



**Health
Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Report of the unannounced inspection at Cavan & Monaghan 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: 15 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 Cavan & Monaghan Hospital which is located across two sites; one in Cavan (Cavan General Hospital) and one in Monaghan (Monaghan Hospital). The inspection was carried out by Authorised Persons from HIQA; Aileen O' Brien, Noreen Flannelly Kinsella and Emma Cooke. The inspection was carried out on 15 November 2017 between 09:30hrs and 18:00hrs.

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 Renal Dialysis Unit in Cavan General Hospital
- a rehabilitation/step down ward in Monaghan Hospital

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)
- Prevention of aspergillosis during dust-generating building, renovation and maintenance works (Section 2.6.3)

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 Cavan & Monaghan Hospital

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

Cavan & Monaghan Hospital is located across two sites in the towns of Cavan and Monaghan. It is a statutory hospital owned and managed by the Health Service Executive (HSE) and is part of the Royal College of Surgeons in Ireland (RCSI) Hospital Group.

The General Manager at Cavan & Monaghan Hospital held overall accountability and responsibility for the prevention and control of healthcare-associated infection at the hospital. From an operational management perspective a site manager in the Monaghan site reported to the General Manager of Cavan & Monaghan Hospital who was based in Cavan.

Inspectors found that the Infection Prevention and Control Team at the hospital was insufficiently resourced as a number of key team members had vacated positions in both 2016 and 2017. The infection prevention and control service was led by one whole time equivalent (WTE)* consultant microbiologist who was primarily based onsite in Cavan. Two WTE infection prevention and control nurse positions had been vacated in August and October 2017. One WTE surveillance scientist position was vacated in January 2016, and although backfill was provided for the first nine months the position was again vacant from October 2016 to November 2017. The Antimicrobial Pharmacist position was vacated in January 2016 and some of this work was allocated to other hospital pharmacy staff. This situation has affected the delivery of what was a well established infection prevention and control programme at the hospital.

In order to address these deficiencies, in September 2017, hospital management had appointed one WTE general nurse at clinical nurse manager grade to the team and had temporarily appointed a second nurse at clinical nurse manager grade to undertake some infection surveillance duties on a part-time basis across both sites.

* 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.

It was identified to inspectors that these nurses did not have prior experience or post-graduate training in the speciality of infection prevention and control. Hospital management had recruited a surveillance scientist who had taken up position on the week of this inspection. In addition, hospital management was in the process of recruiting an infection control nurse manager position and an antimicrobial pharmacist. Agreed timeframes for commencement of staff in these roles could not be confirmed at the time of inspection. Hospital management reported that a draft three year infection prevention and control plan was in place to support the delivery of the infection prevention and control service at the hospital.

Consultant microbiologist advice was available to clinical staff on a 24-hours basis seven-days-a-week. This was provided on a rotational basis by the consultant microbiologist at Cavan & Monaghan Hospital and by a locum consultant microbiologist who was familiar with the hospital but did not work onsite. A need for an additional consultant microbiologist resource at the hospital had been identified by hospital management over two years previously. Hospital management told inspectors that they were in the process of applying for funding for this resource and therefore there was no agreed date by which this would be in place.

Hospital management need to ensure that new and existing infection prevention and control team members have sufficient managerial, specialist and educational supports to facilitate the continuation of the established infection prevention programme at the hospital. Cavan & Monaghan Hospital should be supported through the RCSI hospital group structure in this regard. Deficiencies in respect of infection prevention and control team and clinical microbiology resources and supports need to be addressed in the short term.

The established governance structure was that the Infection Prevention and Control Team reported to the Cavan & Monaghan Hospital Infection Prevention and Control Steering Committee which was chaired by the General Manager. The Infection Prevention and Control Steering Committee reported to the Quality and Safety Executive Committee. The Quality and Safety Executive Committee reported to the Executive Management Committee which was also chaired by the General Manager. The General Manager reported to the Chief Executive Officer of the RCSI Hospital Group.

The Infection Prevention and Control Steering Committee's terms of reference outlined its aim which was to provide oversight, direction and support to the groups and committees which reported to it. These included the Infection Prevention and Control Team, the Hygiene Committee, the Decontamination Committee, the Environmental Committee, the Hand Hygiene Working Group and the Care Bundle Group. An organisational diagram outlining these structures also included a line of communication between the Infection Prevention and Control Steering Committee

and the Antimicrobial Stewardship Team which reported to the Drugs and Therapeutics Committee. The hospital's organisational diagrams should be updated to reflect these arrangements. Each committee or group had defined objectives which were outlined in an infection prevention and control annual operational plan for 2017.

The Quality and Safety Executive Committee was chaired by a clinical director. Membership of this committee also included the General Manager at Cavan & Monaghan Hospital and representatives from nursing management, clinical services and quality and risk. Documentation reviewed by inspectors showed that this committee had met four times at irregular intervals in 2017. Meeting frequency was not specified in committee terms of reference. Exception reports produced by the Infection Prevention and Control Steering Committee were presented at these meetings. Issues brought to the committee included staff hand hygiene compliance rates, additional resources required for Carbapenemase-producing *Enterobacteriaceae*[†] (CPE) screening and infection prevention control nurse staffing resources. Regular reports of performance in respect of the prevention and control of healthcare-associated infection were not included even though the Infection Prevention and Control Team at the hospital prior to August 2017 had monitored a number of process measures and regularly recorded issues of concern in the hospital incident management system.

Documentation reviewed by inspectors showed that prior to August 2017 the Infection Prevention and Control Team had a well established infection prevention and control programme. The team's workload was overseen at weekly team meetings and included 'alert' organism and 'alert' condition surveillance[‡], outbreak management, provision of advice to and communication with staff, risk identification, staff education and policy development. Advice was also provided in respect of new equipment, construction and renovation activities and water management where there were infection prevention and control implications. The team regularly evaluated the implementation of infection prevention and control policies.

Monitoring and evaluation

Monitoring arrangements at executive management level at the time of this inspection did not provide assurance of clear effective oversight of the prevention and control of healthcare-associated infection at Cavan & Monaghan Hospital.

[†] Bacteria which can cause infections that are difficult to treat because of high levels of resistance to antimicrobials.

[‡] 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.

The hospital reported the percentage compliance of hospital staff with the World Health Organisation's five moments of hand hygiene in line with HSE requirements. However, two other national key performance indicators in relation to *Clostridium difficile* infection and *Staphylococcus aureus* bloodstream infection were not monitored or reported to the HSE from September 2016 to August 2017. This was attributed to deficiencies in surveillance scientist resources at the hospital. This finding was of concern to inspectors as the rate of new *Clostridium difficile* infection cases at the hospital had been higher than desirable in the past and this had been identified as a risk by hospital management and placed on their corporate risk register. Documentation reviewed showed that the Infection Prevention and Control Team followed up all cases of *Clostridium difficile* infection and performed detailed analyses of new cases.

Episodes of healthcare-associated infection diagnosed at the hospital were reported as clinical incidents on the hospital incident management system by the Infection Prevention and Control Team. The team also formally reported infection control issues identified at the hospital such as episodes of healthcare-associated infection, lack of availability of isolation rooms or non compliance with local policies. This information had been trended and presented in a report. The Infection Prevention and Control Team also reviewed complaints received in relation to infection prevention and control at the hospital.

At local level there was ongoing surveillance of 'alert' organisms and 'alert' conditions, monitoring for clusters or outbreaks of infection and measurement of antimicrobial usage. The hospital also monitored implementation of antimicrobial prescribing guidelines, alcohol hand rub consumption and influenza vaccine uptake among staff. The hospital had not contributed microbiological surveillance data to the European Antimicrobial Resistance Surveillance Network (EARS-Net)[§] since October 2016 again due to resource deficiencies.

Cavan & Monaghan Hospital had participated in a national point prevalence survey of hospital-acquired infections and antimicrobial use which was part of a European-wide point prevalence study in 2017.

Environmental hygiene standards were monitored at the hospital. A defined unannounced corporate hygiene walkabout audit schedule was in place and audits were carried out twice monthly. Hygiene audit results were trended for each clinical area and quality improvement plans were developed in response to deficiencies identified. Findings in this regard will be discussed in section 2.6 of this report.

[§] 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*.

Hand hygiene training uptake was monitored by the Infection Prevention and Control Steering Committee. Surveillance in respect of central venous catheter and arteriovenous fistula-related infection was performed in the Renal Dialysis Unit but results of this surveillance did not appear to be fed back to the Infection Prevention and Control Team or hospital management.

Overall, inspectors found that governance arrangements at the hospital could be strengthened to ensure that information produced through local monitoring is used to identify potential risks and opportunities for improvement in relation to the prevention and control of healthcare-associated infection.

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.

Risks which impacted on the prevention and control of healthcare-associated infection in the hospital's corporate risk register** included the following:

- inadequate isolation facilities
- unfilled staff positions due to recruitment, absenteeism and availability of staff
- infrastructural deficiencies in the Emergency Department
- need to upgrade some operating theatre ventilation systems
- infrastructural deficiencies in the central decontamination and endoscopy units.

Hospital management informed inspectors that high risks had been escalated to the RCSI Hospital Group. To address the identified risks, the hospital had made a submission for capital funding for a hospital extension to increase isolation capacity and to create a new decontamination unit at the Cavan site. Interim measures had been approved in the form of minor upgrade works to the existing decontamination unit. Additional control measures in place in response to the risks identified included the implementation of an isolation prioritisation policy to assist staff with decision-making around patient placement.

The Infection Prevention and Control Team had drafted a comprehensive infection prevention and control risk register that highlighted risks and deficiencies in their ability to effectively implement the infection prevention and control programme. This is good practice and is in line with the National Standards. While it was reported that this register was in draft, risks identified were discussed at infection prevention and control steering committee meetings. This information should be used to prioritise the management of risks identified. Other issues in relation to infection prevention and control which were outlined to inspectors included:

** A risk register is a database of assessed risks that face any organisation at any one time. Always changing to reflect the dynamic nature of risks and the organisation's management of them, its purpose is to help hospital managers prioritise available resources to minimise risk and target improvements to best effect. The risk register provides management with a high level overview of the hospital's risk status at a particular point in time and becomes an active tool for the monitoring of actions to be taken to mitigate risk.

- insufficient infection prevention and control and consultant microbiologist staffing resources
- hand hygiene compliance rates below national targets
- high antimicrobial consumption rates.

These risks did not feature on the corporate risk register. Documentation reviewed by inspectors showed that risks in relation to a lack of infection prevention and control staffing resources were discussed at the Quality and Safety Executive Committee meeting in February 2017. The surveillance scientist position at the hospital had been recently filled.

One of the key preventative measures for *Clostridium difficile* infection is appropriate antimicrobial prescribing. An audit of antimicrobial prescribing at the hospital in 2016 showed that local antimicrobial prescribing guidelines were not consistently implemented by prescribers. A lack of clinical pharmacy resources at ward level to monitor antimicrobial consumption and a lack of appropriate isolation facilities were identified as contributing factors to outbreaks of infection at the hospital. It is essential that the antimicrobial stewardship programme at the hospital is sufficiently resourced and that antimicrobial stewardship initiatives are fully supported by the senior management team and clinical leaders at the hospital.

The corporate risk register should be revised to reflect current risks in relation to the prevention and control of healthcare-associated infection at the hospital.

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 in both hard copy and electronic format in clinical areas. It was practice that hospital policies relevant to infection prevention and control were approved by the Infection Prevention and Control Steering Committee and ratified by the Consultant Microbiologist.

The hospital had an infection prevention and control manual in place which included standard precautions, transmission-based precautions and management and screening of patients in relation to multidrug-resistant organisms. The manual had been approved in 2011. Current HSE policy states that hospital policies, procedures and guidelines should be reviewed every three years.³ It was reported to inspectors that the manual had been reviewed and was awaiting approval.

Inspectors noted that staff in the clinical areas inspected had some difficulties in accessing the infection prevention and control manual on the hospital's electronic system. Staff also had access to older regional infection control guidelines which were stored electronically. This should be reviewed so that staff only have access to the latest version of locally approved infection prevention and control policies. The Infection Prevention and Control Team had identified the need for an electronic document management system at the hospital.

Policies in relation to outbreak management, *Clostridium difficile* infection and a draft root cause analysis template for new cases of infection were developed and implemented in 2017. Plans to develop and implement a surgical site infection prevention policy for caesarean section were also outlined in the hospital's quality improvement plan.

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 guidelines recommend that hand hygiene training should be mandatory for relevant staff at induction and every two years thereafter.⁴

Hand hygiene education was mandatory for staff at Cavan & Monaghan Hospital every year. Documentation provided to inspectors showed that 71% of nursing and midwifery staff and 55% of medical staff were up-to-date with hand hygiene training at the Cavan site in April 2017. At the Monaghan site 94% of nursing staff and 71% of ancillary staff were up-to-date with hand hygiene training in June 2017.

It was reported that hand hygiene training had been delivered by the Infection Prevention and Control Team and also by a number of hospital staff who had been trained to deliver practical training in relation to hand hygiene technique. In addition, staff had access to a HSE eLearning programme for hand hygiene.

Prevention and control of healthcare-associated infection core competency training sessions were mandatory for all nursing and midwifery staff and healthcare assistants every two years. This education was comprehensive and aligned to the national framework for such knowledge and skills⁵ and content included aseptic non-touch technique and standard and transmission-based precautions. Education sessions had been scheduled monthly by the Infection Prevention and Control Team.

A number of nursing and ancillary staff had attended this training at the Cavan site in 2016 and 2017, however, overall percentages of staff attendance were not provided to inspectors. Documentation reviewed showed that 83% of nursing staff and 50% of ancillary staff at the Monaghan site received infection prevention and control training in 2017. All staff in the Renal Dialysis Unit were up-to-date with infection prevention and control training. Attendance of staff at education sessions should be overseen at management level at the hospital.

Minutes of infection prevention and control steering committee meetings reviewed by inspectors outlined that as of May 2017 it was agreed that medical staff and allied health and social care professionals should attend training in relation to infection prevention and control.

The Infection Prevention and Control Team had developed an information leaflet about preventing the spread of infection for patients, and had provided information

for staff and people attending the hospital through information leaflets, infection prevention and control newsletters and hand hygiene awareness days.

In view of recent changes to staffing arrangements, the hospital should implement any additional supports needed to ensure staff continue to receive mandatory infection prevention and control training.

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.

Inspectors looked at aspects of the prevention of invasive device-related infection in the Renal Dialysis Unit and in the rehabilitation/step down ward. A care bundle committee had been established to provide oversight and guidance for the implementation of care bundles at the hospital.

Care bundles for peripheral vascular catheters and urinary catheters had been introduced at the Cavan site. Relative to the patient profile at the Monaghan site, urinary catheter care bundles had been introduced at this site also.

Audit results in the rehabilitation/step down ward inspected at the Monaghan site showed compliance of 94% and 98% respectively with urinary catheter care bundle implementation for January to February 2017. In the Renal Dialysis Unit staff used central venous catheter visual exit site score tools that featured essential components of care bundle elements to monitor intravascular devices on a daily basis.

The nurse practice development unit at Cavan & Monaghan Hospital carried out monthly audits of peripheral vascular catheter care bundle implementation and results were centrally recorded. A process was in place at the Cavan site to feedback care bundle audit results to clinical area ward managers to facilitate development of quality improvement plans if indicated. However, this process did not appear to be in place at the Monaghan site due to the relatively low usage of urinary catheter care bundles. Documentation was not provided to indicate that care bundle audit results were centrally trended to provide oversight of consistency of care bundle implementation throughout the hospital. This should be progressed.

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

Documentation reviewed showed that ventilator-associated pneumonia care bundles had recently been introduced in the Intensive Care Unit and that associated guidelines were being reviewed.

Monthly nursing metrics recorded at the hospital included some elements of urinary catheter care bundles. Nursing metric results were displayed on notice boards in main corridor in both clinical areas inspected.

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}

Surveillance of these types of healthcare-associated infection was not performed at Cavan & Monaghan Hospital. HIQA acknowledges that this is currently the case in many public hospitals of similar size and activity levels. Implementation of a healthcare-associated infection surveillance programme requires dedicated resources and expertise. Hospital management informed inspectors that the feasibility of introducing targeted surveillance of caesarean section surgical site infection was being explored at the time of inspection. The hospital did not have a policy in relation to surgical site infection prevention other than local prescribing guidelines for surgical antimicrobial prophylaxis. Such a policy should be developed based on best practice guidelines.^{17,18,19,20}

Inspectors were informed that prospective surveillance of both catheter-related and arteriovenous fistula-related bloodstream infection was performed by staff in the Renal Dialysis Unit which is good practice. However, surveillance results generated from this monitoring should be overseen at senior management level and this surveillance should include collaboration with the Consultant Microbiologist and the Infection Prevention and Control Team.

2.6 Systems to prevent and manage healthcare-associated infections and multi drug 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.

Inspectors looked at systems, structures and processes in place at Cavan & Monaghan Hospital to detect, prevent and respond to healthcare-associated infections and multidrug-resistant organisms in line with national guidelines.

Hospital isolation facilities

There were 255 hospital beds at the Cavan site of which 221 beds were occupied on the day of inspection. The Cavan site had 19 single rooms and four isolation rooms with specialised ventilation. On the day of inspection, 18 patients at the Cavan site required isolation precautions, 10 patients were isolated in single rooms and eight patients were cohorted^{††} in bays in different wards. Hospital management stated that they were only able to isolate approximately one third of patients requiring isolation in single rooms. Patients with suspected or confirmed transmissible infection or patients colonised with multidrug-resistant organisms should be placed in a suitable isolation room, single room or cohort area, in line with national guidelines.^{21,22}

There were 49 patient beds at the Monaghan site which included 26 inpatient and 23 day case beds. The hospital had four single rooms with en-suite facilities. On the day of inspection one inpatient who required isolation precautions was appropriately isolated in a single room.

The hospital had devised patient notification stickers that were inserted into patient healthcare records to outline that the patient had been informed of colonisation or infection with alert organisms by their primary clinical team.

2.6.1 Preventing the spread of antimicrobial resistant organisms

Patients were assessed on admission to determine if they had symptoms of infection or if they had a history of being colonised with a transmissible microorganism. The

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

hospital had a computerised system to identify patients previously colonised or infected with antimicrobial-resistant bacteria.

The draft infection prevention and control risk register which was reviewed by inspectors showed that the infection prevention and control information management system used to track patients during their inpatient stay was not accessible in every clinical area at the Cavan site. This should be addressed.

Measures to prevent the spread of antimicrobial-resistant organisms were reviewed in the clinical areas inspected. Limited screening was performed in relation to CPE at the Cavan site. Inspectors were informed that additional resources were required to fully implement the most recent national guidelines in this regard. Patients attending the Renal Dialysis Unit were screened every three months for Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-resistant *Enterococci*. In Monaghan, inspectors were informed that patients were screened for antimicrobial resistant organisms in line with national guidelines and in respect of the specific patient cohort attending the Monaghan site.

Renal Dialysis Unit at Cavan General Hospital

The Renal Dialysis Unit was fully self-contained and comprised 18 dialysis stations, which were arranged in three open plan areas comprising six, three and eight dialysis stations. In addition there was one single isolation room with an anteroom and ensuite facilities. Due to increased demands for renal dialysis services, eight additional dialysis stations were retrospectively added since the unit first opened in 1994. Isolation facilities in the unit were limited to one single room. This needs to be considered in site development plans going forward and future developments should be in line with international best practice guidelines for renal dialysis units.²³

Overall patient equipment and environmental surfaces inspected in the Renal Dialysis Unit were generally clean with some exceptions. Some opportunities for improvement were identified in relation to the cleaning of a commode and portable toilet seats within patient's toilets and of clinical hand wash sinks. Cleaning frequencies should be in line with national guidelines for high risk clinical areas. Quarterly environmental hygiene audits performed in the Renal Dialysis Unit showed that there was 88% compliance with desirable standards in July and August 2017.

It was reported that patients used the clinical hand wash sinks in the open plan dialysis unit to cleanse the skin over the arteriovenous fistula site prior to dialysis. It is recommended that there are designated hand hygiene facilities for patient use. Inspectors were informed that there were three patient toilets in the unit with hand washing facilities.

Opportunities for improvement were identified in relation to storage and location of equipment, furnishing and supplies within the unit. There were insufficient appropriate storage facilities for designated patient equipment and for patient's personal belongings including wheelchairs and outer coats. Similarly there was limited space for the storage and location of computer terminals, medical supplies and stationery. The location of additional furnishings and storage facilities which had been fitted or placed in patient treatment areas was less than ideal from an infection prevention and control perspective. A mobile cart with open top drawers was located within the patient zone at a dialysis station. Inspectors also found that a fixed blood analyser was located in the open plan treatment area and that a machine for processing serum samples for transport was located in a patient equipment store room. Cupboards containing sterile supplies were inappropriately located in the anteroom of the isolation room.

Infection prevention and control advice should be sought regarding plans to reconfigure or change the infrastructure of the Renal Dialysis Unit. Renal Dialysis Units should be designed and configured in line with international best practice guidelines for such facilities particularly in light of the prevalence of colonisation of patients with antimicrobial-resistant organisms in this cohort of patients.

Rehabilitation/step down ward at Monaghan Hospital

The rehabilitation/stepdown ward comprised two clinical areas located on both the ground floor and first floor at the hospital. The ward could accommodate 26 patients in total. Each clinical area comprised 13 beds which comprised two single rooms with en-suite facilities of which one had specialised ventilation in each area. The remaining beds were located in two-bedded, three-bedded and four-bedded rooms. A number of multi-occupancy rooms had en-suite facilities and hand washing facilities for staff.

Overall the patient environment and patient equipment inspected was generally clean with few exceptions. Brown staining was present on five portable toilet seats in patient's toilets. This was highlighted at the time of inspection.

The hospital had a system in place to identify patient equipment that had been cleaned however this system had not been consistently applied at the time of inspection.

Cleaning specifications were in place which clearly identified environmental surfaces and patient equipment to be cleaned, the required frequency of cleaning and the staff discipline responsible for the cleaning in line with national cleaning guidelines.

During this inspection, HIQA found that there was lack of guidance for staff involved in the cleaning of the healthcare environment in relation to the use of cleaning agents. This information should be included in local cleaning specifications.

Hospital hygiene committee meetings were held every two months at the Monaghan site and meetings were chaired by the hospital site manager. Environmental hygiene audits were performed every two months at the hospital and results of local environmental hygiene audits performed in the rehabilitation/step down ward inspected showed 94% compliance with desirable standards in March and April 2017. Patient equipment hygiene audits for the same period showed 100% compliance with desirable standards.

2.6.2 Safe injection practice

Inspectors looked at implementation of aspects of standard precautions to assess safe injection practice in the Renal Dialysis Unit. Staff who spoke with inspectors were able to describe recommended practice in relation to giving injections safely.

Inspectors were informed that vials containing a specific type of thrombolytic medication were used more than once. A local policy in relation to the preparation and management of this medication had been developed by staff in the unit. It is recommended that manufacturer's instructions are followed in relation to medication usage.

Opportunities for improvement were identified in relation to the location and storage of hand held and fixed blood analysers and equipment used in the processing of blood samples in the unit. Hand held blood analysers were located on the designated medication preparation worktop. It is recommended that this equipment is not stored on the same surfaces upon which medication for injection is handled.

2.6.3 Prevention of invasive aspergillosis during construction work

There is potential risk to people with impaired immune systems of acquiring invasive aspergillosis^{§§} during construction or renovation activities in hospitals, therefore specific controls need to be put in place to prevent such occurrences.

On the day of inspection, measures to reduce the risk of invasive aspergillosis during renovation works were reviewed. A hospital project at the Monaghan site that involved external repairs of a roof and walls on one side of the hospital was in progress at the time of inspection. An inspector was informed that the Infection

^{§§} Healthcare-associated invasive aspergillosis is an infection that can be potentially life threatening in patients with impaired immune systems. It is caused by fungal spores that may be transmitted in dust created by excavation and building work.

Prevention and Control Team undertook a risk assessment prior to commencement of these works and provided advice in relation to control measures. A quality improvement plan reviewed showed that infection prevention and control recommendations had been completed prior to commencement of the works.

Documentation reviewed showed that control measures had been clearly identified. The hospital site manager was satisfied that recommended environmental controls were in place in line with national guidelines. Control measures in place included dust barriers, and enhanced cleaning as required. All windows in the hospital facing the construction area were closed and signage was in place to communicate this requirement.

The Infection Prevention and Control Team provided education for hospital staff and external contractors in relation to aspergillosis prevention. The hospital site manager and the team communicated with hospital staff throughout this project.

2.6.4 Other measures to prevent the transmission of infection

Hand hygiene

Cavan & Monaghan Hospital participates in the national hand hygiene audits, results of which are published twice a year. The hospital scored 80% compliance in the national hand hygiene audit in June/July 2017. In both 2016 and 2017 the hospital failed to achieve the HSE national hand hygiene target of 90%. This finding was identified during a previous HIQA inspection.²⁴

To address the hospital's performance results in relation to hand hygiene compliance the hospital had set up a hand hygiene compliance group. The hospital had revised the approach to improving hand hygiene compliance in June 2017 and had changed the focus from audit to staff education. Measures to improve hand hygiene compliance at the hospital should be led and supported by the senior management team and by clinical leaders at the hospital.

Hand hygiene audits were undertaken every two months in Cavan & Monaghan Hospital by clinical nurse managers and staff who were trained hand hygiene auditors. Staff in the Renal Dialysis Unit achieved 90% hand hygiene compliance in July 2017 and staff in the rehabilitation/step down ward achieved 100% hand hygiene compliance in October 2017.

The hospital needs to continue to build on work to date to ensure that good hand hygiene practice is improved and national targets are achieved.

Prevention of water-borne infection

A formal legionella site risk assessment had been performed for both hospital sites in late 2015 and a report was issued in January 2016. Hospital management had reported that recommendations were being addressed on a phased basis. Issues that could not be addressed locally had been escalated to the Cavan & Monaghan Hospital Environmental Monitoring Committee.

Hospital management reported that internal control and preventative measures in relation to water-borne infection were implemented in the hospital including regular outlet flushing, quarterly microbiological testing of water and annual disinfection of water tanks. Inspectors were informed that a minor capital application had been made to support the installation of a water dosing system at the Monaghan site. Governance and oversight in relation to water-borne infection in the hospital was the responsibility of the Cavan & Monaghan Hospital Environmental Monitoring Committee.

Outbreak management

Documentation reviewed by inspectors showed that there had been a few outbreaks of infection at the Cavan site in 2016 and 2017. Documentation provided to inspectors outlined that outbreak control teams were convened for two of three outbreaks that occurred. The Infection Prevention and Control Team produced quality improvement plans after an outbreak to identify learning opportunities and to make recommendations to management. Minutes of outbreak control team meetings outlined that information from multiple sources such as environmental hygiene audits, hand hygiene audits, microbiology audits, staffing levels and hospital activity were used to inform the control measures required to prevent further outbreaks. This is good practice and shows that the team identified potential risks and made recommendations to mitigate these risks. Summary outbreak reports were not produced due to competing demands. Prompt establishment of an outbreak control team that is responsible for controlling the spread of infection and coordinating the investigation of and response to an outbreak is essential.

Central location for laundering cleaning textiles at Monaghan Hospital

An inspector visited a central location for laundering mop-heads used for cleaning at the hospital on the day of inspection. At the time of inspection the floor in this area was wet following a leak from a washing machine. In the absence of an onsite hygiene supervisor, processes and procedures in relation to laundering textiles were not supervised at the hospital. HIQA was informed by staff that leaks from the washing machine were a regular occurrence; such incidents should have prompted a review of processes in relation to laundering cleaning textiles at the hospital. Hospital management reported that the machine had been serviced twice a year.

Additionally, there was a failure to separate clean and dirty activities in this area which posed a risk of contamination of clean textiles as some clean textiles were stored on a window ledge with unclean equipment. Multiple surfaces and equipment was either dusty or unclean at this location.

Washing machines and driers should be used and maintained according to manufacturer's instructions and national guidelines to ensure cleaning textiles are disinfected appropriately to prevent cross infection. Cleaning textiles should be laundered in a facility that meets hospital laundry specifications with functional separation of the clean and dirty phases of the laundering process. Appropriate supervision and management arrangements should be in place. The hospital site manager reported that the issue in relation to the leaking washing machine would be immediately addressed. It is recommended that the management of laundry services and related assurance arrangements should be revised and improved.

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 both hospital sites. Efforts to enhance the prevention and control of healthcare-associated infection at the hospital included the following initiatives:

- A hand hygiene awareness day was held in May 2016 with information stands and demonstrations of micro-bacterial growth from various surfaces including hands.
- Cavan & Monaghan Hospital participated in the Royal College of Physicians Ireland 'start smart' quality improvement programme which was based on empiric antimicrobial prescribing for lower respiratory tract infections in patients presenting from the community. Preliminary data has been collected and an improvement plan has been agreed. The team presented a poster on its work at the national quality improvement programme's launch of the national gentamicin guidelines in November 2016.
- An environmental hygiene project had been set up in July 2017 with the aim of developing environmental cleaning and decontamination practices, work schedules, audits and ensuring competence for all staff with responsibility for hygiene duties.
- Environmental corporate walk-arounds were undertaken by the senior management team and the Infection Prevention and Control Team bimonthly at both sites.
- Hospital management at the Monaghan site wore badges to encourage staff to avail of influenza vaccination.

2.8 Progress since the previous HIQA inspection

The hospital had indicated in its quality improvement plan^{25 26} the requirement to increase hand hygiene compliance through the establishment of a hand hygiene sub-group and trained hand hygiene champions and hand hygiene auditors. While the majority of these actions had been completed, improvements in hand hygiene compliance need to be further progressed at the hospital.

3. Conclusion

Overall, inspectors found that the recent depletion of resources in respect of the Infection Prevention and Control Team at Cavan & Monaghan Hospital had led to a number of gaps in the provision of the infection prevention and control service which were of concern given the size of the hospital and the complexity of services provided. Specifically, deficiencies were identified in respect of consultant microbiologist resources and infection control nurse staffing levels and skill mix. Infection prevention and control staffing deficiencies need to be addressed to provide assurance that a sufficient infection prevention and control service is being delivered at Cavan & Monaghan Hospital.

Reporting and monitoring arrangements at executive management level described in this report did not provide assurance of clear effective oversight of the prevention and control of healthcare-associated infection. Hospital management must implement the necessary measures to support the monitoring and evaluation of the hospital's infection prevention and control programme. In addition, hospital management should expand their oversight of healthcare-associated infection monitoring and use the information available to address ongoing identified risks such as *Clostridium difficile* infection and hand hygiene compliance results. HIQA notes that the rates of *Clostridium difficile* infection have only improved at brief intervals since HIQA's last inspection in 2015 and overall have remained above the national target. An integrated approach between staff with clinical expertise and staff with corporate responsibility is essential to address infection prevention and control risks.

The hospital should progress the implementation of care bundles across the hospital in line with national guidelines. Care bundles should be consistently implemented in line with evidence-based best practice guidelines as full compliance with all essential care bundle components has shown improved patient outcomes.

Overall HIQA found there had been no significant improvement in the national hand hygiene compliance results since the last inspection in 2015 at Cavan and Monaghan Hospital. Notwithstanding the actions implemented by Cavan & Monaghan Hospital to address hand hygiene compliance and improved local hand hygiene compliance results for the Monaghan site, the hospital continues to fall below national hand hygiene compliance targets. Hand hygiene is recognised internationally as the single most important preventative measure in the transmission of healthcare-associated infections in healthcare services. The hospital needs to continue to build on work to date to ensure that good hand hygiene practice is improved and national targets are achieved.

Overall, the patient environment and equipment in the clinical areas inspected were clean with some exceptions. Work was in progress to improve the hospital infrastructure which included plans to extend Cavan General Hospital and increase isolation room capacity.

From here, it is recommended that efforts to re-establish and develop the infection prevention and control programme at the hospital are expedited. Improvement in the delivery of an effective infection prevention and control programme at the hospital will require improved leadership, governance and management both at senior management level, and within the infection prevention and control team.

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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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