.20	0.09	0.57
										64.54

Please note the calculation above does not include nursing staff required in triage or patients awaiting an inpatient bed.

TRIAGE STAFF CALCULATION							
No of RNs on triage	hours provided	Total Hrs required	Clinical WTE required	Replacement factor (annual, sick and study leaves)	Maternity leave	Replacement WTE required	Total direct clinical WTE required for triage
1.00	24.00	24.00	4.32	0.86	0.00	0.86	5.18

#### OVERALL STAFFING REQUIRED

ED Activity	65.54
Triage	5.18
Total	70.72
Skill Mix	
RN's including CNM 1s and RANP's	56.58
HCA's	14.14
CNM 2	0.00
CNM3	0.00
ADON	0.00
Total Nursing staff requirements	70.72

2020	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %	Total repl
Immediate	584	6.13	3579.92	2028.00	1.76	0.20	0.00	
V. Urgent	18781	3.83	71931.23	2028.00	35.47	0.20	0.00	
Urgent	47280	2.33	110162.4	2028.00	54.32	0.20	0.00	
Standard	29291	1.42	41593.22	2028.00	20.5	0.20	0.00	
Non urgent	19092	0.58	11073.36	2028.00	5.46	0.20	0.00	

Please note the calculation above does not include nursing staff required in triage or patients awaiting an inpatient bed.

TRIAGE STAFF CALCULATION						
No of RNs on triage	hours provided	Total Hrs required	Clinical WTE required	Replacement factor (annual, sick and study leaves)	Maternity leave	Replacer
1.00	24.00	24.00	4.32	0.86	0.00	

OVERALL STAFFING REQUIRED	
ED Activity	141
Triage	5.18
Total	146.18
Skill Mix	
RN's including CNM 1s and RANP's	116.94
HCA's	29.24
CNM 2	0.00
CNM3	0.00
ADON	0.00
Total Nursing staff requirements	146.18

### NHPP Calculations- Hospital 5

2019	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %	Total replace factor
Immediate	226	6.13	1385.38	2028.00	0.68	0.20	0.00	
V. Urgent	7131	3.83	27311.73	2028.00	13.47	0.20	0.00	
Urgent	13133	2.33	30599.89	2028.00	15.09	0.20	0.00	
Standard	9278	1.42	13174.76	2028.00	6.49	0.20	0.00	
Non urgent	1280	0.58	742.4	2028.00	0.36	0.20	0.00	

Please note the calculation above does not include nursing staff required in triage or patients awaiting an inpatient bed.

TRIAGE STAFF CALCULATION							
No of RNs on triage	hours provided	Total Hrs required	Clinical WTE required	Replacement factor (annual, sick and study leaves)	Maternity leave	Replacement WTE required	Total direct clinical WTE required for triage
1.00	24.00	24.00	4.32	0.86	0.00	0.86	5.18

OVERALL STAFFING REQUIRED	
ED Activity	43.3
Triage	5.18
Total	48.48
Skill Mix	
RN's including CNM 1s and RANP's	38.78

HCA's	9.70
CNM 2	0.00
CNM3	0.00
ADON	0.00
Total Nursing staff requirements	48.48

### **NHppP Calculations – Hospital 5**

2020	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %	Total replacement factor	Replacement WTE required	Total direct clinical WTE required
Immediate	173.00	6.13	1060.49	2028.00	0.52	0.20	0.00	0.20	0.10	0.62
V. Urgent	6057.00	3.83	23198.31	2028.00	11.44	0.20	0.00	0.20	2.29	13.37
Urgent	12401.00	2.33	28894.33	2028.00	14.25	0.20	0.00	0.20	2.85	17.1
Standard	7848.00	1.42	11144.16	2028.00	5.49	0.20	0.00	0.20	1.10	6.59
Non urgent	858.00	0.58	497.64	2028.00	0.25	0.20	0.00	0.20	0.04	0.29
										37.97

Please note the calculation above does not include nursing staff required in triage or patients awaiting an inpatient bed.

TRIAGE STAFF CALCULATION							
No of RNs on triage	hours provided	Total Hrs required	Clinical WTE required	Replacement factor (annual, sick and study leaves)	Maternity leave	Replacement WTE required	Total direct clinical WTE required for triage
1.00	24.00	24.00	4.32	0.86	0.00	0.86	5.18

OVERALL STAFFING REQUIRED	
ED Activity	37.97
Triage	5.18
Total	43.15
Skill Mix	
RN's including CNM 1s and RANP's	34.52
HCA's	8.63
CNM 2	0.00
CNM3	0.00
ADON	0.00
Total Nursing staff requirements	43.15

## NHppP Calculations – Hospital 6

2018	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %
Immediate	1016.00	6.13	6228.08	2028.00	3.07	0.20	0.00
V. Urgent	14765.00	3.83	56549.95	2028.00	27.88	0.20	0.00
Urgent	35271.00	2.33	82181.43	2028.00	40.52	0.20	0.00
Standard	4822.00	1.42	6847.24	2028.00	3.38	0.20	0.00
Non urgent	3530.00	0.58	2047.40	2028.00	1.01	0.20	0.00
2019	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %
Immediate	315.00	6.13	1930.95	2028.00	0.95	0.20	0.00
V. Urgent	14881.00	3.83	56994.23	2028.00	28.10	0.20	0.00
Urgent	31332.00	2.33	733003.56	2028.00	35.99	0.20	0.00
Standard	4899.00	1.42	6956.58	2028.00	3.43	0.20	0.00
Non urgent	355.00	0.58	205.9	2028.00	0.10	0.20	0.00

2020	Attendances	Hours	Total Hours req	Yearly hours	WTE required	Replacement	Maternity leave %
Immediate	248	6.13	1520.24	2028.00	0.75	0.20	0.00
V. Urgent	12431.00	3.83	47610.73	2028.00	23.48	0.20	0.00
Urgent	22752.00	2.33	53012.16	2028.00	26.14	0.20	0.00
Standard	4378.00	1.42	6216.76	2028.00	3.07	0.20	0.00
Non urgent	198.00	0.58	114.84	2028.00	0.06	0.20	0.00

Please note the calculation above does not include nursing staff required in triage or patients awaiting an inpatient bed.

TRIAGE STAFF CALCULATION					
No of RNs on triage	hours provided	Total Hrs required	Clinical WTE required	Replacement factor (annual, sick and study leaves)	Maternity leave %
2.00	24.00	48.00	8.64	1.73	

OVERALL STAFFING REQUIRED		2018	2019
ED Activity		91.04	
Triage		10.37	
Total		101.40	
Skill-Mix			
RN's including CNM 1s and RANP's		86.19	
HCA's		15.21	
CNM 2		0.00	

CNM3	0.00	
ADON	0.00	
Total Nursing staff requirements	101.40	

## Appendix B

Agency Nurse					
	7th Point	7th Point	7th Point	7th Point	7th Point
Hours	8 hours Mon to Fri	8 hours Mon to Fri	8 hours Sat	8 hours Sat	8 hours Sat
Shift	Day	Night	Day	Night	Day
Basic Nurse fee	164.64	202.56	179.94	217.86	
Holiday Pay (15.04%)	24.76	30.47	27.06	32.77	
Gross Nurses Pay	189.40	233.03	207.00	250.63	
PRSI (11.05%)	20.93	25.75	22.87	27.69	
Administration Fee (4.5%)	6.82	6.82	6.82	6.82	
Total before VAT	217.15	265.59	236.70	285.14	
VAT (23.0%)	49.94	61.09	54.44	65.58	
Total	267.09	326.68	291.14	350.72	
Hourly Rate	33.39	40.83	36.39	43.84	
<b>Average</b>					

Agency HCA					
	5th Point	5th Point	5th Point	5th Point	5th Point
Hours	8 hours Mon to Fri	8 hours Mon to Fri	8 hours Sat	8 hours Sat	8 hours Sat
Shift	Day	Night	Day	Night	Day
Basic HCA fee	126.96	158.64	137.67	169.35	
Holiday Pay (14.04%)	17.83	22.27	19.33	23.78	
Gross Nurses Pay	144.79	180.91	157.00	193.13	
PRSI (10.85%)	15.71	19.63	17.03	20.95	
Administration Fee (4.4%)	5.98	5.98	5.98	5.98	
Total before VAT	166.48	206.53	180.02	220.06	
VAT (23.0%)	38.29	47.50	41.40	50.61	
Total	204.77	254.03	221.42	270.68	
Hourly Rate	25.60	31.75	27.68	33.83	
<b>Average</b>					

## Appendix C

Table: Demographic profile of patients attending the Emergency Department of Hospital 6 (Patients ≥75 y

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Presentations – N (% of Overall)	18	684 (15.3)	597 (14.1)	568 (12.6)	592 (12.9)	641 (13.0)	624 (13.8)	637 (13.6)	606 (12.9)
	19	622 (13.5)	574 (13.5)	641 (13.5)	619 (13.7)	649 (13.8)	549 (12.2)	635 (13.2)	670 (14.5)
	20	619 (13.6)	533 (12.4)	432 (12.4)	453 (14.8)	578 (14.3)	646 (15.3)	587 (13.3)	615 (14.3)
	21	474 (13.3)	480 (14.0)	574 (13.5)	595 (13.4)				
Gender: Female Male Unknown - N (%)	18	388 (56.7) 296 (43.3)	349 (58.5) 248 (41.5)	296 (52.1) 272 (47.9)	367 (62) 225 (38)	366 (57.1) 275 (42.9)	387 (62) 237 (38)	401 (63) 236 (37)	331 (54.6) 275 (45.4)
	19	348 (55.9) 274 (44.1)	339 (59.1) 235 (40.9)	346 (54) 295 (46)	382 (61.7) 237 (38.3)	333 (51.3) 316 (48.7)	316 (57.6) 233 (42.4)	392 (61.7) 243 (38.3)	370 (55.2) 300 (44.8)
	20	364 (58.8) 255 (41.2)	311 (58.3) 221 (41.5)	228 (52.8) 204 (47.2)	237 (52.3) 216 (47.7)	332 (57.4) 246 (42.6)	363 (56.2) 283 (43.8)	333 (56.7) 254 (43.3)	388 (63.1) 227 (36.9)
	21	279 (58.8) 195 (41.2)	263 (58.3) 217 (41.5)	344 (52.8) 230 (47.2)	336 (52.3) 259 (47.7)				
	18	28 (4.1)	32 (5.4)	27 (4.8)	24 (4.1)	31 (4.8)	15 (2.4)	25 (3.9)	21 (3.5)
	19	19 (3.1)	23 (4.0)	27 (4.2)	17 (2.7)	29 (4.5)	24 (4.4)	27 (4.3)	30 (4.5)
	20	21 (3.4)	18 (3.4)	6 (1.4)	3 (0.7)	6 (1.0)	7 (1.1)	6 (1.0)	11 (1.8)
	21	3 (3.4)	7 (3.4)	5 (1.4)	10 (0.7)				
	18	412 (60.2)	343 (57.5)	336 (59.2)	330 (55.7)	350 (54.6)	331 (53.0)	357 (56.0)	335 (55.3)
	19	366 (58.8)	330 (57.5)	357 (55.7)	359 (58.0)	350 (53.9)	295 (53.7)	339 (53.4)	380 (56.7)
Admitted – N (%)	20	340 (54.9)	289 (54.2)	272 (63.0)	299 (66.0)	332 (57.4)	346 (53.6)	295 (50.3)	305 (49.6)
	21	316 (66.7)	272 (56.7)	323 (56.3)	311 (52.3)				



Table: Demographic profile of patients attending the Emergency Department of Hospital 6 (Patients ≥75 y

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
18		16 (2.3)	12 (2.0)	6 (1.1)	5 (0.8)	6 (0.9)	6 (1.0)	4 (0.6)	2 (0.3)
		319 (46.6)	264 (44.2)	236 (41.5)	247 (41.7)	272 (42.4)	251 (40.2)	269 (42.2)	234 (38.6)
		301 (44)	271 (45.4)	290 (51.1)	294 (49.7)	315 (49.1)	316 (50.6)	317 (49.8)	319 (52.6)
		28 (4.1)	24 (4.0)	12 (2.1)	18 (3.0)	17 (2.7)	25 (4.0)	28 (4.4)	26 (4.3)
19		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.3)	3 (0.5)	0 (0.0)	0 (0.0)
	Triage	4 (0.6)	3 (0.5)	6 (0.9)	7 (1.1)	4 (0.6)	6 (1.1)	4 (0.6)	5 (0.7)
	Category:	292 (46.9)	226 (39.4)	297 (46.3)	273 (44.1)	304 (46.8)	259 (47.2)	277 (43.6)	275 (41)
		282 (45.3)	288 (50.2)	311 (48.5)	295 (47.7)	296 (45.6)	247 (45)	301 (47.4)	343 (51.2)
20	Immediate	9 (1.4)	6 (1.0)	12 (1.9)	19 (3.1)	21 (3.2)	13 (2.4)	23 (3.6)	20 (3.0)
	Very Urgent	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	1 (0.2)	2 (0.3)	0 (0.0)
	Urgent	8 (1.3)	3 (0.6)	6 (1.4)	4 (0.9)	3 (0.5)	5 (0.8)	10 (1.7)	6 (1.0)
	Standard	286 (46.2)	256 (48.0)	240 (55.6)	226 (49.9)	239 (41.3)	288 (44.6)	248 (42.2)	275 (44.7)
21	Non-Urgent	283 (45.7)	241 (45.2)	163 (37.7)	192 (42.4)	274 (47.4)	285 (44.1)	264 (45.0)	291 (47.3)
		20 (3.2)	17 (3.2)	9 (2.1)	16 (3.5)	45 (7.8)	37 (5.7)	34 (5.8)	24 (3.9)
	- N (%)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	2 (0.3)
		4 (1.3)	4 (0.6)	7 (1.4)	5 (0.9)				
21		274 (46.2)	256 (48.0)	274 (55.6)	278 (49.9)				
		174 (45.7)	199 (45.2)	261 (37.7)	277 (42.4)				
		7 (3.2)	10 (3.2)	17 (2.1)	19 (3.5)				
		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)				

Table: Breakdown of ED presentations by attendance type (Patients ≥75 years)

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
New Attendances – N (%)	18	629 (92.0)	497 (83.2)	488 (85.9)	507 (85.6)	539 (84.1)	521 (83.5)	542 (85.1)	503 (83.0)
	19	532 (85.5)	499 (86.9)	554 (86.4)	526 (85.0)	543 (83.7)	474 (86.3)	528 (83.1)	561 (83.7)
	20	528 (85.3)	450 (84.4)	378 (87.5)	404 (89.2)	489 (84.6)	543 (84.1)	503 (85.7)	512 (83.3)
	21	406 (85.7)	406 (84.6)	469 (81.7)	495 (83.2)				
Last attendance admitted, other return ≤7 days – N (%)	18	4 (0.6)	10 (1.7)	12 (2.1)	9 (1.5)	5 (0.8)	12 (1.9)	9 (1.4)	11 (1.8)
	19	4 (0.6)	4 (0.7)	6 (0.9)	6 (1.0)	2 (0.3)	3 (0.5)	10 (1.6)	8 (1.2)
	20	5 (0.8)	7 (1.3)	3 (0.7)	3 (0.7)	7 (1.2)	11 (1.7)	3 (0.5)	8 (1.3)
	21	5 (1.1)	7 (1.5)	9 (1.6)	8 (1.3)				
Last attendance admitted, other return ≤28 days – N (%)	18	19 (2.8)	42 (7.0)	33 (5.8)	35 (5.9)	40 (6.2)	37 (5.9)	42 (6.6)	36 (5.9)
	19	31 (5.0)	38 (6.6)	38 (5.9)	32 (5.2)	31 (4.8)	26 (4.7)	40 (6.3)	41 (6.1)
	20	30 (4.8)	27 (5.1)	20 (4.6)	29 (6.4)	30 (5.2)	42 (6.5)	22 (3.7)	35 (5.7)
	21	28 (5.9)	29 (6.0)	31 (5.4)	37 (6.2)				
Scheduled Return ≤42 days – N (%)	18	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
	19	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	0 (0.0)
	20	0 (0.0)	2 (0.4)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	0 (0.0)	1 (0.2)
	21	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)				
Other Returns ≤7 days – N (%)	18	34 (5.0)	45 (7.5)	40 (7.0)	42 (7.1)	42 (6.6)	51 (8.2)	42 (6.6)	51 (8.4)
	19	39 (6.3)	30 (5.2)	39 (6.1)	46 (7.4)	47 (7.2)	27 (4.9)	51 (8.0)	47 (7.0)
	20	42 (6.8)	36 (6.8)	20 (4.6)	15 (3.3)	47 (8.1)	53 (8.2)	38 (6.5)	50 (8.1)
	21	28 (5.9)	38 (7.9)	52 (9.1)	45 (7.6)				
Other Returns ≤28 days – N (%)	18	55 (8.0)	100 (16.8)	80 (14.1)	85 (14.4)	102 (15.9)	103 (16.5)	95 (14.9)	102 (16.8)
	19	90 (14.5)	75 (13.1)	87 (13.6)	93 (15.0)	106 (16.3)	74 (13.5)	107 (16.9)	109 (16.3)
	20	91 (14.7)	81 (15.2)	54 (12.5)	49 (10.8)	88 (15.2)	103 (15.9)	84 (14.3)	102 (16.6)
	21	68 (14.3)	74 (15.4)	105 (18.3)	100 (16.8)				
Total Returns ≤7 days – N (%)	18	34 (5.0)	45 (7.5)	40 (7.0)	42 (7.1)	42 (6.6)	51 (8.2)	42 (6.6)	52 (8.6)
	19	39 (6.3)	30 (5.2)	39 (6.1)	46 (7.4)	47 (7.2)	27 (4.9)	51 (8.0)	47 (7.0)
	20	42 (6.8)	38 (7.1)	20 (4.6)	15 (3.3)	48 (8.3)	53 (8.2)	38 (6.5)	51 (8.3)
	21	28 (5.9)	38 (7.9)	52 (9.1)	45 (7.6)				
Total Returns ≤28 days – N (%)	18	55 (8.0)	100 (16.8)	80 (14.1)	85 (14.4)	102 (15.9)	103 (16.5)	95 (14.9)	103 (17.0)
	19	90 (14.5)	75 (13.1)	87 (13.6)	93 (15.0)	106 (16.3)	74 (13.5)	107 (16.9)	109 (16.3)
	20	91 (14.7)	83 (15.6)	54 (12.5)	49 (10.8)	89 (15.4)	103 (15.9)	84 (14.3)	103 (16.7)
	21	68 (14.3)	74 (15.4)	105 (18.3)	100 (16.8)				

Table: Emergency Department Patient Outcomes (Patients ≥75 years)

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
Time to Triage – Median (IQR)	18	0.32 (0.15-0.68)	0.33 (0.17-0.62)	0.30 (0.15-0.66)	0.33 (0.18-0.8)	0.32 (0.15-0.70)	0.28 (0.13-0.63)	0.28 (0.15-0.57)	0.28 (0.15-0.63)	0.
	19	0.30 (0.15-0.62)	0.33 (0.17-0.70)	0.37 (0.17-0.74)	0.30 (0.15-0.67)	0.30 (0.13-0.60)	0.25 (0.13-0.45)	0.25 (0.13-0.5)	0.30 (0.15-0.65)	0.
	20	0.27 (0.13-0.53)	0.27 (0.13-0.58)	0.22 (0.10-0.4)	0.13 (0.07-0.25)	0.18 (0.08-0.30)	0.20 (0.12-0.37)	0.18 (0.10-0.32)	0.22 (0.12-0.37)	0.
	21	0.17 (0.08-0.28)	0.20 (0.10-0.35)	0.20 (0.10-0.37)	0.23 (0.13-0.50)					
Triage to be Seen – Median (IQR)	18	1.20 (0.43-2.92)	1.33 (0.35-3.68)	1.47 (0.50-4.00)	1.47 (0.55-3.73)	1.35 (0.54-3.48)	1.24 (0.47-3.10)	1.18 (0.43-3.00)	1.05 (0.45-2.85)	1.
	19	1.25 (0.45-3.00)	1.31 (0.43-3.33)	1.10 (0.42-3.12)	0.98 (0.35-2.45)	0.77 (0.30-1.78)	0.72 (0.27-1.72)	0.95 (0.40-2.38)	0.83 (0.32-2.34)	0.
	20	0.77 (0.31-2.45)	0.93 (0.38-2.28)	0.43 (0.20-0.9)	0.35 (0.17-0.70)	0.37 (0.20-0.75)	0.48 (0.23-1.00)	0.52 (0.23-1.03)	0.67 (0.28-1.63)	0.
	21	0.53 (0.23-1.12)	0.51 (0.24-1.15)	0.60 (0.23-1.50)	0.57 (0.23-1.45)					
Registration to be Seen – Median (IQR)	18	1.74 (0.83-3.28)	1.80 (0.78-4.12)	2.00 (0.82-4.62)	1.98 (0.92-4.30)	1.82 (0.83-3.91)	1.63 (0.80-3.57)	1.60 (0.80-3.43)	1.54 (0.80-3.29)	1.
	19	1.72 (0.70-3.47)	1.72 (0.72-3.65)	1.68 (0.80-3.59)	1.47 (0.70-2.98)	1.23 (0.62-2.37)	1.03 (0.53-2.19)	1.37 (0.70-2.75)	1.38 (0.63-3.00)	1.
	20	1.25 (0.58-2.86)	1.40 (0.65-2.78)	0.72 (0.38-1.42)	0.53 (0.32-0.90)	0.62 (0.37-1.07)	0.73 (0.43-1.37)	0.77 (0.43-1.32)	0.92 (0.53-2.05)	0.
	21	0.75 (0.40-1.30)	0.82 (0.45-1.46)	0.85 (0.43-1.83)	0.95 (0.50-1.90)					
ED Care – Median (IQR)	18	6.74 (3.38-10.23)	6.77 (3.62-10.12)	6.88 (3.54-10.58)	6.28 (3.48-9.58)	6.05 (3.45-9.64)	5.40 (3.14-8.46)	5.80 (3.29-8.77)	5.35 (2.97-8.42)	5.
	19	6.78 (3.96-10.28)	6.21 (3.15-9.59)	6.53 (4.18-9.66)	6.48 (3.52-9.48)	5.52 (2.97-8.58)	5.54 (3.09-8.55)	6.17 (3.02-9.32)	6.65 (3.68-9.32)	6.
	20	6.77 (3.70-10.48)	6.37 (3.59-9.43)	4.63 (2.53-7.53)	4.13 (2.19-6.19)	4.33 (2.83-6.46)	5.06 (3.02-7.48)	4.90 (2.98-7.63)	5.63 (3.82-8.32)	5.
	21	4.36 (2.75-6.08)	4.27 (2.78-6.12)	4.21 (2.71-5.96)	4.25 (2.55-6.25)					
ED Care Admitted – Median (IQR)	18	7.37 (3.89-10.56)	7.27 (3.70-10.33)	7.11 (3.74-11.06)	6.63 (3.58-10.09)	6.68 (3.79-9.96)	5.70 (2.65-8.88)	6.62 (3.88-9.61)	6.03 (2.52-9.03)	6.
	19	7.30 (4.32-10.90)	6.69 (3.15-10.39)	6.85 (3.55-9.97)	7.33 (4.25-10.33)	6.35 (3.15-9.25)	5.78 (2.97-8.60)	6.85 (3.22-10.48)	7.25 (3.80-9.81)	7.
	20	8.28 (5.02-11.95)	7.37 (3.98-10.43)	4.62 (2.46-7.85)	4.50 (2.22-6.47)	4.90 (3.04-7.55)	6.08 (4.01-8.33)	6.50 (4.32-9.27)	7.05 (4.88-9.5)	6.
	21	4.41 (2.74-6.09)	3.95 (2.54-5.48)	4.17 (2.62-5.68)	4.18 (2.52-6.12)					

Table: Emergency Department Patient Outcomes (Patients ≥75 years) (continued)

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
ED Care Not Admitted – Median (IQR)	18	5.81 (2.86- 9.72)	6.16 (3.57- 9.90)	5.78 (3.34- 9.63)	5.93 (3.30- 8.85)	5.50 (3.07- 8.88)	5.22 (3.32- 7.78)	4.78 (2.84- 7.51)	4.83 (3.31- 7.34)	5.
	19	6.22 (3.70- 8.92)	5.77 (3.16- 8.58)	5.95 (4.37- 9.10)	5.43 (2.68- 8.00)	4.80 (2.73- 7.63)	5.43 (3.29- 8.29)	5.26 (2.93- 8.40)	6.07 (3.45- 8.49)	5.
	20	5.38 (3.00- 8.12)	5.48 (3.35- 8.23)	4.68 (2.92- 7.19)	3.82 (2.03- 5.52)	3.93 (2.63- 5.58)	4.18 (2.03- 6.21)	3.68 (1.96- 5.59)	4.82 (3.23- 6.46)	4.
	21	4.26 (2.75- 6.09)	4.82 (2.97- 6.57)	4.3 (2.73- 6.07)	4.34 (2.55- 6.67)					
Trolley LOS – Median (IQR)	18	11.60 (3.58- 21.21)	11.62 (4.38- 20.08)	10.65 (2.62- 19.71)	9.48 (2.98- 18.86)	9.37 (3.63- 16.47)	6.88 (2.64- 14.31)	6.29 (2.26- 13.91)	5.03 (1.65- 13.41)	9.
	19	12.45 (5.50- 21.07)	8.63 (3.62- 17.83)	11.80 (5.37- 19.62)	12.17 (5.47- 21.67)	11.08 (4.55- 19.79)	10.87 (4.63- 19.95)	11.82 (4.88- 21.38)	12.20 (4.71- 21.53)	15.
	20	13.17 (5.15- 25.57)	13.40 (4.95- 22.75)	3.85 (1.93- 9.00)	3.27 (1.76- 5.29)	3.57 (2.07- 5.64)	3.98 (2.33- 7.82)	5.82 (2.85- 10.87)	3.78 (1.92- 7.72)	4.
	21	6.48 (4.12- 11.25)	6.63 (4.27- 11.15)	4.59 (2.99- 6.43)	5.58 (3.35- 8.62)					

Table: Emergency Department Patient Experience Time (Patients ≥75 years)

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
ED PET - Median (IQR)	18	13.43 (5.57-26.07)	13.83 (5.58-25.05)	12.22 (5.28-23.73)	10.72 (5.18-22.58)	10.78 (4.88-21.13)	8.66 (4.20-16.67)	9.22 (4.30-17.32)	7.98 (3.93-15.63)
	19	11.88 (5.92-24.89)	10.00 (4.74-20.65)	12.07 (5.58-23.41)	12.23 (4.97-24.49)	9.03 (4.12-21.44)	9.33 (4.29-21.43)	10.54 (4.33-22.70)	11.28 (5.18-23.35)
	20	12.23 (5.08-26.82)	12.05 (5.09-25.88)	7.12 (4.10-13.12)	6.75 (3.53-9.78)	6.90 (4.17-10.21)	7.30 (4.27-11.70)	7.88 (3.92-13.71)	7.30 (4.59-12.7)
	21	9.25 (5.28-14.00)	8.01 (4.69-13.93)	6.96 (4.10-10.26)	7.17 (4.05-11.47)				
ED PET Admitted - Median (IQR)	18	20.63 (10.73-30.38)	20.93 (9.55-29.33)	19.83 (9.45-29.22)	17.68 (9.11-27.67)	17.34 (9.41-26.50)	14.00 (6.73-23.13)	14.27 (8.51-23.88)	12.68 (5.01-22.59)
	19	21.39 (10.15-29.51)	14.71 (8.06-26.20)	(10.95-28.82)	(11.30-29.00)	18.47 (8.86-26.87)	17.35 (7.58-27.03)	19.83 (8.89-29.40)	19.27 (8.53-28.63)
	20	23.80 (12.90-36.83)	22.93 (12.40-31.80)	8.63 (5.13-15.71)	8.09 (5.61-10.73)	9.08 (6.42-11.65)	10.63 (7.52-13.89)	12.77 (9.48-18.30)	11.18 (7.99-16.31)
	21	11.09 (8.10-15.79)	11.18 (7.47-15.56)	8.95 (6.43-11.70)	10.08 (6.67-13.58)				
ED PET Not Admitted - Median (IQR)	18	6.57 (3.50-12.96)	7.15 (4.11-14.23)	7.05 (3.91-12.94)	7.07 (3.65-10.33)	6.08 (3.42-10.78)	5.82 (3.58-9.85)	5.29 (2.99-8.28)	5.40 (3.65-8.43)
	19	7.09 (4.00-11.5)	6.41 (3.54-10.63)	6.95 (4.62-11.25)	5.88 (2.97-9.49)	5.18 (2.98-8.30)	5.83 (3.68-9.81)	5.66 (3.07-10.68)	6.75 (3.90-11.62)
	20	5.97 (3.45-9.95)	6.06 (3.50-9.78)	4.97 (3.13-8.16)	4.02 (2.40-5.90)	4.25 (2.87-6.30)	4.37 (2.34-6.45)	4.18 (2.15-6.39)	5.00 (3.43-6.73)
	21	4.68 (2.80-7.48)	5.19 (3.68-7.73)	4.55 (2.88-6.93)	4.83 (3.07-7.37)				
ED PET ≤6 hours - N (%)	18	184 (26.9)	164 (27.5)	164 (28.9)	177 (29.9)	197 (30.7)	225 (36.1)	218 (34.2)	247 (40.8)
	19	157 (25.2)	182 (31.7)	177 (27.6)	184 (29.7)	247 (38.1)	195 (35.5)	220 (34.6)	196 (29.3)
	20	186 (30.0)	158 (29.6)	179 (41.4)	197 (43.5)	248 (42.9)	250 (38.7)	238 (40.5)	242 (39.3)
	21	144 (30.4)	172 (35.8)	248 (43.2)	240 (40.3)				
ED PET ≤9 hours - N (%)	18	257 (37.6)	232 (38.9)	224 (39.4)	258 (43.6)	280 (43.7)	323 (51.8)	313 (49.1)	333 (55.0)
	19	245 (39.4)	262 (45.6)	262 (40.9)	264 (42.6)	324 (49.9)	269 (49.0)	296 (46.6)	295 (44.0)
	20	262 (42.3)	223 (41.8)	270 (62.5)	309 (68.2)	389 (67.3)	380 (58.8)	315 (53.7)	355 (57.7)
	21	226 (47.7)	266 (55.4)	379 (66.0)	366 (61.5)				
ED PET ≤24 hours - N (%)	18	481 (70.3)	434 (72.7)	426 (75.0)	457 (77.2)	521 (81.3)	539 (86.4)	542 (85.1)	525 (86.6)
	19	450 (72.3)	463 (80.7)	490 (76.4)	460 (74.3)	513 (79.0)	438 (79.8)	487 (76.7)	510 (76.1)
	20	436 (70.4)	379 (71.1)	396 (91.7)	447 (98.7)	575 (99.5)	622 (96.3)	548 (93.4)	584 (95.0)
	21	444 (93.7)	457 (95.2)	567 (98.8)	581 (97.6)				

## Appendix D

Table: Triage Categories for Hospital 4 Emergency Department

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Triage Category:	18	11(0.3)26(0.7)1094(29.9)55.7(0.6)	26(0.7)1130(30.3)2035(113.5)437(12.8)27(0.7)	17(0.5)28(0.7)120(30.0)54.4(12.7)19(0.5)	30(0.8)26(0.7)152(29.2)2152(152.2)31(0.8)	16(0.7)27(0.7)190(30.9)2063(190.3)471(12.2)30(0.8)	21(0.7)35(0.9)167(29.3)2146(167.3)536(13.5)31(0.9)	18(0.4)26(0.6)245(30.8)2135(245.3)538(13.5)35(0.9)	13(0.23)18(0.5)1213(30.6)212(12.1)523(13.5)2(30.8)	11(0.2)17(0.5)173(42.1)52.1(13.5)30(0.8)
Not Triaged		15(0.4)19(0.5)1158(3.10)213	19(0.5)21(0.5)096(28.0)2114(53.9)543(13.8)66(1.7)	20(0.5)34(0.9)163(29.1)2128(53.3)548(13.7)46(1.2)	11(0.3)24(0.6)193(31.6)2035(53.9)438(11.6)28(0.7)	18(0.5)28(0.7)102(27.9)2199(55.7)533(13.5)36(0.9)	10(0.3)19(0.5)1888(31.7)196(52.3)502(13.4)32(0.8)	11(0.3)18(0.5)166(29.5)2070(53.4)540(13.9)42(1.1)	24(0.6)27(0.7)269(31.6)2062(51.3)525(13.1)66(1.6)	19(0.6)278(42.1)55.3(13.5)47(1.7)
Immediate	19	0(55.5)374(9.7)36(0.9)								
Very Urgent		16(0.5)20(0.6)1074(30.5)1891(53.8)421(12.0)48(1.4)	14(0.4)35(0.9)161(31.1)1974(52.8)442(11.8)61(1.6)	21(0.7)21(0.7)12(26.6)1345(4.0)464(15.2)9(0.6)	817(0.5)25(0.6)233(30.7)1395(42.1)431(10.8)61(1.2)	19(0.6)23(0.7)045(31.2)1311(40.1)401(9.9)52(1.0)	21(0.8)23(0.9)114(31.0)1255(37.6)332(9.10)44(1.1)	18(0.6)25(0.6)258(30.8)1315(42.1)281(11.1)51(1.2)	22(0.9)26(1.1)343(32.1)1406(43.0)208(11.1)49(1.3)	144(139.9)5(4.6)1(0.6)
Urgent	20									
Standard										
Non Urgent										
- N(%)	21	278(6.4)39(0.9)1133(26.2)203(47.2)753(17.5)73(1.7)	144(3.2)32(0.7)1090(23.9)217(47.8)1000(21.9)115(2.5)	181(3.4)50(0.9)1365(25.4)256(47.7)1094(20.4)119(2.2)	159(2.7)38(0.6)1392(23.3)310(51.9)1184(19.8)104(1.7)					

Table: Triage Categories for Hospital 5 Emergency Department

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Triage Category:	18	4 (1.1)135 (35.9)170 (45.2)61 (16.2)5 (1.3)	9 (2.3)150 (38.9)162 (42)59 (15.3)4 (1.0)	4 (1.0)163 (39.8)191 (46.6)43 (10.5)7 (1.7)	4 (1.0)140 (36.7)169 (44.4)64 (16.8)4 (1.0)	6 (1.6)123 (33)162 (43.4)78 (20.9)2 (0.5)	3 (0.8)108 (30.2)175 (48.9)64 (17.9)8 (2.2)	1 (0.3)123 (32.5)175 (46.2)75 (19.8)2 (0.5)	4 (1.2)107 (31.7)173 (51.2)52 (15.4)2 (0.6)	4 (1.2)135 (35.9)172 (45.2)67 (17.5)1 (0.3)
Immediate		3 (0.9)151 (45.8)147 (44.5)26 (7.9)1 (0.3)	3 (0.9)105 (33.0)165 (51.9)37 (11.6)7 (2.2)	8 (2.4)124 (36.5)146 (42.9)56 (16.5)5 (1.5)	6 (1.5)125 (30.6)211 (51.6)65 (15.9)2 (0.5)	8 (2.1)117 (31.0)196 (51.9)52 (13.8)5 (1.3)	4 (1.1)118 (32.8)167 (46.4)70 (19.4)1 (0.3)	2 (0.5)106 (27)203 (51.8)75 (19.1)6 (1.5)	8 (2.2)105 (28.2)181 (48.7)69 (18.5)8 (2.2)	4 (1.2)104 (28.2)153 (40.6)52 (13.5)4 (1.1)
Very Urgent	19									
Urgent										
Standard										
Non Urgent										
- N(%)	20	5 (1.4)127 (35.7)166 (46.6)50 (14.0)6 (1.7)	8 (2.4)107 (31.9)156 (46.6)59 (17.6)5 (1.5)	5 (1.9)95 (36.0)113 (42.8)47 (17.8)3 (1.1)	2 (0.8)68 (27.3)134 (53.8)41 (16.5)4 (1.6)	7 (1.9)96 (26.5)204 (56.4)55 (15.2)-	2 (0.6)97 (27.6)188 (53.6)59 (16.8)4 (1.1)	3 (0.8)119 (31.2)191 (50.0)64 (16.8)5 (1.3)	5 (1.4)108 (30.7)181 (51.4)54 (15.3)4 (1.1)	3 (0.8)105 (28.2)195 (40.6)40 (10.3)1 (0.3)

21	2 (0.6)	2 (0.6)	5 (1.4)	6 (1.5)				
	100 (32.3)	108 (31.5)	124 (33.8)	113 (27.7)				
	178 (57.4)	181 (52.8)	188 (51.2)	229 (56.1)				
	29 (9.4)	45 (13.1)	49 (13.4)	58 (14.2)				
	1 (0.3)	6 (1.7)	1 (0.3)	1 (0.2)				

Table: Triage Categories for Hospital 6 Emergency Department

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
Triage Category:	18	35 (0.8)	29 (0.7)	24 (0.5)	34 (0.7)	23 (0.5)	25 (0.6)	17 (0.4)	23 (0.5)	22 (0.5)
		1347 (30.1)	1199 (28.3)	1221 (27.1)	1196 (26.1)	1323 (26.9)	1195 (26.5)	1283 (27.4)	1163 (24.7)	116 (0.3)
		2477 (55.4)	2337 (55.1)	2534 (56.3)	2643 (57.6)	2828 (57.4)	2624 (58.2)	2750 (58.8)	2829 (60.1)	262 (0.6)
		385 (8.6)	417 (9.8)	437 (9.7)	409 (8.9)	465 (9.4)	439 (9.7)	406 (8.7)	430 (9.1)	400 (1.1)
		23 (0.5)	22 (0.5)	41 (0.9)	29 (0.6)	35 (0.7)	19 (0.4)	8 (0.2)	20 (0.4)	17 (0.5)
	19	20 (0.4)	21 (0.5)	26 (0.5)	30 (0.7)	22 (0.5)	30 (0.7)	29 (0.6)	22 (0.5)	29 (0.8)
		1353 (29.4)	1102 (25.9)	1313 (27.6)	1155 (25.6)	1276 (27.1)	1261 (27.9)	1230 (25.6)	1176 (25.4)	115 (0.3)
		2600 (56.5)	2349 (55.3)	2733 (57.5)	2689 (59.6)	2739 (58.2)	2536 (56.2)	2780 (57.9)	2740 (59.3)	257 (0.7)
		278 (6.0)	276 (6.5)	394 (8.3)	357 (7.9)	406 (8.6)	418 (9.3)	468 (9.7)	425 (9.2)	483 (1.4)
		19 (0.4)	27 (0.6)	39 (0.8)	38 (0.8)	32 (0.7)	25 (0.6)	32 (0.7)	14 (0.3)	23 (0.6)
	20	27 (0.6)	11 (0.3)	22 (0.6)	19 (0.6)	20 (0.5)	28 (0.7)	27 (0.6)	25 (0.6)	24 (0.7)
		1223 (26.8)	1136 (26.5)	1154 (33.2)	985 (32.3)	1114 (27.7)	1253 (29.6)	1237 (28.0)	1327 (30.8)	119 (0.3)
		2489 (54.6)	2432 (56.6)	1761 (50.7)	1410 (46.2)	2000 (49.7)	2035 (48.1)	2313 (52.3)	2291 (53.2)	234 (0.7)
		570 (12.5)	449 (10.5)	361 (10.4)	412 (13.5)	533 (13.2)	508 (12.0)	486 (11.0)	365 (8.5)	281 (0.8)
		43 (0.9)	54 (1.3)	29 (0.8)	13 (0.4)	10 (0.2)	5 (0.1)	10 (0.2)	7 (0.2)	13 (0.4)
	21	27 (0.8)	21 (0.6)	22 (0.5)	26 (0.6)					
		1240 (34.9)	1158 (33.7)	1399 (32.9)	1298 (29.2)					
		1902 (53.5)	1925 (56.0)	2348 (55.2)	2582 (58.1)					
		182 (5.1)	188 (5.5)	235 (5.5)	271 (6.1)					
		3 (0.1)	4 (0.1)	5 (0.1)	5 (0.1)					
- N (%)										