

**Title:** Infection Prevention and Control in Healthcare in Ireland-Learning to date from COVID-19

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## **Infection Prevention and Control in Healthcare in Ireland-Learning to date from COVID-19 Summary**

The most effective way to achieve Infection Prevention and Control (IPC) preparedness for future epidemics and pandemics is to build the basic capacity for control of those Healthcare Associated Infections (HCAIs) that are an intrinsic part of all healthcare provision at all times. Building this capacity will deliver dividends in better control of HCAIs and antimicrobial resistance as well as preparedness for exceptional events.

In a collaborative approach with the support and guidance of NPHE, the Department of Health and HSE have continued to work as part of the COVID response to ensure strengthening of health services to deliver infection prevention and control (IPC) to support the provision of safe COVID and non-COVID care. This work includes IPC governance, the implementation of a suite of measures aimed at preventing transmission of the virus in acute hospitals and across community settings; to limit the demand for specialised healthcare; safeguard risk groups; protect healthcare workers; and minimise the export of cases to other healthcare facilities and the wider community. IPC is by its nature multi-disciplinary and a core component of the practice of all health and social care staff. It requires specialist supports and needs to interface with other corporate and operational functions to ensure good IPC is 'built in' to the way care is delivered. This paper highlights the progress made to expand IPC capacity and capability across the healthcare system but also identifies, through the 'learnings' the areas for continued development.

In summary, the key learning identified through this paper were included in the *NPHE Advice in Relation to the On-going Response to COVID-19* paper to Government week ending 19 February 2021, as set out below:

Congregated health care settings, such as nursing homes, hospices and hospitals, are by their nature, ideal settings for the spread of infectious diseases. Managing healthcare associated infection (HCAI) is therefore critical but very challenging, and the experience over the past year has not only identified what worked well but also highlighted the current gaps and weaknesses in the control of HCAIs, not only in Ireland but across health care systems internationally. A review of the learnings to date from COVID-19 in Ireland has been undertaken and has identified a range of areas of focus to continue to improve infection prevention and control across the health system. This includes:

- Continue to strengthen and develop an integrated governance structure to oversee IPC and the control of HCAIs/outbreaks system wide.
- Enhance IPC capacity and support systems at a local and national level, including workforce, ICT and surveillance systems and laboratory services.
- Appropriate integrated clinical models at local service provider, regional and national levels which encompass IPC requirements and oversight
- Ensure a strategic reserve and secure supply line of critical IPC supplies.
- Sustain and accelerate changes in the way care is delivered including greater provision of care in the community and in less congregated settings, greater separation of scheduled and unscheduled care, and provision of surge capacity.
- New build healthcare facilities that meet current standards and refurbishment of existing areas that are likely to continue in use until new build become available.
- In relation to long term residential care services there should be a move towards household or own door accommodation on a campus and away from mini-hospital style construction
- Develop robust contingency planning for large staff absences to ensure good IPC practice can be sustained.
- Develop and increase occupational health services and develop greater integration of the work of IPC and occupational health.
- Ensure IPC guidelines are applied in a timely, consistent, proportionate and compassionate manner to support system wide service delivery balancing public health requirements with service user wellbeing.
- Build knowledge, skill and resilience in healthcare workers at all levels from undergraduate education and empower service users and their advocates.
- Publication of clear and timely surveillance information on HCAI.
- Review of IPC standards, regulation and licensing in the context of learning from the pandemic while a programme of clinically-led IPC research and development is also required.

The integrated Antimicrobial Resistance and Infection Control (AMRIC ) Team HSE have outlined the following key learning points to continue to develop, summarised below:

#### **Healthcare Associated COVID-19 (HCA-COVID) - the Service User Experience**

Building knowledge, skill and resilience in healthcare workers at all levels from undergraduate education and empowering service users and their advocates.

#### **Healthcare Associated COVID-19 (HCA-COVID) - the Healthcare Worker Experience**

Robust contingency plans and capacity for managing massive staff absence in the context of an outbreak to sustain good IPC practice and greater integration of the work of IPC and Occupational Health services. Occupational Health services and will require some focus and enhancement going forward.

#### **Infection Prevention and Control Support Systems**

**Local;** Better and more integrated human resources for Infection Prevention and Control support service supported by the relevant Department of Public Health. Better and more integrated ICT systems to support IPC. Enhanced laboratory surge capacity and resilience.

**National;** Enhanced capacity to provide on-site clinical and epidemiological support to community and hospital IPC support services dealing with outbreaks and other incidents. Other requirements include behavioural change expertise; an integrated national public health microbiology laboratory service; more effective systems for surveillance and feedback.

Significant investment in our public health system and the early introduction of a new framework for public healthcare as recommended in the Crowe Horwath report.

Plans to update the CIDR system and provide a modern information system to manage the surveillance and control of infectious diseases should be implemented at the earliest opportunity.

#### **Infection Prevention and Control – Consumable Supplies**

There is a need for the future to define and retain a strategic reserve of critical IPC supplies and to secure supply lines for critical supplies for IPC.

#### **Infection Prevention and Control – Healthcare System Design**

Accelerate transition to systems of health care that minimise the requirement for medically vulnerable people and staff to congregate in acute hospitals or other residential settings. Accelerate the separation of services for delivery of scheduled and unscheduled care. Develop some margin of surge capacity.

#### **Infection Prevention and Control and Healthcare Infrastructure**

New build healthcare facilities that meet current standards in terms of single rooms and isolations facilities are urgently required. Pending completion of modernised infrastructure, significant refurbishment in line with work that AMRIC, Acute Operation and HSE Estates did in the context of the CPE public health emergency requirement to bring legacy infrastructure in acute hospitals up to a minimum reasonable standard is required to mitigate any extant risks.

In relation to long term residential care services there should be a move towards household or own door accommodation on a campus and away from mini-hospital style construction.

#### **Infection Prevention and Control Reporting and Transparency**

All healthcare services (public and private) should work to publish clear surveillance information on HCA COVID-19 and other HCAI in a timely manner.

#### **Infection Prevention and Control Standards and Regulation and Licensing**

Review of National Standards, regulatory processes and requirements for licensing that relate to IPC.

#### **Clinical Audit, Incident Review, Quality Improvement, Research and Development**

Enhanced support for audit and incident review and the recognition of these as core responsibilities of senior manager and clinical leaders.

A strong programme of clinically relevant IPC related research and development.

Continued

### **1.1. Introduction**

A large group of people moving in and out of a confined space within which they interact closely by touch and speech is an ideal setting for spread of infectious disease. If the group includes a high proportion of medically vulnerable people, then infection will spread more easily. Congregated health care settings, such as a nursing home, hospice or hospital provide all of these conditions. This background makes managing healthcare associated infection (HCAI) very challenging. As vulnerability of people cared for and the complexity of interventions has increased in recent decades, the challenge has grown. There are older people, and more dependent older people in Ireland than at any time in the past. Demographic trends indicate that this will be increasingly true over the coming decades. Dependent older people, and others with comparable care needs, represent a sector of the population at an inherently high risk of infection. HCAI is a risk in any setting where healthcare is delivered including care in the person's home, but the risks are greater in congregated care settings. The risk of healthcare associated infection to staff and service users can be mitigated but it cannot be eliminated.

HCAI represents a particular challenge in the context of novel pathogens and variants. Introduction of novel pathogens/variants into a congregated healthcare setting can result in rapid amplification and subsequent dissemination into the wider community. This risk is as relevant now to emerging variants of SARS-CoV-2 as it was to initial dissemination of SARS-CoV-2.

Infection Prevention and Control (IPC) is a term used to describe a set of processes and practices for managing the risk of HCAI by delivering "clean safe care". IPC works best when it is accepted as the responsibility of each individual who delivers, supports, plans or uses healthcare and when there is with a dedicated team of IPC practitioners to support them in delivering that care. IPC needs to further develop the interface with other corporate and operational functions to ensure good IPC is 'built in' to the way care is delivered]

Public Health and Occupational Health are key partners with the IPC support team. The goal is the delivery of healthcare services that are experienced as caring with the lowest practical risk of infection. Ceasing to provide, or reducing access to healthcare services that are essential, will stop or reduce HCAI but has profound consequences. Likewise, isolation and a "hands-off" remote approach to delivery of healthcare is one important part of managing the risk but also has potential to do harm. Both real and perceived risks to healthcare workers can lead to practices that have profound consequences for service user's experience of being cared for, and for healthcare workers sense of consistency with their values as carers.

One of the key challenges for IPC interventions in clinical environments is that their impact depends on how people (service users and staff) actually behave, as distinct from how they

are expected to, or intended to, behave. Understanding and influencing human behaviour change in the clinical setting is key to IPC. General experience is that a supportive approach based on quality improvement principles is most effective in achieving positive change. Surveillance of HCAI with direct comparative feedback on HCAI outcome has generally been very influential in driving improvement

None of the above is new but the pandemic has brought the gaps and weakness in the control of HCAI into very sharp relief. This is true not only in Ireland but also in the healthcare systems of other countries.

Based on current experience, healthcare associated COVID-19 (HCA-COVID) is related in large measure to undetected introductions of SARS-CoV-2 into the healthcare setting and the ease of transmission once introduced. Undetected introduction has proved particularly difficult because a person may be infectious before they are symptomatic; staff are often minimally symptomatic and may not think of themselves as ill and a culture among healthcare workers of presenting for work if at all possible. In addition, the symptoms of service users are diverse and often difficult to recognise as COVID-19 related. In the congregated healthcare setting it is apparent that even combined clinical assessment and laboratory testing at point of entry does not reliably identify all infected people. Some infected people who are not detected may subsequently become infectious and trigger chains of transmission in the healthcare setting.

SARS-CoV-2 is highly transmissible by contact and droplet routes. There is evidence that in some circumstances it can be transmitted by the airborne route. These are overlapping rather than discrete routes of transmission. There is little evidence to demonstrate the relative importance of contact and droplet transmission. The relative importance of the different routes of transmission is not likely to be constant. It is likely to depend on the nature of human behaviour and interaction in a particular setting. The impact of interventions targeting a particular route of transmission therefore depends on the setting. The most intense exposure in the healthcare setting for both service users and staff is when they are in direct physical contact with each other while personal care is being delivered. The exposure risk for both the service user and healthcare worker in that setting is very high and the ability to manage that risk with the use of hand hygiene and personal protective equipment is very dependent on the nature of the care required and the capacity of the service user to cooperate with the delivery of care and the skill and behaviour of the healthcare worker. Exposure to an infectious dose of pathogen at a single time point can eliminate the benefit of adherence to protective measures at all other times.

### **2.1 Healthcare Associated COVID-19 (HCA-COVID) - the Service User Experience**

The impact of HCA-COVID in terms of number of infections is described in available data sources and is not revisited here but it has been immense. The impact in terms of mortality directly attributable to COVID-19 in acute and residential settings is harder to gauge precisely but it is clear that it has been great, particularly amongst older and medically vulnerable people in congregated healthcare settings, both acute hospital and long-term residential care facilities. The quality of service experienced by service users has been impacted in facilities where there have been extensive staff absence as a result of the pandemic (illness or contacts).

The impact of this has in turn been mitigated through guidance and support of NPHET and by extensive supports put in place by the DOH and HSE including financial support, PPE supply, COVID-19 Response teams, serial testing, training and the deployment of HSE staffing to support those in greatest difficulty. HCA-COVID in services delivered in non-congregated settings including service user's homes has also occurred. Although the differential risk between congregated and non-congregated settings has not been well quantified in Ireland, it is apparent that HCA-COVID is much reduced in the non-congregated settings. There is also published evidence from elsewhere that non-traditional small house nursing homes have fewer COVID-19 cases and deaths and that nursing home crowding is associated with greater incidence of COVID-19 infection and mortality.

The impact of measures implemented with a view to manage the risk of HCA-COVID on service users experience has not been captured systematically, but engagement with service users and their families and media interviews leave no doubt that unintended harm from measures implemented as IPC requirements has been enormous. The impact has been greatest for older people and others who have spent extended periods in a congregated care setting during the pandemic. The impact has also been significant for others using healthcare services including pregnant women and their partners and for children. The assessment of many experienced clinicians is that the loneliness and restriction of movement have contributed to deterioration in function, deconditioning and poorer health outcomes for many older people. The partners, families and friends of many of those who have died are impacted further by the fact that the family member acquired the infection in a healthcare service and that the service then could facilitate little or no access to accompany the person at the end of their life.

It is important to be clear on the distinction between restrictions based on National IPC and Public Health guidance and accounts of additional restrictions in some healthcare and disability settings that were in excess of national guidance and disproportionate to the risk. It appears from accounts provided that understandable fears of staff members and inadequate clarity played a part in a number of instances in which user's experience, as described, was much more difficult than was strictly necessary for IPC purposes.

Ensuring that IPC guidance is more effectively disseminated through integrated structures across the system will assist in building greater trust in the guidance provided and reduce the risk of such events occurring.

## **2.2. What are the key learning points?**

There is a need to continually review IPC guidance through the lens of the impact on the experience and overall health of service users and their families and friends. This requires progress towards an integrated IPC network across the healthcare service that provides local and trusted guidance on the application of IPC practice.

There is a need for greater knowledge and awareness among service users and their families regarding the risk of healthcare associated infection and how they can contribute to managing the risk. This requires continued efforts to educate service users and their families regarding HCAI.

Continued engagements with advocacy groups to ensure that they are consulted on and are aware of national IPC guidance will support service users and their families in understanding and appropriately questioning measures that are applied. Evidence demonstrates this will improve adherence but also enable meaningful engagement in the name of IPC.

Although there have been significant efforts to reach healthcare workers and managers, a greater focus on translating IPC guidance into sound and consistent practice applied with compassion is required. This includes greater practical and psychological preparedness for the infection risk and fears of infection associated with being a healthcare worker commencing at undergraduate level and continued through post graduate professional training.

### **3.0 Healthcare Associated COVID-19 (HCA-COVID) - the Healthcare Worker Experience**

The quantitative impact on healthcare workers of COVID-19 in terms of number of infections is described elsewhere and has been immense. The consequences of those infections in terms of morbidity and mortality are not yet fully apparent but it has been great. The psychological impact for healthcare worker of coping with fear of infection for themselves and for their families is more difficult to capture. In addition, many have been impacted by what they have experienced of the impact of HCA COVID-19 on service users, and the stress of balancing their commitment to care with their natural fear for themselves. Many healthcare workers who have been excluded from their usual work, because of their medical vulnerability, have also found this a very difficult experience as they wanted to contribute to the service and support their colleagues. There have been a number of accounts of transmission of infection assessed as related to agency healthcare workers staff and other staff who may have felt vulnerable, attending for work when they were overtly symptomatic. Measures to support staff have included temporary accommodation for staff to support restricted movement and self-isolation and access to testing for COVID-19 including the serial testing programme for long term residential care.

One of the greatest challenges for healthcare works in delivering clean safe care during the current pandemic has been staffing deficits related to COVID-19. Staff have been absent from work because of infection and because they have been identified as COVID-19 contacts. The delivery of clean safe care and supporting service users particularly in an outbreak setting takes time and focus. It is practically impossible to follow IPC guidance effectively when services are operating on minimal staffing.

Improved coordination between IPC and Occupational Health through the pandemic has been important in working towards greater consistency in the application of IPC guidance in clinical practice and the designation of healthcare workers as contacts. Healthcare workers and their managers have stressed the importance of this for them in performing their work with confidence that they are adequately protected when adhering to recommended IPC measures.

### **3.2. What are the key learning points?**

There is a need for greater knowledge and awareness among healthcare workers of the risk of infection inherent in the work that they do and how to manage that risk. There is a need for greater preparedness of healthcare workers for coping with the experience of anxiety and fear in the face of risk of infection. This can be addressed by building practical and psychological preparedness for the infection risk and fears associated with being a healthcare worker into undergraduate and post graduate professional training. This also then needs support for continuous 'on the job' learning to take account of changing working risks and work environments.

There is a need for greater medical and psychological support for healthcare workers coping with physical and mental health impacts of their exposure to infection and with the consequences for them and their families of infection when it occurs.

Continuing work to align the work of IPC and Occupational Health services to support healthcare workers and managers. The pandemic has highlighted that the health system's Occupational Health service is underdeveloped and it is clear that this is an area that will require some focus and enhancement going forward. Occupational Health resources are essential to support healthcare workers exposed to high risk of infection, to assist with outbreak management and also to support the safe resumption of services. Importantly, given the disproportionate impact that the pandemic has had on healthcare workers, Occupational Health services will play a key role to support those staff as they return to work, the overall wellbeing of staff and the potential impact of longer term consequences of COVID-19 amongst the health service workforce.

There is a need for more robust contingency planning to manage staff absence in the context of an outbreak and support sustaining good IPC practice.

### **4.1 Infection Prevention and Control Support Systems**

IPC is delivered by the skill and commitment of clinical teams, cleaners, estates service and managers and the support of service users. IPC practitioners and IPC systems function to support those key players in delivering IPC.

#### **4.1.1 IPC Support Systems- Local**

Local IPC Support linked into multidisciplinary COVID-19 Response Teams and Public Health have played an important role in supporting continuing care with the lowest possible HCAI risk in many community settings. The importance of sustaining and developing this work is reflected in the recommendations of the Nursing Home Expert Panel. Likewise, in acute operations existing IPC support teams delivered a high level of training and support and have adapted their work practices, where necessary, to provide additional support over extended hours and weekends. However, the IPC support in community and acute operations has depended on extraordinary levels of commitment from local IPC teams because the capacity has not been adequate to meet the needs in a sustainable way. While deficits exist in all areas, they are particularly serious in the community setting. The impact of this deficit has been greatest in congregated care settings in the community, in particular,

nursing homes. Although guidance is available and has been disseminated through webinars and other approaches, the experience reported from Public Health and COVID Response Teams is that many community healthcare services have very little capacity on the ground to translate guidance into good practice. Funding has been provided to develop, in the first instance, nursing (10 WTEs) and pharmacist (10 WTEs) capacity for IPC in the CHOs in 2019 (arising from the CPE Public Health Emergency) but not all of those posts were in place at the outset of the pandemic and the posts funded at that time were not intended to meet the full requirement. All but one of these posts is now filled and the remaining post is under recruitment.

Although human resources for IPC in the acute hospital setting are much better, and were also increased through the CPE Public Health Emergency, they have struggled to cope, particularly where support systems lack resilience because key skill sets in a hospital are represented by individual people (single handed IPC doctor), the overall IPC team is small and does not include the full multidisciplinary team.

Following a review of the additional IPC investment required due to the COVID-19 pandemic, 100 WTE posts were approved (comprised of 79 posts for IPC and 21 of Occupational Health) in August 2020 to support the integrated response across acute and community services. These posts include 1 WTE at national level (to support the AMRIC National Team), 31.5 WTEs based in community services and 46.5 WTEs based in acute services. As of 19<sup>th</sup> January, last, 5 WTEs posts in community services and 10 WTEs in acute services have been filled. The remaining posts are at various stages of recruitment. In addition to these acute / community specific posts, 21.5 WTEs as shared posts across community and acute services have been approved.

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These joint acute / community posts consist of:

- 10 WTEs for Consultant Microbiologists / Consultants in Infectious Disease
- 11.5 WTEs for Surveillance Scientists

To provide clinical leadership for integration, Consultant appointments with responsibility for IPC which are hospital based but include a specified 0.5 WTE commitment to support Community services in a region aligned to their hospital appointment have been funded. These posts are open to Consultant Microbiologist or Infectious Disease Physicians with a special interest in IPC. The appointment of Surveillance Scientists will enable integrated working on IPC surveillance across both acute and community services.

Further provision to expand IPC capacity has been made in the Budget 2021.

IPC teams are multidisciplinary by nature and a full team complement may include expertise from consultant microbiologist, consultant infectious disease physician, specialist IPC nursing, antimicrobial pharmacist, surveillance scientist as well as business manager and administrative support. The rapidly increasing demand for such highly skilled and qualified practitioners in recent years means that filling of posts is dependent on adequate supply to enable recruitment and retention of healthcare professionals for these roles. A strategic and innovative approach to the multidisciplinary requirements of IPC teams is required to ensure sustainable capability and capacity across generalist and specialist roles.

Information and Communications Technology (ICT) to support IPC practitioners and to link community and hospital have not been available in most parts of the country to enable IPC practitioners and managers to track the infection status of service users moving between community and acute services and allow rapid communication regarding infection status between hospital and community. Where this has been available from the outset (University of Limerick Hospitals Group and CHO3), it has supported an integrated response.

Microbiology laboratory and surveillance support for IPC has been critical to detection and management of infection. Capacity has expanded very successfully with targeted funding of additional posts in the diagnostic laboratories building on an existing skills base. Even with that expansion laboratories have struggled to cope with demand in particular during major surges within existing human, technical and ICT capacity for surveillance of HCAI.

The demand for testing has intensified with growing experience with the disease and in particular the value of testing in earlier identification of infectious people in congregated care settings. Resilience has been impaired by weakness of ICT integration that means in a number of cases where laboratory capacity has been available elsewhere to support sectors under intense pressure it has proved practically difficult to deploy that capacity because of problems with data transfer.

#### **4.1.2 What are the key learning points?**

Better and more integrated human resources for Infection Prevention and Control support service supported by the relevant Department of Public Health and Community Support Teams (as per Nursing Home Expert Panel Report). Every healthcare delivery service, public or private, delivering health care or disability services in any context (congregated, home care, surgery care) needs IPC support capacity within the organisation. At a minimum this should be one or more IPC link practitioners with reasonable protected time for their role. Larger organisations require Infection Prevention and Control practitioners with formal qualifications and experience in addition to link practitioners. Recruitment to expand HSE IPC support services in community and hospital and for Public Health is in train (additional funding has been allocated to support this). A strategic approach to longer-term workforce planning for IPC expertise should be applied to put in place a range of approaches to ensure that a sustainable cohort of specialist IPC staff. This could include developing new and/or expanding existing training programmes and courses, as well as the use of proleptic appointments.

Better and more integrated ICT systems to support IPC communication and to enhance surveillance and timely feedback on HCAI. Implementation of an integrated national ICT system to support IPC in the community and the hospital and an integrated laboratory system. Funding has been allocated to deliver the IPC system and implementation of an integrated laboratory system is in train but has been challenging.

Enhance laboratory surge capacity and resilience. There are plans and funding to enhance human resources for microbiology laboratory services but some barriers to recruitment remain to be resolved.

Development and publication of an integrated infection prevention and control strategy in the community in line with the recommendations of the Nursing Home Expert Panel.

#### **4.2.1 IPC Support Systems -National**

The National Public Health Emergency Team has provided strategic direction on IPC related issues within the context of the overall Public Health response in addition to specific guidance on particular issues such as limiting staff to working on single sites.

On 31st March 2020, NPHET considered a specific paper on LTRCs and made a series of recommendations in relation to LTRC facilities comprising six national public health actions (strengthened HSE national and regional governance support services including IPC; transmission risk mitigation; staff screening and prioritisation for COVID-19 testing; provision of PPE and oxygen; training; facility and homecare preparedness planning). On 3rd April 2020 the NPHET agreed that the HSE was to immediately deploy an integrated outbreak crisis management response across LTRC settings, home support and acute hospital settings, to drive the infection prevention and control, and public health measures agreed by NPHET at the meeting on Tuesday, 31st March 2020. NPHET has also detailed Ireland's response to COVID for nursing homes and disability centres which indicate that Ireland is actioning recommended options identified in the European Centre for Disease Control risk assessment published in late 2020

National IPC Support capacity has primarily been delivered through HSE AMRIC and HPSC has been enhanced since 2017 in the context of the CPE Public Health Emergency. The strong links with HSE Operations developed through the CPE Public Health Emergency have proved very important in supporting services. A General Practice focus has also been developed within HSE AMRIC. As a result, structures, relationships and capacity to support the IPC response in early 2020 were better than would have been the case 3 years previously. Appendix outlining current AMRIC governance structure.

The HSE have an established governance structure and arrangements for Antimicrobial Resistance and Infection Control. This was first established in May 2018 in response to the Public Health Emergency on CPE. This was reviewed in late 2018 and from January 2019, the scope was extended to cover governance across all antimicrobial resistance and infection control (including HCAIs). This was further reviewed and updated in April 2020 to further expand and reflect the extent to which COVID-19 had come to dominate this area of work. The governance structures and arrangements for AMR and IPC are kept under review and had adapted to enable a timely and appropriate response as needed. Most recently, in late 2020, the HSE established the IPC Advisory Group which will also enable the co-ordinated

and integrated approach which has been taken to IPC and AMR across the HSE and DOH since 2017.

In preparation for the conclusion of the Public Health Emergency on CPE, the AMRIC function of the HSE and the National Patient Safety Office in the DOH established a formal quarterly reporting arrangement as part of the oversight engagement on AMR and IPC.

The HSE AMRIC team has developed and disseminated guidance, provided advice and support to local IPC Support teams. Educational webinars were provided and repeated as guidance was updated. HSE AMRIC and HPSC also worked with other key partners within the HSE (including the Office of Nursing and Midwifery Support and Development) and outside the HSE (Health Information and Quality Authority) to deliver support for IPC practice. This experience of integrated and interagency working to support IPC is something to build on for the future. HSE AMRIC and HPSC supports have been open to both public and private sector in the acute hospital and community sector. Key members of the team were not in post at the start of the pandemic. Recruitment has progressed but has been hampered by the pandemic. The total available senior medical staff for IPC support across HSE AMRIC and HPSC at national level has declined over the last 2 years related to staff moving to other posts and the challenges involved in appointing replacements.

The absence of a national hub for an integrated IPC ICT system and of a HCAI surveillance system has been and remains a barrier to monitoring HCA COVID-19 and other HCAs. The lack of an integrated National Public Health Microbiology Laboratory service has limited effective real time laboratory support for outbreak management and for surveillance of emerging variants with implications for IPC although the NVRL provides and is rapidly expanding its reference laboratory service in the context of the pandemic

A specific challenge for National IPC support services through the pandemic has been the different guidance from multiple sources, national and international, on some specific aspects of IPC practice. Changes in guidance based on new consensus and the communication around these changes has added to anxiety and uncertainty for healthcare workers.

Deficiencies in our Public Health system have been very apparent since the start of the pandemic. In that regard, it is noted that the Crowe Horwath report, published in late 2018, recommended a new national strategy for public health and a new organisational model, envisaged as a hub and spoke type structure. While the Department of Health and the HSE are committed to delivering on the recommendations, it is an important learning from the pandemic that a fully functioning and effective public health system will be vital if we are to steel the country against future health crises. Therefore, we need significant investment in our public health system and the early introduction of a new framework for public healthcare.

The importance of access to accurate and timely data is extremely important for surveillance purposes and also to inform decision making. Following the surge in cases in

late December/early January difficulties were encountered with the national Computerised Infectious Disease Reporting System (CIDR). While the limitations of that system were known and plans in train to replace the system, the learnings from the pandemic must be that ICT systems should be kept up to date and modernised on an on-going basis.

#### **4.2.2 What are the key learning points?**

HSE AMRIC and its associated governance structures needs to continue to enhance its capacity to provide national leadership on IPC and to provide on-site clinical and epidemiological support to community and hospital IPC services dealing with outbreaks and other incidents. Developing the multidisciplinary team by building on existing skills and addition of behavioural change expertise is required.

There is a need for an integrated national public health microbiology laboratory service that can respond to emergencies by redeploying staff from less urgent reference laboratory functions

More effective systems for surveillance, feedback and behavioural change processes developed between HSE AMRIC and HPSC.

Plans to update the CIDR system and provide a modern information system to manage the surveillance and control of infectious diseases should be implemented at the earliest opportunity.

We need significant investment in our public health system and the early introduction of a new framework for public healthcare as recommended in the Crowe Horwath report.

#### **5.0 Infection Prevention and Control – Consumable Supplies**

In the early stages of the pandemic all elements of the health service were challenged by the difficulty in accessing consumables (alcohol hand rub and PPE) essential to support staff and to support IPC practice. HSE Procurement has succeeded in increasing access to supplies and has worked with HSE AMRIC towards appropriate and equitable supply to meet the requirements outlined in IPC guidance documents.

#### **5.1. What are the key learning points?**

There is a need for the future to define and retain a strategic reserve of critical IPC supplies and to secure supply lines for critical supplies for IPC. Production capacity, with potential for rapid upscale, in Ireland and or the EU has been developed and needs to be expanded and sustained to ensure that there is access to adequate quality supplies to deal with an epidemic or pandemic.

#### **6.0 Infection Prevention and Control – Healthcare System Design**

Healthcare delivery systems have tended to be organised around a fixed point where skilled people and specialised equipment and facilities are based. The tendency towards

concentration of services has increased with increasing specialisation and more complex technology. In Ireland the acute hospital system operates with occupancy frequently at, or above, 100% leaving little no margin for surge or managing an event such as an outbreak. Such occupancy rates are above international norms, pose a significant risk to patient safety and contribute to the spread of healthcare associated infections; this indicates a need for additional acute bed capacity. However, it is important that any investment in additional acute capacity is underpinned by reformed models of care.

The pandemic has highlighted the HCAI risks associated with delivery of care in congregated healthcare settings both in acute hospital and residential settings. The lack of surge capacity in acute hospitals has repeatedly resulted in the need to admit patients to wards with open COVID-19 outbreaks because the alternative was even greater risk in ED Departments related to accumulation of people awaiting transfer to inpatient areas. The pandemic has also highlighted HCAI risks associated with mixing of scheduled and unscheduled care in common areas.

### **6.1 What are the key learning points?**

Accelerate transition to systems of health care that minimise the requirement for medically vulnerable people and staff to congregate in acute hospitals or other residential settings (hospital in the home type care).

Accelerate the separation of services for delivery of scheduled and unscheduled care  
Increase bed capacity to bring occupancy levels across the acute hospital system in line with international norms.

Develop some margin of surge capacity. A reasonable goal would be that acute hospital should, at a minimum, have capacity to cope with closure of one ward to admission for a period of 2 to 4 weeks without major impact on ED wait times.

### **7.0 Infection Prevention and Control and Healthcare Infrastructure**

The infrastructure in which healthcare is delivered is extremely heterogeneous. This is true not only between sites but even within the same healthcare setting. A consistent theme emerging from engagements with most healthcare settings is that effective prevention and control of outbreaks of COVID-19 was much more challenging in settings where medically vulnerable people are accommodated in large multi-bed areas (long wards and similar) with many people sharing toilet and shower facilities and often with poor ventilation.

The work that AMRIC, Acute Operation and HSE Estates did in 2018 in the context of the CPE public health emergency estimated the capital requirement to bring legacy infrastructure in acute hospitals up to a minimum reasonable standard. This work remains relevant despite building costs that may have changed since. The core issues have not changed very much since this work was done and it remains useful as a general but conservative indicator of the scale of the deficit. IPC guidance on buildings was also developed by AMRIC, Operations and Estates and approved by AMRIC Oversight to support progressing this work.

Those acute hospitals that benefited from new modular builds prior to, or since, the start of the pandemic, consider that they have played a major role in supporting their management of exposure risk for patients and for staff. Some long-term residential care services with facilities where people live in small house like units dispersed on a campus, report that they have experienced far fewer cases of HCA-COVID and have imposed much less onerous restrictions on residents. This is supported by recently published research from the USA.

### **7.1 What are the key learning points?**

There is an urgent need to update our acute hospital infrastructure through a prioritised, acute hospital modernisation programme. Stemming from the experiences with COVID-19, the very clear focus must be to provide new build healthcare facilities that meet current standards for single rooms and isolation facilities as quickly as possible.

Pending the completion of the new infrastructure, there is a need to refurbishing existing areas as quickly as possible. It will be important to ensure that refurbishment of inpatient/residential areas should result in multi-bed areas of no larger than 4 beds, with each multi-bed area having dedicated toilet and shower facilities. There are additional major deficits in the provision of isolation facilities and toilet facilities, even in some relatively new build Emergency Departments. In the context of concerns regarding staff-to-staff transmission, issues including inadequate or non-existent staff facilities for changing, break rooms and very small office areas have emerged repeatedly. Modifications to enhance the scope for safe ventilation are also required. Progressing this work should consider the work that AMRIC, Acute Operation and HSE Estates did in 2018 in the context of the CPE public health emergency.

In relation to long term residential care services, there should be a move towards household or own door accommodation on a campus and away from mini-hospital style construction.

### **8.0 Infection Prevention and Control Reporting and Transparency**

Historically the risk of HCAI and the role of HCAI in amplifying epidemic infection has not always been acknowledged and reported in a timely and transparent manner. A rationale advanced for this in the past has been to avoid creating fear amongst those who need to access healthcare services. If this rationale was ever valid, it is certainly not valid now. People are and should be aware of HCA infection including HCA COVID. They expect to and are entitled to have free access to information regarding HCAI risk associated with healthcare services. The HSE has put in place a process for collecting certain key indicators on HCA COVID for acute hospitals in a timely manner, and is working to put in place a process to provide key information for community operations at CHO level. This builds on existing processes for collecting other key indicators related to HCAI. The HSE has also developed a weekly report for NPHET that summarises key indicators COVID-19 related IPC indicators for Acute and Community Operations.

### **8.1 What are the key learning points?**

All healthcare services (public and private) should work to publish clear information on HCA COVID and other HCAI in a timely manner.

### **9.0 Infection Prevention and Control Standards and Regulation and Licensing**

There are existing National Standards for IPC for both acute and community operations and an effective inspection process in place through the regulators. In addition, HIQA designed and implemented a Regulatory Assessment Framework of the preparedness of designated centres for older people for a COVID-19 outbreak (April 202) and an Infection Prevention and Control Assurance Framework for older person and disability services (September 2020), which include a self-assessment tool and support programme.

#### **9.1 What are the key learning points?**

National Standards, regulatory processes and requirements for licensing that relate to IPC should be reviewed in the context of learning from the COVID-19 pandemic

### **10.0 Clinical Audit, Incident Review, Quality Improvement, Research and Development**

Clinical audit and incident review play a key part in driving quality improvement with respect to HCAI as with other clinical issues. The HSE has developed and disseminated a number of tools for review of specific HCAI incidents. Although developed for the acute hospital setting, they can readily be adapted for community settings. In response to the pandemic a tool was developed which is suitable for general use, of HCAI incidents in hospital including HCA COVID-19. The recommended process for use of the incident review tools is a multidisciplinary review of the incident which should involve the primary clinical team. The institution, not the IPC practitioners alone, are responsible for ensuring this happens in a transparent manner with clear communication with the person impacted. Audits and feedback of adherence to good IPC practice, environmental hygiene and other activities to monitor and support IPC practice can play an important role when supported by senior managers and clinical leaders.

There are pockets of clinical IPC related research expertise in Ireland, but there is very limited funding for clinically led IPC research and development. There are gaps in relation to the ability to assess the impact of interventions in a clinical setting and research to support IPC related behaviour change and quality improvement processes.

#### **10.1 What are the key learning points?**

Enhanced support for audit and incident review and the recognition of these as core responsibilities of senior manager and clinical leaders.

There is a need to develop a strong programme of clinically led IPC related research and development in collaboration with EU partners.

Ireland's first National Action Plan on Antimicrobial Resistance was published in 2017, in line with WHO and European Commission Action Plans. In line with Strategic Objective 3, *Reduce*

*the spread of infection and disease*, IPC initiatives and capacity has been developed under the auspices of the Plan. Development of the second National Action Plan, to known as **iNAP 2**, is now underway and will provide a roadmap for IPC and antimicrobial resistance for Ireland to 2025.

INAP provided and continues to provide a framework for Ireland and has supported progress in IPC and also the responses to both the CPE public health emergency and more recently, to COVID-19. This allows a coherent, integrated approach within an overarching governance structure and provides for the integration of the prevention and management of healthcare associated infections into the day to day provision of healthcare, including monitoring, reporting and oversight. Building on the approach taken to date, iNAP 2 offers an opportunity to further the coherent and integrated approach taken to IPC in recent years, while learning from the CPE and COVID-19 public health emergencies.

#### **Limitations**

This paper takes account of learning from extensive engagements with clinical and operational leaders, advocacy groups and service users together with a number of site visits during the pandemic. It is an interim paper given that the pandemic is still on-going and there has not been an opportunity for structured engagement with all relevant stake holders.

The paper has highlighted the collaborative work to date and the progress made. Of significant importance and considering the interim nature it provides key actions and direction to continue to improve IPC across the health system

ENDS



Figure 1: Governance Arrangements for AMRIC within the HSE in the context of the COVID-19 pandemic and IPC and AMR policy within the DOH and how they interface.

