Health Information and Quality Authority

An tÚdarás Um Fhaisnéis agus Cáilíocht Sláinte

Report of the unannounced inspection at Cork University Maternity 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: 30 November 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 the:

- 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
- the 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 Cork University Maternity Hospital by Authorised Persons from HIQA; Aileen O' Brien, Noreen Flannelly-Kinsella and Emma Cooke. The inspection was carried out on 30 November 2017 between 09:25hrs 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 Neonatal Unit
- a postnatal 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 Cork University Maternity 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

Cork University Maternity Hospital is a statutory hospital which is owned and managed by the Health Service Executive and is part of the South/South West Hospital Group.

At the time of this inspection Cork University Maternity Hospital did not have formalised governance arrangements for the prevention and control of healthcare-associated infection. Inspectors were informed that revised governance structures were being formalised following more recent changes in hospital management arrangements. Revision of governance arrangements was being overseen by a project management team at hospital group level and it was anticipated that these arrangements would be formalised by the end of February 2018.

Previously, Cork University Hospital and Cork University Maternity Hospital were jointly governed and managed with shared arrangements for infection prevention and control overseen by clinical microbiology consultants based in Cork University Hospital who led a joint infection prevention and control team. The team included a designated infection prevention and control nurse for Cork University Maternity Hospital. Since February 2017, the two hospitals had separate governance and management arrangements. The Group Clinical Director for Maternity Services in the South/South West Hospital Group had been delegated direct management responsibility for Cork University Maternity Hospital and therefore had overall responsibility for the prevention and control of healthcare-associated infection at the hospital. Cork University Hospital and Cork University Maternity Hospital are located on the same site and it was HIQA's understanding that some functions such as environmental cleaning remained shared across these two hospitals. In addition to the operational management of Cork University Maternity Hospital, the Clinical Director will, in the near future, take on responsibility for maternity, neonatal and gynaecological services across the hospital group including those services delivered

in University Hospital Kerry, South Tipperary General Hospital and University Hospital Waterford. This transition is hoped to take place in 2018. The Clinical Director was accountable through the Chief Operations Officer to the Chief Executive Officer of the South/South West Hospital Group.

Inspectors reviewed minutes of executive management committee meetings. Agenda and discussion at these meetings was related to all four hospitals within the Maternity Services Directorate in the hospital group. Oversight of the prevention and control of healthcare-associated infection in Cork University Maternity Hospital did not feature in the minutes of these meetings.

Despite the lack of formalised governance arrangements in relation to the prevention and control of healthcare-associated infection there was continued clinical advice and support from consultant microbiology staff and the Infection Prevention and Control Team and Committee at Cork University Hospital. Inspectors were informed that during the Cork University Maternity Hospital governance transition there was a joint infection prevention and control committee between Cork University Hospital and Cork University Maternity Hospital. Cork University Maternity Hospital continues to utilise this infection prevention and control committee until putting their own committee in place in February 2018.

Infection prevention and control and microbiology service

Cork University Maternity Hospital had one whole time equivalent (WTE*) infection prevention and control nurse. Consultant microbiologist advice was available 24 hours a day, seven days a week and this was provided on a rotational basis by consultant microbiologists based at Cork University Hospital. Clinical microbiology services, including out of hours cover, were provided by 2.5 WTE consultant microbiologists across four hospitals which included Cork University Hospital, Cork University Maternity Hospital, Bantry General Hospital and Mallow General Hospital. Deficiencies in relation to consultant microbiologist resources required to deliver this service have previously been highlighted by HIQA.[3] There was one WTE antimicrobial pharmacist at Cork University Maternity Hospital.

Inspectors were informed that governance arrangements in relation to the prevention and control of healthcare-associated infection were under review and that there were plans to form a Cork University Maternity Hospital Infection Prevention and Control Committee to be chaired by the Clinical Director for Maternity Services. The hospital had not established a quality and safety committee at the time of inspection. External advice had been engaged at hospital group level to provide advice on revised governance and management arrangements and a

* 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

meeting to oversee this process at Cork University Maternity Hospital was scheduled in December 2017. Staff had been recruited at the hospital to support evolving quality and safety structures.

At the time of inspection, membership of the Infection Prevention and Control Committee at Cork University Hospital included the Director of Midwifery at Cork University Maternity Hospital. There was a lack of clarity among some members of the Infection Prevention and Control Committee who met with inspectors in relation to evolving operational arrangements around the prevention and control of healthcare-associated infection at Cork University Maternity Hospital. There should be clear communication of these arrangements with relevant stakeholders.

Monitoring and evaluation

Due to transitioning governance and management arrangements, monitoring at executive management level in relation to the prevention and control of healthcare-associated infection at Cork University Maternity Hospital was not formalised at the time of inspection.

The hospital reported data in relation to the prevention and control of healthcare-associated infection in a monthly hospital patient safety indicator report for management and clinicians and the South/South West Hospital Group. Nationally mandated performance indicators monitored included the:

- percentage compliance of hospital staff with the World Health Organisation's five moments of hand hygiene using the national hand hygiene auditing tool
- rate of new cases of hospital-acquired *Clostridium difficile* infection
- rate of new cases of hospital-acquired *Staphylococcus aureus* bloodstream infection.

Due to legacy management arrangements, national performance data in respect of Cork University Maternity Hospital and Cork University Hospital were presented together even though the two hospitals had separate governance arrangements. This needs to be addressed going forward.

Other than national performance indicators above there were no other locally agreed performance indicators in relation to healthcare-associated infection.

The Infection Prevention and Control and Microbiology Teams informed inspectors that they routinely monitored the following:

- surveillance of 'alert' organisms and 'alert' conditions[†]

[†] Alert organisms are micro-organisms that pose a significant risk of transmission to non-infected patients or healthcare workers, alert conditions include physical symptoms such as skin rashes, vomiting, diarrhoea, respiratory illness that could be due to an infectious illness.

- enhanced surveillance of bloodstream infection
- surveillance and audit of antimicrobial use
- clusters or outbreaks of infection
- data reported to the European Antimicrobial Resistance Surveillance Network (EARS-Net)[‡]
- care bundle compliance.

Clinically significant microbiology results were communicated by the clinical microbiology team based at Cork University Hospital to relevant clinicians in Cork University Maternity Hospital. Inspectors were informed that it was practice to complete an incident report if a maternity patient presented to the hospital with a wound infection following caesarean section. Monitoring of infection outcomes among neonates was overseen by consultant neonatologists at the hospital. Microbiological reports were provided to the neonatology team in respect of the neonatal service by consultant microbiology staff periodically on request.

Although governance arrangements for the prevention and control of healthcare-associated infection were in transition at the hospital there was regular communication between clinical staff at the hospital and consultant microbiology staff. Staff at the hospital who spoke with inspectors said that there was very good support and input from consultant microbiologists and the designated Infection Prevention and Control Nurse. The Clinical Director for Maternity Services was satisfied that any concerns or issues in relation to the prevention and control of healthcare-associated infection at the hospital would be brought to his attention. The hospital management team held regular serious incident review meetings at which issues of concern in relation to the prevention and control of healthcare-associated infection could be discussed if indicated.

The hospital also submitted infection surveillance data to the Vermont Oxford Network[§] in respect of very low birth weight babies. The hospital had recently appointed a clinical lead for the neonatology service at the hospital.

Due to staffing resource limitations, the clinical microbiology team did not generate regular reports in respect of maternal and neonatal bacteraemia rates. In addition, Cork University Maternity Hospital had not participated in the most recent national

[‡] EARS-Net performs surveillance of antimicrobial susceptibility of bacteria causing infections in humans including; *Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa,* Acinetobacter species, *Streptococcus pneumoniae, Staphylococcus aureus, Enterococcus faecalis* and *Enterococcus faecium.*

[§] The Vermont Oxford Network is a US based nonprofit voluntary collaboration of health care professionals with a network that comprises nearly 1,000 neonatal intensive care units around the world who are committed to improving the effectiveness and efficiency of medical care for newborn infants and their families through a coordinated program of research, education, and quality-improvement projects.

point prevalence survey of hospital-acquired infections and antimicrobial use which was part of a European-wide point prevalence study. Clinical microbiology services and related supports at the hospital need to be sufficiently resourced going forward to support the delivery of specialist advice and to facilitate ongoing monitoring and evaluation of the prevention and control of healthcare-associated infection and related structures, processes and outcomes.

Cork University Maternity Hospital was the first hospital in Ireland to roll out the new electronic national 'Maternal & Newborn Clinical Management System' (MN-CMS) project[**]. This data management system could potentially be used to support the monitoring and evaluation of infection-related outcomes and antimicrobial usage at the hospital.

The Director of Midwifery oversaw the standard of hygiene at the hospital and environmental and patient equipment hygiene monitoring was performed monthly. Documentation reviewed by inspectors showed that monthly hygiene scores were available for each clinical area but an overall trend report for the hospital was not evident. Hygiene services were shared between Cork University Hospital and Cork University Maternity Hospital. Arrangements in respect of hospital hygiene monitoring need to be formalised within evolving hospital governance arrangements.

The hospital should expand local monitoring arrangements to provide effective oversight to the Executive Management Team in relation to the prevention and control of healthcare-associated infection at Cork University Maternity Hospital.

[**] The MN-CMS Project is the design and implementation of an electronic health record for all women and babies in maternity services in Ireland.

2.2 Risk management

Line of enquiry 1.2

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

Risks in relation to the prevention and control of infection should be identified and effectively mitigated or managed. Any gaps or serious risks identified in the service's ability to prevent and control healthcare-associated infections must be addressed in a timely manner.[1]

Inspectors reviewed the corporate risk register at Cork University Maternity Hospital. Risks in relation to the prevention and control of healthcare-associated infection included:

- surgical site infection following obstetric and gynaecological surgery
- acquisition of healthcare-associated infection among neonates in the Neonatal Unit
- inability to capture data on maternal and neonatal bacteraemia
- opening and use of a fourth operating theatre.

In order to address the risk of surgical site infection, local antimicrobial prescribing guidelines for the maternity service had been updated. Hospital staff had also participated in a study to evaluate a new type of wound dressing. Hospital management did not have any immediate plans to perform prospective surgical site infection surveillance. This should be reviewed, particularly if there are concerns in relation to the incidence of surgical site infection in patients with specific risk factors for infection.

Data on maternal and neonatal bacteraemia should be accessible to clinical staff and management to inform monitoring and evaluation of the prevention and control of healthcare-associated infection at the hospital. Advice had been sought from Cork University Hospital Infection Prevention and Control Committee in relation to the infrastructure of the operating theatre and a business case had been submitted to the HSE to undertake improvement works.

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.

The hospital had a comprehensive suite of infection prevention and control policies, procedures and guidelines which were most recently revised in June 2017 and were approved by a consultant microbiologist. Staff had access to these policies, procedures and guidelines on the hospital's electronic document access system in clinical areas.

Cork University Hospital Drugs and Therapeutics Committee had developed antimicrobial prescribing guidelines specifically for maternity services.

A number of policies procedures and guidelines at the hospital were under revision to reflect any changes required following the implementation of the MN-CMS electronic health record. Inspectors saw that staff were able to access clinical guidelines in the clinical areas inspected through this system. It is recommended that policies, procedures and guidelines available on this system are appropriately labelled and managed to ensure that staff have access to the most up-to-date documents.

Hospital policies, procedures and guidelines were available to staff in both electronic format and in hard copy in a folder in the clinical areas inspected. Inspectors found that the hospital had a suite of up-to-date infection prevention and control policies in relation to standard precautions, transmission-based precautions and multidrug-resistant organisms including outbreak management. It was practice that hospital policies relevant to infection prevention and control were reviewed and approved by a consultant microbiologist.

Two additional policies reviewed in relation to urinary catheter insertion and peripheral vascular catheter care bundles were either in draft form or due for review at the time of inspection. A policy for the insertion, care and management of peripheral vascular catheters was accessible to staff within the MN-CMS electronic health record in the Neonatal Unit. This policy which was issued in 2014 included care bundle elements for neonates but required updating to reflect implementation of the electronic healthcare record.

Inspectors observed that some staff had difficulty accessing the most up to date version of infection prevention and control documents. Additionally, an older electronic file with versions of infection prevention and control guidelines dating

from 2007 were accessible to staff on a computer desktop in the postnatal ward. Document management systems should be reviewed to ensure staff have access to the most up-to-date information to support and guide service delivery.

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.

Hand hygiene training at the hospital was mandatory for relevant hospital staff every two years in line with national recommendations.[3]

The Infection Prevention and Control Nurse provided both formal and informal clinical area and departmental-based training sessions as required. Educational activities in relation to hand hygiene included education sessions, hand hygiene promotion days, conference sessions and video projects.

Infection prevention and control training including standard and transmission-based precautions and training sessions were scheduled on a regular basis for hospital staff. Sixty three percent of relevant staff in the postnatal ward were up-to-date with this training. The percentage of staff in the Neonatal Unit who had availed of this training was not available at the time of inspection.

Once off training in relation to aseptic non-touch technique was provided to midwifery and nursing staff during training sessions around peripheral vascular catheter insertion and intravenous medication administration. Enhanced training and support was provided to clinical staff in the Neonatal Unit in relation to aseptic technique and intravascular device insertion.

All staff at the hospital had access to advice from the Infection Prevention and Control Nurse and clinical staff had access to advice from clinical microbiology staff and the Antimicrobial Pharmacist. Training in relation to antimicrobial stewardship was provided to relevant clinical staff. Infection prevention and control education was provided to non-consultant hospital doctors at induction.

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 published in recent years recommending their introduction across the Irish health system.[4, 5, 6] The implementation of care bundles to prevent invasive device-related infection was reviewed in both of the clinical areas inspected.

Neonatal Unit

Care bundles were in place for indwelling invasive devices in the Neonatal Unit which included peripheral vascular catheters, central venous catheters and umbilical catheter care bundles. Device insertion site were checked hourly by staff in the unit and hourly alarms were set on infusion pumps in use to remind staff to perform these checks. Strict policies were in place in the unit for intravascular access device insertion and blood sampling. Staff wore full personal protective equipment for such practice including a facemask, gloves and a full length gown. There were good supervision and supports in place locally for new medical staff who were taught to insert devices by consultant neonatologists. Support in relation to device management was provided by skilled nursing and midwifery staff in the unit and by a clinical skills facilitator.

Audit of care bundle implementation was not performed in the Neonatal Unit at the time of inspection, this needs to be progressed following implementation of electronic healthcare records at the hospital.

Postnatal ward

Peripheral vascular catheter care and urinary catheter care bundles had been incorporated into patients electronic healthcare records and midwifery staff documented care bundle implementation at each shift. Audit of peripheral vascular catheter care bundle compliance was performed monthly. The hospital had only recently commenced urinary catheter care bundle compliance audits. Peripheral vascular catheter care bundle and urinary catheter care bundle compliance audit results showed that there was 100% compliance with the implementation of

required care elements in November 2017. Inspectors were informed that there was a competency-based training programme for nursing and midwifery staff in relation to peripheral vascular catheter insertion.

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.[7,8,9] 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.[10,11,12] 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.[13,14]

Surveillance of these types of healthcare-associated infection for example surgical site infection surveillance was not performed at Cork University Maternity Hospital. Inspectors were informed that it was practice to complete an incident report if a maternity patient presented to the hospital with a wound infection following caesarean section. HIQA acknowledges that implementation of surveillance programmes for healthcare-associated infection requires sufficient resources and expertise. The implementation of targeted surveillance programmes for healthcare-associated infections should be progressed. This will require the necessary investment and support.

[††] 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.

2.6.1 Preventing the spread of antimicrobial resistant organisms

Inspectors looked at implementation of aspects of transmission-based precautions and measures to prevent the spread of antimicrobial-resistant organisms to patients.

Hospital isolation facilities

There were 150 inpatient hospital beds in Cork University Maternity Hospital of which 142 beds were occupied on the day of inspection. The hospital was a relatively new building which opened in 2007 and it had 36 single rooms with ensuite facilities of which five rooms had specialised ventilation. There were no patients at the hospital who required isolation for infection control purposes on the day of inspection.

Neonatal Unit

There were 38 babies in the Neonatal Unit on the day of inspection. The unit could accommodate up to 50 cots but was staffed for 37 cots and was divided into three areas which included a neonatal intensive care unit with 12 cots, a special care baby unit with 27 cots and a nursery with eight cots. In addition to the open plan configuration of cots in these areas, there was one separate room in the intensive care unit, two separate rooms in the special care baby unit and one separate room in the nursery.

Overall, the environment and patient equipment in the unit was visibly clean without exception. There was good local ownership in relation to standards of hygiene and maintenance in the unit. The unit was a new build and the infrastructure, layout, finishes, space and light in the unit readily facilitated cleaning.

There were good systems in place to identify equipment that needed to be cleaned. Designated staff had been specifically trained to dismantle and clean the complex patient equipment used in the unit. Cleaning of individual items of patient equipment was recorded. Staff had clearly allocated responsibilities in relation to cleaning.

Some opportunities for improvement were identified in relation to the storage of equipment in the unit. Although there was a dedicated room in which equipment cleaning was carried out, there wasn't a designated room into which equipment could be stored following cleaning. This meant that clean equipment was stored on the corridor in the unit until a space such an empty patient room was available. In addition, inspectors noted that transport incubators were stored in the waiting area for parents. It is recommended that storage facilities within the unit are improved.

Monthly hygiene audits performed by staff in the unit showed over 85% compliance with desirable standards from July to November 2017. Patient equipment audits showed over 95% compliance with desirable standards from July to November 2017. There was a process to address any opportunities for improvement identified which included reaudit if audit scores were below 85%.

Postnatal ward

The postnatal ward comprised 31 beds with nine single rooms and 11 two-bed rooms all of which had en-suite toilet and shower facilities. Of the nine single rooms available, two of these were isolation rooms with specialised ventilation. Staff monitored and recorded isolation room ventilation settings every day and there was a local policy in place with instructions on how to do this.

Overall, the patient environment was well maintained and both the environment and patient equipment was generally clean with few exceptions. Inspectors observed that patient toilets were only cleaned once daily and as required. Cleaning frequencies of toilets should be in line with recommended minimum cleaning frequencies for higher risk areas.[15] Inspectors also found that commodes were inappropriately stored in patient toilets. One commode was noted to have brown and red staining. This was addressed by staff on the day.

Inspectors were informed that the 'nursery room' on the ward was used for multiple purposes including baby changing, baby bathing and emptying of formula bottles. However, this room was also used for parent education and for the storage of some patient equipment and clean supplies. It is recommended that clean supplies and patient equipment are stored in a separate room so as to avoid inadvertent contamination during baby care activities.

Opportunities for improvement were identified in relation to the storage of clean supplies. Inspectors observed that a mobile cleaning supply cart was stored in the same room as baby formula in a clean supply storeroom. Cleaning supplies should be stored in the designated storage area so that the risk of contaminating clean supplies is avoided. This was communicated to ward staff at the time of inspection.

There was evidence of clear processes and responsibilities for cleaning both the environment and patient equipment in the ward. However, it was reported that catering staff had dual roles which included both cleaning and catering duties. This is not the operational norm in the majority of Irish hospitals. There is a risk that dual responsibilities may dilute the effectiveness of both roles.

Monthly hygiene audits performed by staff in the ward showed 98% compliance with desirable standards. Patient care equipment audits showed 100% compliance with desirable standards from September to November 2017. Audits were carried out by ward management and the hygiene supervisor. Results of environmental and patient equipment audits were not made available to staff each month, instead staff received feedback annually of overall compliance.

All patient information was recorded in the MN-CMS electronic health record. The admission section prompted staff to review and record microbiological screening requirements. Hospital management was aware that the new electronic healthcare record was not linked to the existing system used by the Infection Prevention and Control Team to record infection control alerts. This meant that staff had to manually input known infection risks into the new system. This needs to be addressed going forward.

It was reported that patients were screened on admission for meticillin-resistant *Staphylococcus aureus* infection (MRSA) in line with national guidelines. There was a lack of clarity on the day of inspection in relation to screening guidelines for other antimicrobial-resistant organisms.

2.6.2 Safe injection practice

Inspectors looked at aspects of standard precautions and safe injection practice in the clinical area inspected. Staff who spoke with inspectors in both of the clinical areas inspected were able to describe recommended practice in relation to giving injections safely. Other findings in relation to safe injection practice are described below.

Neonatal Unit

Medications for injection and or infusion were prepared on a sterile drape on a clean procedure trolley. It was local policy to use strict aseptic technique for such procedures as appropriate.

Postnatal ward

There was a designated medication preparation area within a clean utility room as appropriate and medication trays were cleaned after each use. A clinical hand wash

sink was available in this room but alcohol hand rub was not available at the time of inspection. Alcohol hand rub should be available for staff use in this area.

A multi-dose vial of insulin was labelled to indicate that it had been opened six weeks previously. If multi-dose vial use is unavoidable, multi-dose vials should be labelled with the date of opening and discarded within 28 days of opening or in accordance with manufacturer's instructions as indicated. Inspectors observed an unopened multi-dose vial which had a label to facilitate recording the patient name and a reminder that the vial should be discarded within four weeks of opening. Only the supplies required for a single blood glucose measurement were taken to the point of care as appropriate. Sharps that incorporated safety-engineered protection mechanisms were used for administration of medications by injection and infusion.

2.6.3 Other measures to prevent the transmission of infection

Hand hygiene

Cork University Maternity Hospital participated in national hand hygiene audits, results of which are published twice a year. Hand hygiene compliance results for Cork University Maternity Hospital were combined with Cork University Hospital and reported to the HSE at national level. These combined results showed that together these hospitals achieved 90% hand hygiene compliance for the period June/July 2017 which was in line with the HSE's desirable target of 90% hand hygiene compliance among staff. These reporting arrangements need to be reviewed as governance arrangements for Cork University Maternity Hospital are formalised.

Hand hygiene training in the hospital was mandatory for staff at induction and every two years thereafter in line with national hygiene guidelines.

Hand hygiene compliance audit results reviewed by inspectors showed that hand hygiene compliance audits were performed monthly in clinical areas and results were overseen by local area managers and the Director of Midwifery. Less than desirable levels of hand hygiene compliance in clinical areas were followed up by the Infection Prevention and Control Nurse and supplementary education was provided if indicated. Staff in the postnatal ward consistently achieved 100% compliance in hand hygiene compliance audits performed from August to November 2017. Staff in the Neonatal Unit achieved an average of 95% hand hygiene compliance in audits performed between January and July 2017.

Documentation reviewed showed that 86% of staff in the Neonatal Unit and 63% of staff in the postnatal ward were up-to-date with hand hygiene training at the time of inspection.

Prevention of water-borne infection

Inspectors were informed that a formal independent legionella risk assessment had been performed at the hospital in 2017 and that a draft report of this assessment had been produced. Hospital management informed inspectors that measures in relation to legionella prevention were implemented on a continual basis and these included:

- water temperature monitoring
- water tank cleaning
- automatic and manual flushing of water outlets
- cleaning and chlorination of shower heads.

Hospital management reported that routine water testing for legionella bacteria had not been carried out at the hospital for a number of years. Testing of water samples for legionella bacteria should be in line with recommendations of the risk assessment report when finalised. Documentation reviewed showed that a proposed plan for water sampling at the hospital had been drafted.

The hospital did not have a formalised structure to oversee water monitoring across the hospital at the time of inspection as hospital management was in the process of establishing governance arrangements in this regard.

National guidelines recommend that a legionella risk assessment is performed, reviewed on an annual basis and independently audited every two years. Risks identified in the completed risk assessment report should be addressed within recommended timeframe.

Inspectors noted that a number of ancillary rooms such as store rooms in the Neonatal Unit contained a clinical hand wash sink. Clinical hand wash sinks would not usually be required within clean supply storerooms. It is recommended that the presence of sinks in these rooms be reviewed and that appropriate measures are implemented to reduce the risk of proliferation of waterborne bacteria in this high risk clinical area.

2.7 Quality improvement initiatives

Hospital management were asked to provide inspectors with information about any quality improvement initiatives or new measures that had been implemented in relation to the prevention and control of infection at the hospital. Efforts to enhance the prevention and control of healthcare-associated infection at the hospital included the following initiative:

- the hospital had participated in a survey of caesarean section surgical site infection among patients using a new surgical wound dressing. A new dressing had been introduced at the hospital following this study.

2.8 Progress since the previous HIQA inspection

Cork University Hospital had developed quality improvement plans in relation to the prevention and control of healthcare-associated infection and hygiene following the last HIQA inspection in 2015. This was prior to governance reconfiguration at Cork University Maternity Hospital. Cork University Maternity Hospital did not have a quality improvement plan for the maternity service.

3. Conclusion

At the time of this inspection Cork University Maternity Hospital did not have formalised governance arrangements for the prevention and control of healthcare-associated infection. Inspectors were informed that revised governance structures were being formalised following more recent changes in hospital management arrangements. It was anticipated that these arrangements would be formalised by the end of February 2018.

The hospital should expand local monitoring arrangements to provide effective oversight to the Executive Management Team in relation to the prevention and control of healthcare-associated infection at Cork University Maternity Hospital.

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

There was a suite of up-to-date infection prevention and control guidelines and regular education sessions were offered to staff in relation to hand hygiene and infection prevention and control.

Staff who spoke with inspectors in both of the clinical areas inspected were able to describe recommended practice in relation to giving injections safely.

The hospital had systems in place to identify and manage patients with transmissible infection and had appropriate facilities in which to isolate patients if required. There was good local ownership in relation to standards of hygiene and maintenance. The hospital was a new build ten years ago and the infrastructure, layout, finishes, space and light in the clinical areas inspected readily facilitated cleaning.

Inspectors found that Cork University Maternity Hospital and Cork University Hospital achieved a combined score of 90% hand hygiene compliance in the national hand hygiene audit in May 2017 which was in line with the HSE's desirable target of 90% hand hygiene compliance among staff. Staff in the postnatal ward consistently achieved 100% compliance in hand hygiene compliance audits performed from August to November 2017. Staff in the Neonatal Unit achieved an average of 95% hand hygiene compliance in audits performed between January and July 2017.

Overall, the environment in the areas inspected was visibly clean and well maintained and patient equipment was visibly clean with few exceptions.

Care bundles in relation to intravascular and urinary catheters had been implemented at the hospital. There were strict local policies and good clinical supports in place in relation to the insertion and management of intravascular devices in the Neonatal Unit. Audit of these should be expanded across all relevant inpatient areas. It is acknowledged that the hospital had recently implemented the

national electronic healthcare record for maternal and newborn care which could potentially facilitate some aspects of care bundle audit.

Prospective surveillance of surgical site infection was not performed at the hospital, this should be reviewed and developed going forward.

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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 multidrug-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,

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