



**Health
Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Report of the unannounced inspection at Sligo University Hospital.

Monitoring programme undertaken against the National Standards for the prevention and control of healthcare-associated infections in acute healthcare services

Date of on-site inspection: 20 July 2017

About the Health Information and Quality Authority

The Health Information and Quality Authority (HIQA) is an independent authority established to drive high-quality and safe care for people using our health and social care services in Ireland. HIQA's role is to develop standards, inspect and review health and social care services and support informed decisions on how services are delivered.

HIQA aims to safeguard people and improve the safety and quality of health and social care services across its full range of functions.

HIQA's mandate to date extends across a specified 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 statutory responsibility for:

- **Setting Standards for Health and Social Services** — Developing person-centred standards, based on evidence and best international practice, for health and social care services in Ireland.
- **Regulation** — Registering and inspecting designated centres.
- **Monitoring Children's Services** — Monitoring and inspecting children's social services.
- **Monitoring Healthcare Safety and Quality** — Monitoring the safety and quality of health services and investigating as necessary serious concerns about the health and welfare of people who use these services.
- **Health Technology Assessment** — Providing advice that enables the best outcome for people who use our health service and the best use of resources by evaluating the clinical effectiveness and cost-effectiveness of drugs, equipment, diagnostic techniques and health promotion and protection activities.
- **Health Information** — Advising on the efficient and secure collection and sharing of health information, setting standards, evaluating information resources and publishing information about the delivery and performance of Ireland's health and social care services.

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1. Introduction

HIQA monitors the implementation of the *National Standards for the prevention and control of healthcare-associated infections in acute healthcare services*¹ in public acute hospitals in Ireland to determine if hospitals have effective arrangements in place to protect patients from acquiring healthcare-associated infection. The *National Standards for the prevention and control of healthcare-associated infections in acute healthcare services* will be referred to as the National Standards in this report.

In 2017, HIQA commenced a revised monitoring programme against the National Standards. The aim of this revised monitoring programme is to assess aspects of the governance, management and implementation of designated programmes to prevent and control healthcare-associated infections in hospitals. This monitoring programme comprises Phases One, Two and Three which will be described next.

The National Standards were updated in 2017 and therefore supersede the previous version. Hospitals should work towards implementing these revised National Standards.

Phase One

All public acute hospitals were requested to complete and return a self-assessment tool to HIQA during April and May 2017. The self-assessment tool comprised specific questions in relation to:

- hospital infection prevention and control programme and associated oversight arrangements.
- training of hospital personnel to implement policies, procedures, protocols, guidelines and evidence-based practice in relation to the prevention and control of infection.
- systems in place to detect, prevent, and respond to healthcare-associated infections and multidrug-resistant organisms.

The hospital Chief Executive Officer or General Manager and the Health Service Executive (HSE) Hospital Group Chief Executive Officer were asked to verify that the information provided to HIQA accurately reflected the infection prevention arrangements within the hospital at that time.

Phase Two

Using a revised assessment methodology HIQA commenced a programme of unannounced inspections against the National Standards in public acute hospitals in May 2017.

Specific lines of enquiry were developed to facilitate monitoring in order to validate some aspects of self-assessment tools submitted by individual hospitals. The lines of enquiry which are aligned to the National Standards are included in this report in Appendix 1.

Further information can be found in the *Guide to the monitoring programme undertaken against the National Standards for the prevention and control of healthcare-associated infections*² which was published in May 2017 and is available on HIQA's website: www.hiqa.ie

Phase Three

Phase Three of this monitoring programme will focus on the reprocessing of reusable medical devices and HIQA will commence onsite inspections in this regard in 2018.

Information about this inspection

This inspection report was completed following an unannounced inspection carried out at Sligo University Hospital by Authorised Persons from HIQA; Noreen Flannelly-Kinsella, Aileen O'Brien and Shane Grogan. The inspection was carried out on 20 July 2017 between 09:40hrs and 17:30hrs.

Prior to this inspection, authorised persons reviewed the hospital's completed self-assessment tool and related documentation submitted to HIQA earlier in May 2017.

During this inspection inspectors spoke with hospital managers and staff, and members of the Infection Prevention and Control Team. Inspectors requested and reviewed documentation and data and observed practice within the clinical environment in a small sample of clinical areas which included:

- The Coronary Care Unit
- A Surgical ward

Inspection findings presented in this report are aligned to HIQA's monitoring lines of enquiry as shown in Appendix 1. The inspection team used specifically designed monitoring tools during this inspection in relation to aspects of:

- Prevention of invasive device-related infection (Section 2.5.1)
- Prevention and control of transmission of antimicrobial-resistant bacteria (Section 2.6.1)
- Safe injection practice (Section 2.6.2)

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

2. Findings at Sligo University Hospital

The following sections 2.1 to 2.8 present the general findings of this unannounced inspection which are aligned to monitoring lines of enquiry.

2.1 Governance

Line of enquiry 1.1

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

Governance arrangements

Sligo University Hospital is part of the Saolta University Health Care Group governance structure* and is owned and managed by the Health Service Executive (HSE).

HIQA found that there were clear lines of accountability and responsibility for the prevention and control of healthcare-associated infection in Sligo University Hospital. In addition, formalised governance arrangements with the Saolta University Health Care Group in relation to infection prevention and control were also in place.

The infection prevention and control service in the hospital was led by the Infection Prevention and Control Committee and was delivered by the specialist Infection Prevention and Control Team. The team met informally every day and reported into the Infection Prevention and Control Committee on a two to three monthly basis. The committee was chaired by the hospital Assistant General Manager and had defined terms of reference detailing the frequency and quorum for committee meetings. The committee also served as an Environmental Monitoring Committee to advise and develop procedures in relation to Legionella control in the hospital.

Infection Prevention and Control Committee membership included multidisciplinary and executive management team representation in line with National Standards. It was reported that maternity services were represented by the Director of Nursing prior to the recent appointment of the Director of Midwifery. Documentation reviewed showed that Infection Prevention and Control Committee meetings included feedback and consideration of the following issues:

- training and education

* Saolta University Health Care Group comprises six hospitals and is led by a Group Chief Executive Officer with delegated authority to manage statutory hospitals within the group under the Health Act 2004.

- monitoring, audit and evaluation
- surveillance and outbreak reports
- antimicrobial stewardship
- infrastructure and facilities; refurbishment projects and capital plans
- staff health and dress code
- infection prevention and control work programme
- quality improvement plans.

Minutes of committee meetings reviewed by inspectors showed that attendance at meetings by some members was variable. Committee minutes were available electronically and shared with relevant clinical staff.

The Infection Prevention and Control Committee reported into the Quality and Safety Executive Committee which met monthly. Membership of this committee also included the hospital Assistant General Manager. The Quality and Safety Executive Committee reported into the hospital Executive Management Team meeting, held monthly.

The Saolta University Health Care Group had formalised governance arrangements in place in relation to infection prevention and control in the group. Sligo University Hospital along with other hospitals in the group attended quarterly teleconference meetings with the Saolta University Health Care Group Infection Prevention and Control Committee. The committee was chaired by the Group Chief Operations Officer. Greater formal collaboration, cooperation and shared learning across the group in relation to infection prevention and control is facilitated through this committee.

Documentation reviewed by inspectors showed that performance data and reports presented by Sligo University Hospital at the Saolta University Health Care Group Infection Prevention and Control Committee included:

- Episodes of bloodstream infection
- Cases of colonisation or infection with transmissible micro-organisms including multidrug-resistant organisms
- Hand hygiene audits
- Environmental and patient equipment audits
- Care bundle compliance audits
- Antimicrobial stewardship and antimicrobial consumption data
- Exceptional events, initiatives, achievements and concerns.

Documentation reviewed showed that feedback from the Saolta University Health Care Group Infection Prevention and Control Committee meeting was presented at Sligo University Hospital Infection Prevention and Control Committee meeting. This

two way communication process plays a vital role in improving performance in relation to infection prevention and control.

The hospital General Manager reported to the Saolta University Health Care Group Chief Executive Officer at monthly hospital group performance meetings.

The infection prevention and control service

The infection prevention and control service was delivered by the Infection Prevention and Control Team. The team at Sligo University Hospital was led by a full-time consultant microbiologist position. Consultant microbiologist advice was available to clinical staff twenty four hours a day, seven days a week, in line with National Standards. It was reported that a business case for a second consultant microbiologist position had been prepared and was awaiting approval. Following this inspection, documentation received by HIQA showed that this position had been recommended at a national level and was awaiting final approval. To support the service on a temporary basis, the hospital had funded a second locum consultant microbiologist position for the previous two month period. In light of the importance of such positions from a leadership and expertise perspective, the hospital needs to ensure that dedicated time is available to lead the infection prevention and control programme.

The Infection Prevention and Control Team also comprised two whole-time equivalent[†] (WTE) nurse positions, which included an Infection Prevention and Control Assistant Director of Nursing and a Clinical Nurse Specialist. The team also included a full-time Surveillance Scientist and Antimicrobial Pharmacist. It was reported that an additional 0.5 WTE medical scientist position had been approved to support implementation of national guidelines in relation to screening for Carbapenem-resistant *Enterobacteriaceae*.[‡]

Inspectors were informed that the Infection Prevention and Control Assistant Director of Nursing was reassigned to other duties on a temporary basis, approximately 0.2 whole-time equivalent hours. In consideration of the critical role of infection prevention and control nurse specialists, the hospital needs to be assured that implementation of the infection prevention and control programme is not compromised as a result of this arrangement.

The Infection Prevention and Control Team provided guidance and advice in relation to the management of transmissible organisms, hospital outbreaks and to other

[†] 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.

[‡] Carbapenem-resistant *Enterobacteriaceae* are Gram negative bacteria that are resistant to the carbapenem class of antibiotics, and considered the drug of last resort for such infections.

hospital committees. The team also participated in preliminary design phases of many refurbishment and building projects planned in the hospital.

An annual work programme produced by the team was approved by the Infection Prevention and Control Committee. Infection prevention and control objectives identified in the annual work programme for 2017 included the following:

- Improved hospital performance against national key performance indicators
- Participation in capital and minor capital project steering groups
- Reviewing policies, procedures and guidelines and contingency plans relating to healthcare-associated infections
- Promotion of surgical site surveillance and continued surveillance programmes
- Continued infection prevention and control, antimicrobial stewardship and hygiene audits
- Introduction of electronic auditing technology
- Promotion of Flu Vaccination for staff
- Continued training and education programmes in relation to hand hygiene, and standard and transmission-based precautions
- Promotion of additional team positions including consultant microbiologist and medical scientist.

Monitoring and evaluation

Hospital management monitored the following performance indicators in relation to the prevention and control of healthcare-associated infections in line with HSE national reporting requirements:

- Hospital-acquired *Staphylococcus aureus* bloodstream infection
- Hospital-acquired *Clostridium difficile* infection

Hospital management also monitored performance in respect of the following indicators:

- Median hospital total antibiotic consumption
- Alcohol hand rub consumption
- Percentage compliance of hospital staff with the World Health Organisation 5 moments of hand hygiene
- Mandatory hand hygiene training uptake by current healthcare staff who interact with patients in the rolling 24 month period.

The surveillance programme in the hospital was led by the Consultant Microbiologist and coordinated and implemented by the Infection Prevention and Control Team.

Surveillance of alert organisms[§] and alert conditions were carried out daily. Monthly breakdown of cases of antimicrobial resistant bacteria and episodes of bloodstream infection were provided by the Surveillance Scientist in the hospital.

Detailed surveillance of Intensive Care Unit acquired infections relating to invasive medical devices including ventilator-associated pneumonia, central, arterial, peripheral lines and urinary catheter-related blood stream infections were collected and presented to the Intensive Care Unit team, the Infection Prevention and Control Committee and the Executive Management Team. The hospital's monthly surveillance data was also presented at the quarterly Saolta University Health Care Group Infection Prevention and Control Committee meeting.

Data reviewed by inspectors showed a slight increase in the number of cases of hospital-acquired *Staphylococcus aureus* bloodstream infections in March 2017 which was greater than the national HSE performance indicator. It was reported that episodes of hospital-acquired bloodstream infections were not formally recorded as incidents in the hospital. Documentation received showed no new cases of hospital-acquired *Staphylococcus aureus* bloodstream infection were reported in April 2017.

Sligo University Hospital participated in a national point prevalence survey of hospital-acquired infections and antimicrobial use in May 2017 which was part of a European-wide point prevalence study. Data from this study should be used to proactively identify areas for improvement at the hospital.

Hospital management told inspectors that environmental and patient equipment hygiene standards were continuously monitored at the hospital. Findings in this regard will be presented in section 2.6.1 in this report.

[§] Alert organisms are micro-organisms that pose a significant risk of transmission to non-infected patients or staff, resulting in colonisation or healthcare-associated infection, or that pose a significant risk of transmission to non-infected people in the wider population or community.

2.2 Risk management

Line of enquiry 1.2

Risks in relation to the prevention and control of infection are identified and managed.

The hospital had systems in place to identify and manage risk in relation to the prevention and control of healthcare-associated infection. Hospital risks were reported on an electronic management system and escalated to the Risk Manager and the Quality and Safety Executive Committee. Inspectors were informed that risks identified in relation to infection prevention and control were provided to the Infection Prevention and Control Committee. Inspectors reviewed the minutes of the committee and noted that incidents relating to infection prevention and control were discussed. It may be helpful to include the review of incidents as a standing agenda item for this committee.

Minutes of monthly Quality and Safety Executive Committee meetings showed that corporate risks including serious incidents were presented at meetings. Inspectors were informed that serious incidents were also recorded in the National Incident Management System.** Additionally incident reporting data, descriptions of latest incidents requiring a preliminary assessment report and updates on current status of a serious incident log were also presented at monthly Quality and Safety Executive Committee meetings.

Inspectors were informed that major risks on the hospital corporate risk register included lack of isolation facilities and hospital beds and poor hospital infrastructure. Infrastructural deficiencies and requirement for additional hospital beds and isolation facilities had been escalated by the hospital through the HSE hospital group structure. It was reported that proposed capital projects in the hospital included a new build Emergency Department and a new Surgical Block with 147 single rooms. A number of meetings with HSE estates had taken place in relation to these proposals. Documentation provided showed that funding in respect of the design phase for these proposed building works had been allocated. The design phase would enable the hospital to progress building proposals pending future allocation of capital funding for the project.

** 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.

2.3 Policies, procedures and guidelines

Line of enquiry 2

The hospital has policies, procedures and guidelines in relation to the prevention and control of infection and hospital hygiene.

Hospital policies, procedures and guidelines were made available to staff electronically in each clinical area on the hospital intranet. Inspectors were informed that hospital policies relevant to infection prevention and control were ratified by the Infection Prevention and Control Committee.

Current HSE policy states that hospital policies, procedures and guidelines should be reviewed every three years.³ Inspectors observed that a number of policies were due or overdue for review at the time of the inspection. It is recommended that the Infection Prevention and Control Committee formalises the process in relation to reviewing policies, procedures and guidelines in light of these findings to ensure staff only had access to the most up to date version of hospital policies, procedures and guidelines.

2.4 Staff training and education

Line of enquiry 3

Hospital personnel are trained in relation to the prevention and control of healthcare-associated infections.

National hand hygiene guidelines⁴ recommend that hand hygiene training should be mandatory for relevant staff at induction and every two years thereafter.

Documentation provided by the hospital showed that hand hygiene training was mandatory for staff in Sligo University Hospital at induction and annually thereafter. Hand Hygiene training requirements can also be met by staff completing the e-learning module with the HSE e-learning and development service.

Documentation provided showed that 81% of hospital staff had attended hand hygiene training in the previous two years to March 2017. Data breakdown showed 89% of nursing staff and 66% of medical/dental staff were up to date. Inspectors were informed that hospital management reminded hospital staff by email when their hand hygiene training was due to be renewed. This demonstrates a commitment by hospital management to promote hand hygiene training across the hospital.

Education in relation to standard precautions was mandatory at induction and thereafter every two years. HIQA were informed that education sessions on hand hygiene and basic principles of infection prevention and control including standard precautions were provided on a weekly basis in the hospital. The hospital was planning to align the training in the hospital to national guidance for such knowledge and skills which included training in relation to standard and transmission-based precautions, and aseptic non-touch techniques.⁵

A competency-based training programme for midwifery and nursing staff was provided in relation to intravenous cannulation upon commencement of their employment at the hospital.

The Infection Prevention and Control Team also provided targeted education to staff which included multidrug-resistant organism, Ebola virus and influenza virus education sessions. Education in relation to antimicrobial prescribing was provided by the Antimicrobial Pharmacist to clinical staff during medical and surgical team 'grand rounds'.^{††} Teaching in relation to antimicrobial stewardship was also provided in the hospital.

^{††} Grand rounds are formal meetings where physicians and other clinical support and administrative staff discuss the clinical case of one or more patients. Grand rounds originated as part of medical training.

Additionally, the hospital had secured and finalised a cleaning training programme for supervisors with responsibility for environmental and patient equipment hygiene which was scheduled to occur shortly. Hospital management reported that the aim of this training programme was to enable housekeeping supervisors and other designated staff to become trainers so that in turn, ongoing cleaning training programmes could be provided to staff responsible for cleaning in the hospital.

2.5 Implementation of evidence-based and best practice

Line of enquiry 4.1

The hospital has implemented evidence-based best practice to prevent intravascular device-related infection and urinary catheter-associated infection, ventilator-associated pneumonia and surgical site infection.

2.5.1 Prevention of invasive device-related infection

Care bundles^{††} to reduce the risk of different types of infection have been introduced across many health services over the past number of years, and there have been a number of guidelines^{6,7,8} published in recent years recommending their introduction across the Irish health system. The implementation of care bundles to prevent invasive device-related infection was reviewed in both clinical areas inspected.

Care bundles for peripheral vascular catheter devices and urinary catheter care were in place in both areas inspected. Care bundles are important process measures for evaluation of catheter-related blood stream infection preventative programmes.

In the Coronary Care Unit, monthly audit results of peripheral vascular catheter care bundle compliance from January to June 2017 showed some variation in practice whereby 100% compliance was achieved for three of six months. Compliance with care bundles during the other three months in this time period ranged from 67 to 88%. Overall usage of urinary catheters was low in the unit. Urinary catheter care bundle audits for April and June in 2017 again showed variation in practice with compliance scores of 67% and 57% respectively.

Monthly care bundle compliance audits were also performed in the surgical ward inspected. Peripheral vascular catheter care bundle compliance audit results showed compliance with desirable standards achieved between 64 to 98% from January to July 2017 respectively. Urinary catheter care bundle audit results for the same period also showed variable compliance with results varying between 45 and 100% compliance.

Overall, trended hospital wide compliance data results for 2017 viewed by inspectors showed variation in compliance across clinical areas for peripheral vascular catheter and urinary catheter care bundles. Evidence indicates that full compliance with all essential care bundle components improve patient outcomes. Care bundles should

^{††} A bundle is a small, straightforward set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes.

be consistently implemented in line with evidence-based best practice guidelines. The hospital needs to identify opportunities for improvement and develop an ongoing quality improvement plan to address deficiencies.

2.5.2 Surveillance of invasive device-related and surgical site infection

The surveillance^{§§} of healthcare-associated infection is one of the core components of an effective infection prevention and control programme.^{9,10,11} National guidelines recommend healthcare-associated infection surveillance in relation to surgical site infection, central venous access device-related infection, urinary catheter-associated urinary tract infection and ventilator-associated pneumonia.^{12,13,14} Other health systems have advanced the surveillance of healthcare-associated infection to the benefit of both patients and health service providers by demonstrating reductions in these type of infections.^{15,16}

Detailed surveillance of many healthcare-associated infections was performed at Sligo University Hospital which is not currently the case in many public hospitals of similar size and activity levels in Ireland. In the Intensive Care Unit, detailed surveillance of central venous catheter, arterial and peripheral catheter-related bloodstream infection, ventilator-associated pneumonia and catheter-associated urinary tract infection was performed. It was reported that staff in the Intensive Care Unit used this information to inform improvements which is commendable.

Hospital management told inspectors that the hospital was working towards introducing targeted surveillance of caesarean section surgical site infection at the hospital. HIQA acknowledges that the undertaking of such surveillance would require additional resources. It is recommended that surveillance of healthcare-associated infection is targeted in patients at greatest risk of infection or in areas where deficiencies have been identified.

The hospital did not have a policy in relation to the prevention of surgical site infection. Such a policy should be developed based on best practice guidelines.^{17,18,19,20} However the hospital had guidelines for surgical antimicrobial prophylaxis.

^{§§} Surveillance is defined as the ongoing, systematic collection, analysis, interpretation and evaluation of health data closely integrated with the timely dissemination of these data to those who need it.

2.6 Systems to prevent and manage healthcare-associated infections and multidrug-resistant organisms

Line of enquiry 4.2

The hospital has systems in place to detect, prevent, and respond to healthcare-associated infections and multidrug-resistant organisms in line with national guidelines.

Patients with suspected or confirmed communicable disease including healthcare-associated infection and multidrug-resistant organism should be placed in a suitable isolation room, single room or cohort area, in line with national guidelines.

The hospital had 62 single rooms in total of which 51 had en-suite facilities. One neutral or negative pressure isolation room was located in the Intensive Care Unit for patients with airborne infection. On the day of inspection 35 inpatients required transmission-based precautions, of which 27 were isolated in single rooms. 'Trolley Watch' *** data indicated that seven patients were accommodated on trolleys in the Emergency Department the day before this inspection. This means that there was insufficient capacity at the hospital to accommodate all admitted patients.

The hospital had a computerised system which would alert staff in situations when a patient who had been previously diagnosed with a transmissible infection, was readmitted to the hospital. Patient assessment to determine previous colonisation or infection with a transmissible infection was undertaken in both the Emergency Department and on admission to clinical areas. Patients with transmissible infections were accommodated in single rooms when available.

It was reported that screening of patients for colonisation or infection with Methicillin resistant *Staphylococcus Aureus* was performed in line with national guidelines in the hospital. Limited screening was performed in relation to other multidrug-resistant organisms. It was reported that additional resources approved by the hospital will support implementation of national guidelines in relation to screening for Carbapenem-resistant *Enterobacteriaceae*.

*** Trolley watch figures are compiled by the Irish Nurses and Midwives Organisation to show the number of admitted patients in hospital who are accommodated on trolleys each day because of shortage of available hospital beds. Available at : <http://www.inmo.ie/6022>

2.6.1 Preventing the spread of antimicrobial resistant organisms

Measures to prevent the spread of antimicrobial resistant organisms were reviewed in both clinical areas inspected.

Coronary Care unit

The Coronary Care Unit could accommodate eleven patients with six beds located in a multi-occupancy room in the unit, in addition to five single cubicles. The infrastructure of patient accommodation and some ancillary areas in the Coronary Care Unit was very poor and did not facilitate the management of patients with transmissible infection. On the day of inspection all beds were occupied and patients requiring isolation were managed in single cubicles. None of the single cubicles had en-suite toilet/shower facilities which meant that patients shared one toilet on the corridor or needed to walk to the opposite end of the unit to access toilets or showers. Only two of the five cubicles had hand washing facilities for staff. It is recommended that patients with diarrhoea are accommodated in rooms with hand washing facilities. The single cubicles did not have ante rooms and they opened directly into the main corridor area, which was not ideal from an infection control perspective. Spacing between beds in the six bed area was limited and shelves and cupboards for general storage were located within one patient zone which is not recommended.

Patient equipment was generally clean with few exceptions; there was light dust on a blood pressure monitor and on a portable ultrasound machine.

Opportunities for improvement were identified in relation to environmental hygiene in the unit. Dust was observed on some floors, staff workstation areas and horizontal surfaces in the corridor area. Extract vents were dusty in the unit and wall paintwork was stained in some areas.

Local environmental and patient equipment hygiene audits were performed monthly by ward staff. Results of local environmental hygiene audits performed in the Coronary Care unit in April, May and June 2017 had identified deficiencies in relation to environmental hygiene and maintenance issues. Environmental hygiene audit results for this period showed between 61 and 83% compliance with desirable standards. Environmental hygiene audit action plans showed that findings identified were individually addressed. However there needs to be effective oversight of hygiene audit results to proactively address recurring cleaning and maintenance issues. These findings should have prompted a review of cleaning resources and specifications and maintenance requirements. Patient equipment hygiene audits for the same period achieved 100% compliance with desirable standards which is commendable.

Part of the unit including two patient shower rooms and ancillary storage rooms had been recently upgraded to a modern specification that readily facilitated cleaning, this part of the unit was clean and dust free. However, the older part of the unit was not well maintained and surfaces and finishes including floors, walls and woodwork in this area which included patient rooms and ancillary rooms were worn and damaged and again did not facilitate cleaning.

Ventilation in the unit was reported by staff to be poor and this was apparent on the day of inspection. The practice of opening both doors of the 'dirty' utility room to increase ventilation is not recommended. Windows in patient cubicles were located at high level directly behind patient's bed heads and these could only be opened by using an extension pole to access the window opening. Access to radiator controls in patient cubicles was obstructed by wooden casing which covered the back walls of these rooms. Air conditioning was available in the six bed room but this made some bed spaces quite cool so this system could only be used for short periods of time.

Hospital management reported that they were in the process of upgrading the remainder of the unit. It is recommended that patient care areas are designed in line with recommended hospital building guidelines appropriate for the function of the clinical area. Design considerations should include appropriate provision for isolation facilities, hand washing facilities, ventilation, heating, ancillary rooms and storage requirements.

Surgical Ward

Inspectors looked at implementation of aspects of transmission-based precautions in the surgical ward inspected. The ward comprised 28 beds which included six single rooms, one four-bedded and three six-bedded rooms all with en-suite toilet and shower facilities.

Opportunities for improvement in relation to implementation of transmission-based precautions was observed during the inspection. A staff member was observed entering an isolation room without performing hand hygiene prior to donning protective gloves. Some doors to isolation rooms accommodating patients requiring transmission-based precautions were open. Isolation room doors should be kept closed as far as possible otherwise a risk assessment should be performed. Additionally, isolation signage to alert staff or visitors to the presence of infectious bacteria was not consistently applied at the time of inspection.

Deficiencies in relation to environmental and patient equipment hygiene were identified at the time of inspection. Findings in this regard will also be further discussed in section 2.6.2 in this report. Stains and or dust were observed on a number of items of patient equipment. Inspectors found that commodes in the dirty

utility room⁺⁺⁺ were unclean. These details were communicated and addressed at the time of inspection. Inspectors were unable to identify if patient equipment had been cleaned prior to storage as there was no clearly defined system in place in the equipment storage room.

Additionally, patient equipment items were inappropriately stored in a dirty utility room increasing the risk of inadvertent contamination of clean items. It is recommended that the storage of patient equipment and supplies in the unit is reviewed and improved upon. During the inspection risks were identified in relation to a recycling bin in the dirty utility room; communication received from hospital management after the inspection showed that this issue had been effectively mitigated following the inspection.

A number of environmental surfaces in a patient toilet facility were unclean. There was no clearly designated person with responsibility for cleaning hand hygiene gel dispensers and consequently, all dispensers inspected were unclean. Sticky residue deposits did not facilitate effective cleaning. Hospital documentation received showed that cleaning in relation to hand hygiene dispensers were discussed in March 2017. This issue had been previously outlined in HIQA's previous inspection report 2016.

Local monthly environmental and patient equipment hygiene audits performed by ward staff showed an overall average compliance of 94% from January to July 2017. The most recent hygiene audit conducted in July 2017 showed patient equipment achieving 92% compliance with desirable standards. This high level of compliance was not evident on the day of inspection. Environmental hygiene audit action plans showed that progress was slow in relation to some issues identified during audits including maintenance issues.

Senior management hygiene observational audits in the surgical ward showed 92% compliance with desirable environmental and patient equipment standards in January 2017. The frequency of managerial hygiene audits should be appropriate to the risk associated with the functional area and the cleanliness levels already achieved. More frequent managerial auditing of higher risk areas is recommended in line with national guidance.

2.6.2 Safe injection practice

Inspectors looked at aspects of standard precautions to assess safe injection practice in the clinical areas inspected. Staff spoken with were able to describe recommended practice in relation to giving injections safely in the Coronary Care Unit.

⁺⁺⁺ A 'dirty' utility room is a temporary holding area for soiled/contaminated equipment, materials or waste prior to their disposal, cleaning or treatment.

There was no clean utility room in the Coronary Care Unit. Medication for injection and related supplies were stored in an alcove adjacent to the central staff work station which was within a corridor leading to patient rooms. Space for medication preparation in this area was very limited and the existing space used by staff to prepare medication was quite close to a clinical hand wash sink which was less than ideal as this presents a risk of splashing water directly onto work surfaces. Storage space was also limited and medications and intravenous fluids were stored inappropriately on top of cupboards or on low shelves close to the floor. Multiple items were stored on the limited work surfaces available which did not facilitate cleaning. Sterile supplies were stored inappropriately in open drawers in carts located in the main corridor area of the unit, these should be stored in fully enclosed drawers or cupboards in a clean storeroom.

In the surgical ward, staff spoken with were able to describe recommended safe injection practices apart from disposal of sharps. Sharps were disposed of into rigid biohazard labelled sharps containers in the medication preparation room instead of at point of use. Inspectors observed that sharps with safety-engineered protection mechanisms were used for injections in line with European Union Sharps Directive and Regulations 2010/32/EU.²¹

The medication preparation room on the surgical ward did not facilitate effective infection prevention and control and was inappropriate. The room was not ventilated, small in size with limited space for staff movement or to manoeuvre equipment. In addition, the room was not equipped with a clinical hand wash sink and there was no designated area for medication preparation.

Multiple surfaces in the medication preparation room were either dusty or unclean including storage containers, worktop space, shelving units, and a medication fridge, a controlled drug cupboard, a drug dispensing trolley and walls and floors. Paintwork on walls and cupboards had become worn over time which did not facilitate effective cleaning. Medication fridges were not included in ward cleaning schedules.

Patient equipment including blood glucose testing kits, a theatre tray and a drug dispensing trolley was stored inappropriately in an office and some items were dusty. Desks, computer terminals, stationary supplies, patient healthcare records, and staff personal belongings such as bags, coats and drinks were also located in the office. Medical equipment should be managed and stored appropriately in order to limit the risk of inadvertent contamination. Use of this room as both an office and a clinical room is not appropriate and requires review.

Stocks of sterile consumables were also stored inappropriately in an open drawered mobile cart in an open plan office. Two integrated sharps trays were stored on top of the cart which was also unclean. Sterile supplies should be stored in enclosed containers to avoid inadvertent contamination of clean items.

The ward should have a clean utility room with appropriate hand hygiene facilities and a dedicated worktop space for intravenous medication preparation, with adequate facilities for storing clean and sterile supplies and preparing dressing trolleys and not for administration functions. The hospital needs to ensure that ancillary rooms in the ward are appropriate for intended use. These deficiencies had been highlighted to hospital management by ward staff. The hospital should look to progress this issue as a matter of priority.

Cleaning specifications and resources

Inspectors observed that cleaning resources allocated to environmental hygiene in the surgical ward on the day of inspection were insufficient to meet daily activity levels for a high risk area. Cleaning frequencies should be in line with recommended minimum cleaning frequencies for high risks areas,^{22,23} for example toilet facilities should have three full cleans and two check cleans daily.

Additionally, cleaning frequencies in relation to patient equipment were not aligned with recommended national minimum cleaning frequencies for high risk areas. Inspectors were informed that staff responsible for cleaning patient equipment were not regularly allocated time to perform routine cleaning due to competing demands such as the need to assist nursing staff with patient care needs.

Staff responsible for cleaning should have the right level of training, appropriate equipment, allocated time, know what needs to be cleaned and how often and be properly supervised.²⁴ The surgical ward is deemed a high risk areas and therefore should have the necessary resources required to ensure that the environment and patient equipment is cleaned in line with minimum cleaning frequencies. During the course of the inspection, inspectors were told that provision of an on-call cleaning service in the hospital outside normal routine working hours was also limited. It is recommended that this arrangement is audited to provide assurances that the service being provided is appropriate for service requirements in the hospital.

Documentation received showed that revised cleaning specifications had been circulated for consultation and that the hospital was planning to re-introduce a tagging system for cleaned patient equipment, on a trial basis. Following the inspection, inspectors were informed that a deep cleaning session had been completed in both clinical areas inspected.

In addition, hospital management confirmed that a cleaning training programme had been arranged for hygiene cleaning supervisors and was scheduled to occur shortly. These are positive developments however, there remains scope for improvement in relation to cleaning resources particularly in the context of higher risk areas. The time taken to undertake cleaning tasks should be measured and used to calculate the cleaning resources required for a high risk area.

2.6.3 Other measures to prevent the transmission of infection

Hand hygiene

Essential components of the World Health Organisation (WHO) multimodal improvement were evident in Sligo University Hospital. The hospital participated in national hand hygiene audits, the results of which are published twice a year. The hospital achieved 90% compliance rate in the national hand hygiene audit in October/November 2016. Inspectors were informed that the hospital also achieved 90% compliance with hand hygiene practice in May 2017 reaching the required HSE national hand hygiene compliance target of 90% which is commendable.

Local hand hygiene audits were performed quarterly in clinical areas. The latest audit result for the surgical ward showed 83% compliance with hand hygiene practice in May 2017. Hand hygiene audit results for the Coronary Care Unit showed 100% compliance in May 2017.

Outbreak management

Documentation reviewed by inspectors showed the hospital had two outbreaks of Norovirus infection in the hospital in 2016, both with extended durations of 40 days and 17 days respectively. Inadequate isolation facilities, high occupancy rates and increased norovirus activity in the community, and difficulty assigning dedicated nursing staff to affected areas were identified as contributory factors.

Documentation reviewed showed that members of the Infection Prevention and Control Team presented an outbreak report at the Executive Management Team meeting July 2016. Recommendations following the outbreak included training on decontamination and cleaning techniques, staff education in relation to standard and transmission-based precautions and the introduction of molecular screening methods in the microbiology department.

***Clostridium difficile* infection**

The hospital reported the rate of new cases of *Clostridium difficile* infection monthly to the HSE. Inspectors were informed that episodes of *Clostridium difficile* infection were investigated and a root cause analysis performed by the Infection Prevention and Control Team. It was reported that molecular typing of isolates was undertaken in all cases of *Clostridium difficile* infection associated with a cluster or an outbreak of infection.

Data for quarter one 2017 showed a slight increase in the incidence of *Clostridium difficile* infection and a further increase in April 2017 which was greater than the national HSE performance indicator. Minutes of the Infection Prevention and Control Committee meeting showed that a detailed discussion took place in relation to this trend. On the background of persistently high activity levels and limited isolation

facilities, the hospital needs to address the findings of this report particularly in relation to environmental and patient equipment hygiene so that potential outbreaks of infection are contained and effectively managed. *Clostridium difficile* infection can survive for long periods on environmental surfaces, a factor which contributes to transmission of infection in healthcare environments.

Inspectors were informed that the hospital had resubmitted and updated a previous business case proposal for technology to support molecular testing in the hospital and facilitate rapid and accurate confirmation of infection. This had also been escalated by the hospital through the hospital's risk management structure. Since this inspection hospital management confirmed that approval had been granted. It is anticipated that this technology should be in place in quarter one 2018.

Prevention of water-borne infection

A formal Legionella site risk assessment had been performed at the hospital in early July 2017. The hospital was awaiting the first draft of the fieldwork report at the time of inspection. The hospital should assure itself that any recommendations from the risk assessment are addressed promptly in line with national standards²⁵ and infection prevention and control standards. Sligo University Hospital, as a member of the wider Saolta University Health Care Group should also be supported within the group structure in order to fully address these recommendations.

Hospital management reported that internal control and preventative measures in relation to waterborne infection were implemented in the hospital including regular outlet flushing and microbiological testing of water. Governance and oversight in relation to water-borne infections in the hospital was the responsibility of the Environmental Monitoring Committee. The Environmental Monitoring Committee was incorporated into the Infection Prevention and Control Committee in the hospital. It was reported that water test results were overseen by the Infection Prevention and Control Team, the Maintenance Manager and Assistant General Manager in the hospital.

2.7 Quality improvement initiatives

Inspectors were informed of a number of quality improvement initiatives that had been implemented in relation to the prevention and control of infection at the hospital.

Training and education passport

Sligo University Hospital designed and produced a training and education passport for nursing and midwifery staff at the hospital. The passport was used by staff to record mandatory and non-mandatory training and education sessions attended each year. The passport clearly identified the frequency and location of training and education sessions. Staff were required to produce evidence that hand hygiene training was up to date before additional training was approved.

Antimicrobial stewardship

Antimicrobial stewardship programmes including rationalisation of antimicrobial usage and surveillance of antimicrobial consumption as necessary to address emergent serious threats of antimicrobial resistance. Sligo University Hospital reported the lowest rate of antibiotic consumption in Defined Daily Dose (DDD) per 1000 bed days used (BDU) in antimicrobial consumption data in public acute hospitals published June 2016.

The importance of prudent antimicrobial prescribing practice in non-acute care settings has an important role to play in managing the risk of emergent antimicrobial resistance. On-going education sessions on antimicrobial stewardship and management of urinary tract infections were provided by Sligo University Hospital to staff in the non-acute healthcare setting.

Personal hygiene need initiative

Staff in the Intensive Care unit had implemented a change in practice in relation to assisting patients to maintain essential hygiene needs, which successfully addressed an area identified for improvement through ongoing hospital surveillance programmes. Single-use bed bath heated patient wipes had been introduced in place of wash basins in the unit.

Patient engagement

Hospital management reported that they actively seek feedback in relation to patient experiences in the hospital in relation to infection prevention and control issues. Monthly Nursing and Midwifery HSE Quality Care Metrics recorded data in relation to patients' experience of hospital hygiene and patient comment cards were also available in the hospital. A number of patient forums held throughout the year focused on infection prevention and control themes including hygiene,

environmental facilities, infection prevention and control and hand hygiene products. Additionally, patient information leaflets were made available on the hospitals' intranet site.

Quality and Safety Walk Arouns

Regular quality and safety walk arounds were undertaken by the Executive Management Team in line with National Standards. This initiative demonstrates a commitment by senior management to involve patients and staff at all levels of the service. Staff identification badges stating 'Hello my name is..' had been introduced. Identification badges were observed on hospital staff and members of the executive management team on the day of inspection.

2.8 Progress since the previous HIQA inspection

HIQA reviewed the quality improvement plan²⁶ developed by the hospital following the 2016 HIQA infection prevention and control inspection. A number of issues identified by HIQA during the last inspection had been addressed at the hospital. Notwithstanding the progress made, inspection findings showed that deficiencies in relation to environmental and patient equipment hygiene had not been comprehensively addressed throughout the hospital.

Infrastructural deficiencies which could not be adequately mitigated locally had been escalated through the HSE hospital group structure. Inspectors were told that hospital capital development plans in relation to a new Emergency Department and Surgical Block would include a new Intensive Care Unit and that this would help to address configuration and design issues identified in the previous inspection. It is acknowledged that risks in relation to hospital infrastructure cannot be mitigated until any proposed building works are completed. In the interim of any future capital investment and to facilitate storage and management of stock in the unit, the hospital had planned to upgrade storage systems in the Intensive Care Unit in quarter three 2017.

Since HIQA's inspection in 2016, a designated office had been assigned as a clean utility room for the preparation of intravenous medication in the Oncology/Haematology Ward. Inspectors were informed that a number of capital projects were planned subject to capital funding. Additional proposed projects included completion of phase two refurbishment programme in the Coronary Care Unit, and upgrading of a Central Sterile Supplies Department and an Interventional Radiology Suite in the hospital.

A replacement programme in relation to hand hygiene sinks was ongoing subject to minor capital funding. Hospital equipment identified in need of replacement such as bedside lockers and tables had been requested in line with hospital procurement procedures. It was reported that ongoing maintenance requests in the hospital were addressed in order of priority rather than as an ongoing preventative maintenance programmes due to limited resources. Some maintenance issues remained outstanding subject to additional funding. The timescale for maintenance work should be monitored and audited.

3. Conclusion

Sligo University Hospital had formalised governance arrangements with clear lines of accountability and responsibility for the prevention and control of healthcare-associated infections. These arrangements included a formalised link with the Saolta University Health Care Group infection prevention and control hospital group committee.

The Infection Prevention and Control Team had put in place many elements of an infection prevention and control programme. The hospital had a detailed surveillance programme in the Intensive Care Unit; this approach represents a commitment to promoting safer patient care and is a core component of an infection prevention and control programme. With additional resources, surveillance in the hospital could be further expanded to facilitate wider evaluation of the impact of infection prevention and control measures across the hospital.

The hospital had systems in place to identify and manage risk in relation to the prevention and control of healthcare-associated infection. HIQA acknowledges that infrastructural deficiencies impacting on infection prevention and control in the hospital cannot be fully addressed in the short-term. However in the interim of proposed capital development plans, hospital management should address deficiencies identified during this inspection in relation to medication preparation facilities in the clinical areas inspected. In addition, in light of planned additional upgrades in the Coronary Care Unit, the hospital needs to ensure that patient care areas are designed in line with recommended hospital building guidelines appropriate for the function of such areas.

Hospital hygiene plays an important role in the prevention and control of healthcare-associated infection. During this inspection deficiencies were identified in relation to environmental and patient equipment cleaning. The hospital should conduct a comprehensive review of all aspects of hygiene service delivery including resources, cleaning practices and related assurance arrangements to ensure compliance with national standards and recommended guidelines. Hospital management confirmed that a cleaning training programme had been arranged which is a positive development. The hospital also needs to have effective oversight of hygiene audit results to proactively address recurring cleaning and maintenance issues.

Overall care bundle compliance audit results in relation to invasive medical devices showed some variation. This needs to be addressed by the hospital to drive improvement and provide ongoing assurance to hospital management that care bundles are being implemented consistently in the line with National Standards.

The hospital had recently completed a Legionella site risk assessment and was awaiting the final report. The hospital achieved 90% compliance rate in the national hand hygiene audit in October/November 2016.

In light of the size, complexities and specialities of the service, Sligo University Hospital, as a member of the Saolta University Health Care Group, should be supported to continue to endeavour to fully implement the infection prevention and control programme in the hospital.

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5. Appendix 1

Lines of enquiry for the monitoring programme undertaken against the *National Standards for the prevention and control of healthcare-associated infections in acute healthcare services*

Number	Line of enquiry	Relevant National Standard
1.1	The hospital has formalised governance arrangements with clear lines of accountability and responsibility around the prevention and control of healthcare-associated infections.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.3, 5.4, 6.1, 7.1
1.2	Risks in relation to the prevention and control of infection are identified and managed.	2.1, 2.3, 2.5, 3.1, 3.6, 3.7, 3.8
2	The hospital has policies, procedures and guidelines in relation to the prevention and control of infection and hospital hygiene.	2.1, 2.5, 3.1, 3.6, 3.8, 5.4, 7.2
3	Hospital personnel are trained and in relation to the prevention and control of healthcare-associated infection	2.1, 2.8, 3.1, 3.2, 3.3, 3.6, 6.1, 6.2
4.1	The hospital has implemented evidence-based best practice to prevent intravascular device-related infection and urinary catheter-associated infection, ventilator-associated pneumonia and surgical site infection.	1.1, 2.1, 2.3, 3.5
4.2	The hospital has systems in place to detect, prevent, and respond to healthcare-associated infections and multi-drug resistant organisms in line with national guidelines.	2.1, 2.3, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.8,

For further information please contact:

**Health Information and Quality Authority
Dublin Regional Office
George's Court
George's Lane
Smithfield
Dublin 7**

**Phone: +353 (0) 1 814 7400
Email: qualityandsafety@hiqa.ie
URL: www.hiqa.ie**

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