



Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

An Ghníomhaireacht um Éilimh ar an Stát
State Claims Agency

Clinical Risk Unit & Snapshot Insights

Presenter:

Dr Cathal O’Keeffe

Deputy Director - Head of Clinical Risk

25 November 2025



Clinical Risk Unit & Snapshot Insights – Agenda

State Claims Agency risk mandate & claims profile

Clinical Risk Unit updates

Snapshots and insights from claim and incident analysis

Learning from claim case study



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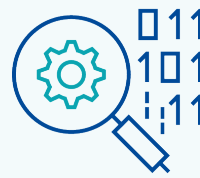
State Claims Agency and Clinical Risk Unit Updates

Our Services

We provide a number of **specialist services** to State Authorities, in line with our mandate.



Claims
Resolution



Risk
Management



Legal Costs
Management

State Claims Agency: Statutory Risk Management Mandate

NTMA (Amendment) Act, 2000, Section 8(4)

The Act sets out that the SCA shall advise and assist a State Authority whenever it considers it appropriate to do so for the purpose of reducing risks that may occasion claims. Such advice may include:

- the **provision of information, instruction and training** for the purposes of identifying and taking appropriate measure to counter such risks
- the **assessment of any such risk**, including the determination of whether it could give rise to a serious hazard
- the **evaluation of the adequacy of the measures adopted by such an authority** to counter any such risk
- the provision to such an authority of **safety audits, inspections and reviews**

Clinical Indemnity Scheme



Covered

- Professional medical services provided in public hospitals, clinics and healthcare facilities
- Clinical care during transfer of patients
- Representation at Coroners' Inquests
- Good Samaritan acts within Island of Ireland

Did you know?

Principle of “enterprise liability” applies – the health and social care service assumes vicarious liability for the acts and omissions of its employees providing professional medical services.



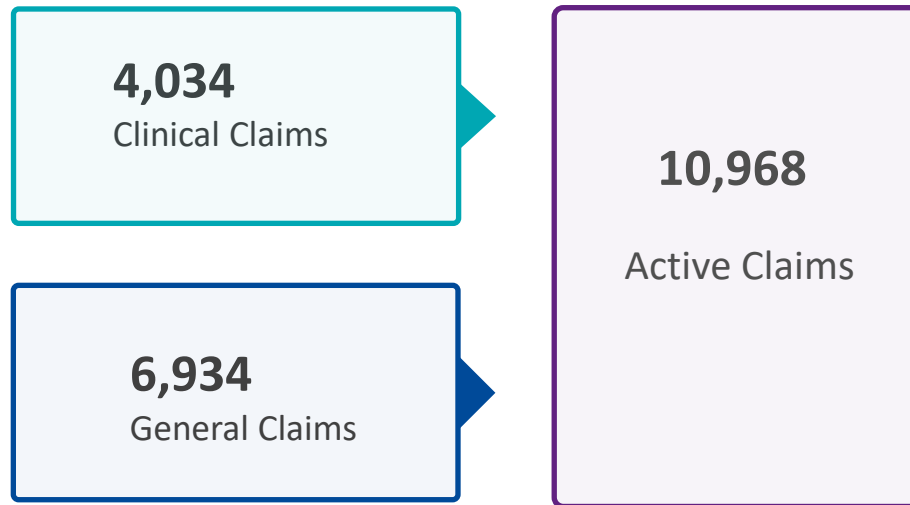
Not Covered

- Private hospitals
- Private practice in private settings, save for the Caps arrangements.
- Disciplinary hearings
- Criminal cases
- GPs

NB: Supplementary insurance required

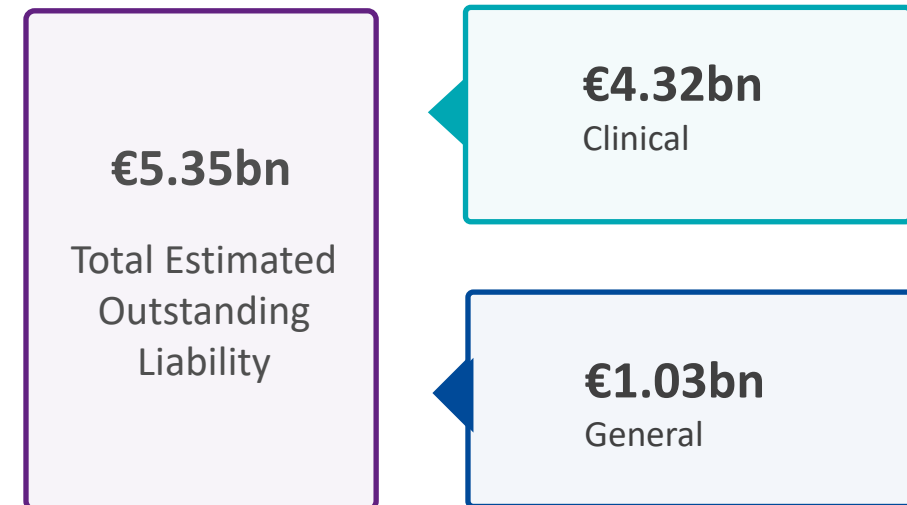
Claims Position (to end-2024)

Active Claims



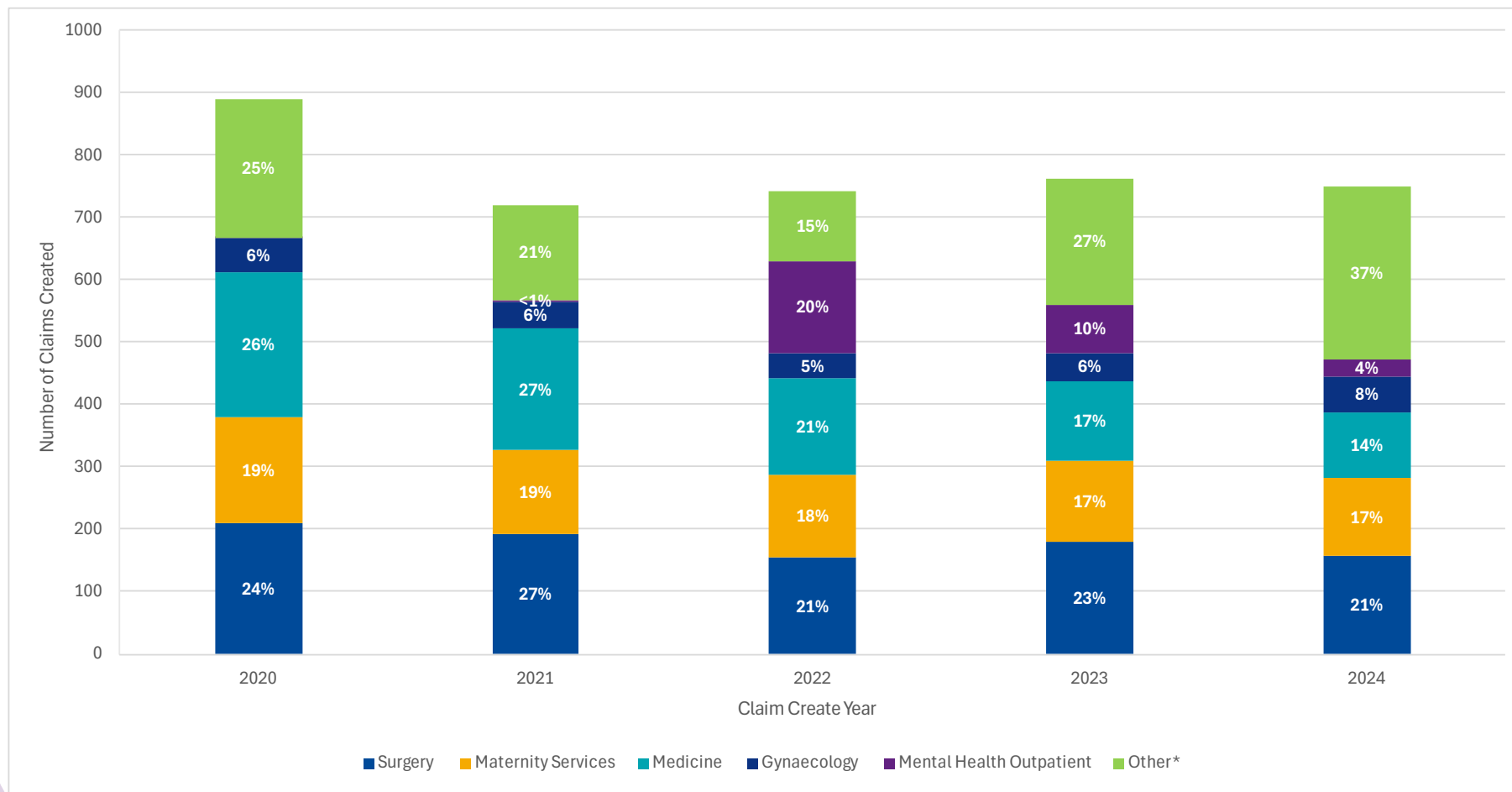
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Outstanding Liability



Number of clinical care claims created by service

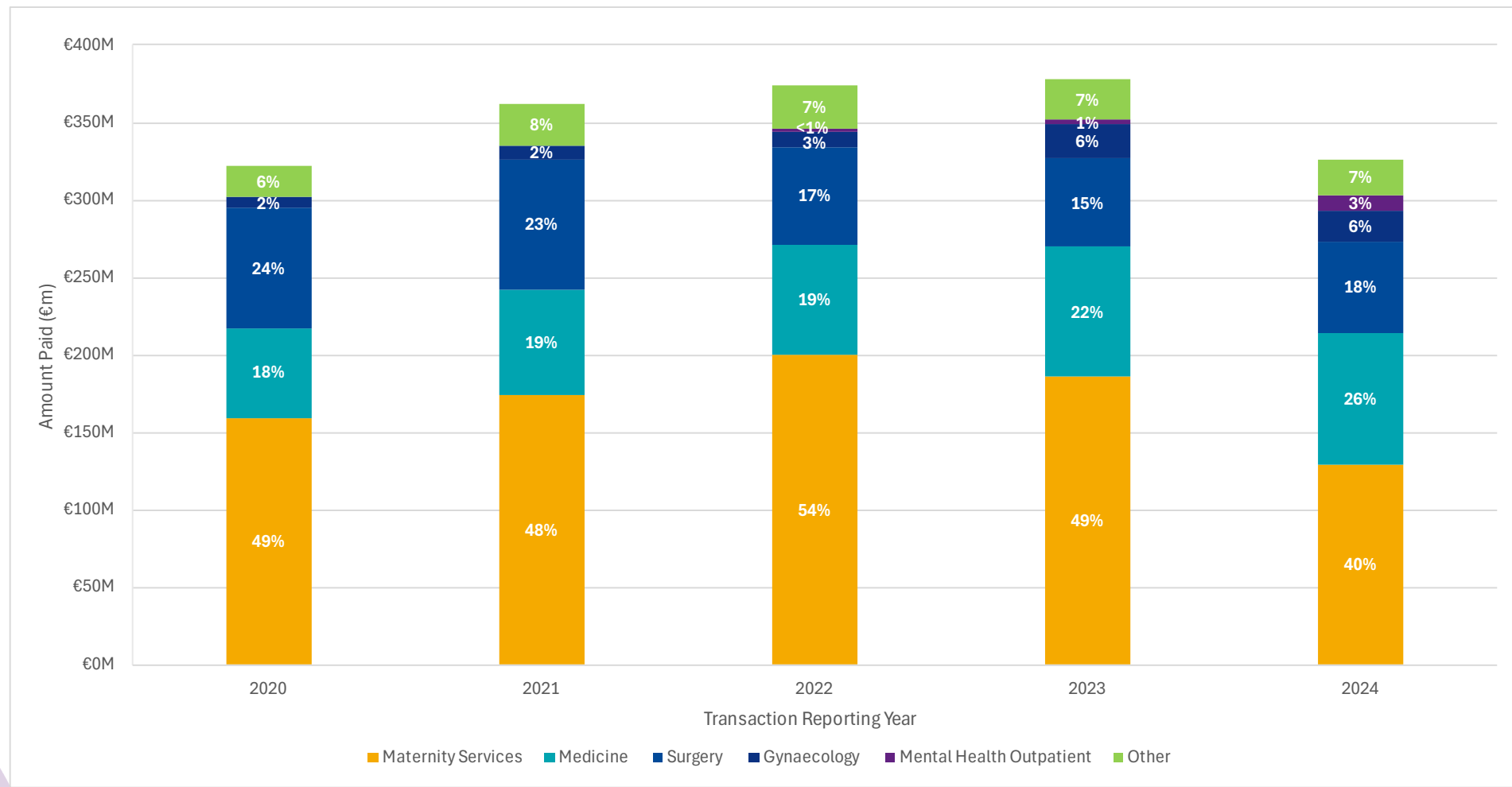
Clinical Care Claims (Top 5, based on number of claims created in 2024)



*Other includes all Service categories not included in the top 5 as well as claims where Service is null.

Transactional amount paid on clinical care claims by service

Clinical Care Claims (Top 5, based on transactional amount paid in 2024)



*Other includes all Service categories not included in the top 5 as well as claims where Service is null.

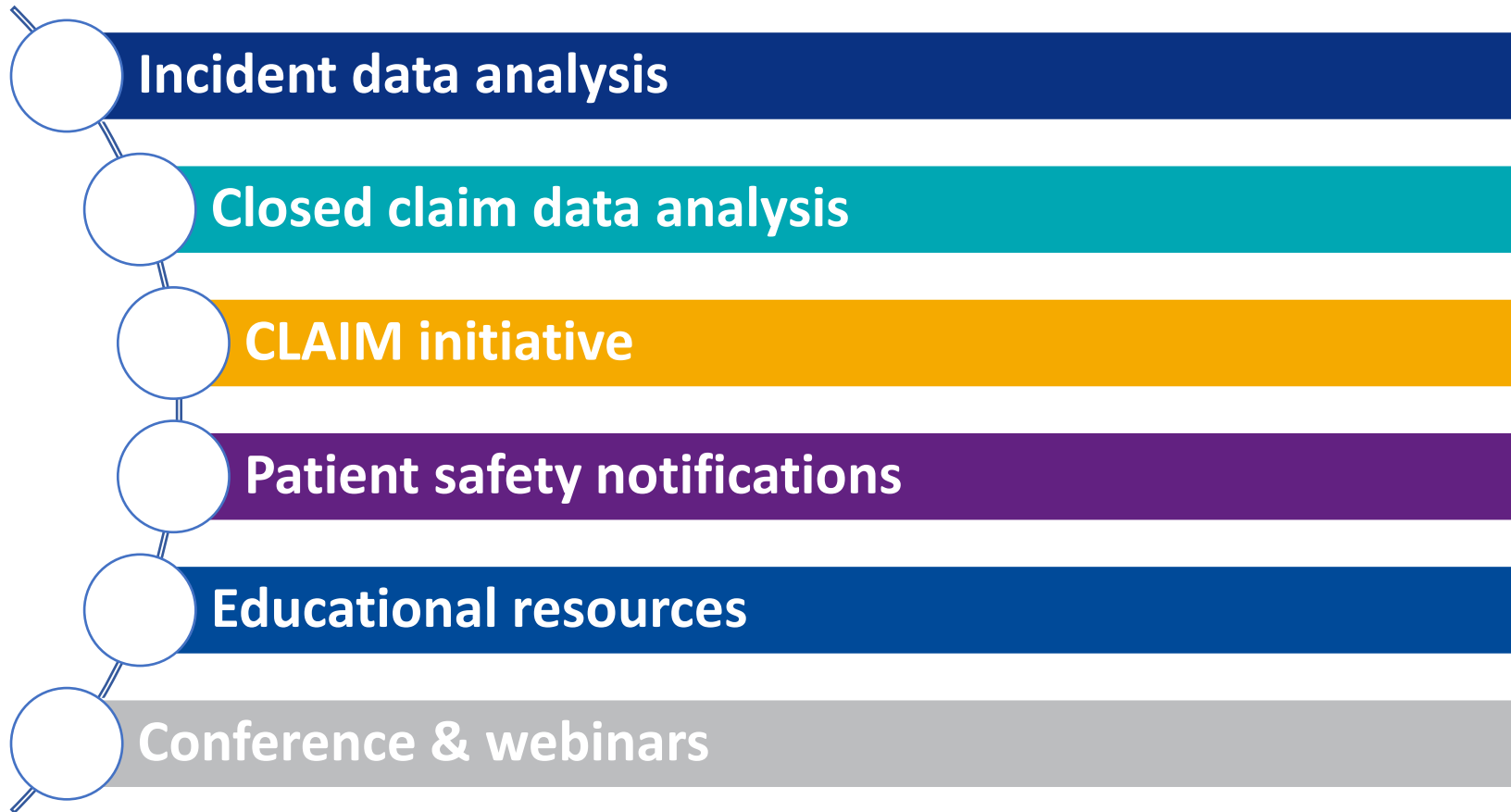
Clinical care claims created in 2024 and estimated liability

Clinical Care Claims (Top 5, based on number of claims created)

Sub Hazard Type	No. of Claims Created	Estimated Liability (€M)
Surgical/Medical Procedures	227	67.63M
Diagnosis	181	116.21M
Care Management	128	59.71M
Labour/Delivery	99	137.81M
Medication	64	59.73M
Other Categories*	50	34.11M
Grand Total	749	475.20M

*Other Categories includes the remaining Sub Hazard types which are not included in the top 5 by claim count.

Clinical Risk Unit: Engagement with services



C.L.A.I.M Project: Claims, Learning, Actions, Implementation, & Monitoring

Our Aim

Continuous engagement with hospitals in relation to high value claims and claims where an outcome was extreme to share learning and seek assurance.

What do you need to do?

- ✓ Liaise with State Claims Agency Clinical Risk Advisor/Manager
- ✓ Consider/analyse any learning from the claim internally
- ✓ Provide assurance to State Claims Agency about measures taken to prevent reoccurrence



SCA Learning Event Report: Understanding and Improving Diagnosis

NEWS3 Oct 2025

Event report: Understanding and Improving Diagnosis in Healthcare (1 October 2025)

The [Clinical Risk Unit](#) in the [State Claims Agency](#) hosted the conference 'Understanding and Improving Diagnosis in Healthcare' for delegated State authorities under the Clinical Indemnity Scheme, in-person at the [Alex Hotel](#) on 1 October.

This learning event brought together leaders in the field of diagnostics in healthcare to share their knowledge, expertise and experience.



- The speakers explored the theme of diagnosis – exploring the challenges, as well as the best practices and the latest technologies, such as artificial intelligence (AI), that are shaping the future of diagnosis to improve the quality of care and patient safety.
- The conference was attended by over 100 delegates, including representatives from the HSE, hospitals and a range of other health and social care organisations.



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Snapshot Insights: Clinical Risk Insights newsletter



- Clinical Risk Insights is the regular newsletter issued by the Clinical Risk Unit
- Each edition includes articles on managing clinical risk, information on upcoming webinars and events, and notifications of any updates to NIMS.





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Snapshot insights from incidents and claims



Clinical Risk Snapshots - Transfer of care: Focus on admission and discharge



- Transfer of care ensures the **coordination and continuity of healthcare** as **patients** transfer between different locations or different levels of care within the same location.
- Analysis of NIMS data shows that incidents related to **admission and discharge** occur during transfer of care between hospital and community services and between departments.
- Incidents include: **lack of admission coordination, poor discharge planning, incomplete or inaccurate documentation, and lack of resources** such as bed availability, all impacting on patient care.

Clinical Risk Snapshots - Transfer of care: Focus on admission and discharge

Key Messages: Admission

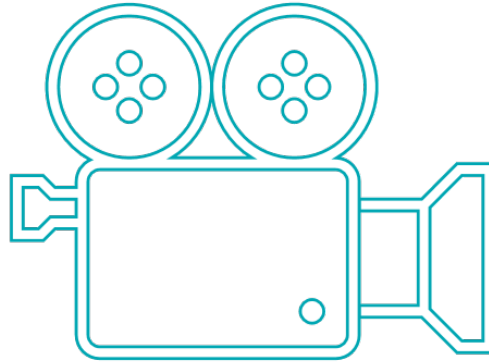
- ✓ Clearly communicate **criteria for acceptance and admission** of patients to relevant stakeholders (patients, family, carers, ambulance service, referring services, and general practitioners (GPs)).
- ✓ **Streamline administrative processes** through use of standardised admission notes, and where possible the implementation of integrated electronic health records.
- ✓ Ensure clear communication pathways for **pre-transfer acceptance**.
- ✓ Ensure admission **documentation is comprehensive** and includes detailed medical history, reason for admission, estimated length of stay and expected date of discharge.
- ✓ Ensure efficient '**real-time**' **bed management** to reduce waiting times and **improve service user experience**, by use of data analytics and alignment of IT systems to enhance patient flow.

Clinical Risk Snapshots - Transfer of care: Focus on admission and discharge

Key Messages: Discharge

- ✓ Ensure **early discharge planning** and identify issues that would impact a patient's discharge or transfer so that action may be taken early to address them.
- ✓ Use **checklists and standardised criteria** to arrange prescriptions, discharge letters and any further care requirements prior to discharge.
- ✓ Follow up on the results of **diagnostic tests or investigations** and ensure appropriate action taken, **including communication** to the GP or community services. The responsibility for following up on tests lies with the doctor who ordered them.
- ✓ Following discharge ensure a timely and **prompt discharge summary** which clearly documents, at a minimum, a summary of relevant medical and treatment history, medication and medication changes, any planned follow-up by the discharging service, action required by service / GP is clearly documented.

New Educational Video



Enhancing safety in clinical handover during transfers of care

<https://stateclaims.ie/learning-events/clinical-risk-video-enhancing-safety-in-clinical-handover-during-transfers-of-care>





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Learning from claim case study



Learning from claims case study: fall from trolley

Vignette

A man in his 70s was brought in by ambulance to the Emergency Department (ED) with a history of COPD and had complained of numerous blackouts that day brought on by coughing.

The patient was triaged and placed on a trolley. The patient suffered a further blackout and fell off the trolley.

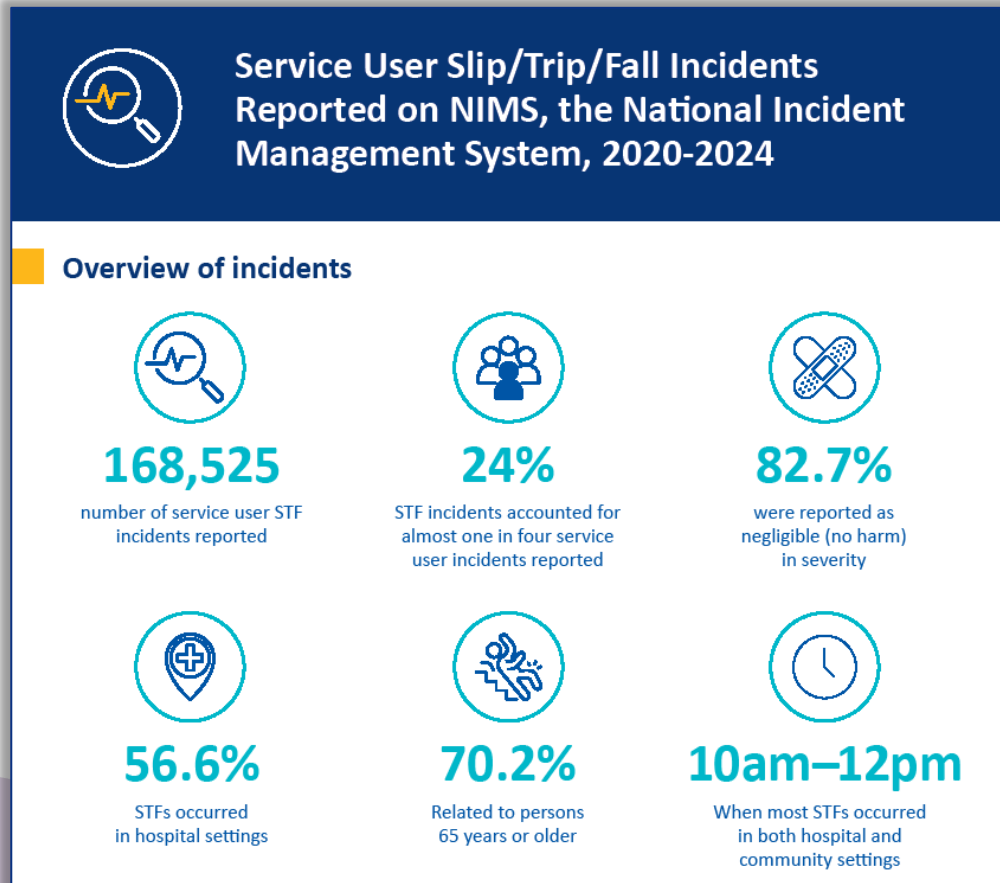
The patient suffered a hip fracture and extensive soft tissue injuries.

Learning from claims case study: Fall from trolley

Learning

- The patient's advancing age, history of a chronic condition (COPD), and history of numerous blackouts should have indicated that he was at a high risk of falling.
- On this basis, a falls risk assessment should have been carried out and the trolley sides should have been up at all times.
- This would have prevented the fall and the patient's subsequent injuries.

New resource coming soon – Slip, Trip & Falls Infographic



- In line with our statutory risk management mandate and in support of the United Nations 2025 International Day of Older Persons theme, “Our Well-Being, Our Rights”, the Clinical Risk Unit completed an analysis of **slip, trip & falls incidents reported on NIMS** from 2020-2024.
- This infographic shares **national data on reported service user slip, trip & falls incidents** and provides **learning opportunities** for health and social care services.



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Safe Use of Oxytocin in Maternity Services

Presenter:

Clíodhna Grady

Senior Clinical Risk Manager

25 November 2025



Agenda

Use of oxytocin in maternity services

Learning from incidents and claims

Advice and available guidance for best practice

What is oxytocin and why is it used in maternity services?

- Oxytocin is a hormone and neurotransmitter that plays a key role in childbirth and breastfeeding.
- Synthetic oxytocin (e.g., Syntocinon[®], Pitocin[®]) is a drug that is commonly used for:
 - Induction or acceleration of labour
 - Active management of the third stage of labour
 - Prevention and treatment of postpartum haemorrhage (PPH)



Inappropriate or incorrect use of oxytocin

This can result in uterine hyperstimulation / tachysystole, which can have catastrophic implications for the woman and her baby.



Placental abruption

Uterine rupture



Interrupted utero-placental perfusion

Fetal hypoxia

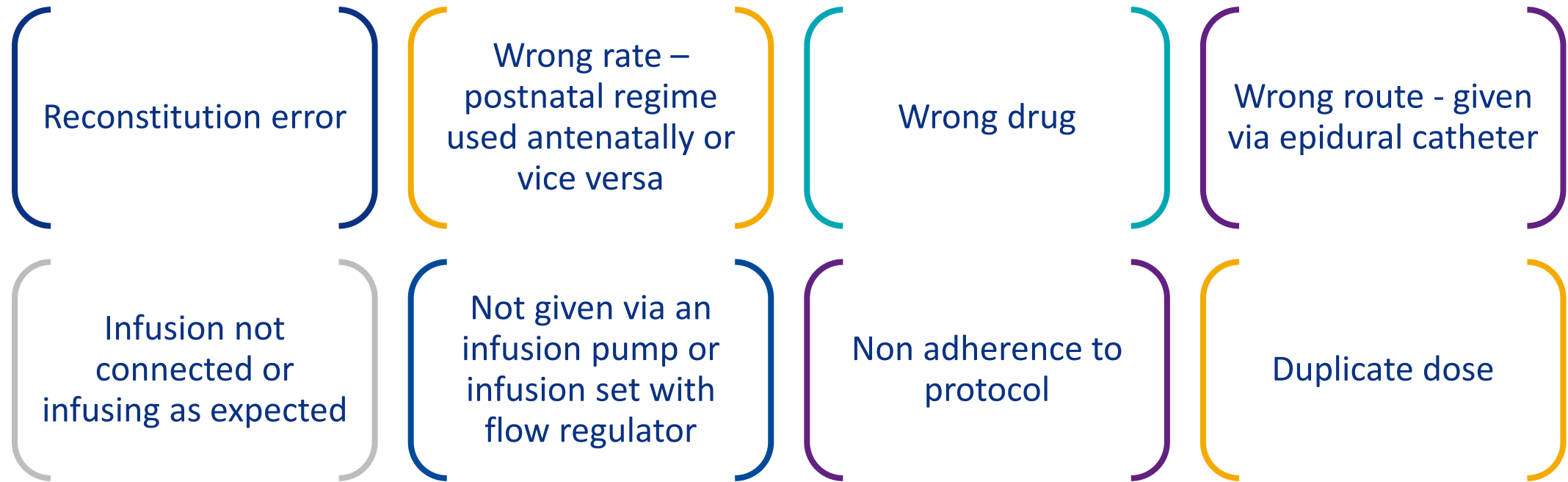


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Learning from incidents and catastrophic claims in maternity services: Insights into the inappropriate or incorrect use of oxytocin

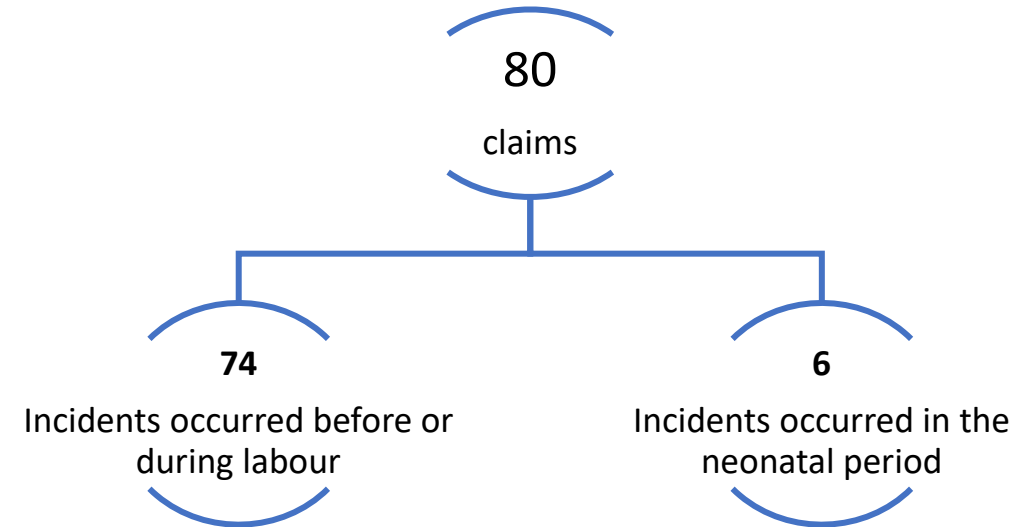
Examples of oxytocin-related incidents



Catastrophic claims review – an overview

All service user-related clinical claims

- defined as catastrophic
- related to an infant aged up to 28 days
- concluded and settled during the period 1 January 2015 to 31 December 2019 inclusive



Inappropriate use of oxytocin was evident in 36% of the claims analysed

Learning from claims: Inappropriate or incorrect use of oxytocin

The following themes were identified in the review of catastrophic claims:

Fetal wellbeing

Commencement of oxytocin without first assessing and confirming fetal wellbeing.

Inappropriate / continued use of oxytocin in the presence of a non-reassuring / pathological CTG and / or meconium.

Failure to continuously monitor the fetal heart during the administration of oxytocin.

Clinical assessment and decision making

A failure to undertake a clinical review by an obstetrician prior to commencing oxytocin in women with a uterine scar.

Use of maximum oxytocin dose, rather than the minimum dose to achieve satisfactory progress.

Inappropriate decision to restart oxytocin.

Learning from claims: Inappropriate or incorrect use of oxytocin

Hyperstimulation and monitoring of uterine contractions

Failure to recognise or act on hyperstimulation.

Failure to adequately monitor and document the frequency of uterine contractions and to titrate oxytocin accordingly.

Documentation and policy

Poor record keeping in relation to oxytocin administration and titration - unclear entries resulting in uncertainty over oxytocin use.

Non-adherence to local or national guidelines related to the use of oxytocin.

Learning from claims case study:

Fetal distress caused by oxytocin induced hyperstimulation

Vignette

The mother, in her 30s, primigravida, was admitted for induction at 40+6 weeks. After dinoprostone gel and spontaneous rupture of membranes with meconium-stained liquor, labour progressed slowly.

Several hours later, in view of the slow progress, oxytocin was commenced. Despite a suspicious CTG with early decelerations, bradycardia, and reduced variability, the on-call junior doctor advised the continuation of the same dose of oxytocin. Uterine hyperstimulation developed, and during an acute bradycardia episode, oxytocin was neither reduced nor stopped. Later, oxytocin was increased as labour progressed.

After an hour of ineffective pushing, an emergency caesarean was performed due to failure to progress. CTG had been discontinued for the last 35 minutes despite prior abnormalities. Delivery was difficult, requiring manual displacement of the deeply impacted head. The infant was born in poor condition with severe acidosis, low Apgar scores, and early seizures, necessitating therapeutic hypothermia. The infant subsequently developed dyskinetic cerebral palsy and requires lifelong full care.

Learning from claims case study:

Fetal distress caused by oxytocin induced hyperstimulation

Several factors contributed to sub-optimal care for both mother and baby, including:

- Incorrect administration of oxytocin.
- Pathological CTG features were present but not acted upon.
- Lack of timely escalation to senior obstetric input.
- Delay in delivery.

Inappropriate and incorrect use of oxytocin

- Oxytocin was continued despite suspicious CTG findings (early decelerations, bradycardia, reduced variability).
- Oxytocin was not reduced or discontinued during uterine hyperstimulation and acute bradycardia.
- Later, oxytocin was increased despite ongoing concerns.

Other factors

- Omission of fetal blood sampling to assess fetal status.
- CTG monitoring was discontinued for the final 35 minutes before delivery despite prior abnormalities.

Advice for safe oxytocin use in maternity services

Advice for safe use of oxytocin

Ensure the use of oxytocin is not contraindicated and used with extreme caution e.g. in the presence of meconium, a suspicious CTG, or in multiparous women with a uterine scar.

Commence oxytocin only after assessment and confirmation of fetal wellbeing.

Continuously monitor and document fetal heart during oxytocin administration.

Adequately monitor and document uterine contraction frequency and titrate oxytocin accordingly.

Reduce or discontinue oxytocin if CTG concerns arise or in the event of uterine hyperstimulation in line with local and national policy.

Use the lowest possible rate to achieve the desired the amount of uterine contraction activity and progress in labour.

Standardise oxytocin protocols in line with national recommendations.

National Medication Safety Group: Oxytocin medication safety bundle



Think
30!

Standardised oxytocin infusion - oxytocin 30 units in 500 ml sodium chloride 0.9%.

Recommended by the National Women and Infant Health Programme (NWIHP) for induction and augmentation of labour and management of PPH.

Simplified dosing: infusion rate in ml / hour equals milliunits / minute.

Enables rapid response in cases where PPH follows a labour that was induced / augmented – the same infusion bag can be used.

Implementation may require updates to local hospital policies and guidelines.

Use of smart infusion pump technology with oxytocin drug library and dosing limits is recommended to reduce dosing errors.



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Spotlight on Medication: Medication related incidents and claims – what have we learned?

Presenter:

Mark McCullagh MSc MPSI,
Clinical Risk Advisor

25 November 2025



Presentation Contents

Medication error – background and definitions

Medication related incidents and claims

- What have we learned?

Conclusion

- What can we do to improve medication safety?



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Medication error – background and definitions



Background

- One medication error occurs for every five doses administered in US hospitals (Mansur JM, Drugs Aging 2016)
- 1-2% of patients admitted to US hospitals are harmed by medication errors (Routledge PA, BJCP 2012)
- 1 in 9 medical malpractice lawsuits in the US involves medication (CRICO, 2016)
- Median cost of a medication related claim in Ireland is €60,991 (McCullagh & Slattery, BJCP 2019)
- Global cost of medication errors is estimated at US \$42 billion annually (WHO Medication Safety in Transitions of Care, 2019)
- Less than 1% of medication errors are reported spontaneously (Cousins et al, BJCP 2011)

Definitions

- An **Adverse Drug Reaction** is defined as an appreciably harmful or unpleasant reaction, resulting from an intervention related to the use of a medicinal product. (Edwards & Aronson, Lancet 2000)
- A **Medication Incident** is defined as any preventable event that may cause or lead to inappropriate use or patient harm while the medication is in the control of the healthcare professional, patient or consumer. (ISMP Canada, 2001)
- An **Adverse Drug Event** is defined as an injury from a medicine or lack of an intended medicine. Includes adverse drug reactions and harm from medication incidents. (ISMP Canada, 2001)



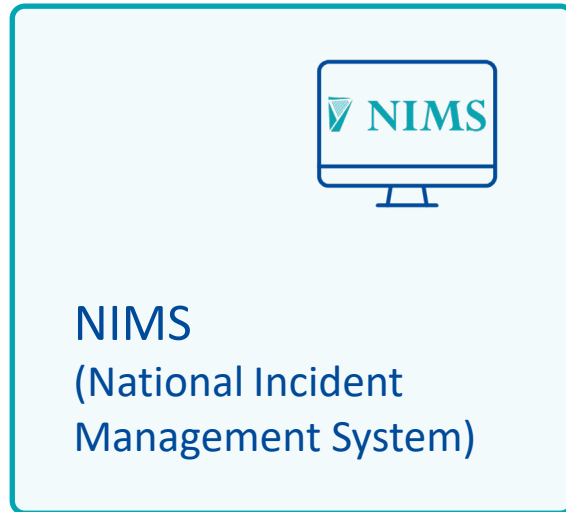
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Learning from medication related incidents and claims



NIMS – the National Incident Management System



- A confidential national end-to-end incident, risk and claims management platform
- System used by State Authorities to fulfil the statutory requirement to report incidents to the State Claims Agency and for their own incident and risk management purposes

Safety and insights. Powered by data.



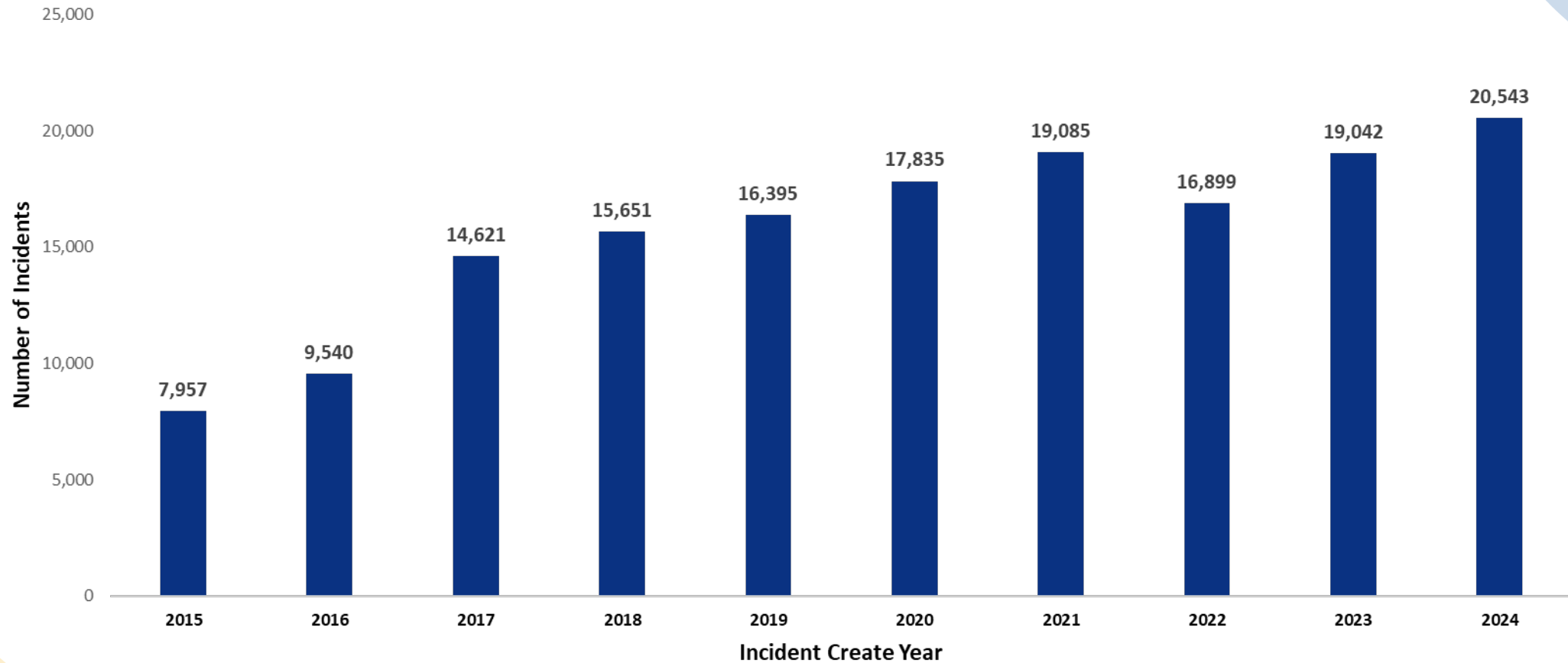
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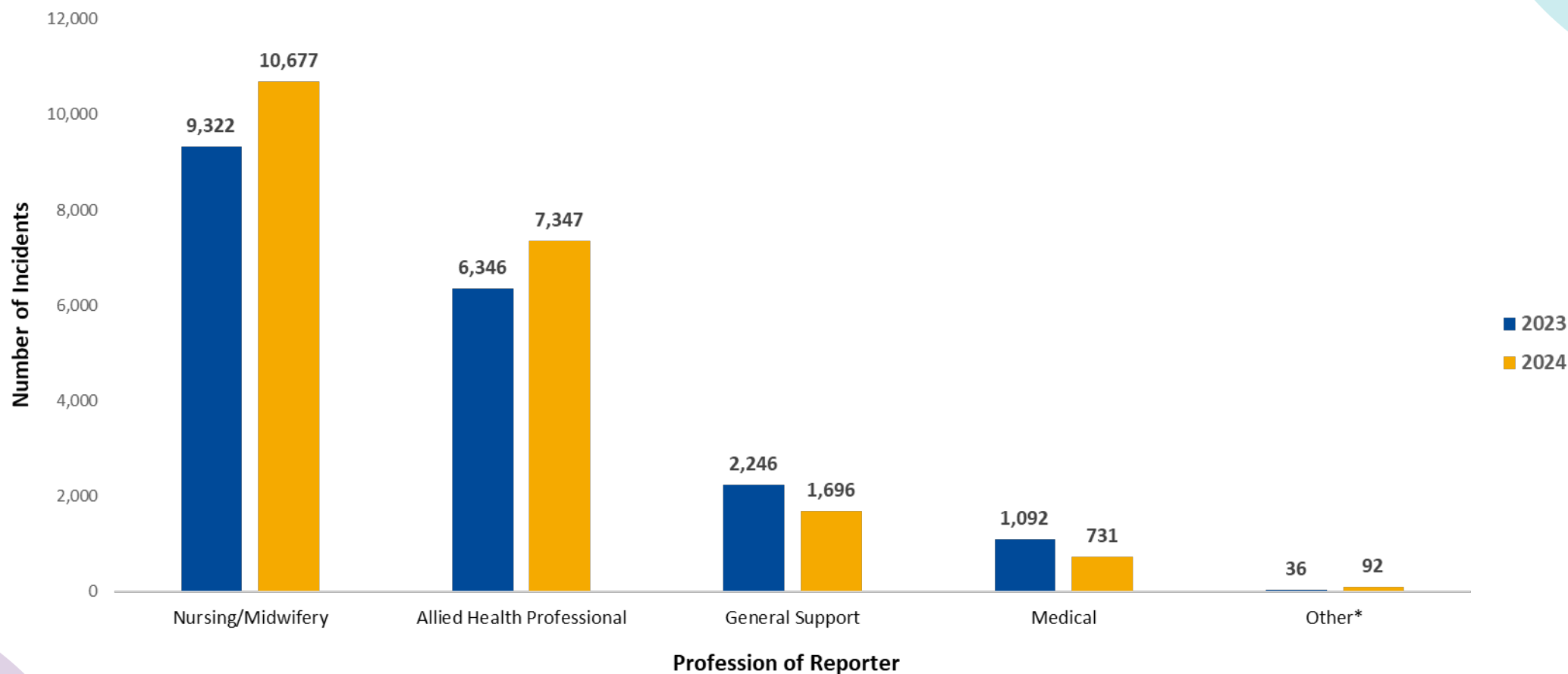
Medication incidents reported on NIMS, 2023 – 2024



Medication incident reporting on NIMS, 2015-2024



Medication incidents by profession reporting, 2023-2024



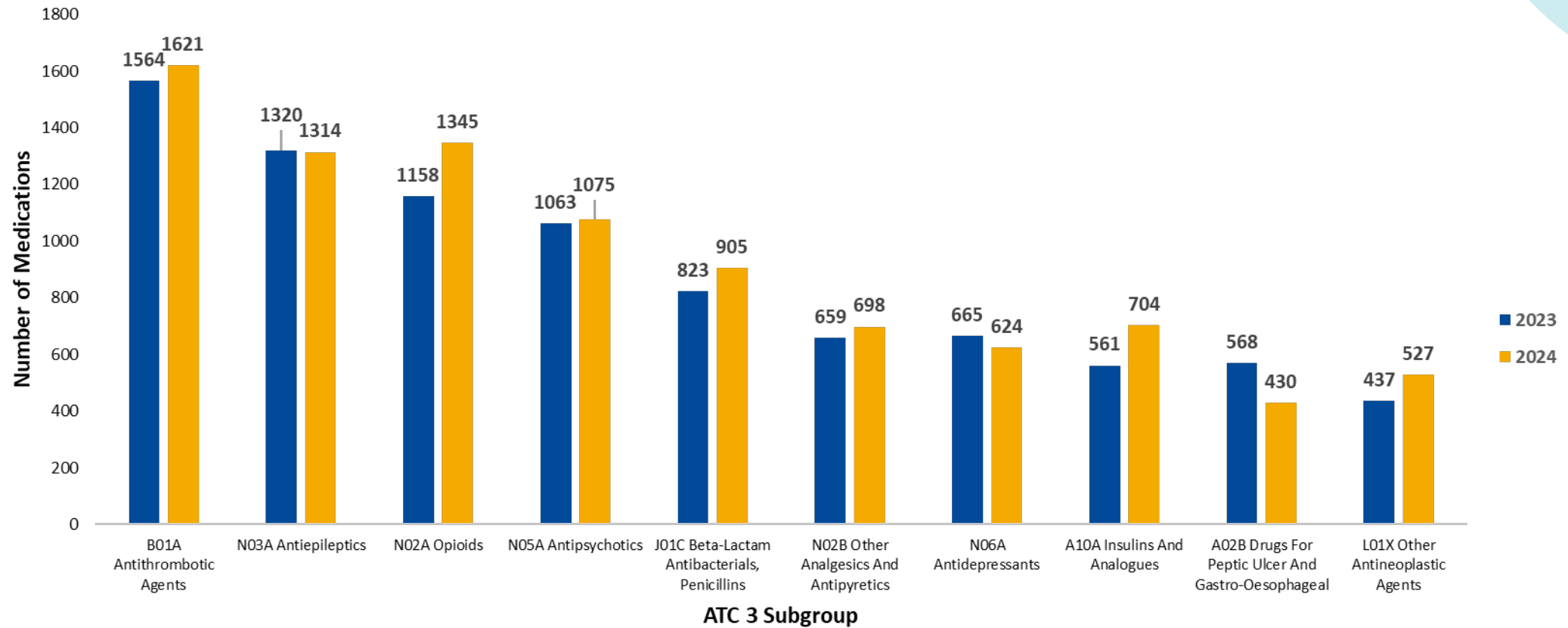
Medication incidents by stage of process, 2023-2024

<i>Process</i>	<i>Number of Incidents</i>	<i>% of Total</i>
Administration	20,473	51.7
Prescribing	12,467	31.5
Preparation / Dispensing	2,090	5.3
Monitoring	1,345	3.4
Supply / Ordering / Transport	1,192	3.0
Reconciliation	1,116	2.8
Storage	882	2.2
Other	20	0.1
Grand Total	39,585	100.0

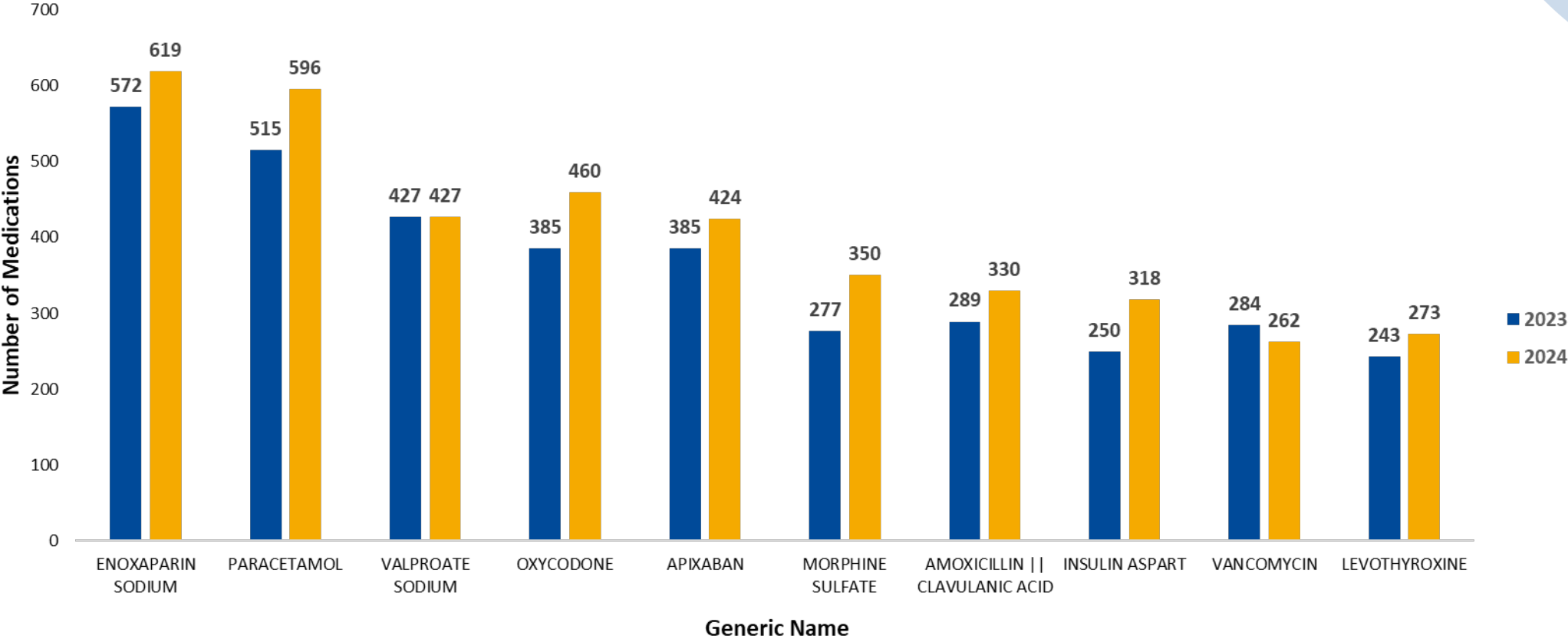
Medication incidents by severity rating, 2023-2024

<i>Severity Rating</i>	<i>Total Number of Incidents</i>	<i>% of Total Incidents</i>
Extreme	12	0.03%
Major	3	0.01%
Moderate	1,234	3.12%
Minor	1,090	2.75%
Negligible	37,245	94.09%
Not populated	1	0.00%
Grand Total	39,585	100.00%

Top 10 medication subgroups, 2023-2024



Top 10 medications by generic name, 2023-2024



Clinical care claims created in 2024 and estimated liability

Clinical Care Claims (Top 5, based on number of claims created)

Sub Hazard Type	No. of Claims Created	Estimated Liability (€M)
Surgical/Medical Procedures	227	67.63M
Diagnosis	181	116.21M
Care Management	128	59.71M
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Drug allergy incidents reported by hospitals in Ireland, 2016 to 2022



Drug allergy incidents reported by hospitals in Ireland, 2016 to 2022

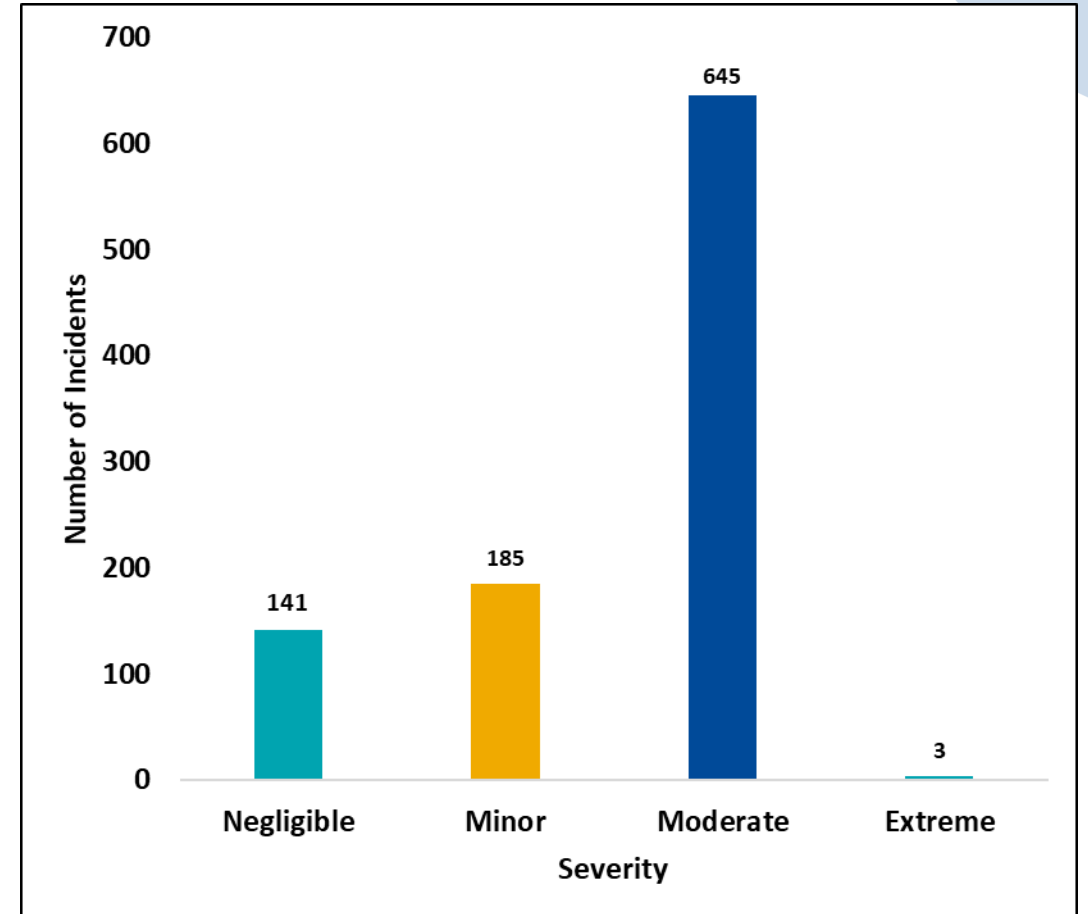
Irish Journal of Medical Science (1971 -)
<https://doi.org/10.1007/s11845-025-04167-0>

ORIGINAL ARTICLE

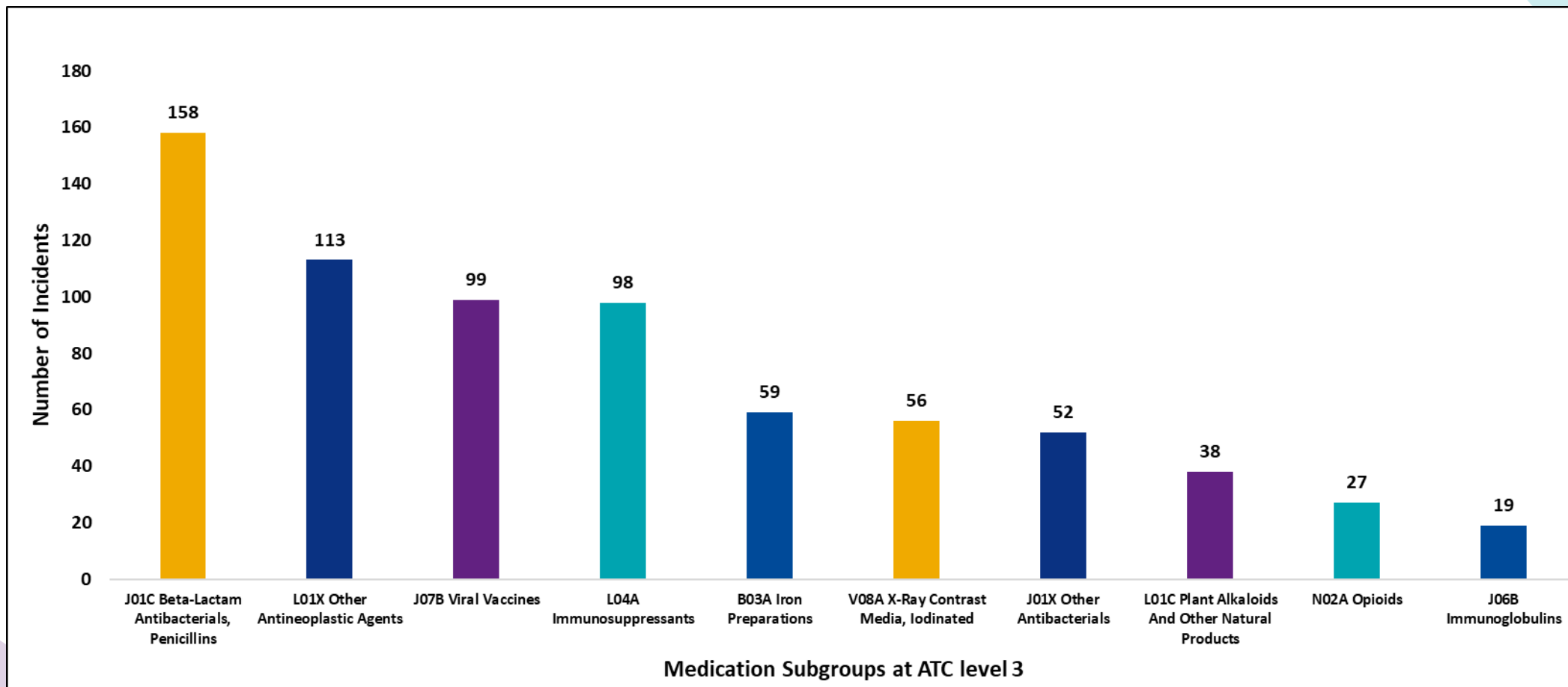
Drug allergy incidents reported by hospitals in Ireland to the national incident management system from 2016 to 2022

Mark McCullagh¹ · Natasha Coen¹ · Cathal O'Keeffe¹

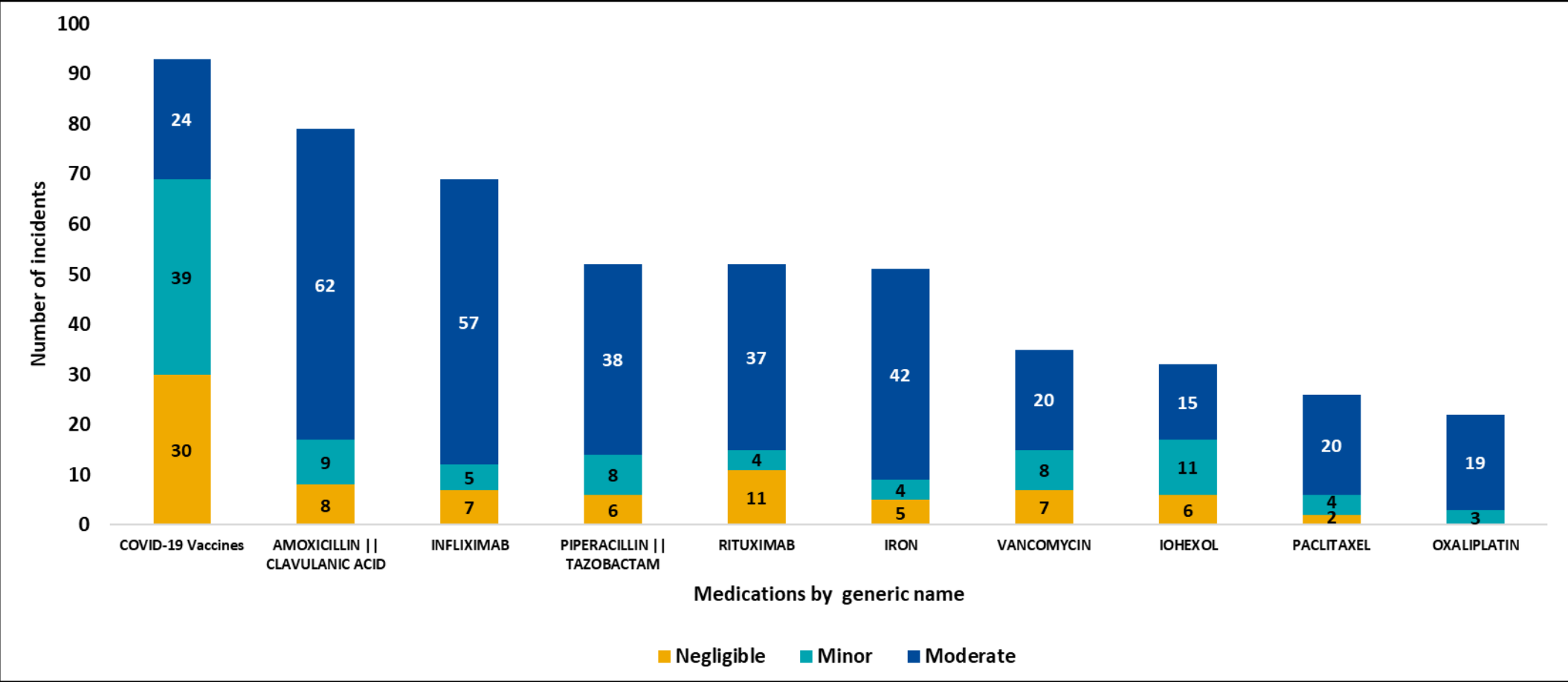
- NIMS was searched for drug allergy incidents reported by acute public hospitals in Ireland from 1st January 2016 to 31st December 2022
- 974 drug allergy incidents identified
- Nursing/midwifery reported 65.8%, AHPs 20.1% and medical staff 9.2% of incidents
- 75.8% reported at administration, 11.6% at monitoring and 10.3% at prescribing stage



Top 10 medication subgroups implicated in drug allergy incidents



Top 10 medications by generic name implicated in drug allergy incidents





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Clinical claim case study – Drug allergy



Learning from claims case study: Drug allergy

Vignette

The patient, an older man, was admitted via the ED. He gave a history of allergy to penicillin, which was noted in the admission notes and the medication kardex by the medical registrar

A week later, a new medication kardex was commenced and the medical SHO transcribed the details of the medications to the new kardex, **the penicillin allergy was not transcribed**

The following day the medical registrar instructed the SHO to prescribe Amoxicillin TDS by oral route

One dose was given after which the patient showed signs of drowsiness, skin rash and itch. He was transferred to CCU then ICU with possible sepsis

The patient continued to deteriorate and subsequently died (he had developed DRESS* syndrome post drug administration)

*DRESS = Drug Reaction with Eosinophilia and Systemic Symptoms



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Fluoroquinolones and tendon injury: a five-year review of Irish national incident and claims data

Fluoroquinolones and tendon injury: a five-year review of Irish national incident and claims data

Methods

- NIMS search for (1) FQ incidents referencing tendon injury, 01/06/18 to 31/05/23, and (2) FQ clinical claims finalised over the same period

Incident analysis findings

- Study identified 20 incidents related to FQs and tendon injury; 6 reported an actual tendon injury
- In 15 (75%) of the incidents the prescription of a FQ was deemed inappropriate by the reporter

NIMS Incident

Patient, who had previously reacted to penicillin, started on levofloxacin 500mg twice daily. Creatinine clearance 35ml/min. Patient is a transplant recipient on regular steroids and, in light of renal impairment, is at high risk of tendonitis. Team asked to review antibiotic. Levofloxacin discontinued. Antibiotic changed.

Fluoroquinolones and tendon injury: a five-year review of Irish national incident and claims data

Claims analysis findings

- Four claims found, all of which related to bilateral Achilles tendon rupture following FQ exposure
- In all claims, the injury occurred within days of commencing the FQ and in one case within 24 hours
- In all cases, the patient was aged over 60 at the time of the injury
- In three claims, the patient had been prescribed a corticosteroid concurrently
- In two claims, the patient had a penicillin allergy, perhaps providing a rationale for the selection of a FQ





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Conclusion



What can health and social care services do to improve medication safety?

- ✓ Consider adopting a standardised prescription chart, which has been shown to reduce prescribing errors
- ✓ Ensure clinical areas have access to clinical pharmacy services and medication reconciliation occurs at transitions in care
- ✓ Allocate dedicated time for staff education and training on safe medication practices; facilitate medical staff in attending incident reporting awareness training
- ✓ Where resources allow, consider introducing electronic prescribing systems, which have been shown to reduce prescribing errors
- ✓ Encourage and facilitate medication incident reporting on NIMS to promote learning at both a local and national level

What can health and social care professionals do to improve medication safety?

- ✔ Use two patient identifiers to ensure the correct patient is selected before prescribing, dispensing, or administering medication
- ✔ Prescribers should establish and document an accurate medication history and drug allergy history prior to prescribing new medication
- ✔ Prescribers should consult a recognised reference source when prescribing new or unusual medication
- ✔ Staff preparing medication requiring reconstitution, or for which a dose calculation is required, should ensure their work is double-checked
- ✔ Staff involved in, or who discover, a medication incident should report the incident on NIMS, ensuring the medication name is captured accurately



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Thank you



References

- Mansur JM. Medication Safety Systems and the Important Role of Pharmacists. *Drugs Aging*. 2016; 33: 213-21.
- Routledge PA. Safe prescribing: a titanic challenge. *BJCP*. 2012; 74 (4): 676-84.
- CRICO. Medication-related Malpractice Risks [Internet]. CRICO Strategies; 2016.
- McCullagh M, Slattery D. Medication related litigation in Ireland: A 6-year review. *Br J Clin Pharmacol*. 2019; 85 (9): 2155-2162.
- World Health Organisation. Medication Safety in Transitions of Care [Internet]. Geneva: WHO; 2019. Available from: <https://www.who.int/publications/i/item/WHO-UHC-SDS-2019.9>
- Cousins DH, Gerrett D & Warner B. A review of medication incidents reported to the National Reporting and Learning System in England and Wales over 6 years (2005-2010). *BJCP*. 2011; 74 (4): 597-604.
- Edwards IR & Aronson JK. Adverse drug reactions: definitions, diagnosis and management. *Lancet*. 2000; 356: 1255-9.
- Institute for Safe Medication Practices Canada. Definitions of Terms [Internet]. ISMP Canada; 2022.
- McCullagh M, Coen N, O'Keeffe C. Fluoroquinolones and tendon injury: a 5-year review of Irish national incident and claims data. *Ir J Med Sci*. 2025; 194 (2): 757-760.