

**National Public Health Emergency Team**

**Acute Hospitals Preparedness Subgroup  
Paper on Critical Care Capacity Requirements**

**25 June 2020**

Action required

For noting

For discussion

For decision

## **1. Introduction**

The Acute Preparedness Subgroup submitted a paper providing an overview of its work since inception to NPHE on 18 June. The paper identified the need to increase critical care capacity as a key lesson of the pandemic. It also set out the intention to bring a further paper to NPHE on 25 June in regard to critical care requirements, noting that a proposal regarding critical care capacity requirements had been received from the HSE on 17 June.

## **2. Background**

Timely access to an appropriate level of critical care improves survival and outcomes for critically ill patients. These may include transplant patients, patients with major trauma, patients with sepsis or patients who require ventilation and multi-organ support. However, the Irish acute hospital system has an acknowledged deficit in critical care capacity. As a result, bed occupancy is very high in Irish critical care units, with resulting impacts on timely admission<sup>1</sup>.

The need for adequate critical care capacity, with appropriate levels of isolation and airborne infection control facilities, is clear and has been underlined further by the emergence of Covid-19. The deficit in critical care capacity resulted in an increased requirement for creation of surge capacity, including redeployment from other areas of the acute hospital system. Over the coming months, and longer, the system will need to maintain the capacity to respond to Covid-19 care needs as they move up and down, and at the same time deliver at least an essential level of non-Covid care in order to ensure the best possible outcomes for the sickest Irish patients.

Significant investment will be required to deliver the necessary additional capacity. It is imperative therefore, from a value for money perspective, that this investment supports wider strategic reform and service development. Beds must be put in place immediately where feasible, to support care delivery in a Covid-19 world, but this must be done as one element of a strategic multi-year approach that underpins delivery of the right care, at the right time, in the right place across key areas of complex care.

## **3. Current critical care service provision**

Critical care units provide life sustaining treatment for critically ill patients with acute organ dysfunction due to potentially reversible disease. Critical care units support the patient's failing organs and diagnose and treat the underlying cause, and may also provide care peri-operatively or post-trauma to patients who are at risk of organ dysfunction. Complex interventions provided in critical care units include ventilation, extracorporeal membrane oxygenation (ECMO), continuous renal replacement therapy and others. Critical care is provided by appropriately trained and accredited medical, nursing and allied health professionals based in a critical care unit, working within a quality and governance structure consistent with delivery of the best critical care and to national and international best practice guidelines. Critical care may be described as Level 2 (high dependency), Level 2 (intensive care) or Level 3s (intensive care specialist units eg neurocritical care).

As recorded by the NOCA ICU audit, patients may be admitted to critical care units due to major trauma, organ transplant, multi-organ failure, serious brain injury or post major surgery. Most recently, the acute hospital system has seen significant numbers of patients with confirmed Covid-19 admitted, with a significant proportion of these requiring ventilation. According to recent data provided by the IEMAG subgroup which is looking at demand and capacity modelling, patients with Covid-19 typically spend 20 days in critical care, although length of stay in critical care has anecdotally extended to as much as 80 days.

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<sup>1</sup> [http://s3-eu-west-1.amazonaws.com/noca-uploads/general/Irish\\_National\\_ICU\\_Audit\\_Annual\\_Report\\_2018\\_FINAL.pdf](http://s3-eu-west-1.amazonaws.com/noca-uploads/general/Irish_National_ICU_Audit_Annual_Report_2018_FINAL.pdf)

#### 4. Requirement for additional capacity

##### *Health Service Capacity Review*

The deficit in critical care capacity in the Irish acute hospital system was identified in the Health Service Capacity Review (noted by Government in 2018), which recommended that an additional 190 critical care beds should be in place by 2031. This would bring the total to 430 (an increase of 79%), from the figure of 237 in place in 2016.

Since that time, the number of open, staffed adult critical care beds has increased with additional beds put in place in 2017, 2018 and 2019. The Critical Care Programme's National Adult Critical Care Capacity and Activity Census Report 2019<sup>2</sup> identified an operational complement of 255 adult critical care (Level3 ICU and Level2 HDU) beds. This remains far short of the long-term requirement identified by the Capacity Review.

##### *Impact of capacity deficits on clinical care*

The NOCA Irish National ICU Audit 2018 report provided data on critical care patients from 18 units in 15 hospitals. It found that bed occupancy was very high in Irish units - 88% overall and up to 96% in some units, compared with the ESICM recommended occupancy rate of 75%. This reflects the fact that Ireland has 6.0 beds per 100,000 population (including private hospitals) compared with the European average of 11.5 per 100,000. This was reflected in findings that were suggestive of delays in admission to ICU for critically ill patients, and the report states that "[this] under-provision of beds led to high levels of bed occupancy...[which] are recognised as leading to delay in ICU admission, early discharge, cancellation of elective surgery, and increased incidence of hospital-acquired infection. Further detail on the NOCA ICU audit is attached at Appendix A.

The evidence is clear that delayed access to critical care has a significant impact on patient outcomes<sup>3</sup>. An admission delay to a Critical Care Service for a critically ill patient that lasts longer than six hours is associated with threefold increased rate of mortality. In the context of the need to provide critical care for both Covid and non-Covid patients simultaneously, for the foreseeable future, in a critical care environment with existing bed shortages, such a statistic is alarming. In Ireland there is evidence of access fail for neurocritically ill patients, appropriately referred, occurring during ICU overcrowding<sup>4</sup>. This specialty service access delay or access fail for the critically ill patient is likely associated with poor outcome and likely increased mortality.

##### *Impact of Covid-19*

The emergence of Covid-19 has sharply highlighted the fragility of the critical care service as it currently stands, in regard to both capacity and infrastructural deficits. In an unmitigated pandemic the demand for critical care would have overwhelmed the best-resourced system. Nevertheless, Ireland's starting point in terms of critical care increased the challenge of preparing for Covid-19 in the face of unknown and rapidly-increasing levels of demand for critical care and ventilation. Intensive work was done, including training of up to 1500 nursing staff, to put surge capacity in place.

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<sup>2</sup> <http://13.94.105.41/eng/about/who/cspd/ncps/critical-care/critical-care-capacity-planning/national-adult-critical-care-capacity-census-2019-report.pdf>

<sup>3</sup> Harris S, Singer M, Rowan K, Sanderson C. Delay to admission to critical care and mortality among deteriorating ward patients in UK hospitals: a multicentre, prospective, observational cohort study. *Lancet*. 2015;385

<sup>4</sup> Sweeney R, O'Connor P, O'Halloran P, Corr P, Nolan D, Power M. Access of Neuro-Critically Ill Patients to Neuro-Critical Care in Ireland – Does Lack of Capacity Cause an Access “Lottery”? *NIHS Research Bulletin* 2020

The acute hospital system and critical care service coped, largely due to the success of public health measures in flattening the curve and the fall-off in non-Covid care provision. However, with existing high levels of ICU occupancy pre-Covid, and the additional demand of some Covid patients on an ongoing basis, critical care capacity deficits will now be exacerbated.

Furthermore, provision of critical care in surge conditions represents increased risk for patients. In May this year, NOCA produced a bed capacity census which identified and stratified clinical and institutional risk for critically ill patients, setting out the increasing levels of risk associated with different levels of surge capacity.

These issues have been highlighted by critical care clinical leaders<sup>5</sup>, who have noted Ireland's low number of ICU beds per capita compared to European norms and requested that expansion in ICU capacity is funded as soon as possible, given the unsustainable nature of surge capacity and the requirement to provide critical care to both Covid and non-Covid patients for the foreseeable future.

The lack of isolation rooms has increased the risk and the challenge associated with providing care. The emergence of Covid-19 has underlined the need for a sufficient stock of single rooms and isolation facilities to manage patients who require critical care during pandemic infections.

#### *Monitoring the response to Covid-19 – ECDC framework*

The ECDC recently published a monitoring and evaluation framework for Covid-19 response activities in the EU/EEA and the UK<sup>6</sup>. The framework presents indicators for a variety of key pillars of Covid-19 preparedness, prevention and control activities and provides guidance to countries on how to collect and analyse data for the suggested indicators.

Pillar 8 of this framework is *Maintaining essential health services and systems* and a suggested indicator underneath this pillar is the occupancy rate of total Intensive Care Unit (ICU) beds (overall and for Covid-19 patients). The framework states that measuring the occupancy rate of ICUs is the main indicator of the remaining capacity of the healthcare system to provide care to critically ill Covid-19 patients. Given that capacity deficits were evident in critical care prior to the Covid-19 pandemic, it is essential that additional capacity is put in place to meet requirements going forward.

#### **5. Strategic investment in critical care capacity**

Given the high complexity nature of critical care, planning for provision of additional capacity must be clinically led in order to ensure appropriate provision of high quality, safe care. Planning must also consider the broader strategic context for care delivery, so that additional critical care beds align with strategic requirements in regard to trauma, organ transplant, cancer and other highly complex care. This is key to ensuring that the significant investment required delivers optimal value for money.

#### *Hub and spoke model*

The National Clinical Programme for Critical Care published its Model of Care for the provision of critical care in Ireland in 2014<sup>7</sup>. This set out evidence that multidisciplinary, multispecialty critical care in centralised (or regionalised) high-volume Critical Care Units is associated with superior

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<sup>5</sup> Open letter to An Taoiseach, other party leaders, the Ceann Comhairle and other members of Dáil Éireann

<sup>6</sup> <https://www.ecdc.europa.eu/sites/default/files/documents/covid-19-framework-monitor-responses.pdf>

<sup>7</sup> <https://www.hse.ie/eng/services/publications/clinical-strategy-and-programmes/model-of-care-for-adult-critical-care.pdf>

outcomes<sup>8</sup>. The Model of Care also notes that, in some smaller hospitals, several very low-volume ICUs are provided. While smaller hospitals provide excellent general medical and general surgical services, they lack specialty services (such as nephrology and continuous dialysis) to support the complex needs of critically ill patients.

Accordingly, the Model of Care adopts a hub-and-spoke configuration. This aims to ensure that critical care services are provided in hospitals where it is clinically appropriate to do so, with mechanisms in place to transport patients between hospitals when required. Arising from patients' needs for specialty services, and in line with the volume-outcome evidence base, critical care capacity provision and expansion is required at hospital centres or hubs.

The hub and spoke model is supported by the National Ambulance Service Critical Care Retrieval Service (MICAS). This is a comprehensive retrieval/transfer system for seriously ill babies, children and adults throughout Ireland.

#### *Wider strategic reform and service development*

Investment in critical care is also an enabler for the implementation of other key national strategic reforms and service developments.

- A Trauma System for Ireland: the Report of the Trauma Steering Group was approved by Government in 2018. The report is clear that sufficient critical care bed stock is essential for the treatment of major trauma, and it noted the extreme pressure on critical care bed capacity currently. It says that immediate or prompt access to critical care in the receiving hospital is a key outcome determinant for the critically ill patient. Accordingly, provision of additional critical care capacity will need to take account of the location of Major Trauma Centres and Trauma Units, and the necessary flexibility is allowed for in the current proposal.
- A broad objective of the National Cancer Strategy 2017-2026 is to have models of care in place that ensure that patients receive the required care, in a timely fashion, from an expert clinical team in the optimal location. As part of this, cancer surgeries will be further centralised in the eight designated cancer centres as set out in the Strategy, with some tumour types to be operated in no more than four sites. This is based on clear evidence that patients who are operated on by surgeons who carry out higher volumes of surgery in specialist centres, that themselves have high volumes, achieve better outcomes.
- Organ transplant services are resource intensive with respect to ICU capacity. Critical care is required in both the transplant centre, where the transplant surgery is undertaken and in the hospital where the donor is, prior to retrieval of the organs. Each donor will potentially go on to transplant to seven recipients, and transplant especially for heart and lung can result in significant length of stay in critical care. Transplant is time critical surgery, and there is risk of missed opportunities if ICU beds in transplant centres are not available when a donor opportunity in another hospital is identified.
- While the number of maternity patients who require critical care is relatively small, the recently published NCEC National Clinical Guideline on Stratification of clinical risk in pregnancy makes reference to critical care. The recommended model of care set out in the guideline is clear that critically ill mothers should be admitted directly to the ICU.

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<sup>8</sup> Davenport, RA., 2010. A major trauma centre is a specialty hospital not a hospital of specialties. *British Journal of Surgery* 97(1): 109-117; Kim, MM, 2010. The effect of multidisciplinary care teams on intensive care unit mortality. *Archives of Internal Medicine* 170(4): 369-376).

- The provision of additional critical care capacity in accordance with the hub and spoke model is in keeping with the overall strategic direction of Slaintecare, supporting delivery of the right care, in the right place at the right time. Slaintecare envisages most care being provided in the community, as is appropriate – critical care is the type of high complexity, low volume care that can only be provided in our acute hospitals.

## **6. Workforce planning**

Workforce planning is a key component of additional critical care capacity. The current proposal provides for workforce planning to be undertaken this year to support the development of additional capacity.

### *Nursing*

An increase in critical care capacity will necessitate an increase in the numbers of specialist ICU trained nurses. The complement of critical care nurses necessary to meet the demands of critically ill patients presenting to prioritised hospitals should be based on detailed workforce planning, which will need to consider skill mix, recruitment strategies, development of specialist pathways of training as well as advance practice roles eg critical care outreach, critical care retrieval and within critical care. Engagement is underway between the HSE and the Office of the Chief Nurse in relation to initiatives which will help to increase the number of trained critical care nurses in Ireland.

### *Consultants*

The National Doctors Training Planning (NDTP) unit and the Joint Faculty of Intensive Care Medicine will publish “An Intensive Care Medicine Speciality Workforce Review” in June 2020. To support increased critical care capacity, there will be a need to develop workforce plans to ensure sufficient numbers of junior doctors in training as well as access to increased post-graduate training places in order to support increased bed capacity.

### *Other health and social care professionals*

HSCPs are vital for the delivery of Critical Care services. The early involvement of these professions in the management of the critically ill patient will support better patient outcomes. Workforce planning will be required for relevant HSCPs include pharmacists, dieticians, physiotherapists, occupational therapists, speech and language therapists and social workers.

## **7. Capital infrastructure**

The provision of fit for purpose infrastructure is a key component of additional critical care capacity, and will require capital investment. Single en-suite rooms and isolation rooms decrease transmission of bacteria and viruses in vulnerable critically ill patients in a critical care unit. Specifically, isolation rooms decrease airborne infection transmission and certain highly transmissible infections require single rooms that are specifically designed to minimise the transmission of these infections. Neutral pressure isolation rooms can provide both source isolation of patients with airborne infections and protective isolation of patients with profound immune deficiency. SARI standards<sup>9</sup> and HBN-0402<sup>10</sup> recommend that there should be 50% of Airborne Infection Isolation Rooms (AIIRs) in critical care units. Currently, around half of capacity has no air management (air exchanges) or treatment (HEPA filtration).

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<sup>9</sup> <https://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/infectioncontrolandhai/guidelines/File,3439,en.pdf>

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[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/147865/HBN\\_04-02\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/147865/HBN_04-02_Final.pdf)

In terms of providing care for Covid patients, the Intensive Care Society of Ireland guidance document for the Intensive Care Management of the adult patient with confirmed or suspected COVID-19<sup>11</sup> states that critically ill patients who are likely to require aerosol-generating procedures should be cared for in rooms with appropriately-controlled ventilation.

The HSE has advised that the majority of existing beds will need to be rebuilt in order to ensure that all critical care beds in these locations have the capacity to isolate patients in single rooms as well as providing 50% of the new accommodation with airborne isolation facilities.

Planning for additional critical care infrastructure at current acute hospital sites will require consideration of design and building timelines, disruption to existing services within the hospital, the on-site location of critical care facilities and the importance of maintaining relevant clinical adjacencies.

## **8. Summary proposal**

The proposed expansion in critical care beds involves two phases. Phase 1 provides for an increase of 66 adult beds in the short to medium term with 40 of these beds being provided in 2020/2021 and the remaining 26 in Q4 2021 and Q3 2022. The total additional Revenue funding requirement identified in these proposals is €44.5m in 2021 and a further €12m in 2022. In addition, capital funding of €36.2m will be required to progress projects in Phase 1. Phase 2 proposes a further 117 net new beds, entailing capital developments in the form of new critical care ward blocks at five priority locations. The detail of the proposal is set out at Appendix B.

This two-phase approach reflects, as outlined above, the need to add capacity quickly to deal with the co-existing demand for Covid and non-Covid care, allied with a strategic multi-year approach to underpin strategic reform, service development and fit-for-purpose infrastructure over time. This approach also reflects the time involved in capital development, and the need for appropriate workforce planning to ensure additional appropriately trained and qualified staff become available in line with staffing requirements.

Clinical prioritisation has been undertaken by the HSE to identify hospital locations for additional critical care beds. The locations were considered in the context of implementing national strategies, health policy and clinical programmes. Additionally, resource allocation profiling was used to determine the impact of the distribution of the additional critical care beds at the Hospital Group population level. The outcome of the profiling demonstrates that, following the developments proposed, each Hospital Group will have an equivalent rate of critical care beds per 100,000 of the population. This also reflects increased allocation of critical care beds to Hospital Groups with key national specialities including neuro-specialty services, solid organ transplant programmes, bone marrow transplant, burns, ECLS/ECMO, hepato-biliary cancer service and provide for the implementation of the Trauma Strategy.

## **9. Conclusion**

It is intended now to engage further within the Department and cross-Departmentally as necessary to seek the necessary approvals through normal processes.

The Acute Hospitals Preparedness Subgroup requests that NPHE notes and supports these proposals as set out, as appropriate for ongoing Covid preparedness, and notes the intention to seek necessary approvals through the normal processes.

ENDS

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<sup>11</sup> <https://www.intensivecare.ie/wp-content/uploads/2020/02/ICS-Guidelines-COVID-19-V4.pdf>

## **Appendix A Summary of Irish National ICU Audit 2018**

The 2018 Report has data on critical care patients from 18 Units in 15 hospitals - which between them undertake 70% of ICU activity in HSE-funded hospitals. Audit staff in each hospital collect the data and forward to the Intensive Care National Audit and Research Centre (ICNARC) in London. ICNARC monitor the quality of the data, analyse it and report back to each Unit and NOCA on activity and quality of care. NOCA monitor these reports and liaise with hospitals regarding any 'outlier' findings that are not within the expected range. The aim is to ensure that patient care is optimised.

### **Key Findings**

- Bed occupancy was very high in Irish Units: 88% overall and up to 96% in some Units. The European Society of Intensive Care Medicine recommends an occupancy rate of 75%. This high level of occupancy is attributed to the low provision of intensive care beds in Ireland, with only 6.0 beds per 100,000 population (including private hospitals) compared with the European average of 11.5 per 100,000.
- Unit length of stay (LOS) averaged 5.0 days. A common feature was delayed discharge from ICU of patients after being cleared for discharge. This is due to shortage of ward beds, but it leads to inappropriate utilisation of scarce ICU beds, leading to delays when a critically ill patient needs urgent admission from the ward or Emergency Department
- National Early Warning Scores (NEWS) before discharge from ICU were surprisingly high with a median value in some Units of 4 and an upper quartile value of 6, meaning that 25% of patients were being discharged with a NEWS of 6 or greater. These values were seen in the Units with the highest rates of bed occupancy. Discharges from ICU with these levels of NEWS may be appropriate if patients are being discharged to a step-down Unit such as a HDU. However, in hospitals without a HDU, discharges to a ward with a high Early Warning Score (EWS) are undesirable. This generally occurs because of a need to make a bed available for a new admission.
- Severity of illness on admission to ICU was similar in Ireland and the UK, but the predicted mortality rate was somewhat higher for Irish patients (7% versus 5%), indicating that Irish patients had more risk factors than patients in the UK.
- Some 46% of Unit admissions required ventilation via an endotracheal tube or tracheostomy.
- Hospital LOS after ICU discharge for hospital survivors was 22 days in Ireland versus 14 days in the UK.
- Delay in admission to ICU for critically ill patients worsens outcomes. Only one Unit (Regional Hospital Mullingar) achieved the HSE target of 50% of patients admitted within one hour. Five out of 18 Units achieved the HSE target of 80% of patients admitted within four hours of a decision to admit, but there were problems with delayed admission in the larger Units in Dublin and Galway.
- If a patient develops organ failure in four or more organ systems within 24 hours of admission to ICU, it is suggestive of delayed admission to ICU. The national rate was 11.5%, which was somewhat greater than the UK rate of 9.3%.
- The national rate of unplanned discharges at night was 4.6% (4.6% versus 2.2% UK). Discharges from ICU at night of patients not cleared for discharge the previous evening suggests that the



patients may not be fully ready for ward care. In addition, the admission of a sick patient to a ward at night is less than ideal, as staffing levels are lower, and the patient is not known to staff.

### **Recommendations of the NOCA ICU Audit Report**

1. Increase bed capacity in adult Critical Care Units (ICU and HDU) towards the 430 beds recommended in the Department of Health's Health Service Capacity Review 2018.
2. Review the appropriateness of providing care for critically ill patients in Units with small numbers of patients with multiorgan failure, in line with the recommendations of the HSE Critical Care Programme Model of Care, the Joint Faculty of Intensive Care Medicine of Ireland, and the European Society of Intensive Care Medicine.
3. Prioritise the discharge of patients from ICU to the ward once they have been declared fit for discharge.
4. Explore best practice in providing optimal care for high-risk patients outside critical care, including the potential benefits of critical care outreach teams.
5. Improve the rates of organ donation after brain death in the larger Units.
6. Improve the rates of organ donation after circulatory death (DCD).
7. Improve psychological care for relatives whose family member is in critical care.
8. Expand the range of reports produced by the NOCA ICU Audit on data already collected for ICU Audit.
9. Regrade ICU Audit Coordinator posts to clinical nurse manager (CNM) level.

**Appendix B Critical Care Detailed Proposals**

**Table 1: Breakdown of locations for adult critical care beds provided under Covid-19 response and proposed locations for additional beds**

Hospital Group	Hospital	2019 Critical Care Census	Phase 1 Expansion		Phase 2 Expansion
			Covid-19 Beds (initial locations)	No of Additional Beds	No of Additional Beds
Ireland East Hospital Group	Mater Misericordiae Hospital	32	9	-	19
	MRH Mullingar	6	-	-	-
	St. Vincent's University Hospital	16	2	8	19
	St. Luke's Hospital Kilkenny	4	-	-	-
	Our Lady's Hospital Navan	2	-	-	-
	Wexford General Hospital	5	-	-	-
Dublin Midlands Hospital Group	St. James's Hospital	29	2	-	19
	MRH Portlaoise	2	-	-	-
	Naas General Hospital	4	-	-	-
	Tallaght University Hospital	14	-	12	-
	MRH Tullamore	4	3	-	-
RCSI Hospital Group	Beaumont Hospital	25	3	-	22
	Cavan General Hospital	4	1	-	-
	Connolly Hospital	4	1	-	-
	Our Lady of Lourdes Hospital	8	-	-	-
Saoilta University Healthcare Group	Galway University Hospitals	18	5	-	-
	Letterkenny University Hospital	5	1	-	-
	Mayo University Hospital	3	-	-	-

	Portiuncula University Hospital	5	1	-	-
	Sligo University Hospital	5	1	-	-
South / Southwest Hospital Group	Cork University Hospital	18	3	-	38
	Mercy University Hospital	5	1	-	-
	South Tipperary GH	4	1	-	-
	UH Kerry	5	1	-	-
	UH Waterford	9	1	-	-
UL Hospitals	UH Limerick	18*	4	6	-
Subtotals		254	40**	26	117
Totals		254	294	320	437

\* The Critical Care Unit in UL has 28 beds of which 18 + 4 COVID are currently open.

\*\* The location for these 40 additional critical care beds is being reviewed in light of actual COVID activity data and the recommendations of the Adult Critical Care Programme. The intention is that the additional critical care capacity in non-hub sites will migrate to hub sites as soon as physical space is available in these locations.

**Table 2. Initial Adult Critical Care Development Proposals**

<i>Expected date of delivery</i>	<i>Development proposal</i>	<i>No. of additional beds</i>	<i>Revenue (full year) €m</i>	<i>Capital</i>	<i>Expected date of delivery</i>
End 2021 Q1	Revenue funding of 42 COVID-19 development beds (40 adult and 2 paediatric)	40	40.0	TBC	Q4 2020
End 2021 Q1	Complete workforce plans for Nursing, Medical and Health & Social Care Professions	N/A	0.3		Q1 2021
End 2021 Q2	Commence Capital Strategic Assessments and preliminary business cases for the first 5 prioritised sites	N/A		5.0	Q2 2021
Start 2021 Q3	Increase resources for Mobile Intensive Care Ambulance Service (MICAS) to facilitate transfers of critically ill patients between hub and spoke hospitals	N/A	3.0		Start Q3 2021
Start 2021 Q3	Open 6 HDU beds in UH Limerick and support clinical management of fully opened 28 bed Critical Care Unit	6	6.4		Start Q3 2021
End 2021 Q4	Open 8 HDU beds in St Vincent's University Hospital	8	4.8	12.2	Q4 2021
End 2022 Q3	Open 12 ICU beds in Tallaght University Hospital	12	12.0	19.0	Q3 2022
	<b>Total</b>	<b>66</b>	<b>€66.5m</b>	<b>€36.2m</b>	

**Table 3: Prioritised locations for critical care developments**

Priority locations for critical care (ward block) developments		Existing beds as per Critical Care Census 2019	No of additional beds under phases 1 & 2	Total bed numbers
1	Beaumont Hospital	25	25	50
2	Cork University Hospital	19	36	60
3	St Vincent's University Hospital	16	34	45
4	Mater University Hospital	32	28	60
5	St James's Hospital	29	21	50
	<b>Total</b>	<b>121</b>	<b>144</b>	<b>265</b>