



**Health
Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Report of the announced inspection of medication safety at South Tipperary General Hospital.

Date of announced inspection: 15 October 2019

About the Health Information and Quality Authority (HIQA)

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

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

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

Table of Contents

1.	Introduction.....	7
2.	Findings at South Tipperary Hospital	10
2.1	Leadership, governance and management	10
2.2	Risk management.....	11
2.3	High-risk medications and situations	14
2.4	Person centred care and support	19
2.5	Model of service and systems in place for medication safety.....	21
2.6	Use of information	23
2.7	Monitoring and evaluation	24
2.8	Education and training	26
3.	Summary and conclusion	28
4.	References	30
5.	Appendices	36
	Appendix 1: Lines of enquiry and associated National Standards for Safer Better Healthcare.	36
	Appendix 2: Hierarchy of effectiveness of risk-reduction strategies in medication safety.....	37
	Appendix 3: National Coordinating Council for Medication Error Reporting and Prevention. Index for categorising medication errors.	38

1. Introduction

HIQA's medication safety monitoring programme began in 2016 and monitors public, acute hospitals in Ireland against the *National Standards for Safer, Better Healthcare* to ensure patient safety in relation to the use of medications.¹ The programme aims to examine and positively influence the adoption and implementation of evidence-based practice in relation to medication safety in acute healthcare services in Ireland.

Medications are the most commonly used intervention in healthcare. They play an essential role in the treatment of illness, managing chronic conditions and maintaining health and wellbeing. As modern medicine continues to advance, increasing medication treatment options are available for patients with proven benefit for treating illness and preventing disease. This advancement has brought with it an increase in the risks, errors and adverse events associated with medication use.²

Medication safety has been identified internationally as a key area for improvement in all healthcare settings. In March 2017, the World Health Organization (WHO) identified medication safety as the theme of the third Global Patient Safety Challenge.³ The WHO aims to reduce avoidable harm from medications by 50% over 5 years globally. To achieve this aim the WHO have identified three priority areas which are to:

- improve medication safety at transitions of care
- reduce the risk in high-risk situations
- reduce the level of inappropriate polypharmacy.*

Medication safety has also been identified by a number of organisations in Ireland as a key focus for improvement.^{4,5,6,7,8,9} Medication safety programmes have been introduced in many hospitals to try to minimise the likelihood of harm associated with the use of medications, and in doing so maximise the benefits for patients. These programmes aim to drive best practice in medication safety by working to encourage a culture of patient safety at a leadership level and through the introduction of systems that prevent and or mitigate the impact of medication-related risk.¹⁰

HIQA's medication safety monitoring programme 2019

HIQA published a national overview report of the medication safety monitoring programme '*Medication safety monitoring programme in public acute hospitals- an overview of findings*'¹¹ in January 2018 which presented the findings from thirty-

* Polypharmacy: the use of many medications, commonly five or more.

four public acute hospital inspections during phase one of the programme. This report identified areas of good practice in relation to medication safety and areas that required improvement, to ensure medication safety systems were effective in protecting patients. A number of recommendations were made focusing on improving medication safety at a local and national level. The recommendations are detailed in the report which is available on the HIQA website (www.hiqa.ie).

The final phase of HIQA's medication safety monitoring programme has been updated and developed and the current approach is outlined in eight lines of enquiry[†]. The lines of enquiry are based on international best practice and research, and are aligned to the National Standards¹ (see Appendix 1). The monitoring programme will continue to assess the governance arrangements and systems in place to support medication safety. In addition, there will be an added focus on high-risk medications and high-risk situations.

High-risk medications are those that have a higher risk of causing significant injury or harm if they are misused or used in error.¹² High-risk medications may vary between hospitals and healthcare settings, depending on the type of medication used and patients treated. Errors with these medications are not necessarily more common than with other medications, but the consequences can be more devastating.¹³

High-risk situation is a term used by the World Health Organization³ to describe situations where there is an increased risk of error with medication use. These situations could include high risks associated with the people involved within the medication management process (such as patients or staff), the environment (such as higher risk units within a hospital or community) or the medication.

International literature recommends that hospitals identify high-risk medications and high-risk situations specific to their services and employ risk-reduction strategies[‡] to reduce the risks associated with these medications (Appendix 2).¹⁴

System based risk-reduction strategies have a higher likelihood of success because they do not rely on individual attention and vigilance, and a small number of higher level strategies will be more likely to improve patient safety than a larger number of less effective strategies.¹⁴ Therefore, risks associated with the procurement, dispensing, storage, prescribing, and administration of high-risk medications need to be considered at each step of the medication management pathway.¹⁵

[†] Lines of enquiry are the key questions or prompts that inspectors use to help inform their inspection, assessment or investigation.

[‡] Risk reduction strategies: a term used to describe different ways of dealing with risks. Strategies include risk avoidance, transfer, elimination, sharing and reducing to an acceptable level.

Information about this inspection

An announced medication safety inspection was carried out at South Tipperary General Hospital by Authorised Persons from HIQA; Emma Cooke and Nora O'Mahony. The inspection was carried out on 15 October 2019 between 09:00hrs and 17:05hrs.

Inspectors spoke with staff, reviewed documentation and observed systems in place for medication safety during visits to the following clinical areas:

- Medical wards
- Theatre Department.

Two group interviews were held in the hospital with the following staff:

- Group one: the chairperson of the Drugs and Therapeutics Committee, the chief pharmacist, the quality manager and the risk manager.
- Group two: the director of nursing, the general manager and the clinical director.

HIQA would like to acknowledge the cooperation of staff that facilitated and contributed to this announced inspection.

Information about the hospital

South Tipperary General Hospital is a statutory acute hospital which is owned and managed by the Health Service Executive. The hospital is part of the South/South West Hospital Group and provides acute, general and maternity services.

2. Findings at South Tipperary Hospital

Section 2 of this report presents the general findings of this announced inspection.

The inspection findings are outlined under each of the eight lines of enquiry and opportunities for improvement are highlighted at the end of each section.

2.1 Leadership, governance and management

Hospitals should have governance arrangements in place to support the development, implementation and maintenance of a hospital-wide medication safety system.^{15,16}

South Tipperary General Hospital had a Drug and Therapeutics Committee in place in line with best practice.^{17,18} The committee had responsibility for overseeing all processes relating to medication safety in the hospital and was accountable to the Quality, Risk and Patient Safety Group through a formalised reporting structure. The Quality, Risk and Patient Safety Group reported to the Executive Management Team at the hospital. Overall corporate responsibility for oversight of medication safety within the hospital rested with the General Manager.

Inspectors were informed that common membership from senior hospital management across the Drugs and Therapeutics Committee, the Quality, Risk and Patient Safety Group and the Executive Management Team enabled both formal and informal reporting of medication safety issues. Minutes of meetings reviewed by inspectors outlined formal periodic reporting from the Drugs and Therapeutics Committee to the Quality Risk and Patient Safety Group.

The Drugs and Therapeutic Committee had multidisciplinary membership. Although some specialties were not represented on the committee, such as surgery, obstetrics and paediatrics, it was explained to inspectors that representatives would be invited as required in accordance with the meeting's agenda as set out in the committee's terms of reference. Examples of this were seen in minutes of committee meetings. In addition wider membership of the Drugs and Therapeutics Committee should include a representative from community services but this was not in place at the time of inspection. However, it was reported to inspectors that the committee agreed to invite representation from a local General Practitioner group. The hospital should review the membership of the Drugs and Therapeutics Committee to ensure it is reflective of the services provided by the hospital including community representation so that the expertise of the committee reflects the decisions it is being asked to make.

Hospitals should have a clear corporate strategy that sets out the organisation's mission, values, role, functions and actions to be taken to meet organisational goals.^{10,19} The Drugs and Therapeutics Committee had an annual plan for 2019 which comprised a medication safety strategy and a medication safety programme plan. The 2019 annual plan outlined the short, medium and long term goals of the Drugs and Therapeutics Committee. Inspectors found that some of the objectives defined in the 2019 medication safety programme had been actively progressed by the committee while other objectives had not been achieved within the specified timeframes. Hospital management outlined that the lack of clinical pharmacy services impacted the committee's ability to effectively achieve all objectives set out in the medication safety programme.

Annual reports produced by the Drugs and Therapeutics Committee for 2017 and 2018 also detailed the work completed by the committee in previous years.

2.2 Risk management

Medication-related risks requiring additional control measures were documented on the hospital's corporate risk register. Hospital management reported the following key medication-related risks:

- inadequate pharmacy staffing levels
- out-of-hours pharmacy arrangements.

Inspectors viewed risk assessment forms completed for these risks which detailed current controls in place and additional controls required to mitigate against the risk. The hospital management team reported that risks in relation to pharmacy staffing deficiencies had been escalated to the South/South West Hospital Group.

The hospital had a system in place for reporting medication safety incidents. Medication incidents were completed on the National Incident Report Form and were reviewed by line managers and then forwarded to the risk manager. Incidents[§] that occurred in the hospital were reported to the State Claims Agency using the National Incident Management System^{**}(NIMS).²⁰

A total of 280 medication incidents were reported in 2018 which showed a pattern of decrease since 2017 of which there were 340 incidents reported (see figure 1).

[§] An incident is an unplanned, unexpected or uncontrolled occurrence which causes (or has the potential to cause) injury, ill-health, and or damage. An incident can be a harmful incident (adverse event), a no harm incident, a near miss, dangerous occurrence or complaint.

^{**} The State Claims Agencies (SCA) National Incident Management System (NIMS) is a risk management system that enables hospitals to report incidents in accordance with their statutory reporting obligation to the SCA (Section 11 of the National Treasury Management Agency (Amendment) Act, 2000).

Minutes of Drugs and Therapeutics Meetings and Quality Risk and Patient Safety Group meetings outlined reviews and discussions on medication safety incidents including possible reasons for declining reporting rates.

Reports reviewed by inspectors indicated that clinical pharmacy interventions positively impacted on the rates of incident reporting. For example, greater than 50 medication incidents were reported in July and August 2019 when pharmacy interventions were occurring in the clinical areas. This compared with less than 30 medication safety incidents reported in the months with no pharmacy interventions. Inspectors found there was scope to improve incident reporting across some disciplines, particularly for medical staff, with only 1% of incidents reported by doctors and the majority (>70%) by nurses.

The over reliance on pharmacy staff to report medication incidents needs to be addressed. The hospital must promote incident reporting among all clinical staff, within a just culture,^{††21} to strengthen reporting of medication incidents, so that safety surveillance is improved.

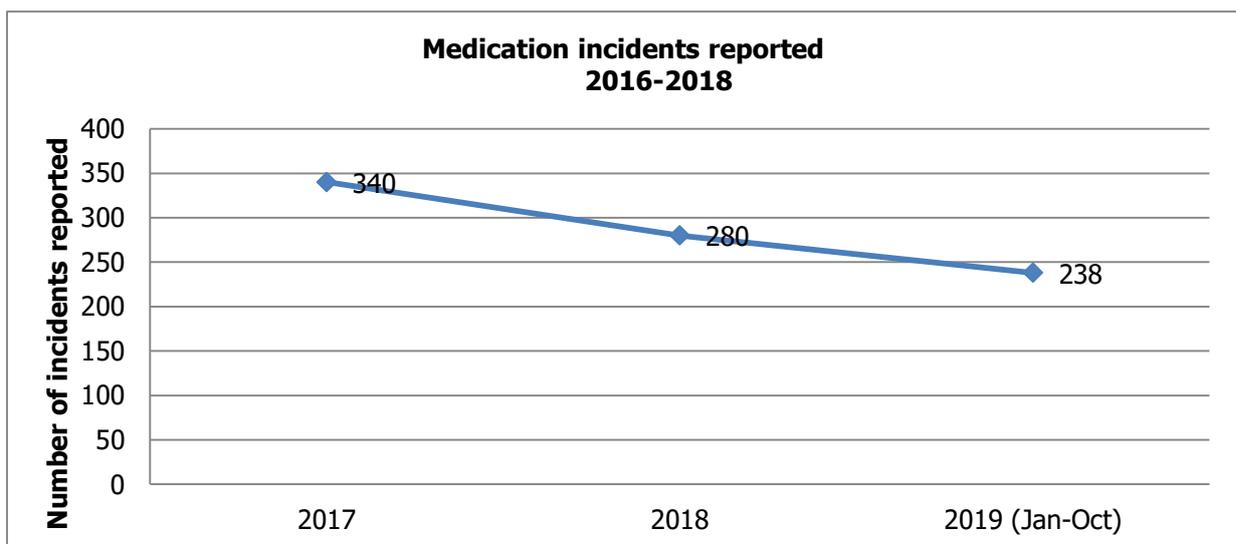


Figure 1. Medication incidents reported 2016 to 2018

Analysis of incidents

Medication incidents were categorised using the NIMS system. Inspectors reviewed medication incident reports for 2017, 2018 and 2019 (year to date) produced by the Drugs and Therapeutics Committee. The data taken from NIMS was trended and analysed based on numbers, location of incident, severity rating, type of injury and category of staff reporting incident.

†† The framework of a just culture ensures balanced accountability for both individuals and the organisation responsible for designing and improving systems in the workplace.

Medication incidents were not tracked and trended by medication, however the pharmacy department carried out a review of medication safety incidents and produced a quarterly report of common themes identified across medication incidents. Common themes identified included:

- dosing errors
- brand prescribing
- illegible handwriting
- duplicate prescribing of medication in the same class
- absence of maximum dosages in PRN 'as needed' section
- co-prescribing of low molecular weight heparins (LMWH) and direct oral anticoagulants (DOACs).

The reporting of incidents is of little value unless the data collected is analysed to identify trends or patterns in relation to risk and the resulting recommendations for improvement are shared with front-line staff.²² The themes identified were used to inform practice changes and medication safety education sessions. For example, in response to reoccurring themes associated with direct oral anticoagulants (DOACs), pharmacy had increased medication safety education sessions provided at nursing in-service training days by twenty minutes to include a dedicated section on DOACs.

It is recommended that in addition to incident analysis, a proactive approach is taken to gaining intelligence around medication safety.²³ Given the limited pharmacy sources, hospital management should encourage a broader proactive approach across all disciplines for the monitoring and evaluation of medication safety at the hospital.

Alerts and recalls

The General Manager received and acted on alerts and recalls^{**} related to medication if relevant to the service. Inspectors viewed examples of alerts communicated in some of the clinical areas inspected.

Opportunities for improvement

- The hospital must continue to promote incident reporting and ownership of incident reporting among all clinical staff and across all clinical areas within a just culture, to strengthen reporting of medication incidents so that safety surveillance is improved.

^{**} Recalls are actions taken by a company to remove a product from the market. Recalls may be conducted on a firm's own initiative or by authorised authority.

2.3 High-risk medications and situations

High-risk medications require special safeguards to reduce the risk of errors and minimise harm. Strategies for reducing risk with high-risk medications and in high-risk situations^{§§} may include high leverage, medium leverage or low leverage risk-reduction strategies^{***} (see Appendix 2).

High leverage risk-reduction strategies such as forcing functions, standardisation and simplification need to be implemented alongside low-leverage risk-reduction strategies such as staff education, passive information and the use of reminders.

South Tipperary General Hospital provided HIQA with a generic high-risk medications list and also had an APINCH^{†††} list displayed in the clinical areas visited by inspectors, however, this list was not locally adapted. Notwithstanding this, the pharmacy department had developed a high-risk medication list which had been locally adapted and provided information on the reason why the medication was considered to be high-risk and the control measures in place. The list also identified high-risk sound-alike look-alike drugs (SALADS^{‡‡‡}). Inspectors were informed that this list was specific to the pharmacy department only and was not shared with the clinical areas. The hospital should review the current high-risk list available to staff in the clinical areas to include the work carried out by the Pharmacy Department in identifying high-risk medications specific to the hospital and associated risk reduction strategies as well as increasing awareness around SALADS.

The hospital had implemented a combination of associated risk-reduction strategies^{§§§} which were observed by inspectors in practice. Staff who spoke with inspectors had an awareness of the high-risk medications available in their clinical areas and the associated risk-reduction strategies in place.

The following sample of high-risk medications was reviewed in detail during this inspection to identify the risk-reduction strategies in place:

^{§§} High-risk situation is a term used by the World Health Organization² to describe situations where there is an increased risk of error with medication use.

^{***} Risk-reduction strategies: a term used to describe different ways of dealing with risks. Strategies include risk avoidance, transfer, elimination, sharing and reducing to an acceptable level.

^{†††} the 'APINCH' acronym and classification is widely used to assist clinicians focus on a group of medicines known to be associated with high potential for medication-related harm.

^{‡‡‡} 'Sound-alike look-alike drugs (SALAD)' or 'Look alike sound alike' (LASA). The existence of similar medication names is one of the most common causes of medication error and is of concern worldwide. With tens of thousands of medications on the market, the potential for error due to confusing drug names is significant.

^{§§§} Risk reduction strategies: a term used to describe different ways of dealing with risks. Strategies include risk avoidance, transfer, elimination, sharing and reducing to an acceptable level.

- anticoagulants****
- concentrated potassium chloride
- insulin
- medication management during the perioperative period.

Anticoagulants

The hospital had a combination of risk-reduction strategies in place to mitigate against the risks associated with anticoagulants such as:

- patient specific dispensing of direct oral anticoagulant (DOACS)
- segregated storage of anticoagulants in clinical areas
- providing nurses and doctors with education on direct oral anticoagulants as part of medication safety education
- limiting the availability of unfractionated heparin to certain clinical areas such as oncology, paediatrics and operating theatre.

Inspectors found there was scope to improve and rationalise the stock levels of some anticoagulants in one of the clinical areas inspected.

The hospital's medication record had been redesigned to incorporate a designated section to prescribing anticoagulants in response to a number of medication safety incidents with anticoagulants. Staff reported that this was a welcome improvement and supported safe prescribing. Inspectors noted that the medication record had designated sections for documenting the indication for a particular anticoagulant, as well as target range and daily results. However, inspectors observed that these details had not been consistently documented on a medication record in one of clinical areas inspected.

Concentrated potassium chloride

Concentrated electrolyte solutions for injection are especially dangerous with potentially fatal consequences when not prepared and administered properly.²⁴ National and international evidence recommends the complete removal of concentrated potassium from patient care areas as the goal, with the use of ready-mixed potassium infusions stored segregated from other solutions.^{25,26,27}

Inspectors viewed a number of risk-reduction strategies to mitigate against the risks associated with concentrated potassium chloride including:

**** Anticoagulants: are commonly referred to as blood thinners that prevent or treat blood clots, but these medicines also carry an increased risk of bleeding or clots, so patient education and regular monitoring of blood levels are essential to maintain patient safety and ensure good patient outcomes.

- the availability of concentrated potassium solutions for injection was limited to certain clinical areas including paediatrics, oncology, intensive care unit and coronary care unit
- there was rationalised storage of pre-mixed potassium chloride observed in the ward area separated from other intravenous solutions in a locked cupboard
- two strengths of pre-mixed potassium chloride solutions were available in clinical areas
- an up-to-date policy for the management of intravenous potassium
- a local policy defined maximum rates of infusions; 10mmol/hour for general wards and 20mmols/hour for critical care areas.
- local policy defined maximum concentration of infusion of 40mmol/litre and 40mmol/500mls in exceptional circumstances, with consultant approval only and additional requirements such as:
 - the need for central line access or a large peripheral vein at a minimum
 - patient must be on telemetry
 - hourly monitoring of site if peripheral vein used

Insulin

Risk-reduction strategies in place to mitigate against the risks associated with insulin included:

- the term 'units' was pre-printed to support safe prescribing of insulin
- insulin was double checked prior to administration
- the hospital had hypoglycaemic box⁺⁺⁺ which contained instructions for staff to manage a hypoglycaemic⁺⁺⁺ episode
- a diabetes clinical nurse specialist was available for patient review and education
- insulin pens in use in the hospital were for single patient use only
- unopened vials of fast acting insulin were stored in a temperature controlled fridge in line with good practice

⁺⁺⁺ Hypoglycaemic box: 'Hypo box' provides quick access to equipment required to support effective treatment for patients in the event of hypoglycaemia.

⁺⁺⁺ Hypoglycaemic: when a person's blood sugar falls below the normal level.

- insulin was administered using an insulin syringe or insulin pen device.

The hospital had a separate medication record for the administration of insulin. A green sticker marked 'insulin' was placed on the patient's main medication record to alert staff that the patient was also on insulin.

Insulin pens stored in medication trolleys were observed in sealed bags and were for single patient use only with individual patient details and the date of opening recorded on a flag label.^{§§§§28} One of the clinical areas inspected had recently introduced medication lockers at the bedside which were locked and accessible by nursing staff only. Inspectors found an example whereby a patient's insulin pen that was in use and stored in this medication locker did not have flag labels with patient detail or dates of opening recorded. The hospital should review and update their existing policy on the storage of insulin to include guidance for staff on the appropriate storage and use of patients' insulin pens which have been brought in from home and stored in bedside medication lockers.

Medication management during the perioperative period

A hospital's operating theatre presents a unique situation with the use of multiple high-risk medications, high patient throughput and complex procedures.²⁹ A diverse range of medications are used which have the potential for a serious adverse event if administered incorrectly.³⁰ Therefore, the perioperative period is a high-risk situation in relation to medication safety.

Examples of risk-reduction strategies in place to mitigate against the risks of medications used within the theatre department are outlined below:

- anaesthetic medications were prepared, labelled and administered by the same anaesthesiologist
- international colour-coded labels were used
- emergency drugs were drawn up by the on-call anaesthesiologist at the start of each day, labelled and stored in a separate tray and disposed of at the end of each shift.

Daily temperature control checks were carried out on the fridge in the operating theatre inspected. However, daily record checks did not indicate the target temperature range and staff were not clear on the acceptable range. Hospital management must ensure that quality control checks carried out on fridges storing medication are effective and that staff know when to act on and escalate any issues.

§§§§ Flag labels are used to attach label on small syringes and containers where part of the label is applied to the syringe, leaving an exposed 'flag' portion to ensure that details on the labels can be read, and the markings and contents of the pen remains visible.

There was evidence of good communication regarding medications administered at transitions of care throughout the perioperative patient pathway.

Other high-risk medications

Examples of risk-reduction strategies in place to mitigate the risks for other high-risk medications and situations were also identified during this inspection and are outlined below:

The hospital had a number of high level risk-reduction strategies in place for oral methotrexate. Inspectors were informed that oral methotrexate was not stocked in clinical areas and a pharmacy request for methotrexate triggered a pharmacist review. The hospital only stocked one strength methotrexate tablets, and patient dose had to be confirmed by two independent sources e.g. patient, community pharmacy, prescribing doctor or general practitioner. Pharmacists would indicate the day of the week the oral methotrexate was to be administered and block out all other days with an 'x' on the medication record to prevent inadvertent daily administration.

The medication record had a separate antimicrobial section which facilitated prescribing, monitoring and administration of antimicrobials requiring therapeutic drug monitoring. The antimicrobial section included prompts for staff to review intravenous antimicrobials after three days in view of switching to oral antibiotics and also included a 'Day seven review'. There was also a supporting dosing calculator for calculating aminoglycoside/glycopeptide doses^{*****}, and guidance for interpreting levels. The hospital had guidelines for the empiric use of antimicrobials in adults which were developed at hospital group level, these were due to be updated in 2018.

Opportunities for improvement

- The hospital should review the existing list of high-risk medication to include the work completed by the pharmacy department and use this information to promote awareness of sound-alike look-alike medications.
- The hospital should ensure that the risk reduction strategies and policies in place are audited periodically to provide assurance to hospital management that risk reduction strategies have been effectively and consistently implemented in practice across all clinical areas.

***** Aminoglycosides are broad-spectrum, bactericidal antibiotics that are commonly prescribed for infections

2.4 Person centred care and support

Patients should be well informed about any medications they are prescribed and any possible side effects. This is particularly relevant for those patients who are taking multiple medications.^{31, 32}

National Inpatient Experience Survey

The National Inpatient Experience Survey is a nationwide survey that offers patients the opportunity to describe their experiences of public acute healthcare in Ireland.

Of the 442 people discharged from South Tipperary General Hospital during the month of May 2019, 184 people completed the survey, achieving a response rate of 42%.³³ Two questions related directly to medication in the survey. The scores for South Tipperary General Hospital and the national scores for 2019, 2018⁺⁺⁺⁺ and 2017⁺⁺⁺⁺ are illustrated in table 1 below.

Questions	Year	South Tipperary General Hospital score	National score
Q44. Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?	2019	7.4	8.0
	2018	7.5	8.0
	2017	7.1	7.8
Questions	Year	South Tipperary General Hospital score	National score
Q45. Did a member of staff tell you about medication side effects to watch for when you went home?	2019	4.3	5.3
	2018	4.8	5.2

++++ National Inpatient Experience Survey known as the National Patient Experience Survey in 2017 and 2018.

++++ Please note that the numbering of questions changed after the 2017 survey was completed. Question 44 '.....' was originally question 45 in the 2018 survey and question 45 '.....' was originally question 46.

	2017	4.9	5.1
--	------	-----	-----

Table 1: Comparison between South Tipperary General Hospital and national scores for Questions 44 and 45 of the National Patient Experience Survey 2017 and 2018.

The results obtained by South Tipperary General Hospital illustrate a slight disimprovement for 2019 with both results scoring less than the national average.

In response to 2018 survey results, inspectors were informed that some changes had been made to the South Tipperary General Hospital discharge leaflet to advise patients where to seek advice on new changes to medication on their discharge prescription. However, the results for 2019 provide an opportunity for improvement in relation to patient education about medications they are prescribed and the possible side effects.

Patient information

Inspectors were informed that patient information was provided primarily by nurses and doctors. However, it was reported that pharmacy would aim to provide information to patients if specifically requested. Clinical nurse specialists also provided patient information in areas such as diabetes, respiratory and heart failure.

One whole time equivalent senior pharmacist worked on the South Tipperary Integrated Care Programme for Older People (ICPOP). Although this post is a community funded post, much of the pharmacist’s work was undertaken at the hospital which included reviewing medication records of patients referred to the programme on a daily basis. It was explained to inspectors that this was also a valuable resource in providing information to patients and carrying out medication optimisation.

Examples of medication related patient information leaflets provided to inspectors included a discharge information leaflet, a warfarin anticoagulant record book and patient information leaflet on the use of Entonox, however, inspectors observed limited patient information leaflets available in the clinical areas inspected.

Medication reconciliation

Medication reconciliation is a systematic process conducted by an appropriately trained individual, to obtain an accurate and complete list of all medications that a patient is taking on admission, discharge and other transitions in care.^{34, 35,36}

Inspectors were informed that the hospital did not have a formal medication reconciliation process in place. From analysis of medication incidents and pharmacy interventions and audits, the hospital identified the need for medication

reconciliation but reported that this could not be facilitated with the current level of clinical pharmacy at the hospital. HIQA acknowledges the challenges, complexity and resource requirement to implement an effective medication reconciliation process but notes that this has been progressed in other similar sized hospitals. The hospital should look to prioritise this multidisciplinary process as a fundamental building block of its medication safety programme.

Staff reported that the availability of an electronic discharge letter enabled the provision of printed prescriptions on discharge which acted as a useful resource when medication reconciliation was facilitated.

Systems to support medication safety and optimisation

Some systems were in place to support medication safety and optimisation in relation to the:

- introduction of a bedside medication locker system
- prescribing and administration of crushed medications
- prevention of unintended administration of enteral medication through the intravenous route.

Patient weight measurements are important for medications that require an individual weight-based dose.³⁷ Patient weights and allergies were documented on all medication records reviewed by inspectors during the inspection.

Opportunities for improvement

- The hospital should look to have formal structured systems in place for patient education on medication, and also review the availability of medication information leaflets for patients.
- The hospital should introduce a system of formal medication reconciliation to all patients on admission and discharge in order to protect patients from potential harm and optimise patient safety.

2.5 Model of service and systems in place for medication safety

There are currently no agreed national standards outlining requirements for the provision of clinical pharmacy services. However, international studies support the role of clinical pharmacy services^{38§§§§§} in hospital wards to prevent adverse medication incidents.^{39,40,41,42,43,44}

§§§§§ Clinical pharmacy service describes the activity of pharmacy teams in ward and clinic settings. The following core activities are involved in providing clinical pharmacy services: prescription monitoring, prescribing advice, optimising therapeutic use of medicines, adverse drug reaction

The hospital had approval for six whole time equivalent (WTE) pharmacy positions, however, at the time of inspection, five of these posts were filled with the remaining position awaiting appointment. A clinical pharmacy service was not routinely provided in any clinical area. This situation was of concern to HIQA given that South Tipperary General Hospital has a number of high-risk clinical areas including paediatrics, maternity and intensive care.

The pharmacy service within the hospital was almost entirely restricted to dispensing and resources were also deployed to dispensing medications to healthcare providers external to the hospital. Access to clinical pharmacy was only provided on request and subject to the demands on the pharmacy service at any given time. Inspectors were informed that on average, there was 7.5 hours of a basic grade pharmacist allocated to clinical pharmacy work per week but this was depending on leave and other priorities in the pharmacy department. It was reported that older patients with polypharmacy were often prioritised when a clinical pharmacy service could be facilitated.

Hospital management informed inspectors that a business case for clinical pharmacy services was submitted to the South/South West Hospital Group in 2018 followed by business cases for additional clinical pharmacy resources. It was explained that one whole time equivalent post had been approved for a new 40 bedded modular build that is due to open at the hospital in 2020 but no further additional resources have been approved for existing services at the hospital.

Medication Formulary

The hospital did not have a list of medications approved for use in the hospital (a formulary)*****. However, the hospital had a system in place for the approval of new medicines which was under the governance of the Drugs and Therapeutics Committee to ensure appropriate oversight of the medications approved for use within the hospital.

It was explained that the hospital had a good collaborative relationship with other hospitals within the South/South West Hospital Group and the hospital would be interested in developing or adapting a group wide hospital formulary. The hospital should look to progress the development of a formulary and identify and act on opportunities to collaborate with the wider hospital group.

detection and prevention, patient education and counselling, inter-professional education about medicines. It may also involve some or all of the following: medication history taking, medication reconciliation, specialist clinics e.g. HIV, clinical audit, protocol/guideline development. Source: Pharmaceutical Society of Ireland. *Future Pharmacy Practice in Ireland - Meeting Patients' Needs*. Dublin; 2016. Pharmaceutical Society of Ireland.

**** Formulary: a managed list of preferred medications that have been approved by the hospital's Drugs and Therapeutics Committee for use at the hospital.

Opportunities for improvement

- The hospital should continue to progress the recruitment of pharmacy staff and to examine how best to allocate the resources to ensure that high-risk patient areas are prioritised.
- The hospital should look to progress the development of a hospital formulary to improve patient care through improved selection and rational use of medications and ensure appropriate governance of prescribed medications. This work could be progressed by collaboration with other hospitals within the group.

2.6 Use of information

Hospitals should support clinical staff in achieving safe and effective medication use through the availability of up-to-date evidence-based information and decision support tools for medications.¹⁵

South Tipperary General Hospital had a number of medication information sources which were accessible to staff through hard copy or electronic version such as:

- locally developed intravenous medication administration guidelines
- antimicrobial guide
- medication protocols
- British National Formulary.

The medication information available on electronic version was accessible to staff on computers in some of the clinical areas inspected. However, inspectors observed that access to medicines information was not available at the point of preparation in one of the clinical areas inspected.

It is recommended, by both the Health Service Executive⁴⁵ and the National Clinical Effectiveness Committee⁴⁶ that policies, procedures and guidelines are reviewed and updated every three years. The hospitals Drugs and Therapeutics Committee had within its annual plan for 2019 identified the goal of maintaining an up-to-date list of medication related policies procedures and guidelines that require a review and prioritise order of review. This was also identified as a key performance indicator for the Drugs and Therapeutics Committee.

Data provided to inspectors indicated that 33% of policies procedures and guidelines relative to the Drugs and Therapeutics Committee were up-to-date. Minutes of committee meetings outlined discussion around policies and guidelines and those that were prioritised for review. It was reported that the lack of clinical pharmacy

was impacting on the hospital's ability to review medication related policies, procedures and guidelines. Notwithstanding this, the majority of policies, procedures and guidelines reviewed by inspectors on the day were found to be up-to-date.

Opportunities for improvement

The hospital should ensure that staff have access to medication information at the point of prescribing, preparing and administration.

2.7 Monitoring and evaluation

Monitoring of medication safety should be formally planned, regularly reviewed and centrally coordinated with resulting recommendations actioned and the required improvements implemented.¹⁵

Monitoring and evaluation of medication safety was included in the drugs and therapeutics annual plan for 2019. However, the hospital did not have an audit plan aligned to the medication safety strategy and audits were not centrally controlled. One of the goals for 2019 was to develop an audit programme for 2019 with a particular focus on high-risk medicines and high risk situations but this had yet to be progressed at the time of inspection.

The Drugs and Therapeutics Committee had developed a number of key performance indicators to monitor the effectiveness of the medication safety programme at the hospital. These included:

- number of reported medication safety incidents
- staff attendance rates at medication safety training
- percentage of policies, procedures and guidelines related to medication usage that were out of date or awaiting review
- compliance with standards set out in medicines management module of ward assessment process
- compliance with standards set out in medicines management module of nursing metrics.

Evidence of monitoring and evaluation of medication safety provided to inspectors for the past two years consisted of:

- medication reconciliation audit 2019
- audit of inpatient DOAC prescriptions to assess compliance with licensed doses
- audit for patients who receive entonox only for colonoscopy

- nursing and midwifery quality care metrics⁺⁺⁺⁺⁺⁴⁷

Nursing and midwifery quality care metrics,⁺⁺⁺⁺⁺ monitored on a monthly basis included a number of elements focused on medication management. Results reviewed by inspectors for 2017 and 2018 outlined good compliance with medication storage and custody, scheduled controlled medication and administration.

Dissemination of audit results is essential so that the clinical workforce is informed of the areas that need improvement, and also to motivate them to change practice and participate in improvement activities.⁴⁸ Inspectors were informed that audit results were discussed at various forums including the Drugs and Therapeutics Committee and the Quality and Risk Patient Safety Group. Audit results were also disseminated to frontline staff during clinical handover, grand rounds, ward meetings and informal education sessions. Inspectors observed nursing metrics results displayed in some clinical areas inspected. Inspectors also reviewed examples of quality improvement plans and action plans that were developed based on audit findings or recommendations.

The hospital held a yearly quality day which was used to disseminate medication safety audits and quality improvement initiatives.

Overall inspectors found that the monitoring and evaluation work carried out by the pharmacy department including audits, pharmacy interventions and the identification of medication safety incident themes assisted to identify areas which required improvement and enabled the pharmacy department to prioritise these within the current resources available.

Hospital management acknowledged that there was scope to further develop and centralise medication safety audits at the hospital. A more structured, coordinated approach to planning medication safety audits aligned to a formal medication safety strategy could potentially enhance the hospital's current approach to evaluation and monitoring of medication safety. This should be progressed to ensure that audit is planned and co-ordinated based on local priorities, driven by and with oversight from hospital management to ensure recommendations are implemented and required improvements achieved.

Opportunities for improvement

- Evaluation and monitoring of the use and safety of medication should be planned in line with the hospital's overall priorities and aligned to a medication safety strategy.

⁺⁺⁺⁺⁺ Metrics are parameters or measures of quantitative assessment used for measurement and comparison or to track performance.

- The hospital should ensure that audits are centrally controlled, strategically driven and conducted in a multidisciplinary manner.

2.8 Education and training

Staff education can effectively augment error prevention when combined with other strategies that strengthen the medication-use system.⁴⁹

South Tipperary General Hospital had a structured induction programme for doctors and nurses which included medication safety education and staff education was identified as a goal within the 2019 annual plan.

A structured ongoing medication education programme was also in place for nursing staff at the hospital. Nurses were required to attend in service training every two years which included education sessions on medication safety. Furthermore, nurses were required to attend a six hour medication management day every two years. Content included the hospital's intravenous medication policy, high-risk medications, clinical risk in medication management and insulin safety. Nurses were required to complete the HSE Land^{§§§§§§} medication management eLearning and an aseptic non touch technique eLearning module prior to attending. Training records reviewed indicated that 67% of nursing staff had attended training from 2017-2019.

Pharmacists provided a one hour medication safety education session to non-consultant hospital doctors on induction.

Staff attendance rates at medication safety training was a set key performance indicator for the Drugs and Therapeutics Committee. Training records reviewed by inspectors showed that attendance records were not actively monitored for all disciplines and there was scope to improve overall monitoring of attendance to provide additional oversight.

Other medication focused sessions were provided for staff on an ongoing basis such as:

- intravenous study day
- informal ward-based education
- pharmacy lunchtime sessions
- education sessions facilitated by clinical skills facilitator
- daily multidisciplinary grand rounds
- monthly morbidity and mortality meetings
- weekly departmental meetings.

^{§§§§§§} The health service eLearning and development service

Opportunity for improvement

- The hospital should improve the existing system in place for maintaining attendance records so that hospital management can be assured that all staff have the necessary competencies to deliver high-quality medication safety through induction and ongoing training.

3. Summary and conclusion

Medications play a crucial role in maintaining health, preventing illness, managing chronic conditions and curing disease. However, errors associated with medication usage constitutes one of the major causes of patient harm in hospitals and the impact of medication errors can be greater in certain high-risk situations.

Understanding the situations where the evidence shows there is higher risk of harm from particular medications and putting effective risk-reduction strategies in place is key for patient safety.

South Tipperary General Hospital had established and formal governance arrangements with clear lines of accountability in place to support medication safety. The hospital had a medication safety plan in place for 2019 which was overseen by the Drugs and Therapeutics Committee and while not all goals had been achieved, inspectors found evidence of progress across some areas.

There was a lack of clinical pharmacy services in the hospital, and considering the size and complexity of the services provided by the hospital, the lack of a comprehensive clinical pharmacy service constituted a risk to patient safety. Notwithstanding the efforts made to recruit additional pharmacy resources, the hospital should work to assure itself that the current pharmacy service is utilised most appropriately and prioritises high risk areas in order to mitigate risk and promote patient safety.

South Tipperary General Hospital had systems in place for high-risk medications. Staff demonstrated an awareness of risk reduction strategies in place for high-risk medications however, the hospital should ensure that the risk reduction strategies and policies in place are audited periodically to provide assurance to hospital management that risk reduction strategies have been effectively and consistently implemented in practice across all clinical areas. The hospital should develop its generic high-risk list of medications to include the work carried out by the pharmacy department.

Some systems were in place to monitor the effectiveness of medication management systems at the hospital and there was evidence that updates in respect of medication safety were actively and regularly discussed with senior hospital management. Inspectors determined that there was scope to improve the culture and ownership on incident reporting of medication safety across all disciplines. Hospital management acknowledged the opportunity to further strengthen the monitoring of medication safety through audit activity which is centrally controlled and strategically driven.

Overall, it was evident that the hospital had acted to strengthen medication safety through medication safety governance arrangements and the implementation of some safety initiatives. Medication safety at the hospital was an evolving process and progress to date demonstrated the commitment of staff to advancing the medication safety agenda in the hospital for the benefit of patients considering the limited clinical pharmacy resources available. However, there is scope for further improvement. The hospital should continue to work towards improving medication safety practices by addressing the findings of this report and advancing the implementation of its medication safety plan and goals identified through its own monitoring of practices in place.

This report should be shared with relevant staff at South Tipperary General Hospital and the South/South West Hospital Group to highlight the findings from this inspection including what has been achieved to date and to foster collaboration in relation to opportunities for improvement.

The opportunities for improvement highlighted in this report requires renewed focus for leadership and management at the hospital to ensure that medication safety is seen as a priority and that patients are protected from known and avoidable harm.

4. References

1. Health Information and Quality Authority. National Standards for Safer, Better Healthcare. Dublin: Health Information and Quality Authority; 2012. [Online] Available from: <https://www.hiqa.ie/reports-and-publications/standard/national-standards-safer-better-healthcare>
2. World Health Organization. Patient Safety Curriculum Guide: Multi-professional Edition. 2011. [Online] Available from: https://apps.who.int/iris/bitstream/handle/10665/44641/9789241501958_eng.pdf;jsessionid=D5A16C6845504A60457784D2EBD50B3A?sequence=1
3. The World Health Organization. Medication Without Harm. The World Health Organization; 2007. [Online] Available from: <http://www.who.int/patientsafety/medication-safety/medication-without-harm-brochure/en/>
4. Department of Health and Children. Building a Culture of Patient Safety: Report of the Commission of Patient Safety and Quality Assurance. Dublin: Department of Health and Children; 2008. [Online] Available from: https://health.gov.ie/wp-content/uploads/2014/03/en_patientsafety.pdf
5. The Irish Medication Safety Network. [Online] Available from: <https://imsn.ie/>
6. The Department of Health. [Online] Available from: <https://health.gov.ie/national-patient-safety-office/>
7. Health Service Executive. The National Medication Safety Programme [Online] Available from: <https://www.hse.ie/eng/about/who/qid/nationalsafetyprogrammes/medicationsafety/>
8. The Health Products Regulatory Authority. [Online] Available from: <http://www.hpra.ie/homepage/about-us>
9. The Pharmaceutical Society of Ireland. [Online] Available from: <http://www.thepsi.ie/gns/home.aspx>
10. American Hospital Association, Health Research and Educational Trust, and the Institute for Safe Medication Practices. Pathways for Medication Safety. American Hospital Association, Health Research and Educational Trust, and the Institute for Safe Medication Practices; 2002. [Online] Available from: <http://www.ismp.org/tools/pathwaysection3.pdf>

11. Health Information and Quality Authority. Medication safety monitoring programme in public acute hospitals-An overview of findings. Dublin: Health Information and Quality Authority; 2018. [Online] Available from: <https://www.hiqa.ie/reports-and-publications/key-reports-and-investigations/medication-safety-monitoring-programme>
12. The Clinical Excellence Commission. Medication Safety and Quality. High Risk Medications. [Online] Available from: <http://www.cec.health.nsw.gov.au/patient-safety-programs/medication-safety/high-risk-medicines/A-PINCH>
13. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards. Second ed; 2017. [Online] Available from: <https://www.safetyandquality.gov.au/wp-content/uploads/2017/12/National-Safety-and-Quality-Health-Service-Standards-second-edition.pdf>
14. Institute of Safe Medication Practices (ISMP) Canada. Ontario Critical Incident Learning. Improving quality in patient safety. [Online] Available from: https://www.ismp-canada.org/download/ocil/ISMPCONCIL2013-4_EffectiveRecommendations.pdf
15. Australian Commission on Safety and Quality in Health Care. Safety and Quality Improvement Guide Standard 4: Medication Safety. Sydney: Australian Commission on Safety and Quality in Health Care; 2012. [Online] Available from: https://www.safetyandquality.gov.au/wp-content/uploads/2012/10/Standard4_Oct_2012_WEB.pdf
16. Council of Australian Therapeutic Advisory Groups. Achieving effective medicines governance. Guiding Principles for the roles and responsibilities of Drugs and Therapeutics Committees in Australian public hospitals; 2013. [Online] Available from: <http://www.catag.org.au/wp-content/uploads/2012/08/OKA9964-CATAG-Achieving-Effective-Medicines-Governance-final1.pdf>
17. Australian Commission on Safety and Quality in Health Care. Safety and Quality Improvement Guide Standard 4: Medication Safety. Sydney: Australian Commission on Safety and Quality in Health Care; 2012. [Online] Available from: https://www.safetyandquality.gov.au/wp-content/uploads/2012/10/Standard4_Oct_2012_WEB.pdf
18. Council of Australian Therapeutic Advisory Groups. Achieving effective medicines governance. Guiding Principles for the roles and responsibilities of Drugs and Therapeutics Committees in Australian public hospitals; November 2013. [Online] Available from: <http://www.catag.org.au/wp->

[content/uploads/2012/08/OKA9964-CATAG-Achieving-Effective-Medicines-Governance-final1.pdf](#)

19. Government of Western Australia Department of Health and Office for Safety and Quality in Healthcare ., Medication Safety Strategic and Operational Plan for WA Health 2012-2015; 2012. [Online] Available from: http://ww2.health.wa.gov.au/~media/Files/Corporate/general%20documents/medicines%20and%20poisons/PDF/WA_MEDICATION_SAFETY_STRATEGIC_PLAN_201215.ashx. Accessed: 2nd March 2016. (Archived by WebCite® at <http://www.webcitation.org/6fhu0ZfLm>)
20. State Claims Agency. National Clinical Incidents, Claims and Costs Report 2010-2014. [Online] Available from: <http://stateclaims.ie/2017/05/national-clinical-incidents-claims-and-costs-report-lessons-learned-a-five-year-review-2010-2014/>
21. Boysen PG. Just Culture: A Foundation for Balanced Accountability and Patient Safety; 2013. [Online] Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3776518/>
22. World Health Organization. Reporting and learning systems for medication errors: the role of Pharmacovigilance centres. Washington: World Health Organisation; 2014. [Online] Available from: <http://apps.who.int/medicinedocs/documents/s21625en/s21625en.pdf>
23. Irish Medication Safety Network. Building a Medication Safety Programme in a Hospital in Ireland: Fundamental Steps; 2018. [Online] Available from: <http://www.imsn.ie/images/publications/BuildingBlocks2018.pdf>
24. Joint Commission, Joint Commission International, World health Organisation. Control of concentrated electrolyte solutions. Patient safety solutions; volume 1, solution;2007. [Online] Available from: <http://www.who.int/patientsafety/solutions/patientsafety/PS-Solution5.pdf>
25. Recommendations from National Patient Safety Agency alerts that remain relevant to the Never Events list 2018. NHS Improvement; 2018. [Online] Available from: https://improvement.nhs.uk/documents/2267/Recommendations_from_NPSA_alerts_that_remain_relevant_to_NEs_FINAL.pdf
26. Irish Medication Safety Network. Best Practice Guidelines for the Safe Use of Intravenous Potassium in Irish Hospitals; 2013. [Online] Available from: <https://imsn.ie/wp-content/uploads/2019/11/imns-july-2013-best-practice-guidance-for-iv-potassium-use.pdf>

27. Institute for Safer Medication Practice Canada. Potassium Chloride Safety Recommendations Summary; 2005. [Online] Available from: <https://www.ismp-canada.org/download/PotassiumChlorideSafetyRecommendations2005.pdf>
28. Australian Commission on Safety and Quality in Health Care. National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines. [Online] Available from: <https://www.safetyandquality.gov.au/wp-content/uploads/2015/09/National-Standard-for-User-Applied-Labeling-Aug-2015.pdf>
29. Nanji KC, Patel A, Shaikh S, Seger DL, Bates DW. Evaluation of Perioperative Medication Errors and Adverse Drug Events. *Anesthesiology*; 2016.124(1):pp25-34
30. Lazarra EH, Keebler JR, Wall MH, Lynch I, Wolfe R, Cooper RL. Medication safety in the operating room: literature and expert-based recommendations. *Br J Anaesth*; 2017. 118(1):32-43
31. Health Service Executive, Quality and Patient Safety Division. Integrated Care Guidance: A practical guide to discharge and transfer from hospital. Health Service Executive; 2014. [Online] Available from: <http://www.hse.ie/eng/about/Who/qualityandpatientsafety/safepatientcare/integratedcareguidance/IntegratedCareGuidancetodischargefulldoc.pdf>
32. National Institute for Health and Care Excellence (NICE). *Clinical Guideline 76. Medicines adherence: Involving patients in decisions about prescribed medicines and supporting adherence*. National Institute for Health and Clinical Excellence; 2009. [Online] Available from: <http://guidance.nice.org.uk/CG76>
33. The National Inpatient Experience Survey. South Tipperary General Hospital 2019.[Online] Available from: https://yourexperience.ie/wp-content/uploads/2019/11/South-Tipperary-General-Hospital_Report_2019.pdf
34. Health Information and Quality Authority. *Guidance for health and social care providers. Principles of good practice in medication reconciliation*. Dublin: Health Information and Quality Authority; 2014. [Online] Available from: <https://www.hiqa.ie/reports-and-publications/guides/guidance-principles-good-practice-medication-reconciliation>
35. World Health Organization. *The High 5s Project. Standard Operating Protocol. Assuring Medication Accuracy at Transitions in Care*. Washington: World Health Organisation; 2014. [Online] Available from: <http://www.who.int/patientsafety/implementation/solutions/high5s/h5s-sop.pdf>

36. Galvin M, Jago-Byrne MC, Fitzsimons M, Grimes, T. Clinical pharmacist's contribution to medication reconciliation on admission to hospital in Ireland. *International Journal of Clinical Pharmacists*; 2013; 35 (1): pp14–21
37. Institute for Safe Medication Practices Canada. Weight-Based Medication Dose Errors; 2016. [Online] Available from: <https://www.ismp-canada.org/download/safetyBulletins/2016/ISMPCSB2016-09-WeightBasedDoseErrors.pdf>
38. Pharmaceutical Society of Ireland. *Future Pharmacy Practice in Ireland - Meeting Patients' Needs*. Dublin; 2016. Pharmaceutical Society of Ireland.
39. Kaushal R, Bates DW, Abramson EL, Soukup JR, Goldmann DA. Unit-based clinical pharmacists' prevention of serious medication errors in pediatric inpatients. *American Journal of Health-System Pharmacy*; 2008. 1: 65(13): pp1254-60.
40. De Rijdt T, Willems L, Simoens S. Economic effects of clinical pharmacy interventions: a literature review. *American Journal of Health System Pharmacy* ;2008. 15;65(12): pp1161–72
41. Rivkin A, Yin H. Evaluation of the role of the critical care pharmacist in identifying and avoiding or minimizing significant drug-drug interactions in medical intensive care patients. *Journal of Critical Care*; 2011. Feb;26(1): pp104. [Online] Available from: <http://www.sciencedirect.com/science/article/pii/S0883944110001188>
42. Agency for Healthcare Research and Quality. *Making Health Care Safer II: An Updated Critical Analysis of the Evidence for Patient Safety Practices. Evidence Report/Technology Assessment No. 211Chapter 4. Clinical Pharmacist's Role in Preventing Adverse Drug Events: Brief Update Review*. . Maryland: Agency for Healthcare Research and Quality; 2013. pp31- 40. [Online] Available from: <https://archive.ahrq.gov/research/findings/evidence-based-reports/ptsafetyII-full.pdf>
43. Leape LL, Cullen DJ, Clapp MD, et al. Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. *JAMA*; 1999 July. 281;282(3): pp267–70. [Online] Available from: <http://jamanetwork.com/journals/jama/fullarticle/190687>
44. Bond CA, Rael CL. Clinical pharmacy services, pharmacy staffing, and hospital mortality rates. *Pharmacotherapy*. April 2007; 27 (4): pp481-93
45. Health Service Executive Framework for developing Policies, Procedure Protocols and Guidelines (PPPGs); 2016. [Online] Available from:

<http://www.hse.ie/eng/about/Who/QID/Use-of-Improvement-methods/nationalframeworkdevelopingpolicies/>

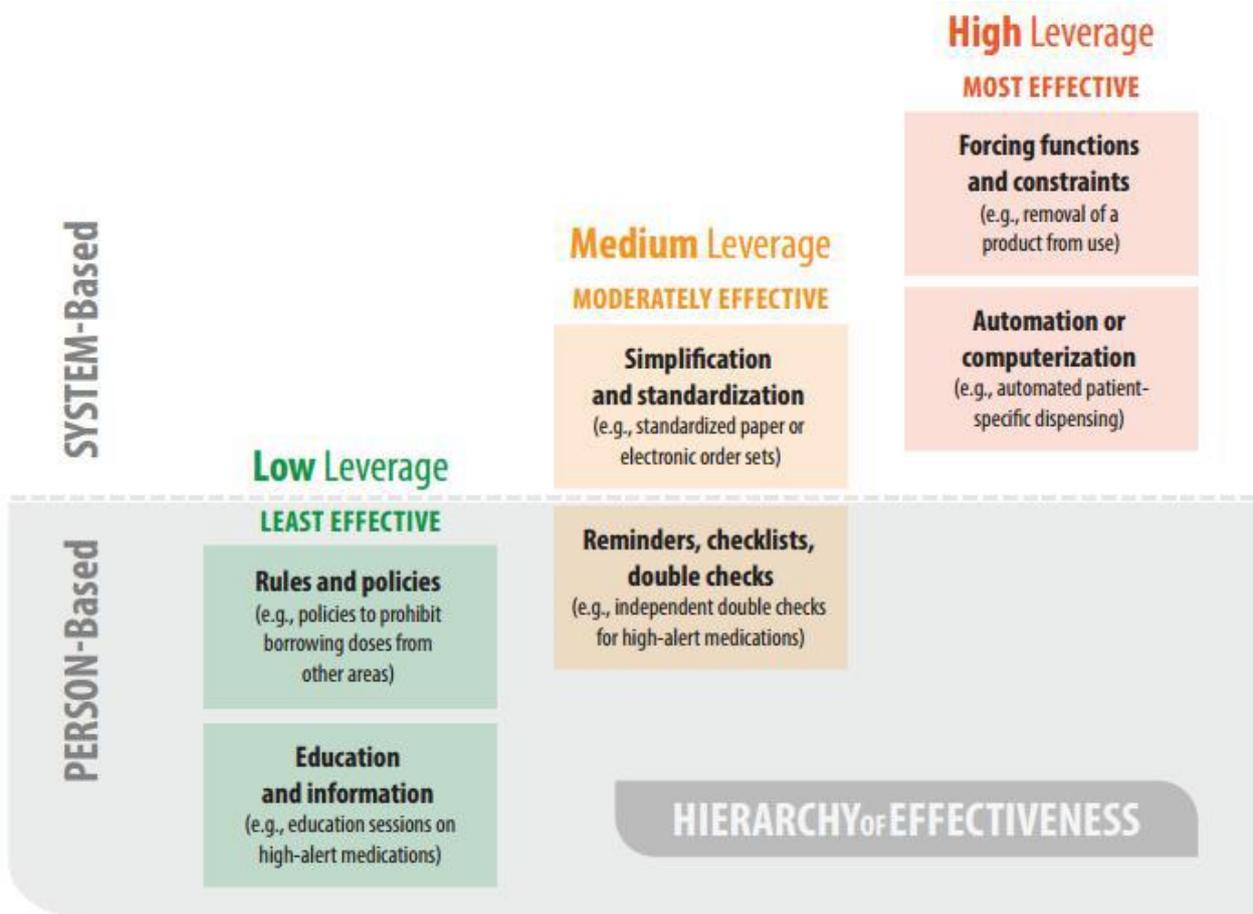
46. National Clinical Effective Committee. Standards for Clinical Practice Guidance; 2015. [Online] Available from: <https://health.gov.ie/national-patient-safety-office/ncec/clinical-practice-guidance/>
47. Health Service Executive. Standard Operating Procedure for Nursing and Midwifery Quality Care-Metrics Data Collection in Acute Services; 2005. [Online] Available from:
http://www.hse.ie/eng/about/Who/ONMSD/NMPDU/NMPDUDSkilwicklow/Nursing_and_Midwifery_Quality_Care_Metrics.html
48. Health Service Executive. A practical guide to clinical audit; 2013. Available online from:
http://www.hse.ie/eng/about/Who/qualityandpatientsafety/Clinical_Audit/clinicalauditfiles/pdfs/practicalguideclaudit2013.pdf
49. Institute of Safe Medication Practices (ISMP) Staff competency, education. Institute of Safe Medication Practices; 2009. [Online] Available from:
[http://pharmacytoday.org/article/S1042-0991\(15\)31825-9/pdf](http://pharmacytoday.org/article/S1042-0991(15)31825-9/pdf)

5. Appendices

Appendix 1: Lines of enquiry and associated National Standards for Safer Better Healthcare.

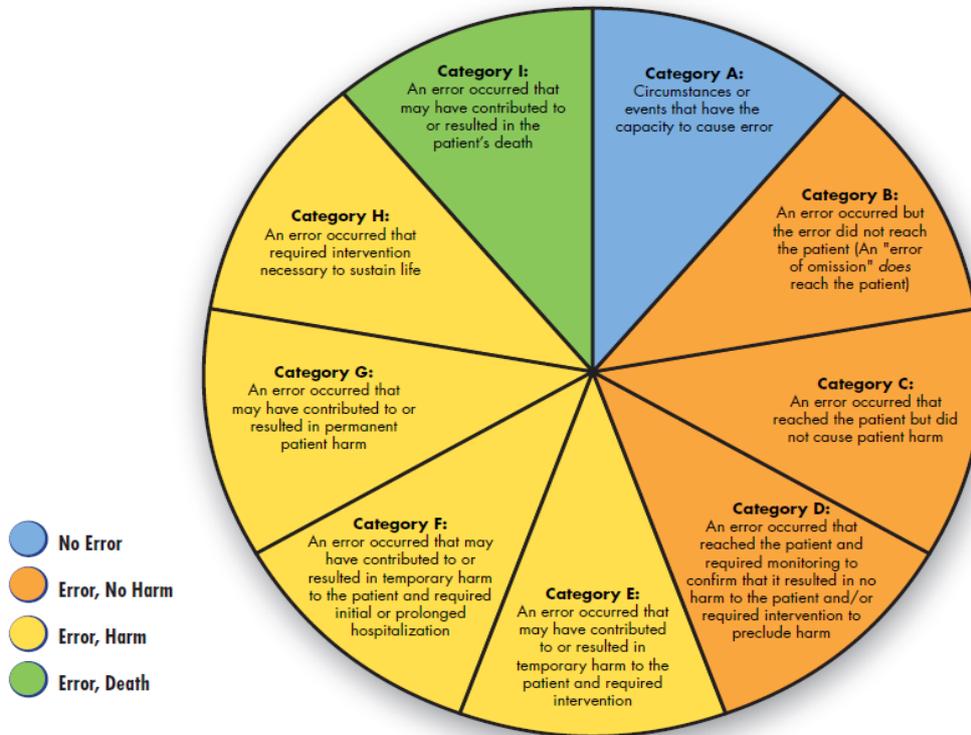
Area to be explored	Lines of enquiry	Dimensions/ Key Areas	National Standards
Leadership, governance and management	1. Patient safety is enhanced through an effective medication safety programme underpinned by formalised governance structures and clear accountability arrangements.	Capacity and capability	3.7, 5.1, 5.2, 5.5, 5.4, 5.6, 5.11
Risk management	2. There are arrangements in place to proactively identify report and manage risk related to medication safety throughout the hospital.	Quality and Safety	3.1,3.2,3.3,3.6, 5.8, 5.11, 8.1
High-risk medications	3. Hospitals implement appropriate safety measures for high-risk medications that reflect national and international evidence to protect patients from the risk of harm.	Quality and Safety	2.1, 3.1
Person centred care and support	4. There is a person centred approach to safe and effective medication use to ensure patients obtain the best possible outcomes from their medications.	Quality and Safety	1.1, 1.5, 3.1, 2.2, 2.3
Model of service and systems for medication management	5. The model of service and systems in place for medication management are designed to maximise safety and ensure patients' healthcare needs are met.	Quality and Safety	2.1, 2.2 ,2.3, 2.6, 2.7, 3.1,3.3, 5.11, 8.1
Use of Information	6. Essential information on the safe use of medications is readily available in a user-friendly format and is adhered to when prescribing, dispensing and administering medications.	Quality and Safety	2.1, 2.5, 8.1
Monitoring and evaluation	7. Hospitals systematically monitor the arrangements in place for medication safety to identify and act on opportunities to continually improve medication.	Quality and Safety	2.8, 5.8
Education and training	8. Safe prescribing and drug administration practices are supported by mandatory and practical training on medication management for relevant staff.	Capacity and capability	6.2, 6.3

Appendix 2: Hierarchy of effectiveness of risk-reduction strategies in medication safety.



Reprinted with permission from ISMP Canada

Appendix 3: National Coordinating Council for Medication Error Reporting and Prevention. Index for categorising medication errors.



Definitions

Harm

Impairment of the physical, emotional, or psychological function or structure of the body and/or pain resulting there from.

Monitoring

To observe or record relevant physiological or psychological signs.

Intervention

May include change in therapy or active medical/surgical treatment.

Intervention Necessary to Sustain Life

Includes cardiovascular and respiratory support (e.g., CPR, defibrillation, intubation, etc.)

© 2001 National Coordinating Council for Medication Error Reporting and Prevention. All Rights Reserved.

Permission is hereby granted to reproduce information contained herein provided that such reproduction shall not modify the text and shall include the copyright notice appearing on the pages from which it was copied.

Health Information and Quality Authority.
For further information please contact:
Health Information and Quality Authority
Dublin Regional Office
George's Court
George's Lane
Smithfield
Dublin 7
Phone: +353 (0) 1 814 7400
Email: qualityandsafety@higa.ie

URL: www.higa.ie

© Health Information and Quality Authority 2020