Health Information and Quality Authority

An tÚdarás Um Fhaisnéis agus Cáilíocht Sláinte

Report of the announced inspection of medication safety at Roscommon University Hospital.

Date of announced inspection: 09 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, medication, 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.

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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-

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[*] 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 Standards[1] (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.

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 Organization[3] 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 Roscommon University Hospital by Authorised Persons from HIQA; Dolores Dempsey Ryan, Nora O' Mahony and Emma Cooke. The inspection was carried out on 9 October 2019 between 08:50hrs and 16:05hrs.

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

- St. teresa's ward

- operating 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 senior pharmacist and the risk manager.

- Group two: the director of nursing and the general manager.

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

Information about the hospital

Roscommon University Hospital is a model 2[§] public acute hospital in the Saolta University Healthcare Group.[**] The hospital had a bed capacity of 63 inpatient beds and services provided included day surgery, diagnostic services, specialist rehabilitation medicine, palliative care services and it also had an urgent care centre.

[§] Model 2 hospital: admit low acuity medical patients and have a range of ambulance bypass protocols in place. They commonly have a daytime Medical Assessment Unit (MAU), urgent care centre and day care surgery is performed

[**] Saolta University Health Care Group is a hospital group which includes Portiuncula University Hospital, University Hospitals Galway (University Hospital Galway and Merlin Park Hospital), Mayo University Hospital, Sligo University Hospital, Letterkenny University Hospital, and Roscommon University Hospital.

2. Findings at Roscommon University 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 (appendix1) 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]

Roscommon University Hospital had a Drug and Therapeutics Committee in place in line with best practice.[15,16] The committee had responsibility for overseeing all processes relating to medication safety in the hospital. It was accountable to the Hospital Management Team through a formalised reporting structure and accountable to the Group Drug and Therapeutics Committee through the hospital general manager. Overall executive accountability and responsibility for oversight of medication safety within the hospital rested with the hospital general manager.

The Drugs and Therapeutics Committee met every two months. However, attendance at these meetings was not in line with its terms of reference, as a quorum was not always met. This finding was highlighted during the previous medication safety inspection.[17] Inspectors were informed that senior hospital managers planned to broaden out the membership of the Drugs and Therapeutics Committee to include a consultant anaesthesiologist.

Review of the hospital's organisational diagram indicated that there were thirty-four committees and working groups at the hospital and a number of these reported to the Hospital Management Team. It was explained to inspectors during interviews that many of the serving members of the Drugs and Therapeutics Committee were also members of multiple other committees in the hospital. This meant that issues relating to medication safety and medication incidents were regularly communicated to other committees and key individuals when relevant, ensuring a real time response to issues identified. However, the multiple layers and complexity associated with this organisational structure due to the need to report to multiple committees could result in potential duplication of work and impact attendance at meetings. Minutes of the Hospital Management Team meetings confirmed that the hospital was intending to review membership of all hospital committees. HIQA is of the view that the overcomplicated committee structure needs to be reviewed to ensure rational, effective governance structures and communication pathways are in place. This

could include a review of the function, membership and meeting frequency of hospital committee meetings.

Roscommon University Hospital did not have a medication safety strategy.[10,18] Despite not having a medication strategy or a formalised medication plan, the senior management team had informally identified key priorities for medication safety and were progressing with implementing same. These priorities included progressing with the recruitment and appointment of a clinical pharmacist and a pharmacy technician, a plan to develop a medication safety strategy, implement an audit strategic plan and medication reconciliation. The hospital should progress with their plan to develop a medication safety strategy linked with an overarching Saolta University Healthcare Group Drugs and Therapeutics Committee medication safety strategy.

Opportunities for improvement

- The hospital should look to develop a medication safety strategy to clearly articulate its short and long-term operational goals for medication safety.

- The overcomplicated committee structure in the hospital needs to be reviewed to ensure rational, effective governance structures and communication pathways are in place for medication safety.
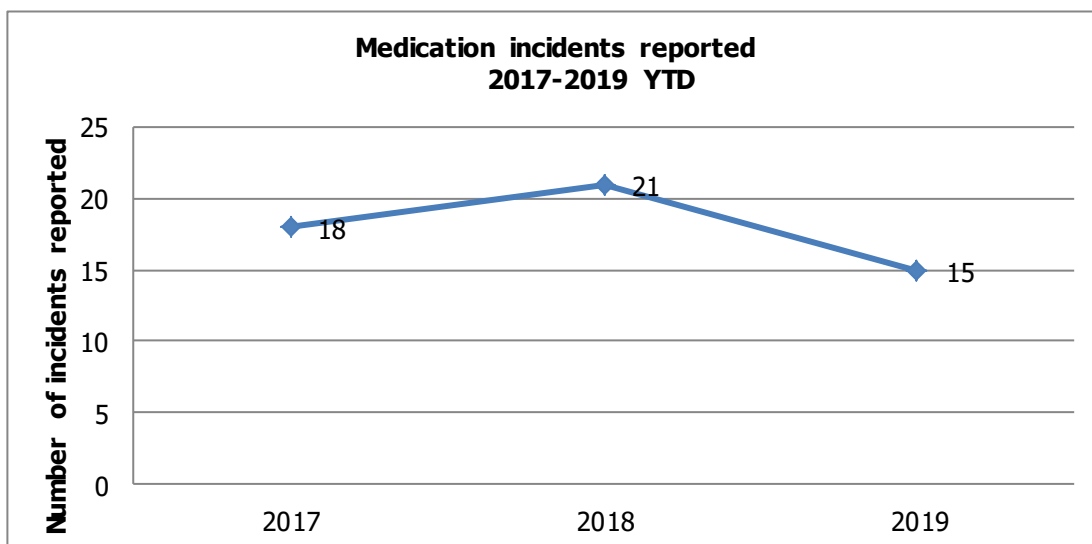
2.2 Risk management

Medication-related risks requiring additional control measures were documented on the hospital's corporate risk register. One risk identified was the lack of clinical pharmacy at ward level and senior hospital managers were progressing with the recruitment of a clinical pharmacist and a pharmacy technician to address this.

Medication safety incidents within Roscommon University Hospital were reported on the hospital's electronic quality management software system. Incident reports were reviewed by the risk manager with the senior clinical pharmacist using the Health Service Executive risk matrix.[19] Inspectors were informed that medication safety incidents were discussed at the Drugs and Therapeutics Committee and the Quality and Safety Committee meetings. Medication safety incident reports were produced monthly as part of an overarching quality and safety report for the Hospital Management Team.

While clinical incidents were inputted onto the *National Incident Management System* [††](NIMS), not all clinical incidents were inputted due to a lack of resources.[20] This was identified as an issue at the last inspection.

A total of 21 medication safety incidents were reported in 2018, 18 in 2017 and 15 year to date in 2019 which are very low numbers of medication safety incidents reported (see figure 1) in the context of the hospital activity levels, services provided and the population of patients cared for in the hospital. The majority of medication safety incidents were reported by nursing staff, the antimicrobial clinical pharmacist (.2 post) and recently by some medical staff. HIQA noted the there was little progress made to improve the culture of incident reporting from 2017 to 2019. Low numbers of incidents reported does not necessarily mean a low number of incidents occurring. Studies have found a positive association between increased incident reporting rates and measures of safety culture where an increase in incident reporting was indicative of a positive reporting culture within the hospital. [21]

Promoting and reinforcing a patient safety culture requires effective governance, clear accountability and strong leadership from healthcare professionals and managers at all levels of the organisation[1,11] The hospital acknowledged the low reporting rates of medication safety incidents and outlined that they were encouraging and supporting staff through verbal communication to report incidents including medical staff.

Figure 1. Medication safety incidents reported 2017 to 2019 YTD

†† 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).

One factor which increases incident reporting is the timely provision of feedback to staff on medication safety incidents reported and the actions required to avert future risks.[22,23] Inspectors were informed that a summary report on medication safety incidents was sent to each clinical area every two weeks and also sent to consultants and the senior clinical pharmacist.

Overall, staff who spoke with inspectors showed a general awareness of learning and improvement measures implemented following analysis of medication safety incidents. However, low reporting of medication safety incidents was identified as an issue at the last inspection in 2017 and this situation has not improved. To improve and promote a culture of incident reporting to support medication safety, stronger leadership is required from senior hospital managers, healthcare professionals and managers at all levels within the hospital.[24]

 This is an area for improvement that the senior hospital management team needs to focus on following this inspection.

Analysis of incidents

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 frontline staff.[11,25] Inspectors were informed that due to the low level of reporting of medication safety incidents, it was difficult to trend incidents. Hospital management acknowledged that the practice of responding to medication safety incidents was more reactive rather than proactive

Alerts and recalls

The senior pharmacist received and acted on alerts and recalls[‡‡] related to medication. The process in place was outlined to inspectors, and evidence of alerts circulated to frontline staff was observed by inspectors. An example of the action taken in response to a recent alert was outlined to inspectors.

Opportunities for improvement

- The hospital should identify and support targeted promotion of medication safety incident reporting, so that a culture of reporting is enhanced across all disciplines to mitigate against key medication-related risks identified.

- The hospital should ensure that all data collected relating to medication safety is analysed and trended to identify patterns of risk, areas for improvement and support a more proactive response to minimise the risk to medication safety risks occurring.

[‡‡] 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. 'High-risk situation' is a term used by the World Health Organisation[3] to describe situations where there is an increased risk of error with medication use. 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 for more information). High-leverage risk-reduction strategies such as forcing functions and fail safes, standardisation and simplification need to be implemented alongside low-leverage risk-reduction strategies such as staff education, passive information and the use of reminders.

Roscommon University 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 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:

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

Insulin

The hospital had risk-reduction strategies in place to mitigate against the risks associated with insulin. Examples of these are outlined below:

- the term 'units' was pre-printed to support safe prescribing of insulin
- insulin was double checked prior to administration
- insulin was administered using an insulin syringe or insulin pen device
- insulin pens in use in the hospital were for single patient use only
- opened insulin pens were stored in the medication trolley with individual patient details and date of opening recorded on a flag label [26]
- no extra insulin stock was stored on the wards with the exception of one ward where one insulin type (novarapid) was stored as extra stock and the clinical pharmacist was informed if this extra stock of insulin was used

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[§§] 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: are commonly referred to as blood thinners that prevent or treat blood clots, but these medications 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.

- insulins not in use were observed stored securely in a temperature controlled fridge with a high-risk label and a dispensing label with the patient's name and details recorded on it to indicate who the insulin was intended for[†††] [26]
- an insulin sticker was placed on the front of the medication prescribing and administration record to alert clinical staff that the patient was also on an insulin prescription and administration record
- the clinical pharmacist viewed the patient's insulin prescription and administration record before dispensing insulin which was then labelled with a dispensing label detailing the patient's name and details.
- the insulin medication prescribing and administration record had a section on it to provide information and guidance to staff on the management of hypoglycaemia in adults
- a diabetes advanced nurse practitioner was available for patient review and education
- the hospital had a hypoglycaemic[‡‡‡] guide and 'hypoglycaemic boxes[§§§]·
- the hospital had a storage and use of insulin policy that included information on how insulin pens brought in from home were to be stored on the ward.

Anticoagulants

The design of the new medication prescribing and administration record[****] supported safe management of anticoagulants with venous thromboprohylaxis and warfarin prescribed in the same section of the medication record to minimise inadvertent duplication of these medications. The medication prescribing and administration record had been developed using information from medication records from other hospitals within the hospital group. The hospital had recently introduced the medication prescribing and administration record on some of the ward areas of the hospital and planned to implement this record hospital wide.

Unfractionated heparin was not stored on the general wards. Inspectors observed different types of low molecular weight heparins[††††] stored together in the same drawer on one ward inspected, but segregated from other medications.

[†††] Flag labels: a method of attaching labels to 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.
[‡‡‡] Hypoglycaemic: when a person's blood sugar falls below the normal level
[§§§] Hypoglycaemic box: Hypo box provided quick access to equipment required to support effective treatment for patients in the event of hypoglycaemia.
[****] The Medication Record is the medication prescription and administration record, drug kardex or drug chart.
[††††] Heparin is an anticoagulant specifically used in the initial treatment and prevention of deep vein thrombosis, pulmonary embolism, and arterial thromboembolism.

Concentrated potassium chloride

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

- two strengths of pre-mixed potassium chloride solutions were available and dispensed by pharmacy department to clinical areas
- there was rationalised storage of pre-mixed potassium chloride observed in the ward area separated from other intravenous solutions
- concentrated potassium chloride ampoules were not routinely stocked on general wards and only dispensed on a patient specific basis and labelled accordingly[27]
- one ward visited had a high observational unit and if a patient required intravenous potassium, they were transferred to the high observation unit where an intravenous pump was used for the administration of concentrated potassium
- the medication record supported safe infusion practices. There were prompts on the electrolyte infusion section of the record to remind staff to administer electrolytes such as potassium or magnesium through a controlled-rate pump and that some solutions may need to be infused via a central line.

Overall high risk-reduction strategies were in place for concentrated electrolytes. The hospital also had a policy for the management and nursing care of a patient undergoing a magnesium infusion.

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.[28] A diverse range of medications are used which have the potential for a serious adverse event if administered incorrectly.[29] Therefore, the perioperative period is a high-risk situation in relation to medication safety.

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

- medications drawn up were labelled using international colour-coded labelling
- staff who spoke with inspectors reported that they used prefilled syringes for emergency medications required during the perioperative period
- medications were prepared, labelled and administered by the same doctor
- the storage of medications on the anaesthetic trolley was uncluttered clear and organised
- medications drawn up by the anaesthesiologist at the start of each case were reconciled and disposed of at the end of the case.

There was a process in place for communicating medications administered at transitions of care throughout the perioperative patient pathway.

Inspectors were informed that the hospital had an Operating Theatre Users Group that met every two months and membership included consultants from the peri-operative care team and senior nursing management staff. Informal meetings were also held between staff disciplines daily. Theatre nursing staff met every four to six weeks to discuss agenda items such as policies and clinical incidents including medication safety issues.

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:

- Intravenous paracetamol was used for patients with moderate pain or fever where the oral route was not clinically indicated. Information to guide staff on how to administer paracetamol intravenously was provided at point of care. This guide also included information relating to dose adjustments for low weight patients.
- The hospital had an up to date guideline titled 'Conscious Sedation in Endoscopy'.
- The hospital only stocked one strength of methotrexate tablets which were dispensed as a patient specific single dose.
- It was reported to inspectors that a strong painkiller of two different strengths was separated and stored on different shelves in the controlled drug[‡‡‡‡] cupboard in response to a medication safety incident to reduce the risk of error when administering this medication.
- Antimicrobial guidelines were available to guide staff in the prescribing and administering of antimicrobials which required therapeutic monitoring. The antimicrobial clinical pharmacist (.2 post) was available for guidance and support to staff as required.

Roscommon University Hospital provided HIQA with a generic high-risk medications list and also had an APINCH[§§§§] list displayed in the clinical areas visited by inspectors. The hospital had yet to develop their own local high-risk medications list with a policy to support staff in the management of high-risk medications.

[‡‡‡‡] Scheduled controlled drugs should be locked in a separate cupboard/container from other medicinal products to ensure further security. A controlled drug is any substance, product or preparation specified in the Schedule of the Misuse of Drugs Act 1977.
[§§§§] the 'APINCH' acronym and classification is widely used to assist clinicians focus on a group of medications known to be associated with high potential for medication-related harm.

The hospital had yet to develop a local list of sound-alike look-alike medications (SALADs)***** and display it in clinical rooms. Inspectors were provided with a copy of the Irish Medication Safety Network Sound-Alike Look-Alike Drugs (SALAD) list. Although, the hospital had no SALAD list displayed in the clinical areas visited, staff were provided with information on SALAD medications in the medication safety newsletter.

Overall, Roscommon University Hospital had implemented evidence-based safety measures for high-risk medications with a range of low, medium and high leverage risk-reduction strategies in place.

Opportunities for improvement

- The hospital should develop a local list of sound-alike look-alike medications (SALADs).

- The hospital should develop a local list of high-risk medication and continue to review risk-reduction strategies for high-risk medication to ensure that they appropriately reflect all of the high-risk medications in use within the hospital.

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.[30, 31]

National Inpatient Experience Survey

The Roscommon University Hospital National Inpatient Experience Survey††††† was completed by 118 patients discharged from the hospital in May 2019 achieving a response rate of 39% for the hospital.[32] The scores for Roscommon University Hospital and the national scores for 2017, 2018 and 2019 are illustrated in table 1 below. ‡‡‡‡‡

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

††††† The National Inpatient Experience Survey is a nationwide survey which asks people for feedback about their stay in hospital. The survey is a partnership between HIQA, the Health Service Executive (HSE) and the Department of Health. All patients over the age of 16 discharged during May who spent 24 hours or more in a public acute hospital, and have a postal address in the Republic of Ireland are asked to complete the survey.

‡‡‡‡‡ 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.

Questions	Year	Roscommon University Hospital score	National score
Q44. Did a member of staff explain the purpose of the medication you were to take at home in a way you could understand?	2019	7.7	8.0
	2018	8.3	8.0
	2017	8.0	7.8
Q45. Did a member of staff tell you about medication side effects to watch for when you went home?	2019	6.2	5.3
	2018	7.2	5.2
	2017	4.5	5.1

Table 1: Comparison between Roscommon University Hospital and national scores for Questions 44 and 45 of the National Inpatient Experience Survey 2017,2018 and 2019.

In 2019, the results showed that Roscommon University Hospital scored slightly below the national average scores for explaining the purpose of taking medication in a way the patient can understand and scored above the national average for explaining medication side effects to watch out for at home. Inspectors were informed that hospital staff encouraged patients to record their medication on the 'My Medication List' in line with the 'Know, Check, Ask campaign'.§§§§ [33,34]

Patient information

Inspectors were informed that information on medicine use and side effects was provided to patients by doctors and nurses. The advanced nurse practitioner played a role in patient education in specialist areas such as diabetes. Senior hospital managers told inspectors that the hospital planned to develop patient medication information leaflets with the support of the Saolta University Healthcare Group and or adapt patient medication information leaflets from other hospitals within the group.

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§§§§ The campaign encourages people who take regular medications, and those assisting them, to know your medications and keep a list, bringing the list to appointments and if admitted to hospital. Check that you are using the right medicine the right way and ask your healthcare professional if you're unsure.

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.[35, 36,37]

The hospital had taken initial steps to implement medication reconciliation by revising its medication prescribing and administration record to include a section on medication reconciliation. Medical and nursing staff told inspectors that following an incident, it was now practice for all discharge prescriptions to be checked by two clinical staff. As already discussed, senior hospital managers reported that the hospital was currently recruiting a second clinical pharmacist to support the implementation of medication reconciliation.

Systems to support medication safety and optimisation

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

- prescribing and administration of crushed medications
- prescribing and administration of medications intended for nasogastric administration
- prevention of unintended administration of enteral medication though the intravenous route.

Inspectors were informed that patients' medication prescribing and administration records were reviewed during consultant-led ward rounds which were carried out three times a week to support medication optimisation.

Patient weight measurements are important for medications that require an individual weight-based dose.[38] Patient weights and allergies were documented on all medication records reviewed by inspectors during the inspection.

Opportunities for improvement

- The hospital should implement formal medication reconciliation for all patients on transitions of care.

- The hospital should look to have formal structured systems in place for patient education on medication, and also progress with the development of medication information leaflets for patients.

2.5 Model of service and systems in place for medication safety

International studies support the role of clinical pharmacy service[******] in hospital wards in preventing adverse drug events.[39,40,41,42,43,44]

Similar to the previous inspection, HIQA found that Roscommon University Hospital was not sufficiently resourced to provide a clinical pharmacy service at ward level. Inspectors found on the day of inspection that the pharmacy service within the hospital was almost entirely restricted to dispensing. The hospital had an antimicrobial pharmacist one day a week from another hospital to review patient records with regard to antimicrobial stewardship.

The absence of a clinical pharmacist at ward level, in the operating theatre and other high risk clinical areas could pose a risk to patient safety. As already discussed in section 2.2, inspectors were informed that the hospital was actively recruiting a second clinical pharmacist and a pharmacy technician to provide a clinical pharmacy service at ward level. Staff informed inspectors that the senior pharmacist was easily accessible for medication information and support with queries.

The hospital had a system in place for the approval of new medications which was under the governance of the Drugs and Therapeutic Committee.[45] Similar to the previous inspection, inspectors found that the hospital did not have a list of medications approved for use in the hospital (a formulary),[††††††] but had a list of medications stocked for use in the hospital. The purpose of maintaining this list is to ensure appropriate governance of medications approved for use within the hospital and that a safety evaluation occurs before new medications are introduced.[46]

The hospital should move towards the development of a defined formulary system, to outline medications that are approved for use in the hospital by the Drugs and Therapeutics Committee and provide information and guidance on the use of these medications. This work could be supported through collaboration with other hospitals within the Saolta University Health Care Group.

Opportunities for improvement

- The hospital needs to progress with its plan to address deficiencies in clinical pharmacy resources and while addressing this put in place contingency

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[******]Clinical pharmacy service describes the activity of pharmacy teams in ward and clinic settings; 'core' activities may include:-prescription monitoring, prescribing advice, optimising therapeutic use of medications, adverse drug reaction detection and prevention, patient education and counselling.

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

arrangements to ensure that governance, accountability and oversight arrangements for medication management and safety are effective.

▪ The hospital should move towards the development of a defined formulary system, to outline medications that are approved for use in the hospital by the Drugs and Therapeutics Committee linked to an overarching Saolta University Health Care Group formulary.

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]

Roscommon University Hospital had access to a model 4 hospital' medication guidelines with in the group. However, the use of these guidelines had not been formally approved for local use by the Drugs and Therapeutics Committee. This finding was highlighted during the previous medication safety inspection.[17]

The Health Service Executive[47] and the National Clinical Effectiveness Committee[48] recommend that policies, procedures and guidelines are reviewed and updated every three years. Inspectors found that the clinical areas visited had access to printed up to date copies of a model 4 hospital's intravenous drug administration guidelines within the hospital group. Medication information was also accessible to staff on the computers. Medication information available included the following:

▪ British National Formulary in electronic format
▪ Antimicrobial Prescribing Policy/Guidelines mobile application
▪ antimicrobial Guidelines available as an application for smart phones
▪ intravenous administration monographs for adults.

Medication policies, procedure and guidelines viewed by inspectors during the inspection were up to date. The hospital also had a list of medication policies, procedures and guidelines and reported that they were progressing with updating those that were due for review. The Quality and Safety Committee and the Drugs and Therapeutic Committee approved all medication-related policies, procedures and guidelines prior to implementation.

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.[1,15] Evidence of monitoring and evaluation of medication

safety provided to inspectors for the past two years consisted of the following audits:

- audits of the use of restricted antimicrobials and overall antibiotic usage
- audit of documentation of allergy status on medication chart January 2018 – December 2018
- 2019 nursing quality care metrics[‡‡‡‡‡‡][49] for each clinical area
- clinical audit on the use of antihypertensive in the hospital 2016
- venous thromboembolism prophylaxis in older patients
- audit of venous thromboembolism in a Level 2 hospital
- monitoring of sedation in endoscopy April-June 2019.

There was evidence of monitoring and evaluation of medication safety through audit, but not all of the audits completed had a time bound action plan or recommendations made to address areas of improvement with audit findings. Hospital management confirmed that audit practice was adhoc and not centrally controlled.[50]

The hospital had a nursing clinical audit strategy for 2018-2021 with an operational plan and the medical team had an audit list for 2019. Inspectors found that there was evidence that audits were carried out by medical and nursing staff. Given that the hospital had a nursing audit strategy, there is an opportunity here for both medical and nursing staff to collaborate and develop a combined multidisciplinary audit strategy based on local priorities, driven by and with oversight from hospital management to support medication safety practices in the hospital.

Nursing and midwifery quality care metrics were monitored on a monthly basis and included a number of elements that focused on medication management. The findings were presented at the Nurse Quality Board meetings. Results reviewed by inspectors for the past year outlined good compliance with medication storage and custody, schedule controlled drugs and medication 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.[15] Audit metric results were discussed at a staff nurses forum and audit findings were also discussed at non-consultant hospital doctors meetings with consultants. Medical staff told inspectors that following a medication safety incident, a presentation on drug allergies was made by a non-consultant hospital doctors to share learning amongst colleagues. This presentation could also be shared with other disciplines to share learning gained.

[‡‡‡‡‡‡] Metrics are parameters or measures of quantitative assessment used for measurement and comparison or to track performance

Opportunities for improvement

- The hospital should ensure that audits are centrally coordinated and conducted in a strategic 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.[51]

Roscommon University Hospital had an induction programme for doctors where the first part of their induction programme was provided at Galway University Hospital for one week. The senior pharmacist in Roscommon University Hospital also provided additional medication safety education to non-consultant hospital doctors on induction with a focus on orientation to the medication record and prescribing.

Nurses completed the HSELanD[§§§§§§] medication management module at induction and every two years there after. Nurses also completed an intravenous study day with associated competency assessment as part of their induction programme. Training records were accessible by managers on computer, and records viewed by inspectors demonstrated good compliance with attendance for nurses.

A consultant anaesthesiologist provided informal education sessions at least once a month in the operating theatre department which were well attended by all theatre staff. Presentations made were stored in a local anaesthetic teaching folder to share the information with other clinical staff. An example of these education sessions was a session on anaesthetic medications.

Overall, inspectors found ongoing education in relation to medication management and safety was relatively limited when compared to similar hospitals inspected thus far by HIQA under this programme of monitoring, for both nurses and medical staff.

Opportunity for improvement

- The hospital should continue to ensure that professionals have the necessary competencies to deliver high-quality medication safety through induction and ongoing training. This could be supported by developing a structured targeted ongoing programme of education for medication safety.[11]

[§§§§§§] The health service eLearning and development service.

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.

The hospital had a Drugs and Therapeutics Committee that provided oversight for medication safety at the hospital. However, attendance at these meetings was not in line with its terms of reference. A review of the hospital's organisational diagram indicated that there were a large number of committees and working groups at the hospital and that many of the serving members of the Drugs and Therapeutics Committee were also members of multiple other committees in the hospital. HIQA is of the view that the overcomplicated committee structure in the hospital needs to be reviewed to ensure rational, effective governance structures and communication pathways are in place for medication safety.

In many areas there was limited or no progress with recommendations made during the previous medication safety inspection since 2017. Inspectors found that the hospital had no medication safety strategy in place, was still not sufficiently resourced to provide a clinical pharmacy service at ward level and there was no improvement with medication incident reporting. In addition, medication reconciliation for patients on transitions of care had not been implemented and the medication guidelines adopted from another hospital had not been formally approved by the Drugs and Therapeutics Committee despite this being highlighted during the previous medication safety inspection.

The hospital was actively progressing the recruitment and appointment of a clinical pharmacist for the clinical ward areas and a pharmacy technician that may address some of these deficiencies. Nonetheless in the absence of clinical pharmacy resources, senior hospital managers and those responsible for medication safety need to provide stronger leadership to ensure medication safety systems are in place to protect patients, to strengthen reporting and analysis of medication safety incidents and address the recommendations contained in this and the last inspection report.

Despite these challenges, Roscommon University Hospital had established systems in place for high-risk medications and had implemented a new medication prescribing and administration record to support medication reconciliation in the future, antibiotic and venous thromboembolism prescribing.

The hospital had a generic high-risk medication list, but had yet to develop a local high-risk medication and a local SALAD list. However, the hospital had identified high-risk medications in use, and had implemented evidence-based safety measures to protect patients from the risk of harm associated with these high-risk medications.

There was evidence of monitoring and evaluation of medication safety through audit and metrics. Inspectors found examples of audit practice, but the hospital should ensure that audits are centrally coordinated and conducted in a strategic multidisciplinary manner to assure senior hospital managers about medication safety practices.

It is recommended that this report is shared with senior managers, clinicians and other relevant staff at Roscommon University Hospital and with Saolta University Healthcare Group to highlight both what has been achieved by the hospital in implementing medication safety activities to date, and to foster further much needed collective progression from this time point.

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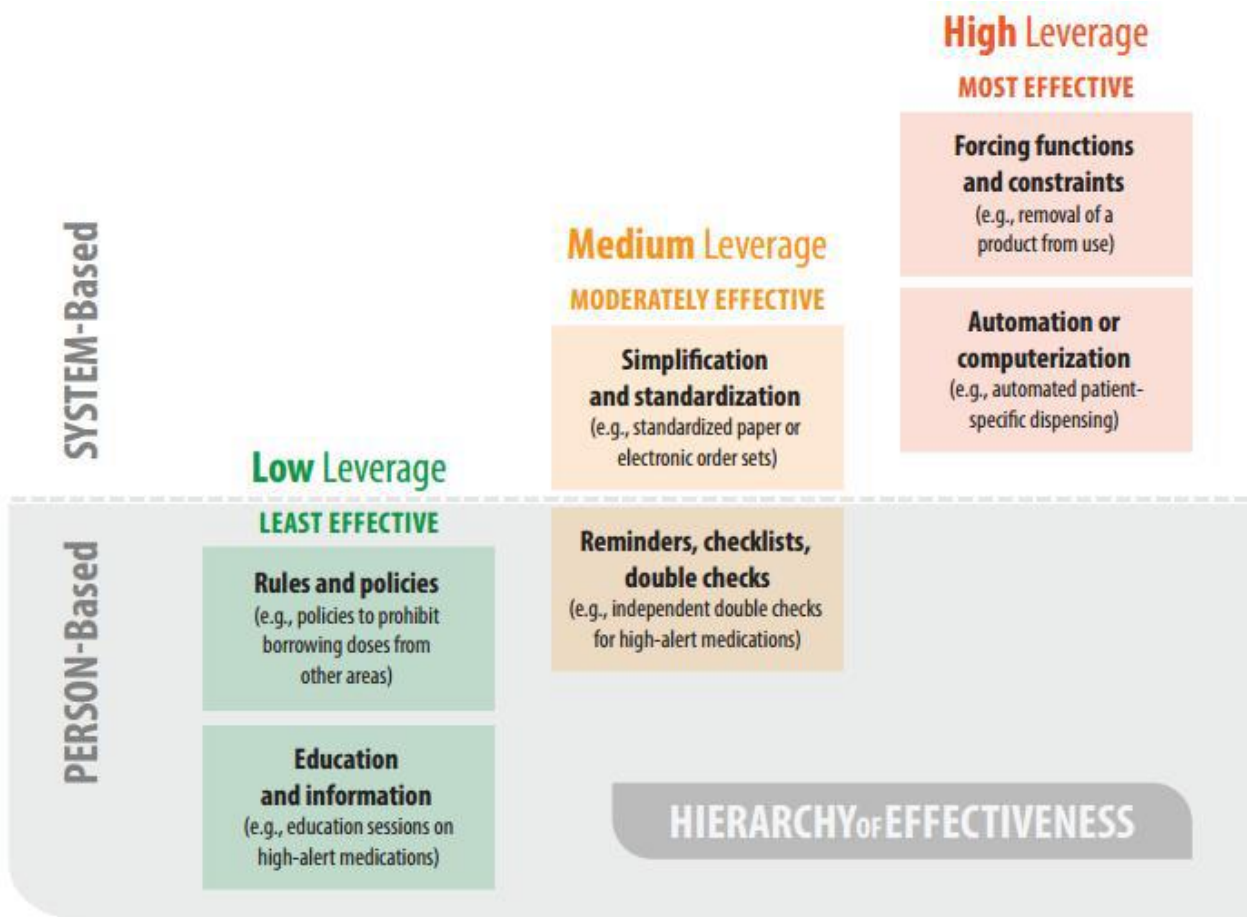
4. Appendices

## 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.

High Leverage
MOST EFFECTIVE

Forcing functions and constraints
(e.g., removal of a product from use)

Automation or computerization
(e.g., automated patient-specific dispensing)

Medium Leverage
MODERATELY EFFECTIVE

Simplification and standardization
(e.g., standardized paper or electronic order sets)

SYSTEM-Based

Low Leverage
LEAST EFFECTIVE

PERSON-Based

Rules and policies
(e.g., policies to prohibit borrowing doses from other areas)

Reminders, checklists, double checks
(e.g., independent double checks for high-alert medications)

Education and information
(e.g., education sessions on high-alert medications)

HIERARCHYOF**EFFECTIVENESS**

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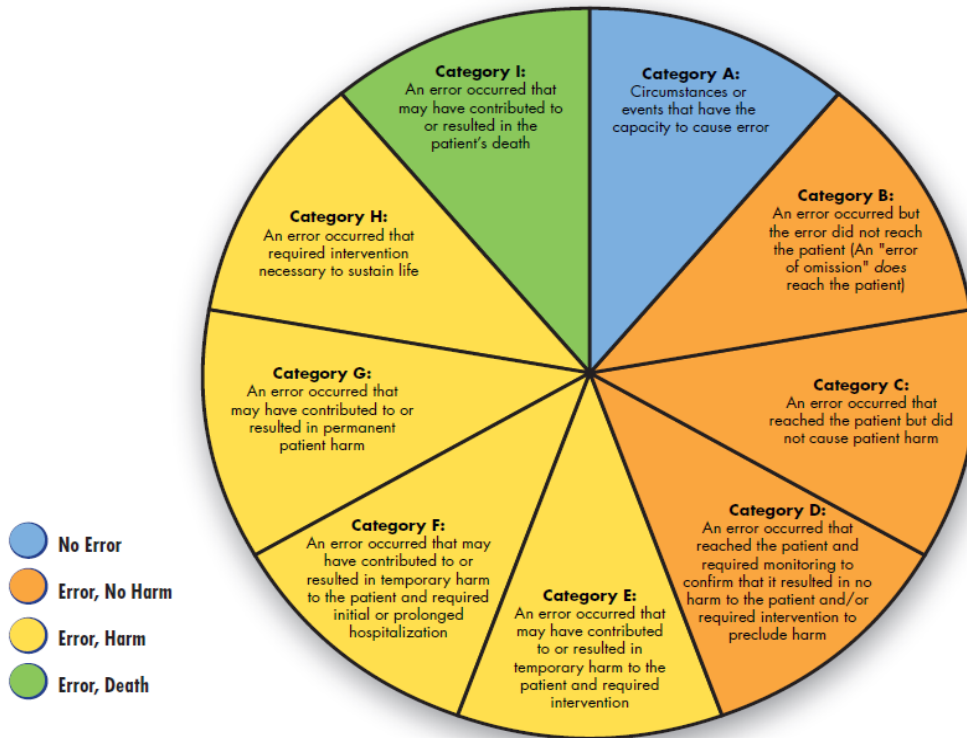
Definitions

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.)

Category I: An error occurred that may have contributed to or resulted in the patient's death

Category A: Circumstances or events that have the capacity to cause error

Category H: An error occurred that required intervention necessary to sustain life

Category B: An error occurred but the error did not reach the patient (An "error of omission" *does* reach the patient)

Category G: An error occurred that may have contributed to or resulted in permanent patient harm

Category C: An error occurred that reached the patient but did not cause patient harm

Category F: An error occurred that may have contributed to or resulted in temporary harm to the patient and required initial or prolonged hospitalization

Category E: An error occurred that may have contributed to or resulted in temporary harm to the patient and required intervention

Category D: An error occurred that reached the patient and required monitoring to confirm that it resulted in no harm to the patient and/or required intervention to preclude harm

- ● No Error
- ● Error, No Harm
- ● Error, Harm
- ● Error, Death