



**Health
Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Desktop analysis of public acute hospital infection prevention and control preparedness for Covid-19

Conducted at the request of the Covid-19
National Public Health Emergency Team

April 2020

Contents

Executive Summary.....	3
1. Introduction	5
2. Infection Prevention and Control preparedness for Covid-19 in public acute hospitals – relevant historical context.....	6
3. High level findings from HIQA’s self-assessment exercise relating to Covid 19 preparedness in acute hospital settings	7
4. Placing these findings in wider context - A comparison of self-assessment findings with HIQA’s own inspection experience since 2017	11
4.2 Known underlying infection prevention and control challenges	13
5 Overall analysis of risk issues that require close managerial oversight, supports or intervention.....	14
6. Conclusion.....	18

Appendix 1: Self-Assessment Tool for Acute Hospital Groups relating to infection prevention and control arrangements to manage Covid-19

Appendix 2: HIQA infection prevention and control monitoring and inspection programmes 2012-2019

Appendix 3: Risks escalated by HIQA to HSE management following inspection over the period 2017-2019

Appendix 4: Analysis of infection prevention and control specialist resourcing by hospital group

Appendix 5 – HIQA’s Risk Matrix

Executive Summary

- The Covid-19 pandemic will place very significant demands on hospital infection prevention and control programmes across the state. These demands will likely last for a significant period of time, and arise on top of existing infection prevention and control challenges.
- HIQA's programmes of monitoring against National Standards¹ in this area has identified some progress in the expansion of infection prevention and control capacity and capability in acute hospitals in recent times – inclusive of enhanced national leadership - largely in response to the threat posed by multidrug resistant Gram-negatives. These efforts have therefore recently provided much needed additional capacity and capability that are now in place to assist in addressing the acute threat posed by Covid-19.
- This desktop review compared findings from a specially designed self-assessment tool issued to hospital group CEOs, with HIQA's own intelligence gathered over its programmes of inspection in this area. The self-assessment was designed with reference to similar documents produced by the WHO², CDC³, ECDC⁴ and relevant National Standards¹
- Areas of identified strength from this exercise include;
 - Clarity around leadership and Covid-19 planning at site level
 - Availability of access arrangements to clinical and infection prevention and control expertise 24/7
 - Implementation of critical infection prevention and control measures – rapid streaming and isolation of possible Covid-19 cases, measures to prevent intravascular catheter-related bloodstream infection and ventilator associated pneumonia in critical care, and reported measures to protect staff from risk of Covid-19 – although some groups caveated their response by stating adherence to social distancing was challenging to enforce.
 - Contingencies in place to plan essential services – catering, laundry, mortuary services, security.
- Common identified areas of challenge include;
 - Continuity of access to PPE beyond 48 hours supply
 - Continuity of access to testing kits and consumables to enable ongoing Covid-19 testing in house
 - Some hospitals report concerns around ongoing availability of alcohol hand gel, soap, cleaning materials and foot operated waste bins for infectious materials.

- Evaluation of self-assessment responses, allied to HIQA's own inspection experience, points to a need to consider additional supports for the University of Limerick Hospital Group and the South Southwest Hospital Group. Such an analysis has been mindful of the anticipated expansion of critical care in these groups and the extra demands this will place on programmes and staff, in the context of prior inspection findings and self-declared responses.
- Many medium sized hospitals have relatively limited provision for medical microbiology, and may see large expansion in critical care in the event of a surge in activity. As demand for these services increases due to a pandemic, these existing provisions may come under pressure. Furthermore, contingencies at hospital group level to manage the potential for absenteeism of critical staff in these minimally resourced services will be necessary.
- Risks associated with the need to ensure continuity of supply of consumables, inclusive of PPE, testing consumables, alcohol hand gel, and cleaning equipment were cited by all hospital groups.
- As Covid-19 continues over the coming months, efforts to ensure that other existing infection prevention and control challenges need to continue to be targeted. This may require additional resourcing for hospitals.
- There is a need to ensure that those healthcare services that feed into acute hospitals, and that have in some circumstances relied on supports from acute hospitals relating to infection prevention and control, continue to be supported from an infection prevention and control perspective.

1. Introduction

HIQA has been assisting the National Public Health Emergency Team (NPHET) relating to Covid-19. As part of these efforts, HIQA has been requested by the NPHET to conduct a desktop analysis of public acute hospital infection prevention and control preparedness for Covid-19.

This analysis has been informed by a targeted and specific self-assessment exercise which was designed with reference to similar documents designed by the WHO², CDC³ and ECDC⁴, and distributed to all seven of the hospital group CEOs on 8 April 2020, with an expected return date of 13 April 2020 (Appendix 1). This tool was designed to both act as an aid for hospitals and hospital group preparedness, and to identify where required, what additional supports might be required at hospital and hospital group level. Risk evaluation has been informed by HIQA's risk matrix (Appendix 5). Areas of focus included;

- Leadership and governance of Covid-19 preparedness
- Resources, access to expertise and staff training
- Specific infection prevention and control measures
- Environmental and patient equipment hygiene
- Essential support services and management of visitors
- Infection prevention and control staffing levels

Analysis of responses has been further augmented through knowledge gathered by HIQA through its programs of monitoring against the *National Standards for the Prevention and Control of Healthcare Associated Infections*¹ since 2012, and in particular since 2017 (Appendices 2 and 3).

It should be noted that given the time imperative required for the completion of this work, it has not been possible to follow up with hospitals, hospital groups or the wider HSE in person to verify or further clarify the contents of findings from each self-assessment. Analysis of findings on the part of HIQA has therefore been conducted in good faith, and should be interpreted in the knowledge that if further time had been available to further explore issues, then additional context might have been forthcoming from the HSE. Any recommendations contained within this body of work are therefore qualified in this context as a consequence of the required timeframes and methodology applied.

Finally, it should be noted that the scope of this analysis extends to public acute hospitals only. An analysis of provisions in private hospitals that have been engaged to assist with the pandemic, or other temporary health service facilities likewise fall outside the scope of this exercise but could be included in further work as deemed necessary.

2. Infection Prevention and Control preparedness for Covid-19 in public acute hospitals – relevant historical context

Efforts to build infection prevention and control capacity and capability in public acute hospitals in Ireland has been an ongoing and progressive process for over two decades. These efforts have been aided by the production and mandating of National Standards in this area in various forms since 2009, and has incrementally built from a low baseline in terms of resources at the start of this timeframe.

HIQA has had an active programme of inspection in this area since 2012. These inspections have covered many areas of specific patient safety focus over that timeframe (See Appendix 2), and included a national review of Antimicrobial Stewardship in 2015-16⁵. This national review took the opportunity to explore overall levels of staffing for infection treatment, prevention and antimicrobial stewardship across all acute hospitals. This work also explored national governance arrangements for stewardship and infection control and relevant recommendations relating to national leadership and oversight, allied to staffing requirements were made.

Since 2016, a national focus on emergent Gram-negative bacterial antimicrobial resistance - which included the establishment of a National Public Health Emergency Team to address the increase in Carbapenemase Producing *Enterobacteriales* (CPE) in 2017 – has seen an increase in investment in this area of the health service, inclusive of increased patient screening⁶. Furthermore HIQA has observed an enhanced approach to national leadership and governance of infection prevention and control within public acute hospitals in recent times, aided by the development of the Antimicrobial Resistance and Infection Control (AMRIC) national team.

As will be explored in further detail through this document, if one compares current levels of specialist staffing[⊗] for infection treatment, prevention and control in acute hospitals with those identified by HIQA back in July 2015 through its review of Antimicrobial Stewardship⁵, some hospital groups have seen enhanced resourcing levels. Such resourcing has occurred in response to the CPE threat, and more recently to manage Covid-19. Others hospital groups have however not seen the same levels of investment.

Efforts over the past five years to enhance infection prevention and control capacity and capability in public acute hospitals has resulted in a level of baseline resourcing and expertise that is therefore more robust than it might otherwise have been in

[⊗] For the purpose of this analysis, as it related to the control of Covid-19, specialist infection treatment, prevention and control staffing includes Medical Microbiology Consultants and NCHDs, Infectious Diseases Consultants and NCHDs, Infection Prevention and Control Nurses, and Surveillance Scientists. It is acknowledged that efforts in hospitals extends beyond this cohort of specialist staff – inclusive of antimicrobial pharmacists and other laboratory staffing.

advance of the arrival of Covid-19 in many hospitals. Notwithstanding same, HIQA also acknowledges that the demands placed on such services and the wider health system by a viral pandemic will represent a burden on staff and systems well beyond the norms of regular business. Furthermore, HIQA notes that some services continue to fare less well than their peers in terms of resourcing, or may be more vulnerable in the event of higher than normal absenteeism rates due to a lower baseline level of critical staff. In addition, HIQA is conscious that despite some recent enhancements, infection prevention and control resourcing levels in community settings continue to lag behind those of acute settings.

3. High level findings from HIQA's self-assessment exercise relating to Covid 19 preparedness in acute hospital settings

Overall evaluation of self-assessment responses received by HIQA reveal that hospital groups CEOs were in general assured relating to many of the specific areas of query. In a minority of the questions asked, a lack of assurance was common. In some instances, the level of assurance found at hospital CEO level was less than that found across most hospital groups.

Governance and management

All groups stated that leadership roles and planning related to Covid-19 preparedness were clearly defined in each hospital.

Resources, access to expertise and staff training

Self-assessment responses to this section of the tool revealed a more mixed picture relating to the level of assurance in each hospital group. The Children's Hospital Group stated that unlike other groups, they did not have 24/7 access to medical microbiologists, infectious diseases physicians, for advice on treatment or infection control. As this finding was at odds with HIQA's experience on inspection in these hospitals, further clarification was sought. This identified that the group had answered 'No' to these questions as they stated that this cover was only provided as a consequence of hard work and goodwill rather than through their evaluation as to the required level of resourcing needed. All other groups stated that such expertise was present, albeit the South Southwest Hospital Group highlighted that the infection control team in place at Cork University Hospital was relatively inexperienced.

While noting the generally positive nature of these responses, overall evaluation of this part of the self-assessment responses revealed that, with the exception of the Children's Hospital Group, a lack of confidence around the ability to guarantee continuity of testing for Covid-19 over a four week period due to limited availability

of necessary consumables, testing kits or reagent. Were this ability to be disrupted, this would have significant implications on the ability and efficiency of hospitals to prevent or manage nosocomial outbreaks of Covid-19. The Dublin Midlands Hospital Group and Ireland East Hospital Group reported a lack of assurance around access to testing – albeit further written clarification in their response revealed that access was available and work was ongoing to further enhance testing access across the group, albeit they would have preferred better levels of testing capacity. On this basis it is suggested that this risk is being actively managed across these groups and does not require further external intervention at this time.

All hospitals responded positively to the question relating to staff training. HIQA's experiences on inspection would indicate that an existing programme of infection prevention and control staff education was already in place in acute hospitals prior to the emergence of Covid-19, and this self-assessment response is therefore credible.

Specific infection prevention and control measures

The self-assessment included query as to the universal presence of a selection of specific infection prevention and control measures of relevance to Covid-19. These included measures to quickly identify and isolate potential cases on entry to the hospital, measures to prevent intravascular catheter-related bloodstream infection and ventilator associated pneumonia. Hospital group CEOs provided positive assurances in relation to the universal presence of these measures – a finding which is credible based upon HIQA's more recent inspection findings, albeit something that could not be fully verified without onsite inspection.

The self-assessment likewise queried if all hospitals had put in place a full suite of measures to protect staff from the risk of occupational exposure to Covid-19 inclusive of; social distancing in the workplace; reducing staff footfall where possible; and adherence to uniform and staff sickness policies. All hospital group CEOs stated that they were assured in relation to this query, albeit some groups qualified this answer by stating that there were adherence challenges associated with social distancing and uniform policy.

Environmental and patient equipment hygiene

With the exception of the RCSI Hospital Group who were fully assured around all aspects of this part of the self-assessment tool, all other groups outlined that to a greater or lesser extent they were not assured that all hospitals had necessary resources or measures in place as included in the tool.

All hospital groups expressed concerns around continuity of supply of personal protective equipment (PPE), with the RCSI Hospital Group qualifying their positive answer with an explanation around limited supplies. This issue has been well

recognized at a national level. Most hospitals described concerns around ongoing availability of supply of alcohol hand gel which has perhaps received less attention more recently, but which may equally require attention akin to that of PPE in terms of national coordination in a challenging global supply market. A smaller number of groups also expressed concerns around ongoing supplies of soap, paper towels, cleaning and disinfectant products and foot operated bins for infectious waste. It is therefore suggested that these supplies will likewise need to be a focus for security of availability as the pandemic progresses.

The self-assessment also asked a series of questions related to accepted best practice processes required to maintain environment and equipment hygiene. The University of Limerick Hospital Group were unable to provide an assurance relating to many of these questions. Such a response tallies with HIQA's own experiences through inspection on a number of occasions in recent years, and it is therefore disappointing that these concerns would not, by the hospital groups own admission, seem to have been addressed. Similarly, the South Southwest group were unable to assure that they universally had mechanisms around cleaning specifications in place – again something HIQA has previously highlighted on inspection. In the context of a pandemic situation, these findings in these groups in particular are of concern and require action in the short term to bridge these gaps.

Essential support services and management of visitors

The presence of contingency arrangements around relevant essential back up services such a laundry, catering, mortuary, security and waste management were explored in the self-assessment. All hospital groups stated that these measures and contingencies were fully in place – however HIQA would need to inspect these services to fully confirm this to be accurate. Given the previously identified challenges associated with mortuary services at University Hospital Waterford in recent times, further clarity in relation to these services in terms of pandemic preparedness may be warranted following this exercise.

Specific declared findings related to specialist workforce

This self-assessment exercise specifically explored the level of resourcing of specialist infection treatment, prevention and control staffing. Furthermore, these levels of staffing were compared to data presented to the National Public Health Emergency Team relating to planned additional critical care capacity for Covid-19. Such an analysis is intended to provide a crude proxy for the intended level of clinical activity and therefore infection control risk it is planned to distribute within the acute hospital system, to enable a comparison of relative staffing levels across groups (Appendix 4).

Hospital groups were asked to confirm if hospitals had received supplementary specialist staff increases on account of Covid-19. Five hospital groups stated that at

least in the case of larger hospitals that were due to see the biggest absolute uplift in activity, these resources had indeed been supplemented. The Children's Hospital Group has not seen such an uplift in resourcing – possibly given the likely older age profile of Covid-19 cases. Furthermore, University Hospital Limerick Group likewise declared that they had not received supplementary resourcing in response to Covid-19.

A comparison of current reported specialist staffing levels with those reported in July 2015 to HIQA through its Antimicrobial Stewardship review⁵ revealed that in many groups there has been a significant uplift in staffing levels in the intervening time period. In particular, RCSI Group and Saolta have respectively seen a 40% and 30% uplift in staffing.

Appendix 4 provides an analysis of group specialist staffing levels against potential critical care staffing capacity. Children's Health Ireland, the South Southwest Hospital Group, the University of Limerick and the Ireland East Hospital Groups fared least well on this metric. In analyzing these measures from the perspective of Covid-19 which impacts elderly persons most frequently, a number of issues of particular relevance emerge

- Within the South Southwest Group, it is proposed to add a maximum of 85 critical care beds collectively to Cork University Hospital and the Mercy University Hospital. This amounts to 10% of the total national added capacity provided by 7% of the specialist infection medical staff. Further planned critical care capacity at South Tipperary within this group in particular – in the form of 21 critical care beds - may likewise present challenges relative to the allotted infection prevention and control resourcing.
- Across the country, there is also a proposal to increase critical care capacity in a number of other Model three hospitals significantly beyond their norms in a scenario where Microbiology staffing levels often amount to a single consultant working alone (with no complementary infectious diseases service), or on a smaller sessional basis with more substantive hours in another hospital. This raises a risk in the face of increased workload, or in the event of absenteeism of these staff members.
- Many hospitals fall into this category (Appendix 4), with the intended increase in critical care capacity in the face of a static singular (or less) complement of standalone microbiologists likely to be most acutely felt in the hospitals at Tullamore, Mullingar, Letterkenny, Naas, Ballinasloe (Portiuncula), Wexford and Kerry.

4. Placing these findings in wider context - A comparison of self-assessment findings with HIQA's own inspection experience since 2017

While the conduct of a self-assessment exercise such as this acts as a helpful and quick way to provide a high-level snapshot of the comparative implementation of measures, by its very nature it can only provide limited high level information.

However given the current pandemic situation, a comparison of what has been declared with the bank of intelligence that HIQA has gathered over recent years through inspection may provide further context through which to direct additional actions and supports in the acute hospital setting⁷⁻¹¹. The following outlines at a high level what HIQA has found on the ground through inspection over the past three years in particular, which are of relevance to the ongoing management of Covid-19 in acute settings.

4.1 Areas of assurance

Overall, HIQA's monitoring activity against the *National Standards for the Prevention and Control of Healthcare Associated Infection in Acute Healthcare Settings*¹ has identified an improvement in both overarching governance and the degree of implementation of national standards relating to infection prevention and control of healthcare-associated infections across hospitals since 2017.

HIQA has found that a number of essential elements have been found to be in place within the majority of hospitals that should, notwithstanding the inherent challenges posed by a pandemic situation, support and enable these hospitals to manage infection prevention and control related to Covid 19. The following areas of improvement have been identified through inspection over the past three years:

Local Hospital Infection Prevention and Control Governance Arrangements

- The majority of hospitals have been found to have appropriate governance and management arrangements in place for the prevention and control of healthcare-associated infection. These arrangements are well tested in managing outbreaks at the local level.
- In those small minority of hospitals that were not found to have strong arrangements in place on inspection – HIQA has highlighted concerns, and assurance provided post inspection to HIQA should, if sustained, have addressed identified deficit. However in the case of findings for the University of Limerick Hospitals and the South/Southwest Hospital Group

relating to cleaning practices, such assurances at the time of inspection contradict the recent self-assessment responses which is of concern.

- Furthermore, HIQA has observed that while linkages at hospital group level relating to infection prevention and control are advancing, they are not as well developed as local arrangements. However as most outbreaks occur at local unit level - this has heretofore not represented a major risk given the usual effectiveness of more local outbreak management arrangements. This may be challenged by a pandemic however, especially if absenteeism rates mount. Overall, local governance arrangements should support hospitals in the effective management and escalation of issues in relation to Covid-19.

Risk Management

- Hospitals have mature systems in place to identify and manage risks in relation to the prevention and control of healthcare-associated infection. Management of high risks within hospitals should be and have been found to be escalated in line with HSE risk management processes.

Monitoring and evaluation

- Hospitals are engaged in the ongoing monitoring and evaluation of services in relation to infection prevention and control, inclusive of effective local infection surveillance systems, and hospitals are benchmarked at local and national level. Oversight of performance is regularly facilitated by ongoing microbiological surveillance and monitoring and audit programmes, albeit some hospital groups are more advanced than others in this regard.
- There are regular performance updates in relation to antimicrobial stewardship reported through established infection prevention and control governance structures

Education and Training

- Over the years, HIQA has seen concerted action to improve hand hygiene compliance across all hospitals through various initiatives. Audit data available for HIQA to review indicates generally good rates of hand hygiene compliance, and the infrastructural requirements to promote the five moments of hand hygiene are in place in our acute hospitals. However, HIQA has found that some hospitals are more advanced than others in achieving and sustaining a more extensive culture of good hand hygiene practices.
- HIQA notes that education and training in standard and transmission-based precautions had, even before Covid-19, become a mandatory feature of many hospitals' induction programmes as well as a requirement for hospital

staff to attend refresher training. As a consequence, update training in the face of the pandemic should be building upon a core level of competence among the healthcare workforce, and positive assurance provided through the self-assessment should be regarded as credible.

Improved national leadership and coordination of the response to CPE

- As previously outlined in this report, throughout 2018 and 2019 HIQA identified strengthened national leadership and governance across the HSE in relation to the CPE threat, including the bedding in of the Antimicrobial Resistance and Infection Control (AMRIC) national management approach. CPE screening rates improved significantly in most hospitals during 2019, with the number of CPE screens increasing from 178,800 in 2018 to 297,000 in 2019.

Overall findings carried out under this area of thematic monitoring should provide assurance that most hospitals and hospital groups have the necessary structures, systems and processes in place to respond to and manage issues that will emerge as a result of Covid-19. However there are some inherent weaknesses in a small number of hospitals with respect to the above areas. Furthermore, all hospitals will be challenged in their efforts to manage infection prevention control in the context of Covid-19 surge as a result of a number of underlying factors outlined below.

4.2 Known underlying infection prevention and control challenges

Where specific risk issues have been identified by HIQA during the course of inspection, these are raised through HSE governance structures (Appendix 3).

Given HIQA's focus on CPE management in more recent times, many of the risks escalated have related to deficits in screening patients from this organism in line with national guidance (Appendix 3). Often this risk has emerged as a result of a lack of dedicated specific resourcing rather than wider concerns around the nature of infection prevention and control in their totality. However in a number of hospitals, a composite of risk findings that have resulted in escalation by HIQA likely indicate more fundamental weaknesses in their infection prevention and control programme that run the risk of being further exposed during a pandemic.

Furthermore, some recurring challenges faced by most hospitals that have been identified through HIQA's monitoring work could likely impact on the hospital's ability to effectively manage the Covid 19 outbreak, regardless of the strengths and abilities the infection prevention and control programme have in place. These may be summarised as follows.

Hospital infrastructure

The underlying nature, design and maintenance of the infrastructure of some hospitals present ongoing and significant challenges to best practice and meeting the national standards. Key challenges identified through HIQA's monitoring work include:

- insufficient patient-isolation rooms/en-suite toilet facilities and potential high occupancy rates across hospitals. This is a particular risk for critical care areas
- insufficient spacing between patient-bed spaces and points of care to prevent cross-contamination, with very large multi-occupancy nightingale style wards still comprising a sizable proportion of the bed stock of many hospitals
- insufficient numbers of and access to clinical hand-wash sinks particularly in multi-occupancy rooms.

Environmental Hygiene and Equipment

Maintenance of the physical environment and environmental hygiene are necessary to prevent cross contamination of infection within hospitals. Key findings to environmental hygiene and equipment include:

- deficits in equipment hygiene and oversight of equipment hygiene
- cleaning, monitoring and audit not in accordance with required standards to effectively deal with an outbreak situation.

ICT Infrastructure

HIQA notes an absence of dedicated software to aid surveillance of infections in most hospitals.

5. Overall analysis of risk issues that require close managerial oversight, supports or intervention

The self-assessment requested hospital group CEOs to declare areas of assurance or concern related to specific measures that cumulatively contribute to mitigating against the risk of Covid-19 infection in hospital. As such, each group CEO therefore risk assessed their own services through use of this tool.

In many areas, these responses were able to provide good assurance around the institution of required measures. In other areas, commonality was found in terms of shared difficulties, inclusive of concerns relating to the continuity of supply of PPE, other key products or testing consumables and kits. However the differences in responses, coupled with a review of HIQA's internal intelligence through inspection,

has revealed a number of potential risk issues that need to be addressed following this assessment

University of Limerick Hospital Group

The self-assessment response from this hospital group did not assure relating to a number of aspects of environmental or equipment cleaning. This tallies with findings from some of HIQA's inspections of the past, and further actions may be needed to reduce infection control risks at the hospital, especially when one considers the difficulties University Hospital Limerick faces in relation to ward infrastructure in some of its older wards, and the potential for overcrowding which pre-pandemic was severe. It is notable that of the hospital groups treating adult patients, this group was the only one where the staffing numbers for the infection control team were reported as not having been specifically supplemented to deal with Covid-19. An examination of the potential for supplementary staffing and other supports within this group should be further explored following this risk assessment exercise.

Current risk rating – Moderate

Risk rating in the event of a further surge in acute hospital activity, or should hospital overcrowding increase – Significant

Immediate mitigation therefore required

The South Southwest Hospital Group

On an individual hospital group basis, HIQA has needed to escalate significant concerns relating to infection prevention control for hospitals in the South Southwest Hospital Group more often than other hospital groups over the past three years (Appendix 3). It should be noted that a number of much needed actions have been initiated to address these concerns in the intervening period. However the nature of recent risk escalation following inspections in Cork University Hospital, University Hospital Waterford and previously in Kerry point to the potential for underlying weaknesses in each of these infection prevention and control programmes which could be re-exposed in a pandemic situation.

Previously in this report, likely challenges presented by the addition of significant extra critical care surge capacity at Cork University Hospital, the Mercy Hospital in Cork, and at South Tipperary, on a background of comparatively poor specialist medical staffing in particular was highlighted. Furthermore, in the self-assessment, the group highlighted a level of inexperience within the infection control nursing complement at Cork University Hospital which may likewise contribute to possible difficulties as the pandemic progresses. HIQA also notes the relatively large number

of critical care beds intended for the group in total relative to the overall level of infection control resourcing which will result in challenges in the event of a surge.

In light of these composite risks, further targeted supports within the South Southwest hospital group should be explored.

Current risk rating – Moderate

Risk rating in the event of a further surge in acute hospital activity, or should hospital overcrowding increase – Significant

Immediate mitigation therefore required

Contingency arrangements in hospitals staffed with standalone Consultant Microbiologists

As previously highlighted, many model 3 hospitals in Ireland are reliant on limited consultant microbiology resources which are often not supported by an NCHD team (Appendix 4). Such arrangements present challenges in normal times, and represent a significant risk in a pandemic scenario – both in terms of increased demands, and in the event of critical staff absenteeism. At a hospital group level, it will be necessary for contingency measures to be advanced to address this risk.

Current risk rating – Moderate

Risk rating in the absence of contingency measures, should a further surge in acute hospital activity occur, or should staff absenteeism rates increase – Significant

Immediate mitigation therefore required (if not already in place)

Risk associated with discontinuity of critical supplies – PPE, Testing materials, Alcohol hand gel, soap and cleaning materials

The self-assessment exercise highlighted continued concerns related to this matter across hospital groups. While PPE and testing materials have been well recognized as in short supply, the self-assessment flagged further areas for potential challenge of relevance to infection control.

In the absence of an ability to gain wider knowledge related to supply contingencies for these items within the HSE it is not possible to risk rate this item. However it is worthy of continued managerial oversight.

Addressing other infection prevention and control challenges while also managing Covid-19

Managing Covid-19 looks set to be a marathon rather than a sprint. Prior to its emergence, HIQA noted that hospitals and infection control teams in particular were very busy working to protect patients from other potential healthcare associated infections, including CPE. Much if not all of the resource associated with these efforts has now been dedicated to Covid-19. Over time, there is a risk that other infection control risks may not receive the due attention required due to resourcing challenges presented by Covid-19.

It is suggested that very close surveillance of other pathogens through nationally recorded data should be maintained. There may also be a need to consider additional resourcing to differentiate Covid-19 infection control efforts from the more business as usual threats as this continues on.

Current risk rating – Moderate (given the reduction in standard hospital activity at this time)

Risk rating as more normal activity in hospitals returns alongside a Covid-19 threat – moderate, but potentially raising to significant

6. Conclusion

There has been a concerted focus on infection prevention and control in acute hospital settings for many years in Ireland. This focus has been aided by National Standards, which have been supplemented by an extensive programme of inspection by HIQA against these standards dating back to 2012. Over this time period, significant progress has been achieved to enhance capacity and capability within the system. However in looking at the provision across all acute hospitals in terms of staffing in particular, it can be seen that resourcing while available is often spread thinly, and will be significantly challenged by a pandemic, even where resources have been augmented.

Through HIQA's programme of inspection, a number of potential points of weakness within the system that require evaluation and potential additional supports have been outlined within this report. These areas have been identified in good faith on the basis of information available for rapid desktop review, and the limitations inherent in such an approach should be acknowledged. It is clear that in order to address these challenges in a timely and meaningful way, close cooperation at hospital group level, allied to the potential for further resourcing will be necessary.

It should also be noted that in addition to public acute hospitals, good infection prevention and control practices will also be necessary across other health and social care settings to control Covid-19. A review of provision in non-acute inpatient healthcare services, pre-hospital care, private healthcare and other settings has fallen outside of the scope of this review. However efforts to maintain and enhance practices in these settings is equally important. Furthermore, it is recommended that close consideration around the potential impact that extra demand on hospital infection control teams has on the supports they provide to non-acute services is considered. Often these supports have not been formalized and are underpinned by goodwill, making them hard to sustain in a pandemic.

Finally, it should be noted that as with other parts of the health service, in the event of a major surge in activity due to proliferation of the pandemic, any infection control programmes capacity to cope would be severely challenged beyond a certain point.

Appendix 1: Self-Assessment Tool for Acute Hospital Groups relating to infection prevention and control arrangements to manage Covid-19

1. Governance and Management			
1.1	Does each hospital in your hospital group have an identified person who has overall responsibility for directing the hospital's emergency plan in relation to management of COVID-19?	Yes	No
1.2	Are you assured that each hospital has clearly defined operational plans and arrangements in place for the management of a Covid-19 outbreak in each hospital – inclusive of defined involvement from senior managers and infection prevention and control experts?	Yes	No
2. Resources, access to expertise and staff training			
2.1	Does each hospital have access to advice from Medical Microbiology or Infectious Diseases consultants for the management of Covid-19 cases on a 24-hour 7 days a week basis?	Yes	No
2.2	Are you assured that each hospital has access to necessary levels of infection prevention and control advice and expertise on a 24-hour 7 days a week basis?	Yes	No
2.3	Are you assured that each hospital has the required amount of testing kits to maintain the required level of diagnostic testing for Covid-19 over the next four weeks?	Yes	No
2.4	If hospital(s) in your group have an in-house Covid-19 testing service – are you assured that they have the necessary resources, inclusive of reagents and consumables, to continue to meet the required demands placed upon it over the next four weeks?	Yes	No
2.5	Are you assured that each hospital has sufficient access to testing and in-house contact tracing to quickly identify both close contacts and occupational cases of Covid-19?	Yes	No
2.6	Are you assured that each hospital has a comprehensive staff training programme in place and appropriate to the staff role, in for example: <ul style="list-style-type: none"> • Healthcare staff: training on how to recognise signs and symptoms of Covid-19 minimise the specific risks related to the management of suspected or confirmed Covid-19 patient/s • Non-healthcare staff: training on how to minimise specific risks related to their jobs in particular the cleaning of area occupied by suspected or confirmed Covid-19 patient/s • Standard precautions in infection prevention and control • Hand Hygiene • Protective personal equipment - who should use PPE, why, when and how doff/don PPE • Data protection in relation to patients • Sick leave policy • Communication pathways (internal and external) 	Yes	No

3. Specific Infection Prevention and Control Measures			
3.1	Are you assured that each hospital has clearly defined and effective measures in place to identify and isolate possible cases of Covid-19 at points of entry or transfer into the facility?	Yes	No
3.2	Are you assured that each hospital has put the required measures in place to protect patients against intravascular catheter related bloodstream infections (policies, procedures, staff training, case surveillance)? (noting a likely increase in critical care cases)	Yes	No
3.3	Are you assured that each hospital in your group has the required measures in place to protect patients against ventilator associated pneumonia (policies, procedures, staff training, case surveillance)? (noting the likely increase in critical care cases)	Yes	No
3.4	Are you assured that all required measures to mitigate the risk of covid-19 transmission among healthcare workers (inclusive but not limited to adherence to social distancing during breaks, reduced staff footfall for non-essential services, staff uniform policy and adherence to sickness policies) are being adhered to in each hospital?	Yes	No

4. Environmental and patient equipment hygiene			
4.1	Is there a designated person with delegated responsibility for the management of environmental and patient equipment hygiene in each hospital?	Yes	No
4.2	Does each hospital have adequate supplies of personal protective equipment (PPE) available in different sizes (gowns, masks, eye protection, gloves) to ensure continuity of availability over the next four weeks?	Yes	No
4.3	Does each hospital have adequate supplies of alcohol-based hand gel available for staff and patients in locations throughout the hospital to ensure continuity of availability over the next four weeks?	Yes	No
4.4	Does each hospital have sufficient supplies of hand soap and paper towels next to <u>all</u> sinks in the hospital to ensure continuity of availability over the next four weeks?	Yes	No
4.5	Does each hospital have sufficient supply of foot-operated bins for infectious waste?	Yes	No
4.6	Does each hospital have protocols in place to ensure that healthcare personnel can readily identify equipment that has been cleaned and disinfected and is ready for patient use (e.g. tagging system, placement in dedicated clean area)?	Yes	No
4.7	Are you assured that each hospital has a cleaning specification or matrix that identifies elements to be cleaned, method of cleaning, frequency of cleaning and discipline responsible, in line with national cleaning guidelines?	Yes	No

4.8	Are you assured that each hospital has identified and put in place the necessary resources and facilities for environmental and patient equipment cleaning in line with expected demands over the coming weeks?	Yes	No
4.9	Are you assured that each hospital has sufficient stocks of cleaning and disinfectant products shown to be effective against Covid-19 to ensure continuity of supply over the next four weeks?	Yes	No
4.10	Are you assured that all hospitals have necessary measures in place to prevent against reusable invasive device transmission of Covid-19 (through storage, transport, reprocessing and audit arrangements)?	Yes	No

5. Essential support services, and the management of visitors

5.1	<p>Are you assured that each hospital has adequate contingency arrangements in place to support and manage estimated and increased demand for essential services:</p> <ul style="list-style-type: none"> • Waste management • Laundry services • Catering services • Mortuary Facilities • Facility backup arrangements and contingencies • Hospital Security 	Yes	No
5.2	Are you assured that each hospital has appropriate measures in place to manage visitor restrictions, inclusive of special cases?	Yes	No

Part 6: Infection Prevention and Control Workforce:

Please note: the data request has been developed with the understanding that the data requested should already be in existence and in use by the Hospital/Hospital Group/HSE. Please submit data as whole time equivalents (WTEs) **currently in position**

HOSPITAL	Consultant Microbiologists	Microbiology NCHDs	Consultant Infectious Diseases Physicians	Infectious Diseases NCHDs	Infection Control Nurses	Surveillance Scientists	List other infection prevention and control team members	Have these resources been supplemented due to Covid-19 (delete as applicable)
								Yes/No
								Yes/No
								Yes/No
								Yes/No
								Yes/No
								Yes/No
								Yes/No

Insert Free Text Box Here For Any Further Comment or Clarification on answers provided

Declaration to be completed by the hospital group Chief Executive Officer

I declare, that to the best of my knowledge and belief, all of the information that I have given in connection with this self-assessment, is full and correct.

For Hospital Group Chief Executive Officer

Name:

Signed:

Date:

Appendix 2. HIQA infection prevention and control monitoring and inspection programmes 2012-2019

2012-2016

Prevention and Control Healthcare-associated infection inspections:

With a focus on environmental hygiene, hand hygiene and invasive device infection prevention

2012 - 12 inspections undertaken
2013 - 38 inspections undertaken
2014 - 52 inspections undertaken
2015 - 38 inspections undertaken
2016 - 32 inspections undertaken

2017

Monitoring programme revised, with a broader infection prevention and control monitoring programme introduced in line with revised national standards.

23 inspections undertaken in public acute hospitals.

2019

Monitoring of non-acute hospitals/facilities against the *National Standards for Safer Better Healthcare* introduced.

15 inspections undertaken in public acute hospitals
6 inspections undertaken in non-acute healthcare facilities

2016

Antimicrobial stewardship review:
All public acute hospitals self-assessed.
(A sample of 14 hospitals inspected).

2018

Refocused monitoring programme in light of CPE public health emergency, decontamination of reusable invasive devices also integrated.
23 inspections undertaken in public acute hospitals.

Appendix 3: Risks escalated by HIQA to HSE management following inspection over the period 2017-2019

Risks highlighted in green represent those associated with a lack of CPE screening in accordance with expected national guidelines in the context of a declared public health emergency relating to this pathogen. These have been differentiated out as HIQA had a low threshold for escalation relating to this matter – however this risk where found in isolation often resulted from a lack of dedicated additional resourcing rather than more fundamental concerns relating to the wider infection prevention and control programme.

HOSPITALS	Specific Risks Escalated 2017-2019
South/South West Hospital Group (S/SW)	
Cork University Hospital	<p>Non compliance with CPE Screening guidelines. Re-opening the outbreak ward to admissions while the outbreak continued; contrary to advice from the infection prevention and control team Cohorting of patients with CPE in a multi-bed room without toilet, shower or hand hygiene facilities Cleaning, monitoring and audit were not in accordance with required standards to effectively deal with an outbreak situation Insufficient staffing levels within the IPC team Insufficient numbers of housekeeping staff</p>
Kerry General Hospital	<p>Lack of testing of the hospital’s water supply and storage system to check for legionella bacteria Non-compliance with national screening guidelines in relation to multi-drug resistant organisms unsafe preparation and storage of medication for injection Lack of decontamination equipment to thermally disinfect reusable items such as bedpan holders, urinals and measuring jugs in clinical areas.</p>
University Hospital Waterford	<p>Non Compliance with CPE Guidelines Ineffective managerial oversight of facilities in the basement</p>
Lourdes Orthopaedic Hospital, Kilcreene	Non Compliance with CPE Guidelines
Mallow General Hospital	Non Compliance with CPE Guidelines
South Infirmary Victoria University Hospital	Non Compliance with CPE Guidelines
Royal College of Surgeon Ireland Hospital Group (RCSI)	
Beaumont Hospital	<p>Non Compliance with CPE Screening guidelines. Continuing to admit patients to a CPE outbreak ward which had been closed to admissions</p>
Connolly Hospital Blanchardstown	Non Compliance with CPE Guidelines
Ireland East Hospital Group (IEHG)	
St Michael's Dunlaoghaire	Hospital had not implemented a track and trace system for ENT endoscopes used in OPD

Wexford General Hospital	Lack of onsite consultant presence in two months Non-compliance with CPE Guidelines
Cappagh National Orthopaedic Hospital	Non Compliance with CPE Guidelines
Mater Misericordiae University Hospital	Non Compliance with CPE Guidelines
St Columcilles Hospital, Loughlinstown.	Non Compliance with CPE Guidelines
St Vincents Hospital	Non Compliance with CPE Guidelines
Dublin Midlands Hospitals Group (DMHG)	
Tallaght Hospital, Dublin	Failure to effectively implement transition based precautions (two doors of isolation rooms requiring airborne transmission precautions left open)
Midlands Regional Hospital Portlaoise	Non Compliance with CPE Guidelines
Midlands Regional Hospital, Tullamore	Non Compliance with CPE Guidelines
St. James's Hospital	Non Compliance with CPE Guidelines
University Limerick Hospitals Group (UL)	
University Hospital Limerick	Infection prevention and control team resources and supports Hospital infrastructure; including a relative lack of isolation facilities, the configuration of the infection control cohort ward and identified poor infection prevention and control practices on this ward Environmental hygiene and cleaning of patient care equipment. Lack of routine consultant microbiologist oversight of microbiology laboratory result reports Lack of an up-to-date understanding of local patterns of antimicrobial resistance required to guide antimicrobial prescribing practices A microbiology laboratory that could not be considered for national accreditation because of deficiencies in governance and resourcing*.
Saolta University Hospital Group (Saolta)	
Mayo University Hospital	Blood cultures not being processed between 12midnight and 8am at the hospital.
Children's Hospital Group Ireland (CHI)	
Our Lady's Children's Hospital, Crumlin	Non Compliance with CPE Guidelines

* During the feedback phase of concluding this report, it was declared to HIQA that accreditation has since been obtained in this laboratory.

Appendix 4: Analysis of infection prevention and control specialist resourcing by hospital group

Table 1 - Summary of infection prevention and control specialist resourcing by hospital group

HOSPITAL GROUP	Total planned critical care bed capacity	Total number of IPC Team Specialists	IPC Team Members per planned critical care beds	Consultant Microbiologists	Microbiology NCHDs	Consultant Infectious Diseases Physicians	Infectious Diseases NCHDs	Infection Control Nurses	Surveillance Scientists
Children's Health Ireland	56	15.03	3.725	1.73	1	1.99	3	5.36	1.95
Dublin Midlands Hospital Group	149	52.17	2.856	8.4	5.2	3	6	25.12	4.45
Ireland East Hospital Group	201	63.76	3.152	12.26	6	8.5	7	25.7	4.3
RCSI Hospitals Group	87	52.8	1.647	11.5	3	3.8	10	19.5	5
Saolta University Health Care Group	103	48.77	2.111	10.3	3.8	3.5	7	19.17	5
South / South West Hospital Group	157	40.21	3.904	7.89	6	1.52	4	17.6	3.2
UL Hospitals Group	64	22	2.909	3	2	1	4	10	2

Table 2 – Public Acute Hospitals planned critical care beds and with:

- One or less Consultant Microbiologists
- No Microbiology NCHD's

Hospital Group	Hospital	Total planned critical care bed capacity	Consultant Microbiologists	Microbiology NCHDs
Children's Health Ireland	CHI at Crumlin	41	0.73	0
	CHI at Temple Street	15	1	1
Dublin Midlands Hospitals Group	Midlands Regional Hospital, Tullamore	26	1	0
	Naas General Hospital	13	0.7	0
	Midlands Regional Hospital Portlaoise	6	0.2	0
Ireland East Hospital Group	Midland Regional Hospital Mullingar	14	0.5	0
	St Luke's General Hospital, Kilkenny	10	0.4	
	Wexford General Hospital	18	0.6	0
	Our Lady's Hospital, Navan	10	0	0
	Orthopaedic Hospital of Ireland, Clontarf, Dublin	7	0.25	
	National Maternity Hospital, Holles St	6	0.63	
Saolta University Health Care Group	Letterkenny University Hospital	14	1	0
	Mayo University Hospital	8	1	1.8
	Portiuncula University Hospital	13	10 hours	0
South South West Hospital Group	University Hospital Kerry	16	1	
	Mercy University Hospital	20	0.69	
	South Tipperary General Hospital	21	Session by UHW	
University of Limerick Hospitals Group	University Hospital Limerick	64	3	2
	University Maternity Hospital, Limerick			
	Ennis Hospital			
	Nenagh Hospital			
	Croom Hospital			
	St. John's Hospital			

Appendix 5 – HIQA’s Risk Matrix

Likelihood (Probability) Scoring

Likelihood Score	Descriptor	Frequency
1	Rare	This will probably never happen/recur
2	Unlikely	Do not expect it to happen/recur again but it is possible
3	Possible	Might happen or recur occasionally
4	Likely	Will probably recur, but it is not a persistent issue
5	Almost certain	Will undoubtedly recur, possibly frequently

Impact (Consequence) Scoring

Impact Category	Impact on individual/future service users
1 Negligible	<ul style="list-style-type: none"> No obvious harm No injury requiring treatment
2 Minor	<ul style="list-style-type: none"> Minor injury No permanent harm
3 Moderate	<ul style="list-style-type: none"> Significant injury or ill health Some temporary incapacity
4 Major	<ul style="list-style-type: none"> Major injuries or long term incapacity or disability Major permanent harm as result of clinical or non-clinical incident injuries or long term incapacity or disability Major permanent harm
5 Catastrophic	<ul style="list-style-type: none"> Death

Risk Score	
Score	Grade
15-25	Significant risk
8-12	Moderate risk
4-6	Low risk
1-3	Very low risk

Risk Score	Actions to be taken:
Score 15-25: significant risk (red)	<p>When an inspector/AAP identifies issues that could present an immediate and significant risk to the health and/or welfare of residents/service users, he/she will immediately inform his/her line manager to agree the most appropriate regulatory action(s) to take as per AMA.</p> <p>All available evidence and information about the non-compliance should be considered, together with the range of regulatory actions available before a decision is made about what course of action is proportionate and appropriate (refer to the monitoring compliance and escalation in designated centres SOP).</p> <p>The centre profile should be updated.</p>
Score 8-12: moderate risk (orange)	<p>The inspector/AAP will decide upon the most appropriate action to take in the circumstances following (if required) discussion with his/her line manager.</p> <p>The inspector/AAP will follow up on the action to be taken by the provider to mitigate the risk and re-assess the risk accordingly (refer to the issuing and reviewing action plans Policy).</p> <p>The centre profile should be updated.</p>
Score 4-6: low risk (yellow)	<p>When the risk score is low or very low, there may be no action required, although the inspector/AAP should review such issues on a quarterly basis (as this may indicate patterns in the information/risks being identified).</p>
Score 1-3: very low risk (green)	

References:

1. Health Information and Quality Authority. National Standards for the prevention and control of healthcare-associated infections in acute healthcare services. Dublin: Health Information and Quality Authority; 2017. [Online]. Available online from: <https://www.hiqa.ie/sites/default/files/2017-05/2017-HIQA-National-Standards-Healthcare-Association-Infections.pdf>
2. World Health Organization. Hospital Readiness Checklist for COVID-19. Interim version February 2020. Available online from: <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/hospital-readiness-checklist-for-covid-19>
3. Centers for Disease Control and Prevention. Comprehensive Hospital Preparedness Checklist for Coronavirus Disease 2019 (COVID-19). March 2020. Available online from: <https://www.cdc.gov/>
4. European Centre for Disease Prevention and Control. Checklist for hospitals preparing for the reception and care of coronavirus 2019 (COVID-19) patients. February 2020. Available online from: <https://www.ecdc.europa.eu/en>
5. Health Information and Quality Authority. Report of the review of antimicrobial stewardship in public acute hospitals. Dublin: Health Information and Quality Authority; 2016. [Online]. Available online from: <https://www.hiqa.ie/reports-and-publications/key-reports-and-investigations/report-review-antimicrobial-stewardship>
6. Health Service Executive. Requirements for screening of Patients for Carbapenemase Producing *Enterobacteriaceae* (CPE) in the Acute Hospital Sector. February 2018. [Online]. Available online from: <http://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/strategyforthecontrolofantimicrobialresistanceinirelandsari/carbapenemresistantenterobacteriaceacre/guidanceandpublications/>
7. Overview of 2018 HIQA Regulation of Healthcare services. Published October 2019. https://www.hiqa.ie/reports-and-publications/all-publications?field_pub_published_year_target_id=37&keyspub=overview&=Apply

8. Overview of 2017 HIQA regulation of social care and healthcare services. Published June 2018. https://www.hiqa.ie/reports-and-publications/all-publications?field_pub_published_year_target_id=37&keyspub=overview&=Apply
9. Overview of 2016 HIQA Regulation of social care and healthcare services. Published May 2017. https://www.hiqa.ie/reports-and-publications/all-publications?field_pub_published_year_target_id=37&keyspub=overview&=Apply
10. Overview of HIQA unannounced infection prevention and control inspections (PCHCAI) in 2015. Published March 2016. https://www.hiqa.ie/reports-and-publications/allpublications?field_pub_published_year_target_id=37&keyspub=overview&=Apply
11. Overview of inspections in public acute hospitals against the National Standards for the Prevention and Control of Healthcare Associated Infections. Published March 2015. https://www.hiqa.ie/reports-and-publications/allpublications?field_pub_published_year_target_id=37&keyspub=overview&=Apply