



**Health
Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Report of the unannounced inspection at South Tipperary General Hospital, Clonmel.

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: 29 June 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.
- The 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 invasive 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 South Tipperary General Hospital by Authorised Persons from HIQA; Noreen Flannelly-Kinsella, Aileen O'Brien and Shane Grogan. The inspection was carried out on 29 June 2017 between 09:30hrs and 16:30hrs.

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:

- A medical ward
- The Intensive Care Unit

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)
- *Clostridium difficile* infection prevention and control (Section 2.6.2)
- Safe injection practice (Section 2.6.3)
- Prevention of aspergillosis during dust-generating building, renovation and maintenance works (Section 2.6.4)

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 South Tipperary General 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

South Tipperary General Hospital is part of the South/South West Hospital Group governance structure.* The hospital is owned and managed by the Health Service Executive (HSE).

HIQA found that governance arrangements in South Tipperary General Hospital had been strengthened following the recent appointment of key senior personnel to the Executive Management Team. Overall there were clear lines of accountability and responsibility for the prevention and control of healthcare-associated infection in the hospital.

Notwithstanding the level of progress made, governance arrangements in relation to legacy structures in the HSE South East region were unclear. Members of the Infection Prevention and Control Team in South Tipperary General Hospital were members of the Regional South East Infection Prevention and Control Team which met on a monthly basis for strategic planning and policy development. Inspectors were informed that this team membership included representatives from four hospitals from two different hospital groups and one Community Health Organisation. This arrangement originated from previous HSE South East Regional structures and remained unchanged when the South/South West governance structure was formed.

There was a lack of clarity regarding the formal relationship between this team and the governance structure of South Tipperary General Hospital. Moreover there were

* South/South West Hospital Group comprises 10 hospitals and is led by a Group Chief Executive Officer with delegated authority to manage statutory hospitals within the group under the Health Act 2004.

no formalised working arrangements between South Tipperary General Hospital Infection Prevention and Control Team and Infection Prevention and Control Committee members, and their counterparts in other hospitals in the South/South West Hospital Group.

Recent communication received by the hospital from the hospital group Clinical Director, and seen by inspectors, indicated that the regional structure would be replaced by a South/South West Hospital Group Healthcare-Associated Infection Governance Committee. This is a positive development and would enable greater formal collaboration and cooperation between hospitals in the South/South West Hospital Group. This arrangement would also facilitate effective oversight at hospital group level in relation to the prevention and control of healthcare-associated infection.

The Infection Prevention and Control Team in South Tipperary General Hospital met weekly and reported into the hospital Infection Prevention and Control Committee on a quarterly basis. Committee membership included multidisciplinary and executive management team representation, however maternity services were not represented. The committee was chaired by the General Manager and had defined terms of reference detailing the frequency and quorum for committee meetings. Documentation reviewed showed that meetings followed a standardised agenda which included feedback and consideration of the following issues;

- Monitoring, audit and evaluation
- Surveillance and outbreak reports
- Antimicrobial stewardship
- Training and education
- Key performance indicators and quality improvement plans
- Infrastructure and facilities; construction and renovation activities
- Policy development and national guidance documents
- Decontamination, hygiene and environmental monitoring committees
- Staff health

Minutes of committee meetings reviewed showed overall good attendance at meetings by all members.

The Infection Prevention and Control Committee reported into the Quality Risk and Patient Safety Governance Group as did twenty other hospital committees. Previous monitoring work by HIQA identified that other similar sized hospitals have rationalised the number of hospital committees reporting into an oversight committee in order to strengthen governance arrangements.³

The Quality Risk and Patient Safety Governance Group which included the General Manager and an infection prevention and control clinical nurse specialist met

monthly. This committee reported into the hospital Executive Management Team which included the General Manager and the hospital group Chief Operations Officer. The General Manager as the person with overall accountability and responsibility for the hospital reported to the hospital group Chief Executive Officer in the South/South West Hospital Group at monthly hospital group performance meetings.

The infection prevention and control service

The infection prevention and control service was led by the Infection Prevention and Control Committee and was delivered by the Infection Prevention and Control Team. The team at South Tipperary General Hospital was led by a consultant microbiologist appointed to University Hospital Waterford. There was no formal contractual arrangement for the provision of infection prevention and control service in South Tipperary General Hospital. Inspectors were informed that the Consultant Microbiologist attended South Tipperary General Hospital in person one session each week (0.1 whole-time equivalent[†] hours) however this arrangement was dependent on other competing demands at University Hospital Waterford. It was reported that much support was provided on a good will basis. Twenty four hour clinical microbiology advice was available by telephone to hospital consultants in South Tipperary General Hospital and this was provided on a rotational basis by consultant microbiologists all based in University Hospital Waterford.

It is recommended that the South/South West Hospital Group reviews and formalises the number of hours that a Consultant Microbiologist is contracted to work at South Tipperary General Hospital given the size and complexity of services provided and in light of the importance of such a position from both leadership and expertise perspective around infection prevention and control.

Additionally, the Infection Prevention and Control Team comprised two whole-time equivalent (WTE) infection prevention and control clinical nurse specialists and 0.8 WTE antimicrobial stewardship pharmacist. The team was supported by one microbiology specialist registrar and two surveillance scientists based in University Hospital Waterford. Membership also included an administrative position for one day each week however cover was not provided for this position during leave.

The Infection Prevention and Control Team held weekly meetings and undertook daily visits to clinical areas in the hospital. The team also attended weekly antimicrobial stewardship rounds. An annual work plan was produced yearly and approved by the Infection Prevention and Control Committee. Additionally, the Infection Prevention and Control Team provided advice and support to other hospital

[†] 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.

committees in relation to risk management, medical equipment, renovation and construction projects and technical services.

Review of documentation and discussion with the Infection Prevention and Control Team showed that the teams' workload included attendance at a number of meetings including bed management, drugs and therapeutics, hospital hygiene, decontamination, environmental monitoring and nurse and clinical directorate management meetings.

Monitoring and evaluation

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

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

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

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

Microbiology services at South Tipperary General Hospital were provided by the microbiology laboratory at University Hospital Waterford. Surveillance data for South Tipperary General Hospital was compiled by surveillance scientists based in University Hospital Waterford. Access to laboratory reports were available electronically in South Tipperary General Hospital. Important multidrug resistant organisms were reported to the Infection Prevention and Control Clinical Nurse Specialists on an ongoing basis and significant results or clinically important organisms were phoned directly to the ward or relevant clinical staff in South Tipperary General Hospital by the Clinical Microbiologist in University Hospital Waterford.

Surveillance of alert organisms[‡] and alert conditions was carried out in South Tipperary General Hospital and a database was maintained by the Infection Prevention and Control Clinical Nurse Specialists in the hospital. Daily isolation lists were generated by the Infection Prevention and Control Team who also advised on patients requiring isolation. Monthly surveillance figures were provided to hospital management, surgical and medical directorates, and heads of department and ward managers. Standardised surveillance data was presented to the Infection Prevention and Control Committee on a quarterly basis.

It was noted that surveillance reports also provided 'best practice' guidance reminders for staff in relation to the management of healthcare-associated infection and multidrug-resistant bacteria.

Monthly surveillance reports contained a breakdown of cases in respect of:

- number of hospital acquired *Staphylococcus aureus* bloodstream infections
- number of hospital acquired *Clostridium difficile* infection
- multidrug-resistant organism and healthcare-associated infections.

Data reviewed following the inspection showed a significant increase in the number of cases of hospital-acquired *Staphylococcus aureus* bloodstream infections in April 2017. Documentation showed that the hospital had commenced a root cause analysis to assist in identifying associated causes. Issues in relation to infection prevention and control that require improvement should be addressed as a matter of priority. Episodes of *Staphylococcus aureus* bloodstream infections were reported as incidents through the hospital risk management reporting structures in the hospital.

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

Hospital management told inspectors that environmental hygiene standards were continuously monitored at the hospital. Findings in this regard will be presented in section 2.6.2 in this report. Additionally documentation provided by the hospital showed that implementation of a number of infection prevention and control policies were monitored and audited in the medical ward inspected and relevant findings were fed back to staff by the Infection Prevention and Control Team.

Patient complaints in relation to infection prevention and control were referred to the Infection Prevention and Control Team.

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

Hospital management should expand their oversight of healthcare-associated infection process and outcome measures to facilitate wider evaluation of the impact of infection prevention and control measures.

2.2 Risk management

Line of enquiry 1.2

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

The hospital had systems in place to identify and manage risk in relation to the prevention and control of healthcare-associated infection. Review of Infection Prevention and Control Committee meetings showed that incidents and risk in relation to infection prevention and control were discussed. Risks in relation to infection prevention and control were also presented by the Clinical Risk Manager at monthly Executive Management Team meetings and Quality Risk and Patient Safety Governance Group meetings respectively. Minutes of meetings showed that risks were reviewed, rated, updated and recommendations were made in relation to infection prevention and control in the hospital.

Major infection prevention and control risks viewed on the hospital corporate risk register included; lack of isolation facilities and hospital beds, staffing resource deficiencies, lack of equipment replacement programmes and the hospital infrastructure. To address identified risks, the hospital with HSE estates had commenced working on submissions in relation to HSE capital investment for South Tipperary General Hospital. Options under consideration include a new modular in-patient unit comprising 40-bed single en-suite accommodation and a new build 50-bed single en-suite unit which would help to address capacity issues. In the interim of capital development and in response to ongoing capacity challenges, the hospital had 'fitted-out' a new 11-bay unit which was due to open September 2017.

The hospital management team reported that risks in relation to staffing resource deficiencies had been escalated to the South/South West Hospital Group. It was reported that a number of full-time nursing positions had been secured following a successful recruitment process. Resource deficiencies in relation to hygiene services were also being addressed by the hospital. This included a review of service needs and service delivery across the hospital. An equipment replacement programme had also commenced.

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.

Inspectors found that the hospital had a comprehensive suite of infection prevention and control policies in relation to standard precautions, transmission-based precautions and the prevention of invasive medical device-related infection. The Infection Prevention and Control Team had implemented a document management system to facilitate document version control.

Inspectors found that there were four separate hospital policies in relation to the management of intravascular devices in the Intensive Care Unit. Two of these policies pertained to the management of intravascular devices in other hospitals. It is recommended that a review of these policies is undertaken to ensure a standardised approach in relation to management of intravascular devices in the Intensive Care Unit. Current HSE policy states that hospital policies, procedures and guidelines should be reviewed every three years.⁴

Hospital policies, procedures and guidelines were made available to staff in both hard copy in folders and electronically in each clinical area. Hospital policies relevant to infection prevention and control were ratified by either the Infection Prevention and Control Committee or senior hospital management. There is potential for standardising infection prevention and control policies across the hospital group in regard to the proposed South/South West Hospital Group Healthcare Associated Infection Governance Committee. Such an initiative would also facilitate executive oversight of infection prevention and control policies, procedures and guidelines at hospital group level.

Cleaning specifications for environmental hygiene were in place however specifications for patient equipment hygiene should be reviewed in light of findings of this report. Cleaning specifications should include detailed information in relation to elements of patient equipment to be cleaned, required cleaning method, frequency of cleaning and staff discipline responsible which is recommended in line with national guidelines.^{5,6}

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.⁷ Hand hygiene training in the hospital was mandatory for staff at induction and every year thereafter. Documentation provided by the hospital showed that 65% of hospital staff had attended hand hygiene training in the previous rolling two year period. Data breakdown showed 37% nursing staff, 45% medical staff, 51% allied health professionals, 62% healthcare assistant staff and 86% household staff were up-to-date with two yearly hand hygiene training in June 2017.

Infection prevention and control education was also provided to relevant hospital staff at induction and yearly thereafter. The hospital was aligning this training to national guidance for such knowledge and skills⁸ which included training in relation to standard and transmission-based precautions, and aseptic non-touch techniques. Documentation provided showed that 32% nursing staff, 45% medical staff, 51% allied health professionals, 61% healthcare assistants and 85% household staff were up-to-date with infection prevention and control education.

Mandatory training for infection prevention and control was provided on a weekly basis in the hospital. Responsibility for ensuring staff attendance at training and for maintaining attendance records rested with unit managers. Training attendance was also collated centrally in the hospital. Documentation reviewed showed that high levels of activity in the hospital resulted in a reduction of staff attendance at mandatory education in 2016. Risks in relation to staffing resources had been included in the overall risk register.

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

Additionally staff with responsibility for environmental hygiene had completed a cleaning training programme following HIQA's 2016 inspection.

2.5 Implementation of evidence-based 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^{9,10,11} published in recent years recommending their introduction across the Irish health system. The implementation of care bundles to prevent invasive device-related infection was reviewed in both clinical areas inspected.

Medical ward

Care bundles for intravascular devices and urinary catheter care were in place in the medical ward visited. Peripheral vascular catheter care bundles were incorporated into the hospital's 'national early warning score** adult patient observation chart'. Staff were required to document device insertion and removal dates and other essential care bundle components twice a day. Urinary catheter care bundle documentation included all essential care bundle components. Daily assessment and recording of the condition of the device was required.

Monitoring compliance with care bundles are important process measures for evaluation of catheter-related blood stream infection preventative programmes. Monthly Nursing and Midwifery HSE Quality Care Metrics recorded limited data in relation to elements of invasive device management. While these metrics help to drive quality of care for patients, all essential care bundle components should be audited so that aspects of device-related care requiring improvement are identified and addressed.

Nursing and Midwifery HSE Quality Care Metric audit results in relation to invasive medical devices showed 75% to 100% compliance from January to May 2017 for the medical ward inspected. Overall nursing and midwifery metric audit results in the hospital in relation to invasive medical devices indicated variation in compliance rate

[§] A bundle is a small, straightforward set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes.

** Calculation of an early warning score aims to facilitate early detection of clinical deterioration of a patient in hospital.

across clinical areas for the same period. Evidence indicates that full compliance with all essential care bundle components improve patient outcomes.

Intensive Care Unit

Care bundles for intravascular devices, urinary catheter care and ventilator-associated pneumonia were used in the Intensive Care Unit. Staff in the unit had developed an admission protocol whereby the type and date of insertion of all indwelling invasive devices was recorded. The Intensive Care Unit had developed a local policy in relation to ventilator-associated pneumonia prevention and documentation reviewed showed that education had been provided to staff in the Intensive Care Unit in this regard.

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.^{12,13,14} 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.^{15,16,17} 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.^{18,19}

Surveillance and root cause analysis was performed at the hospital in respect of *Staphylococcus aureus* bloodstream infection. The hospital did not perform catheter-related bloodstream infection surveillance, ventilator-associated pneumonia surveillance or catheter-associated urinary tract infection surveillance.

Daily audit information was collected in the Intensive Care Unit that included the presence of invasive devices; this information could potentially be used to facilitate surveillance of catheter-related bloodstream infection and surveillance of ventilator-associated pneumonia. Additional specialist resources are required to progress this type of surveillance at the hospital. Cooperation with other hospitals in the context of the wider hospital group in this regard may also be worthy of further exploration.

The hospital did not have a policy in relation to the prevention of surgical site infection. Such a policy should be developed based on best practice guidelines.^{20,21,22,23} However the hospital had guidelines for surgical antimicrobial prophylaxis.

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

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

Line of enquiry 4.2

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

South Tipperary General Hospital had many systems in place to prevent, detect and manage healthcare-associated infections and multidrug-resistant organisms in line with national guidelines. It was reported that screening of patients for colonisation or infection with transmissible infection was performed in line with national guidelines.

2.6.1 Preventing the spread of antimicrobial resistant organisms

The Infection Prevention and Control Team had developed a risk assessment tool for every admitted patient to identify potentially infectious patients who required microbiological screening and infection prevention and control precautions. The hospital also had a computerised system which would alert staff in situations when a patient who had been previously diagnosed with a transmissible infection was readmitted to the hospital. A daily list identifying patients who required transmission-based precautions was produced by the Infection Prevention and Control Team for nursing and bed management teams.

There were 32 single rooms in total in the hospital of which 19 had en-suite facilities and two had neutral or negative pressure for patients with airborne infection. Five single rooms were located in the paediatric ward. On the day of inspection, 32 inpatients required transmission-based precautions, of which 20 were isolated in single rooms.

It was noted that there was an increased requirement for isolation facilities and the hospital was therefore unable to isolate or cohort patients who required isolation in a timely manner. 'Trolley Watch'^{††} data for the hospital indicated that there was insufficient capacity overall at the hospital to accommodate admitted patients. This had been highlighted through the hospital's risk management structures. In the interim of capital investment and in order to address the lack of isolation facilities the hospital was exploring the option of installing modular isolation pods similar to other hospitals in the South/South West Hospital Group.

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

On the day of inspection, measures to prevent the spread of antimicrobial resistant organisms were reviewed in the Intensive Care Unit. Environmental surfaces and patient equipment inspected was visibly clean. Two hygiene audits performed in the Intensive Care Unit in May 2017 showed 82% and 84% compliance with desirable standards for environmental hygiene. Patient equipment audit results showed compliance with desirable standards for patient equipment hygiene was 100% and 96% compliance for same period. This high level of compliance was reflected on the day of inspection.

The Intensive Care Unit could accommodate four patients, three beds were located in the open plan aspect of the unit and there was one single isolation room with specialised ventilation, an ante-room and a separate dirty utility room. Patients with transmissible infection were therefore managed in the open plan aspect of the unit if the isolation room was occupied. This does not facilitate effective containment of transmissible infection.

Ancillary rooms opened directly into the open plan patient care area which is less than ideal. A staff rest room opened directly into the unit and the location of this room meant that staff had to walk through a patient zone in order to access it. The design of clinical hand hygiene sinks in the unit did not conform to current recommendations.²⁴ Overall storage space in the unit was limited and there was a lack of sufficient space in which to store and manage patient equipment and consumables. Some patient equipment and boxes of sterile supplies were stored in the open plan aspect of the unit which is not recommended.

Additionally, patient equipment was stored across three storage areas along with sterile supplies. One emergency exit in the unit was partially obstructed by patient equipment and boxes of paperwork. This was brought to attention of hospital management during the inspection. It is recommended that the storage of patient equipment and supplies in the unit is reviewed and improved upon. The infrastructure of the Intensive Care Unit did not facilitate effective infection prevention and control. Hospital management should include review of the design of this facility in their site development plans going forward.

2.6.2 *Clostridium difficile* infection prevention and control

The hospital reported the rate of new cases of *Clostridium difficile* infection monthly to the HSE. Documentation reviewed by inspectors showed that episodes of *Clostridium difficile* infection were investigated by the Infection Prevention and Control Team. Data for quarter four 2016 showed a slight increase in the incidence of *Clostridium difficile* infection which was greater than the national HSE key performance indicator. An outbreak report reviewed by inspectors showed that it was effectively contained and managed. On the background of an overcrowded

hospital with persistently high activity levels and limited isolation facilities, the prevention and control of *Clostridium difficile* infection must remain a priority for all relevant staff in the hospital including hospital management.

Measures to prevent and control *Clostridium difficile* infection was reviewed in the medical ward inspected. The ward comprised 37 beds including six single rooms of which two had ante-rooms; all patient rooms had en-suite facilities. An extra bed was located on the ward in line with hospital escalation policy to deal with Emergency Department overcrowding.

It was reported that single rooms were used to accommodate patients with transmissible infections when available. Colour coded isolation signage identified patients in isolation and specific protection precaution required for staff. Opportunities for improvement were observed in relation to implementation of transmission-based precautions including a staff member entering an isolation room without performing hand hygiene prior to donning protective gloves. Also a number of doors to isolation rooms accommodating patients requiring transmission-based precautions were open. Isolation room doors should be kept closed, as far as possible otherwise a risk assessment should be performed.

Deficiencies in relation to patient equipment hygiene and storage and labelling of patient equipment was observed in the medical ward inspected. A number of items of patient equipment were stained including a commode, two blood pressure cuffs and two thermometer probes. Inconsistencies in relation to labelling of clean equipment to denote cleaning had taken place was evident and storage of items of patient equipment was inappropriate. Additionally, patient equipment cleaning checklists reviewed did not identify all the elements of patient equipment which required cleaning.

Patient equipment should be cleaned in line with manufacturers' instructions with hospital approved detergents and disinfectants. It was reported that the number of staff responsible for cleaning patient equipment had recently been increased; it is recommended that patient equipment cleaning specifications are revised and aligned with national minimum cleaning frequencies for moderate risk areas. Patient equipment hygiene audits showed 89% and 96% compliance for February and April 2017 respectively.

Overall the patient environment appeared clean in the medical ward inspected. Environmental hygiene checklists reviewed indicated that cleaning had been consistently performed. It was reported that household cleaning staff were not always replaced during unplanned staff leave. This issue had been escalated to hospital management.

Environmental hygiene audit results showed 68% and 87% compliance with desirable standards for February and April 2017 respectively. Audit findings appeared to also identify issues that could have been addressed if there were appropriate proactive maintenance arrangements in place. It was identified that there was no one designated person in charge of maintenance in the hospital and no defined budget for ongoing preventative maintenance or equipment replacement. There was no agreed long-term plan or timeframe whereby these issues would be fully addressed. Inspectors were informed that the hospital had secured funding to carry out limited renovation works in the hospital; this plan also included refurbishment works in the medical ward.

2.6.3 Safe injection practice

Inspectors reviewed elements of safe injection practice and implementation of aspects of standard precautions in the medical ward inspected. Staff spoken with were able to describe recommended safe injection practices.

The medical ward had two dedicated clean utility rooms however inspection of the clinical environment showed that there was no clearly designated area for medication preparation in their respective clean utility rooms. Twelve integrated sharps trays were stored on the worktop space in one clean utility room. Additionally, the worktop space was further cluttered with other items stored on this space. It is recommended that a dedicated work space is provided for medication preparation and that this area is free of stored supplies.

Insufficient cleaning was also observed in relation to patient equipment in a clean utility room: pink staining was visible on a tray inspected, dust and or stains were visible on a ketone machine and glucometer box. Medication dispensing trolleys in both areas were stained and a medication fridge did not appear to have been cleaned for some time. Cleaning of this fridge needs to be included in local cleaning schedules.

Storage and management of medication for injection and related supplies needs to be improved. Boxes of intravenous fluids were stored on the floor and worktop adjacent to a hand wash sink which is not in line with good practice and posed a risk of inadvertent splash contamination.

It was reported that staff were in the process of reviewing storage facilities in light of renovation works which were scheduled to occur shortly.

2.6.4 Other measures to prevent the transmission of infection

Hand hygiene

Essential components of the World Health Organisation (WHO) multimodal improvement strategy⁷ were evident in South Tipperary General Hospital. The hospital participated in national hand hygiene audits, the results of which are published twice a year. The hospital achieved 89.5% compliance rate in the national hand hygiene audit in October/November 2016 which is just below the current required compliance target of 90% set by the HSE. The results for the latest monitoring period were being compiled at the time of the inspection.

Inspectors were informed that local hand hygiene audits were performed quarterly in clinical areas. The most recent hand hygiene audit results received for the medical ward inspected showed 93% compliance for quarter four 2016. Hand hygiene audit results for the Intensive Care Unit showed 100% and 90% compliance for quarter four 2016 and quarter one 2017 respectively.

Hand hygiene audit results for clinical areas also included a list of recommendations from the Infection Prevention and Control Team for ensuring that the HSE hand hygiene compliance target is met.

Alcohol gel was available at the point of care in the clinical areas inspected in line with best practice guidelines. Hand hygiene awareness days were held in 2016 highlighting the importance of hand hygiene, aseptic techniques and personal protective equipment.

Prevention of water-borne infection

A formal Legionella site risk assessment had been performed at the hospital in 2016, with a report issued in March 2017. As the original hospital building had dated from the nineteenth century, the report identified a number of risk factors and observations in relation to domestic water services. In the absence of a hospital facilities manager and team, the responsible person in relation to Legionella in South Tipperary General Hospital remained with a regional technical services manager. This position was jointly appointed with regional community and mental health services and reported to three different management structures.

Governance and oversight in relation to implementation of national guidelines relating to water-borne infections comes under the responsibility of the hospital Environmental Monitoring Committee which was re-established 2016. Hospital management reported that the hospital had implemented preventative control measures in relation to water-borne infection which included regular flushing of water outlets and water testing.

Hospital management, in conjunction with HSE Estates, were in the process of commissioning a survey of the hospital pipework in order to accurately map the extent of the pipes in the older structure. However hospital management had identified the requirement for additional resources in the absence of a defined budget in order to complete the survey. This issue had been escalated to the senior management team in the hospital group.

South Tipperary General Hospital, as a member of the wider South/South West Hospital Group, should be supported within the group structure in order to fully address these recommendations and to ensure compliance with national standards²⁵ and infection prevention and control standards.

Prevention of healthcare-associated invasive aspergillosis^{§§}

There is a 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. Measures to prevent healthcare-associated invasive aspergillosis during hospital construction and renovation works were reviewed during this inspection.

Work was underway at the hospital to upgrade emergency lighting and fire alarms systems. HIQA found that the hospital had implemented control measures in line with national guidelines.²⁶ The Infection Prevention and Control Team had been consulted in advance of planned works. A multi-disciplinary hospital project team was involved in planning the programme of work, relevant staff had received communication about the project, staff education had been provided and control measures were documented. The hospital had developed a policy in relation to invasive aspergillosis prevention and this was in the process of being formally approved.

^{§§} 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 works.

2.7 Quality improvement initiatives

Infection prevention and control risk assessment

The hospital had implemented an infection prevention and control risk assessment for all patients admitted to the hospital. The risk assessment developed by the Infection Prevention and Control Team was completed by nursing staff on all patients admitted to the clinical areas in the hospital. The risk assessment identified patients who required microbiological screening and infection prevention and control precautions including isolation facilities on admission. This locally driven initiative demonstrates a strong commitment to infection prevention and control and could also be shared with other hospitals in the hospital group. To support early identification and response to infection risk, the hospital should assess the possibility of completing the risk assessment at the initial point of care for patients admitted from the Emergency Department.

Productive ward

As part of the Productive Ward programme,²⁷ staff in the medical ward were working towards redesigning ancillary facilities to improve work practices going forward. A communication 'ward at a glance' board in a staff office showed that all patients requiring transmission-based precautions were clearly identified.

Hand hygiene

Documentation reviewed showed that monthly hand hygiene awareness stations were held in 2016 in response to hand hygiene audit results. In addition the importance of hand hygiene compliance was further communicated by the Hospital Manager to all staff in 2016 to encourage staff to improve hand hygiene compliance.

2.8 Progress since the previous HIQA inspection

Since the last inspection, a hospital service and bed capacity review was undertaken in South Tipperary General Hospital by the group Director of Quality and Patient Safety. The purpose of the review was to inform the level of additional bed capacity required to address capacity challenges in the hospital. Findings of the review identified a requirement for an additional 36 beds in the hospital.

In the interim of any future capital development, and in response to ongoing capacity challenges, the hospital had identified and 'fitted-out' a new 11-bay unit including two single rooms on the first floor in the hospital. It was anticipated that this unit would open September 2017. Additionally, hospital management with HSE estates had commenced working on submissions in relation to HSE capital investment in South Tipperary General Hospital. In order to address infrastructural deficiencies and space restrictions in the paediatric ward, hospital management reported that plans for a new Paediatric Unit would be included in the overall hospital capital development plan.

HIQA reviewed the quality improvement plan²⁸ developed by the hospital following the 2016 HIQA infection prevention and control inspection. In the interim of capital investment, minor capital refurbishment works had been completed in the paediatric ward. The infrastructural deficits in the paediatric ward had been placed on the corporate risk register.

Since HIQA's inspection in 2016 hospital management personnel had changed with the appointment of a new hospital manager and director of nursing position, a new assistant director of nursing for patient pathway processes and a new clinical risk manager position.

The hospital had undertaken a revision and improvement of environmental and equipment hygiene process management in the hospital. Multiple elements of hygiene service delivery had been reviewed and improved. The hospital had invested in cleaning equipment and supplies. Staff with responsibility for environmental hygiene had completed a cleaning training programme and a revised cleaning system had been implemented. An equipment replacement programme had also commenced. Some of these elements were reflected on the day.

Inspectors were informed that a substantial number of refurbishment programmes were planned subject to minor capital funding. The hospital is working with HSE estates in relation to these projects.

3. Conclusion

Overall HIQA found that South Tipperary General Hospital was committed to improving infection prevention and control practices in the hospital and were endeavouring to fully implement the *National Standards for the prevention and control of healthcare-associated infections in acute healthcare services*.

Governance and management arrangements around the prevention and control of healthcare-associated infection had been strengthened following recent appointments to the Executive Management Team. Plans to establish a South/South West Hospital Group Healthcare-Associated Infection Governance Committee are welcomed and will facilitate improved governance structures and sharing of evidence-based practice in relation to infection prevention and control across the South/South West Hospital Group.

The Infection Prevention and Control Team had put in place many elements of an infection prevention and control programme and with additional resources, could be expanded to facilitate wider evaluation of the impact of infection prevention and control measures. Given the size and complexity of services provided in South Tipperary General Hospital contracted hours in relation to the Consultant Microbiologist should be reviewed and formalised.

The hospital had systems in place to identify and manage risk in relation to the prevention and control of healthcare-associated infections. It is acknowledged that the hospital had identified inherent infection prevention and control risks relating to hospital infrastructure, insufficient bed capacity and insufficient isolation facilities in inpatient clinical areas. In the interim of capital investment, a new 11-bay unit was due to open September 2017 to address capacity issues in the short term.

The hospital had up to date policies, procedures and guidelines in relation to the prevention and control of infection and had implemented a document management system for both hard and soft copies. Systems were in place to prevent, detect and manage healthcare-associated infections and multidrug-resistant organisms. Screening of patients for colonisation or infection with transmissible infection was performed in line with national guidelines. The hospital had an ongoing surveillance programme which with additional resources, could be further expanded to include surgical site infection, central venous access device-related infection, urinary catheter-associated urinary tract infection and ventilator-associated pneumonia in line with national guidelines.

Hand hygiene and infection prevention and control education was provided on an ongoing basis however records show that staff attendance was affected due to staffing resources. The hospital needs to continue to build an awareness and best

practices relating to hand hygiene compliance to ensure it reaches and sustains the national target of 90%.

The hospital had implemented evidence-based care bundles for intravascular devices, urinary catheters and ventilator-associated pneumonia. The hospital should progress with expanding the audit of all essential care bundle components so that aspects of device-related care requiring improvement are identified and addressed.

Overall the patient environment was generally clean in the areas inspected. It is recommended that patient equipment cleaning specifications are revised and aligned to national minimum cleaning frequencies. Hospital environment and patient equipment needs to be maintained at a high standard to prevent the transmission of infection in particular in the context of controlling the spread of *Clostridium difficile* and other healthcare-associated infections.

HIQA found that the hospital is working towards improving the patient care environment. However in order to meet modern day infection prevention and control and hospital infrastructural standards, the hospital needs to be supported both at group and national level to address deficiencies going forward.

The hospital management team is aware that the dated infrastructure of inpatient facilities does not facilitate compliance with desirable standards and is working to develop a capital submission to the Health Service Executive (HSE) for a modular and new-build inpatient unit. The infrastructure of the Intensive Care Unit should be included in their site development plans going forward. On the background of persistently high activity levels and within the context of ongoing capacity challenges and recent capacity review findings, such developments should be progressed as a matter of priority.

South Tipperary General Hospital, as a member of the wider South/South West Hospital Group, should be supported within the group structure in order to fully address the recommendations of the 2016 Legionella site risk assessment to ensure compliance with national standards and to provide assurance that risk to patients of acquiring Legionellosis is fully mitigated.

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5. Appendix 1

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

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

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