



**Health  
Information  
and Quality  
Authority**

An tÚdarás Um Fhaisnéis  
agus Cáilíocht Sláinte

# **Report of the unannounced inspection at University Hospital Limerick.**

Date of on-site inspection: 02 July 2019

**HIQA's consolidated programme of monitoring against the  
*National Standards for the prevention and control of  
healthcare-associated infections in acute healthcare services***



## About the Health Information and Quality Authority (HIQA)

The Health Information and Quality Authority (HIQA) is an independent statutory authority established to promote safety and quality in the provision of health and social care services for the benefit of the health and welfare of the public.

HIQA's mandate to date extends across a wide range of public, private and voluntary sector services. Reporting to the Minister for Health and engaging with the Minister for Children and Youth Affairs, HIQA has responsibility for the following:

- **Setting standards for health and social care services** — Developing person-centred standards and guidance, based on evidence and international best practice, for health and social care services in Ireland.
- **Regulating social care services** — The Chief Inspector within HIQA is responsible for registering and inspecting residential services for older people and people with a disability, and children's special care units.
- **Regulating health services** — Regulating medical exposure to ionising radiation.
- **Monitoring services** — Monitoring the safety and quality of health services and children's social services, and investigating as necessary serious concerns about the health and welfare of people who use these services.
- **Health technology assessment** — Evaluating the clinical and cost-effectiveness of health programmes, policies, medicines, medical equipment, diagnostic and surgical techniques, health promotion and protection activities, and providing advice to enable the best use of resources and the best outcomes for people who use our health service.
- **Health information** — Advising on the efficient and secure collection and sharing of health information, setting standards, evaluating information resources and publishing information on the delivery and performance of Ireland's health and social care services.
- **National Care Experience Programme** — Carrying out national service-user experience surveys across a range of health services, in conjunction with the Department of Health and the HSE.



## **Table of Contents**

<b>1.0 Introduction.....</b>	<b>2</b>
<b>2.0 Information about this inspection.....</b>	<b>2</b>
<b>3.0 Hospital profile .....</b>	<b>3</b>
<b>4.0 Inspection findings.....</b>	<b>4</b>
4.1 Governance and management structures .....	4
4.2 Monitoring, audit and evaluation systems including risk management.....	7
4.3 Implementation of evidence-based best practice .....	10
<b>5.0 Conclusion .....</b>	<b>18</b>
<b>6.0 References .....</b>	<b>20</b>
<b>7.0 Appendices.....</b>	<b>24</b>
Appendix 1: Lines of enquiry (LOE) .....	24
Appendix 2: Infection prevention and control governance organogram.....	25



## 1.0: Introduction

Under section 8(1)(c) of the Health Act 2007, Authorised Persons of the Health Information and Quality Authority (HIQA) monitor the implementation of the *National Standards for the prevention and control of healthcare-associated infections in acute healthcare services*<sup>1</sup> in public acute hospitals.

HIQA's focus in 2019 has included a detailed evaluation of how hospitals organise themselves to minimise the spread of healthcare-associated infections; with a particular focus on systems to detect, prevent, and manage multidrug-resistant micro-organisms, and the approach taken to reduce the risk of reusable medical device-related infection. These two areas are internationally recognised as being major contributors to potentially preventable patient harm as a consequence of healthcare provision.

HIQA has published a guide<sup>2</sup> to this monitoring programme which is available to view on HIQA's website [www.hiqa.ie](http://www.hiqa.ie).

## 2.0 Information about this inspection

This inspection report was completed following an unannounced inspection carried out at University Hospital Limerick by Authorised Persons from HIQA; Noreen Flannelly-Kinsella, Kathryn Hanly and Bairbre Moynihan. The inspection was carried out on 02 July 2019 between 09.15hrs and 17.00hrs.

Specific lines of enquiry were developed to facilitate this monitoring programme and are included in this report in Appendix 1.

Inspectors used specifically designed monitoring tools and focused on:

- the prevention and control of transmission of antimicrobial-resistant bacteria and healthcare-associated infections
- decontamination facilities\* outside of designated controlled decontamination units.<sup>†</sup>

During this inspection inspectors spoke with hospital managers, staff and representatives from the Infection Prevention and Control Committee and Decontamination Committees. Inspectors requested and reviewed documentation,

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\* Decontamination facilities refers to the physical infrastructure where decontamination of reusable medical devices is provided.

<sup>†</sup> A controlled decontamination unit, such as a Central Decontamination Unit or Endoscope Reprocessing Unit, is a designated unit which has defined governance arrangements and is designed, constructed, maintained and controlled with structures, systems, processes and outcomes that are continuously monitored, measured and validated to provide assurances that reusable medical devices are safely and effectively reprocessed consistently in accordance with legislation, manufacturer's instructions, national decontamination standards and guidelines, National Standards and best practice guidance.

data and observed practice within the clinical environment in a sample of clinical areas which included:

- 3A medical ward: 32-bedded ward comprised seven single rooms, two two-bedded rooms, one four and one five-bedded room and one nightingale-style<sup>‡</sup> room containing twelve beds.
- 2D infection control cohort ward:<sup>§</sup> 23-bedded ward comprised six single rooms and six multi-occupancy rooms/areas containing two, three and four beds.
- Ear, Nose and Throat Out-Patient Department (ENT OPD).

HIQA would like to acknowledge the cooperation of the hospital management team and staff who facilitated and contributed to this unannounced inspection.

### 3.0 Hospital profile

University Hospital Limerick is a large acute model four academic teaching hospital and is one of six hospitals comprising the University of Limerick Hospitals Group.<sup>\*\*</sup> The six hospital sites collectively function as one single hospital entity.

The University Hospital Limerick had a bed capacity of 450 inpatient beds and is the only hospital in the group that had 24-hour seven-days-a-week emergency care and critical care services. The hospital provides a range of services including major surgery and other medical, diagnostic and therapy services. The hospital also provides cancer treatment and care, and is one of the eight designated cancer centres in the country. Four clinical directorates with responsibility for daily operations relating to specific specialties across the six hospital sites were in place.

#### Decontamination and reprocessing service for reusable medical devices

The hospital was providing a decontamination and reprocessing service for reusable medical devices used at the hospital and the University Maternity Hospital Limerick.

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<sup>‡</sup> A nightingale-style room consists of one long ward with a large number of beds arranged along the sides, without subdivision of the room into bays. From an infection prevention and control perspective, the higher number of patients accommodated in nightingale wards increases the risk of infection transmission, especially if beds are spaced too close together.

<sup>§</sup> A cohort area is a bay and or a ward in which a group of patients (cohort) with the same infection are placed together. 'Cohorting' of patients classically means the separation of those patients and their nursing staff from other patients because single room isolation facilities are not available. It is generally used as a measure of last resort in situations where single room capacity is greatly exceeded by the number of patients who are colonised with a particular alert organism, in an effort to prevent cross transmission from this patient cohort to the wider hospital patient population.

<sup>\*\*</sup> Hospital groups: The hospitals in Ireland are organised into seven hospital groups. 1. Ireland East Hospital Group. 2. Dublin Midlands Hospital Group. 3. South/South West Hospital Group. 4. Saolta University Health Care Group. 5. University of Limerick Hospitals Group. 6. RCSI Hospitals Group. 7. Children's Health Ireland Hospital Group.

Decontamination and reprocessing of critical and semi-critical devices, such as surgical instruments and gastro-intestinal endoscopes, was performed in the:

- Sterile Services Department (SSD)
- Endoscopy Department.

The SSD was also providing a decontamination and reprocessing service for University Maternity Hospital Limerick located nearby and within the same hospital group.

A satellite decontamination facility located within the footprint of an Operating Theatre (OT) complex reprocessed endoscopes used 'out of hours'.<sup>††</sup>

Additionally decontamination and reprocessing of semi-critical reusable devices using high level disinfectant manual multi-wipe systems was performed in satellite decontamination facilities located in the:

- Out-Patient Department (OPD):
  - ENT endoscopes in the Ear Nose and Throat (ENT) OPD
  - Semi-invasive transrectal ultrasound probes in Urology OPD
  - Reusable ophthalmic (eye care) lenses in Ophthalmology OPD.
- Ward 2C for ENT endoscopes.
- Cardiology Department for transoesophageal echocardiography ultrasound probes.
- Radiology Department for semi-invasive transvaginal and transrectal ultrasound probes.

## 4.0 Inspection findings

The following sections present the general findings of this unannounced inspection. The report is structured as follows:

- Sections 4.1 to 4.3 present the general findings of this unannounced inspection.

### **4.1 Governance and management structures**

#### 4.1.1 Infection prevention and control programme

Inspectors found that there were clear lines of accountability and responsibility in relation to governance and management arrangements for the prevention and control of healthcare-associated infection at the hospital.

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<sup>††</sup> "Out of hours" was defined as after 18.30 hours on weekdays and 24 hours on the weekends and Bank Holidays.

Regular performance updates in relation to infection prevention and control and antimicrobial stewardship were reported through the established hospital governance structures.

The Strategic Carbapenemase Producing *Enterobacteriaceae* Control Committee had been established to oversee the management of Carbapenemase-Producing *Enterobacteriales* (CPE)<sup>††</sup> within the University of Limerick Hospital Group. Weekly pan directorate outbreak meetings were held to co-ordinate the management of the outbreaks. Multimodal infection prevention and control strategies implemented to manage the CPE outbreak will be discussed further in section 4.3 of this report.

#### Infection prevention and control team

An additional consultant microbiologist and three whole time equivalent (WTE)<sup>§§</sup> infection prevention and control nursing posts had been appointed since the 2017 HIQA inspection. This included an additional infection control assistant director of nursing (ADoN) with a specific remit for managing CPE.

Notwithstanding the recent improvements in infection control team staffing levels, inspectors were informed that infection control staffing deficits remained; surveillance scientists continued to be redeployed to microbiology laboratory technical work. This had delayed the production of some surveillance reports.

Governance arrangements and organisational structures for infection prevention and control and decontamination service provision were outlined in an organogram provided to HIQA (appendix 2).

#### Quality Improvement Plan

HIQA reviewed the quality improvement plan (QIP) published by University Hospital Limerick following the 2017 inspection. Overall, it was apparent that progress had been made in addressing the findings of the 2017 inspection. For example:

- Infection prevention and control team staffing numbers had improved.
- The process for preparing and presenting quarterly infection prevention and control assurance reports to the Quality and Safety Executive Committee had been embedded.

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<sup>††</sup> Carbapenemase-Producing *Enterobacteriales* (CPE), are a family of bacteria which can cause infections that are difficult to treat because they are resistant to most antimicrobials, including a class of antimicrobials called carbapenems which have typically been used as a reliable last line treatment option for serious infection. Bloodstream infection with CPE has resulted in patient death in 50% of cases in some published studies internationally.

<sup>§§</sup> Whole-time equivalent (WTE): allows part-time workers' working hours to be standardised against those working full-time. For example, the standardised figure is 1.0, which refers to a full-time worker. 0.5 refers to an employee that works half full-time hours.

- The central area for reprocessing reusable cleaning textiles e.g. mop heads had been refurbished and remodelled to support functional separation of the clean and dirty phases of the laundering process.
- A new process for decontamination of integrated sharps trays had been implemented.
- Works had commenced on a 60-bedded single room modular block on the hospital site.
- Funding for the design phase of a 96-bedded single room inpatient block had been approved.

#### 4.1.2 Decontamination and reprocessing of reusable medical devices

Inspectors found that the hospital had defined governance and management structures in relation to decontamination and reprocessing of critical and semi-critical reusable medical devices used at the hospital. In addition there was good local ownership in relation to decontamination in a satellite decontamination facility inspected.

However a designated decontamination lead in the University of Limerick Hospitals Group was not in place. A leadership role in decontamination to drive and support the implementation of national and international best practice guidance at the hospital (similar to other model 4-sized hospitals inspected) should be advanced.<sup>3,4</sup>

The University of Limerick Hospitals Group Decontamination Users Committee met quarterly and reported to the University of Limerick Hospitals Group Pan Directorate Decontamination Steering Committee, also held quarterly. The organogram provided (see Appendix 2) outlines the accountability and reporting structures for decontamination service provision at the hospital. Minutes of oversight governance committee meetings reviewed included reference to reporting from decontamination services at the hospital.

Membership of decontamination committees included the authorised engineer for decontamination (AED),<sup>\*\*\*</sup> and representatives from satellite decontamination facilities across the University of Limerick Hospitals Group, clinical engineering and infection prevention and control.

The terms of reference showed that designated committee members submitted a written report for each meeting. Inspectors were told that minutes of meetings were circulated to committee members however a responsible person to address actions was not always identified in minutes reviewed. Following discussions with staff in a

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<sup>\*\*\*</sup> A suitably qualified person to graduate level designated by management to provide independent auditing and technical advice in relation to decontamination facilities, and equipment testing and validation records.

satellite decontamination facility inspected it was evident that feedback from meetings was given.

Inspectors were told that formalised transport agreements in line with national guidance<sup>5</sup> in relation to the transport of reusable invasive medical devices to and from the University Maternity Hospital Limerick were in place.

## **4.2 Monitoring, audit and evaluation systems including risk management**

### 4.2.1 Monitoring, audit and evaluation systems

#### Infection prevention and control of healthcare-associated infection

The infection prevention and control surveillance programme included surveillance of:

- 'alert' organisms and 'alert' conditions<sup>+++</sup>
- multidrug-resistant organisms
- bloodstream infections.

Hospital management monitored and regularly reviewed performance indicators in relation to the prevention and control of healthcare-associated infection in line with HSE national reporting requirements<sup>6</sup> and the HSE's Business Information Unit.<sup>7</sup>

Surveillance scientists compiled comprehensive quarterly surveillance reports. However the hospital did not routinely perform surgical site surveillance, ventilator-associated pneumonia surveillance or catheter-associated urinary tract infection surveillance.

#### *Clostridium difficile*

Inspectors were informed at interview that the incidence of *Clostridium difficile* infection remained high relative to 2019 national HSE targets. Inspectors were informed that there had been a recent outbreak of *Clostridium difficile* ribotype 002 involving 14 patients across multiple wards in the hospital.

Risk factors for *Clostridium difficile* infection included suboptimal antimicrobial prescribing practices, poor equipment hygiene and infrastructural and maintenance deficits. Documentation reviewed also indicated that two inpatient wards (1D and 3A) with high burden of infection and outbreaks required refurbishment to assist with managing patients safely and reduce the risk of cross transmission. These risk factors will be discussed further in section 4.3 of this report.

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<sup>+++</sup> Alert conditions include physical symptoms such as skin rashes, vomiting, diarrhoea, respiratory illness that could be due to an infectious illness.

## Hygiene audits

Hospital environmental and patient equipment hygiene standards were monitored and audit results were presented at quarterly infection prevention and control committee meetings, hygiene committee meetings and executive management meetings.

## Decontamination and reprocessing of reusable medical devices

The focus of inspection was on decontamination facilities outside of designated controlled decontamination units. At the time of inspection recommendations following an independent external review of central sterile supplies departments undertaken in 2018 across the hospital group were being explored by senior management. The aim of the review was to develop a group-wide strategic plan for sterile supplies departments.

An AED was appointed by the hospital to oversee and audit technical aspects of the decontamination programme. The AED and infection prevention and control team had undertaken an audit of semi-invasive ultrasound probes and ENT endoscope decontamination in 2018. An updated decontamination QIP demonstrated that concerns in relation to infrastructural deficiencies and lack of automated validated systems for ENT endoscope and semi-invasive ultrasound probe reprocessing had been escalated to senior hospital management by the AED. Business cases seeking approval for a feasibility study for a centralised endoscopy reprocessing model and changing to automated validated decontamination systems had either been submitted or were being prepared. A trial of automated validated decontamination systems for transoesophageal echocardiography (TOE) probe decontamination was due to commence at the hospital.

During this inspection hospital management confirmed that periodic maintenance, testing and validation was performed on all decontamination-related equipment in line with national standards and recommended practices.<sup>8,9,10,11</sup> Inspectors were told that an equipment priority list for replacement was in place. Business cases seeking approval for replacement of ageing equipment in SSD had been submitted. The hospital should ensure that feedback from routine or planned preventive maintenance along with the life cycle information from the manufacturer should inform decisions when to replace a device/equipment.<sup>12</sup> A register of intracavity semi-invasive ultrasound probes was available.

Local monthly audit of practices in relation to decontamination of ENT endoscopes was undertaken in the ENT OPD satellite decontamination facility inspected. Findings in relation to this facility will be presented in section 4.3.2 of this report.

#### 4.2.2 Risk management

The hospital had systems in place to identify and manage risk in relation to the prevention and control of healthcare-associated infection and decontamination of reusable medical devices.

Risk was a standing agenda item at the Quality and Safety Executive Committee meeting. Inspectors were informed that each ward area and or department had a risk register. Infection prevention and control risks specific to the ward area were contained in the local risk register. Risks were escalated to the directorate risk register if it could not be managed locally and to the corporate risk register if it could not be managed at directorate level.

Inspectors were informed that incidents were reported on the National Incident Management System (NIMs).<sup>\*\*\*</sup> The infection prevention and control team informed inspectors that incidents were not being tracked and trended and that they were unsure of what infection prevention and control incidents were being reported. The infection prevention and control team must request a report of the infection prevention and control incidents on a regular basis, track and trend the incidents, provide feedback to staff and share the learning in line with national guidance.<sup>13</sup>

##### Decontamination and reprocessing of reusable medical devices

A local electronic risk register was maintained in the satellite decontamination facility inspected. Staff told the inspector that local risks were overseen and escalated to the perioperative directorate management team. Decontamination-related risks on the peri-operative risk register were last updated May 2019. It was evident that risk assessments were carried out following identification of a risk. A responsible person and or persons and existing control measures to address risks were also identified. A review of minutes of the hospital's infection control committee meetings showed that decontamination-related risks were also discussed. However an annual decontamination quality assurance report outlining and identifying risks, near misses and measures put in place to minimise the risk of reoccurrence was not in place which is not in line with National Standards.<sup>1</sup>

A risk assessment in relation to the use of manual multi-wipe high level disinfection systems for semi-invasive ultrasound probes, ENT endoscopes and ophthalmology lens was viewed by an inspector. Additional control measures included a proposal to have a designated decontamination facility in OPD in the interim of a more centralised endoscopy model across the hospital. However a date by which these actions were to be completed was not evident. This is not in line with HSE's Integrated Risk Management Policy and supporting guidance.<sup>14</sup>

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<sup>\*\*\*</sup> The State Claims Agency National Incident Management System is a risk management system that enables hospitals to report incidents in accordance with their statutory reporting obligation.

Inspectors were informed and documentation reviewed showed that local decontamination-related incidents were reported electronically to the Quality and Risk Department. A log reviewed by inspectors showed that a number of incidents had been recorded for the previous year.

Hospital management told inspectors that the national medical devices eAlert<sup>§§§</sup> system had been implemented at the hospital. The global asset identifier coding and national track and trace programme to support quality assurance of decontamination practices had been rolled-out in central decontamination facilities at the hospital. While the hospital did not have formalised contingency plans in the event of decontamination equipment failure, management stated that discussions to address this were underway at the time of inspection.

### **4.3 Implementation of evidence-based best practice**

#### **4.3.1 Systems to detect, prevent and manage multidrug-resistant organisms**

University Hospital Limerick had experienced an ongoing hospital outbreak of CPE since 2011.<sup>\*\*\*\*</sup> It was reported to HIQA that there had been no cases of CPE bloodstream infections detected at the hospital since June 2015. However despite the implementation of a number of mitigating measures at the hospital, new cases of hospital-acquired CPE continued to be identified with increased detections this year to date including three outbreaks.

Ward 3A had experienced a CPE outbreak since February 2019. On the day of inspection Ward 3A had no CPE positive inpatients. However as a period of 90 consecutive days without a newly detected CPE patient assessed as a “probable” hospital-associated case had not been achieved the outbreak had not yet been declared over.

The predominant carbapenemase encountered in the hospital was *Klebsiella pneumoniae* carbapenemase (KPC) family. However New Delhi metallo-β-lactamase (NDM) and Oxacillinase (OXA-48) had also been identified in recent months.

Inspectors were informed by management that risk factors that likely contributed to the transmission of CPE at the hospital remained largely unchanged and these included:

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<sup>§§§</sup> The national eAlert system receives notification directly from the HPRA of all medical device safety / hazard notifications or any internally generated HSE safety notifications for distribution.

<sup>\*\*\*\*</sup> Guidelines advise that where three or more patients with the same CPE associated with a hospital in the past three months this should be interpreted as prima facie evidence of transmission in your hospital and an outbreak control team should be convened to assess what if any further action is required.

- a reservoir of people in the hospital catchment area who are colonised with CPE
- a hospital operating over capacity where patients were regularly boarded on ward corridors
- hospital infrastructure; including a relative lack of isolation facilities, accommodation of patients in multi-occupancy nightingale-style rooms and insufficient spatial separation between beds in some inpatient areas
- insufficient resources to implement rapid CPE testing
- environmental reservoirs for CPE.

Hospital management must address identified risk factors through stringent infection prevention and control measures which may contain the spread, reduce the severity and duration of outbreaks, minimise invasive infection and limit impact on the delivery of healthcare services.

### **Evidence of good practice**

Measures to prevent, detect and measures to contain the spread of CPE included but were not limited to:

- Screening
  - Full compliance with national CPE screening guidelines.<sup>15</sup>
  - In high risk wards, the cohort ward and where transmission within a ward had been established, the hospital had implemented a programme of universal CPE screening on admission and weekly thereafter.
  - Audits were completed on compliance with CPE screening policy.<sup>16</sup>
- Antimicrobial Stewardship
  - An established antimicrobial stewardship programme coordinated by a multidisciplinary antimicrobial stewardship team was in place.
  - The hospital operated a policy of reserved access to meropenem<sup>+++++</sup> as recommended in the National Policy on Restricted Antimicrobial Agents.<sup>17</sup> This policy stated that preauthorisation from a consultant microbiologist was required.
- Patient placement
  - Ward 2D was designated a specialist cohort ward to accommodate patients identified with CPE and other multidrug-resistant organisms.

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<sup>+++++</sup> Meropenem is an ultra-broad-spectrum antimicrobial belonging to a class of antimicrobial known as carbapenems. It may be used to treat a wide range of infection types however treatment options are very limited for Gram-negative organisms resistant to meropenem.

- Inspectors were informed that the nightingale ward on 3A was closed to admissions due to a number of CPE contacts<sup>\*\*\*</sup> accommodated in this room.
  - Infection control surveillance software was available in all clinical areas. This system assisted in the prompt identification of patients that needed to be isolated.
  - Patients colonised with CPE on Ward 2D (cohort ward) were appropriately accommodated in single rooms on the day of inspection. The remaining patients colonised and or infected with multidrug-resistant organisms on Ward 2D were cohorted appropriately in the remaining multi-occupancy rooms.
- Communication
- In line with the HSE CPE Contact Communications Programme,<sup>18</sup> the hospital had a process for writing to patients that had been discharged prior to been identified CPE patient contacts advising them of their CPE contact status and offering testing for colonisation.
  - New cases of CPE colonisation in the hospital were plotted on a Safety Cross<sup>§§§§</sup> which was circulated for staff to view. This identified the date, gene type and location of new CPE colonisation throughout the hospital on a monthly basis.
- Infrastructure and environment
- Overall, the general environment and equipment in Ward 2D (cohort ward) were clean and well maintained with some exceptions. Records viewed showed that environmental hygiene audits were performed regularly.
  - Environmental screening was performed to trace possible environmental reservoirs for CPE throughout the hospital. Results of environmental initial screening identified the presence of CPE in 14 of 33 sinks sampled in seven wards. Remedial measures were implemented to address this including decommissioning of three sinks in Ward 3A (CPE outbreak ward).
  - An external review of waterborne pathogens in University Hospital Limerick was commissioned. This included a review of hand washing facilities. The report recommended a number of remedial actions that may be taken to address the findings and should be progressed by hospital management.

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\*\*\* A CPE patient contact is defined as a person that has shared a multi-bed area and/or shared toilet facilities with a person identified as colonised or infected with CPE. This includes time spent in the Emergency Department (ED) and Acute Medical Assessment Units (AMAU). A person that has been cared for in an inpatient area (including ED and AMAU) by nursing staff who were simultaneously caring for one or more patients colonised with CPE in the absence of Contact Precautions. This might arise in relation to a patient who was not known to be colonised with CPE at the time in question.

§§§§ The safety cross is a simple data collection tool comprising a one-month colour-coded calendar that notes daily safety measure incidents such as CPE colonisation in UHL.

- Equipment
  - Where possible, equipment on the wards inspected was designated for use only on the patient in isolation to prevent the risk of cross infection via inanimate objects.
  - Patient equipment viewed on the cohort ward (2D) during the inspection was clean with few exceptions.

### **Required areas for improvement**

In addition to the contributing factors identified by the hospital, opportunities for improvement were identified by inspectors in a number of areas. Examples included but were not limited to:

- Screening
  - Inspectors were informed that the microbiology laboratory did not have resources to perform rapid testing of specimens for CPE. Delays in identification of CPE colonised patients is important and has been identified as a major risk factor for the introduction and spread of CPE.
  - Inspectors were informed that there was a variance between the consultant microbiologists and hospital management in the designation of exposed people as "CPE Contacts" that should be offered screening. National guidelines<sup>15</sup> state that a CPE contact is a person who has been assessed by an infection prevention and control practitioner as likely to be at a substantially higher risk than the general patient population of colonisation with CPE.
- Antimicrobial stewardship
  - The antimicrobial stewardship team audited the use of meropenem on a monthly basis. The most recent quarterly antimicrobial stewardship report showed that 76% of meropenem prescriptions were prescribed following consultation with microbiology. This fell short of the hospital's compliance target of 80%. Prescriptions that had not been preauthorised were reviewed by the antimicrobial stewardship team and a specific meropenem alert sticker was placed in the clinical notes.
  - The 2018 Antimicrobial Stewardship Report stated that carbapenem<sup>\*\*\*\*\*</sup> consumption in the hospital was above the median for tertiary hospitals nationally in 2018. This was a concern when considered in the context of the ongoing CPE outbreak.

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\*\*\*\*\* The carbapenem group of antibiotics include meropenem, and ertapenem and are broad spectrum antimicrobials.

- Patient placement
  - Inspectors were informed that the current number of single rooms was insufficient to manage the ever-increasing number of patients requiring isolation for infection prevention and control reasons. The lack of isolation facilities also meant that patients with CPE were frequently moved throughout the hospital whenever a single room became available.
  - Patients colonised with CPE on ward 2D (cohort ward) were not routinely cared for by dedicated nursing staff as recommended in national guidelines.<sup>16</sup>
- Communication
  - Inspectors were informed that patients admitted to the CPE outbreak ward were not routinely informed of the CPE outbreak or provided with CPE information prior to or after admission to this ward. This practice was contrary to National Standards<sup>1</sup> and guidelines<sup>19</sup> and contrary to advice from the infection prevention and control team.
  - There was scope for improvement in nursing admission documentation relating to patient infection control status and risk factors.
- Infrastructure and environment
  - Bed spacing in multi-bedded wards in both inpatient wards inspected was not in compliance with best practice guidelines.
  - Ward wide issues were noted on 3A in relation to maintenance including paint peeling off walls, damaged doors, chipped window sills, stained ceiling and exposed pipes. Management informed inspectors that the ward required renovation and that there had been meetings to identify what was required. Remedial works had taken place in the interim.
  - Inspectors were informed that a wheelchair accessible shower which screened positive for CPE on Ward 3A was not decommissioned as it was the only one on the ward. A standard operating procedure was in place which included risk assessing the patients before using the shower.
  - Unacceptable levels of dust were present above beds and in air vents in Ward 3A.
- Equipment
  - Sterile supplies and consumables were stored adjacent to a hand hygiene sink in a clinical room in Ward 2D (cohort ward) risking inadvertent contamination.
  - A green tagging system which alerted staff to when equipment was last cleaned was inconsistently applied throughout Ward 3A.
  - Staining and splashes were noted on two commodes in Ward 3A. The unclean commodes were of significant importance in the context of reducing the

potential for transmission of CPE and *Clostridium difficile*, and should be a particular focus for improvement.

- Hand hygiene
  - A wide variation of performance was observed in local hand hygiene audits carried out in quarter 4 2018. The low level of compliance achieved in some wards demonstrated the need for ongoing audit and leadership at ward level.
  - Issues in accurately quantifying the percentage of staff that had attended hand hygiene training were reported. As a result, the overall up-to-date attendance levels of staff member groups with hand hygiene training could not easily be determined from a local or corporate level during the inspection.
  - Facilities for and access to hand hygiene facilities in Ward 3A were less than optimal. This issue was a concern when considered in the context of the ongoing CPE outbreak. For example:
    - a number of single en-suite rooms and a two-bedded room did not have hand hygiene sinks
    - the sink in a six-bedded room was decommissioned, therefore staff had no access to a hand hygiene sink in this room
    - a hand hygiene sink in the nightingale ward was inappropriately positioned within the patient zone.

#### 4.3.2 Decontamination and reprocessing of reusable medical devices

An inspector visited a satellite decontamination facility located in OPD to ensure that structures, systems, processes and outcomes were aligned to national standards.<sup>8,9,10,21</sup>

Whilst semi-invasive transrectal ultrasound probes and semi-critical reusable medical devices for eye care<sup>++++</sup> were also decontaminated in OPD, a review of ENT non-channelled endoscopes was undertaken on this inspection

HIQA acknowledge that the hospital had identified infrastructural deficiencies and lack of automated validated systems for decontamination in OPD as areas of concern and had escalated accordingly.

#### **Evidence of good practice included:**

- a defined system which clearly indicated when endoscopes had been contaminated and decontaminated was in place; dedicated endoscope transport trays were used
- a manual track and trace system was in place

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<sup>++++</sup> Reusable ophthalmic medical devices such as diagnostic lens are semi-critical devices that come into contact with the mucous membrane surface of the eye during examinations and procedures in ophthalmology outpatient clinics.

- a controlled endoscope storage cabinet was used
- monthly audit of practices had commenced
- surfaces and finishes in an endoscope storage room facilitated cleaning
- frequencies of environmental and patient equipment hygiene audits were carried out in line with national guidance<sup>20</sup> for higher risk functional area i.e. monthly; a high level of compliance achieved in the last audit was also evident on the day of inspection.

### **Required areas for improvement:**

Findings of non-compliance with the national standards and recommended practices for endoscopy decontamination facilities in ENT OPD included some of the following:

- dedicated operatives whose sole responsibility was decontamination of endoscopes were not in place
- endoscopes were not reprocessed in automated validated endoscope washer disinfectors in line with best practice;<sup>21</sup> high level disinfection manual multi-wipe systems were used
- endoscopes were not leak tested after each procedure which was not in line with the hospital's own procedure; subsequently hospital management confirmed that this had been addressed; a review of the audit tool is recommended
- microbiological testing and monitoring of endoscopes and environment was not performed
- facility design and infrastructure did not ensure the complete physical separation of dirty and clean activities; decontamination procedures were performed at point of patient care and in an endoscope storage room
- the manual track and trace system did not facilitate timely recall.

#### **4.3.3 Staff training, education and competency in relation to decontamination practices**

An inspector was told in ENT OPD that staff operatives had received both on-line and face-to-face manufacturer's training in relation to the use of high level disinfectant multi-wipe systems for decontamination of non-channelled ENT endoscopes.

An action from a hospital decontamination audit and QIP identified training requirements for medical staff carrying out pre-cleaning, fitting and removing ENT endoscope protective sheaths in OPD. However it was unclear as to what action was taken to address this. Hospital management need to be assured that responsible operators at each operation stage are deemed competent to undertake assigned responsibilities. In addition a training needs assessment should be carried out

periodically once operatives are assessed as competent to work independently in line with national guidance.<sup>8</sup> Where areas for improvement are identified in audits, local quality improvement plans need to be implemented to address findings.

Inspectors were informed that, in line with HSE recommendations, a number of staff operatives from central decontamination facilities at the hospital had either completed or were in the process of undertaken an academic qualification in decontamination practices and sterile services, included to degree level. In addition a number of staff were due to commence the same courses in the next academic year. However, academic training for staff operatives working in satellite endoscopy decontamination facilities also need to be progressed as per HSE recommendations.

Regular operator training was provided by the manufacturers and or suppliers of endoscopes and decontamination-related equipment in all areas.

Dedicated staff members had completed the HSE's online decontamination training programme in centralised decontamination facilities and in the satellite endoscope decontamination facility inspected which is in line with the latest national standards and recommended practices.<sup>21</sup> In addition hospital management told an inspector that chemical safety training for personnel who work in all decontamination environments was progressing.<sup>21</sup>

Inspectors were told that individual competencies of staff working in central decontamination facilities were assessed at induction and intermittently in the Endoscopy Department thereafter. To concur with best practice guidance an annual review of competency assessments for staff working in endoscopy decontamination facilities should be undertaken.<sup>21,22</sup>

Current HSE policy states that hospital policies, procedures and guidelines (PPG's) should be reviewed every three years.<sup>23</sup> Inspectors noted that a number of policies in relation to decontamination including the operating procedure for disinfection of ENT non-channelled endoscopes were overdue for review. The hospital also had a guideline for the management of transmissible spongiform encephalopathies<sup>\*\*\*\*</sup> which was also overdue for review.<sup>24</sup> Hospital staff stated that dedicated teams were in the process of reviewing PPG's in this regard.

HIQA recommends that the hospital works towards full implementation of the latest national standards and recommended practices in relation to emergency endoscopes used 'out of hours' in an emergency theatre.<sup>21</sup> In addition the standard operating

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\*\*\*\* Transmissible spongiform encephalopathies (TSEs) are a group of progressive, invariably fatal, conditions that affect the brain (encephalopathies) and nervous system of many animals, including humans, cattle, and sheep. Critical and semi-critical medical devices contaminated with high-risk tissue (i.e., brain, spinal cord, and eye tissue) from high-risk patients—those with known or suspected infection with Transmissible Spongiform Encephalopathies require special treatment.

procedure for decontamination of ophthalmic lenses was in draft form; this needs to be finalised in line with manufacturer's instructions for use and best evidence-based research.<sup>25</sup> Should any contradiction exist, this must be addressed in a timely manner by staff with clinical specialist expertise who can evaluate and advise.<sup>1</sup>

## 5.0 Conclusion

Overall HIQA found that University Hospital Limerick was committed to improving infection prevention and control practices at the hospital and were endeavouring to fully implement the *National Standards for the prevention and control of healthcare-associated infections in acute healthcare services*.<sup>1</sup>

HIQA reviewed the quality improvement plan developed by the hospital following the 2017 unannounced inspection. Overall, it was apparent that progress had been made in addressing the findings of the 2017 inspection.

In light of the National Public Health Emergency in relation to CPE inspectors sought assurance regarding arrangements put in place to ensure compliance with the latest national guideline on screening for CPE at the hospital. During this inspection hospital management confirmed that the hospital had ensured the full implementation of this guideline.

HIQA acknowledges the hospital's positive progress and compliance levels in relation to:

- improved infection prevention and control team resources
- the oversight of performance across all clinical areas in relation to infection prevention and control was facilitated by on-going surveillance, monitoring and audit programmes led by the infection prevention and control team
- environmental hygiene standards, despite infrastructural challenges.

While some improvements were made in response to the ongoing CPE outbreak there was no indication that the spread of CPE in University Hospital Limerick had been effectively controlled to date. Notwithstanding the many good practices that HIQA identified during the inspection, areas for further improvement include:

- infrastructural and ongoing maintenance
- equipment hygiene and oversight of same
- access to resources to perform rapid testing of specimens for CPE
- variance with the specialist infection prevention and control team and hospital management regarding CPE contact screening decisions
- enforcing of antimicrobial restriction policies to avoid unnecessary use of restricted antimicrobials including meropenem
- provision of CPE information to all patients admitted to CPE outbreak wards

- allocating sufficient staff resources taking into account the increased demands placed by managing the CPE outbreak.

## 5.2 Decontamination and reprocessing of reusable medical devices in a satellite decontamination facility

Inspectors found that there was defined governance and management arrangements for decontamination and reprocessing of critical and semi-critical reusable medical devices. However a hospital group decontamination lead position needs to be put in place in line with national recommendations.

The hospital had systems in place to identify and manage decontamination-related risks and incidents. However a number of intended actions on a decontamination quality improvement plan were funding dependent and need to be addressed. A risk-based approach in order to identify specific risks relative to actions required must be implemented by hospital management. It was evident that the hospital was:

- progressing with academic training in centralised decontamination facilities
- exploring recommendations in relation to centralising decontamination services
- using audit to inform quality improvement plans
- moving towards automated validated decontamination systems for probes.

Overall HIQA found that the hospital was endeavouring to implement national standards and recommended best practice guidance in a satellite decontamination facility inspected. It was evident that environmental and patient equipment hygiene auditing schedules were in line with national guidance in this facility. However the design of the facility and lack of automated validated systems for decontamination of ENT endoscopes impacted on overall compliance with best practice guidance. Management stated that they were exploring options in relation to centralising decontamination activity in OPD in the interim of centralised decontamination service provision at the hospital.

Management also need to address the following:

- dedicated personnel with assigned responsibility for reprocessing of non-channelled ENT endoscopes in OPD
- academic training and competency assessment for staff working in satellite endoscope reprocessing facilities
- a number of policies in relation to decontamination were overdue for review
- microbiological testing and monitoring requirements for ENT endoscope reprocessing.

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## 7.0 Appendices

### Appendix 1: Lines of enquiry (LOE)

#### **1. Governance and management structures**

The hospital has formalised governance arrangements with clear lines of accountability and responsibility around the prevention and control of healthcare-associated infections and the decontamination and reprocessing of reusable medical devices.

#### **2. Monitoring and evaluation systems including risk management**

The hospital has effective arrangements in place to respond to the ongoing monitoring, evaluation, audit and outcome measurement in relation to the prevention and control of healthcare-associated infection programme and the decontamination and reprocessing of reusable medical devices.

The hospital has a risk management system in place to identify, manage and report all hazards, adverse events, near misses and risks in relation to the prevention and control of healthcare-associated infections and the decontamination and reprocessing of reusable medical devices.

#### **3. Implementation of evidence-based best practice**

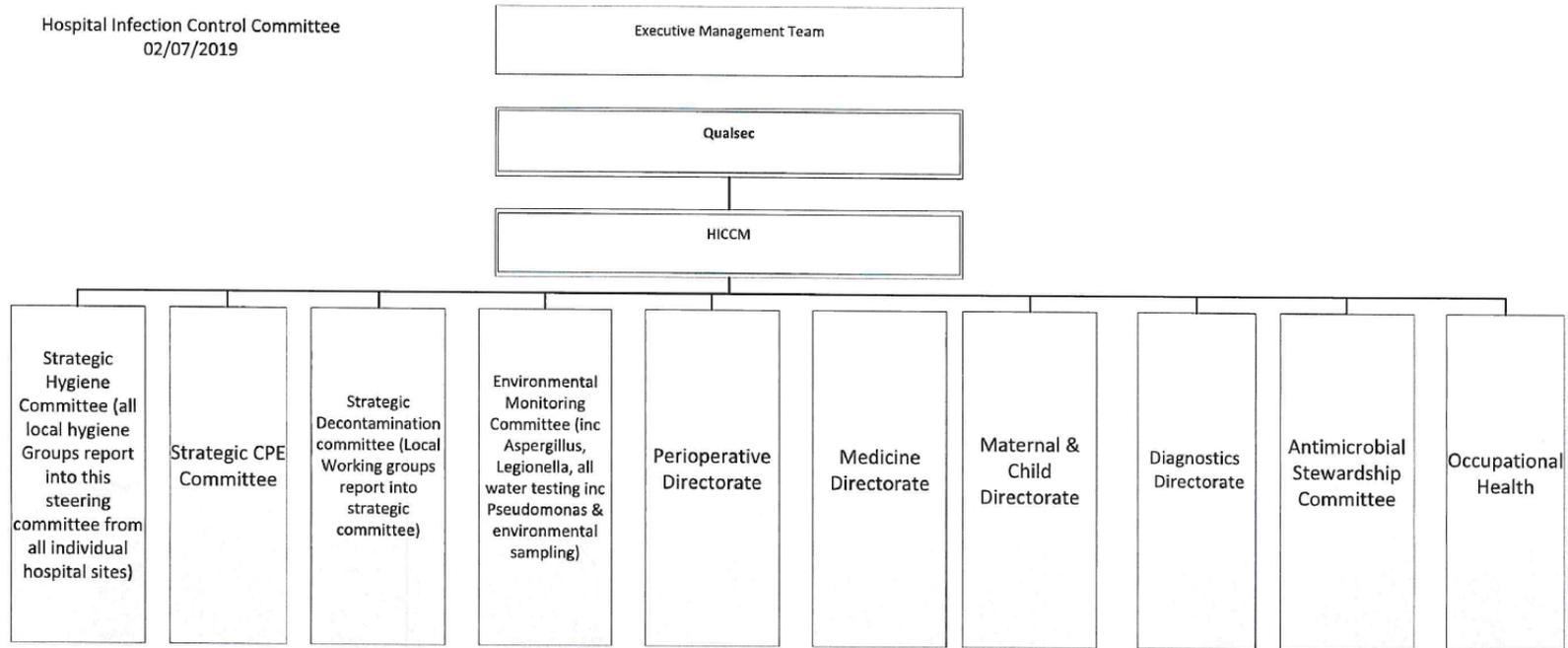
The hospital has the structures, systems and processes to detect, prevent, and manage multidrug-resistant organisms.

The hospital has the structures, systems and processes in relation to decontamination and reprocessing of reusable medical devices in satellite decontamination facilities.

The hospital ensures that key personnel have been appropriately trained to the necessary standard of competence and are supported with ongoing education and training reflecting national and international evidence.

The hospital ensures that key personnel are implementing evidenced-based best practice with up to date policies, procedures, protocols and guidelines in line with relevant legislation and national guidelines.

## Appendix 2: Infection prevention and control governance organogram





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