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Medication Incidents Reported by Irish Acute Public Hospitals (2019 – 2020)

Mark McCullagh

Clinical Risk Advisor, State Claims Agency

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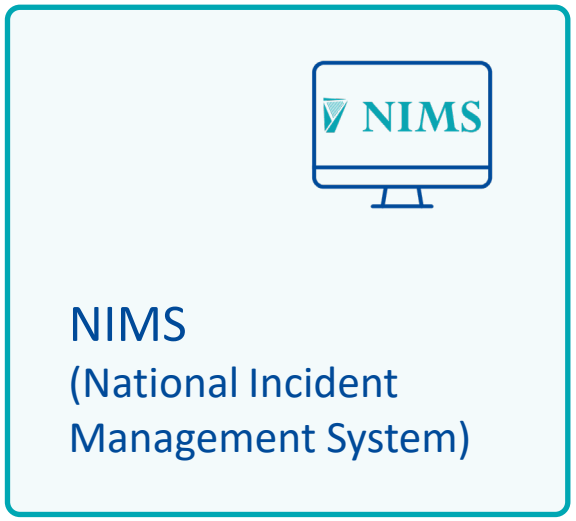
NIMS – the National Incident Management System



- 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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Methodology

- Mixed methods research design combining both quantitative and qualitative elements

Quantitative element

- Search of NIMS database for medication incidents created (reported) by Irish acute hospitals between 1st January 2019 and 31st December 2020
- Total medication incidents for the years 2015 – 2020 obtained
- Data analysed under various headings

Qualitative element

- Quarterly incident surveillance programme i.e. manual review of NIMS clinical incident data
- Two quarters of medication incident data from the study period were reviewed by a pharmacist
- Medication safety issues identified formed the basis for the focus areas of this study

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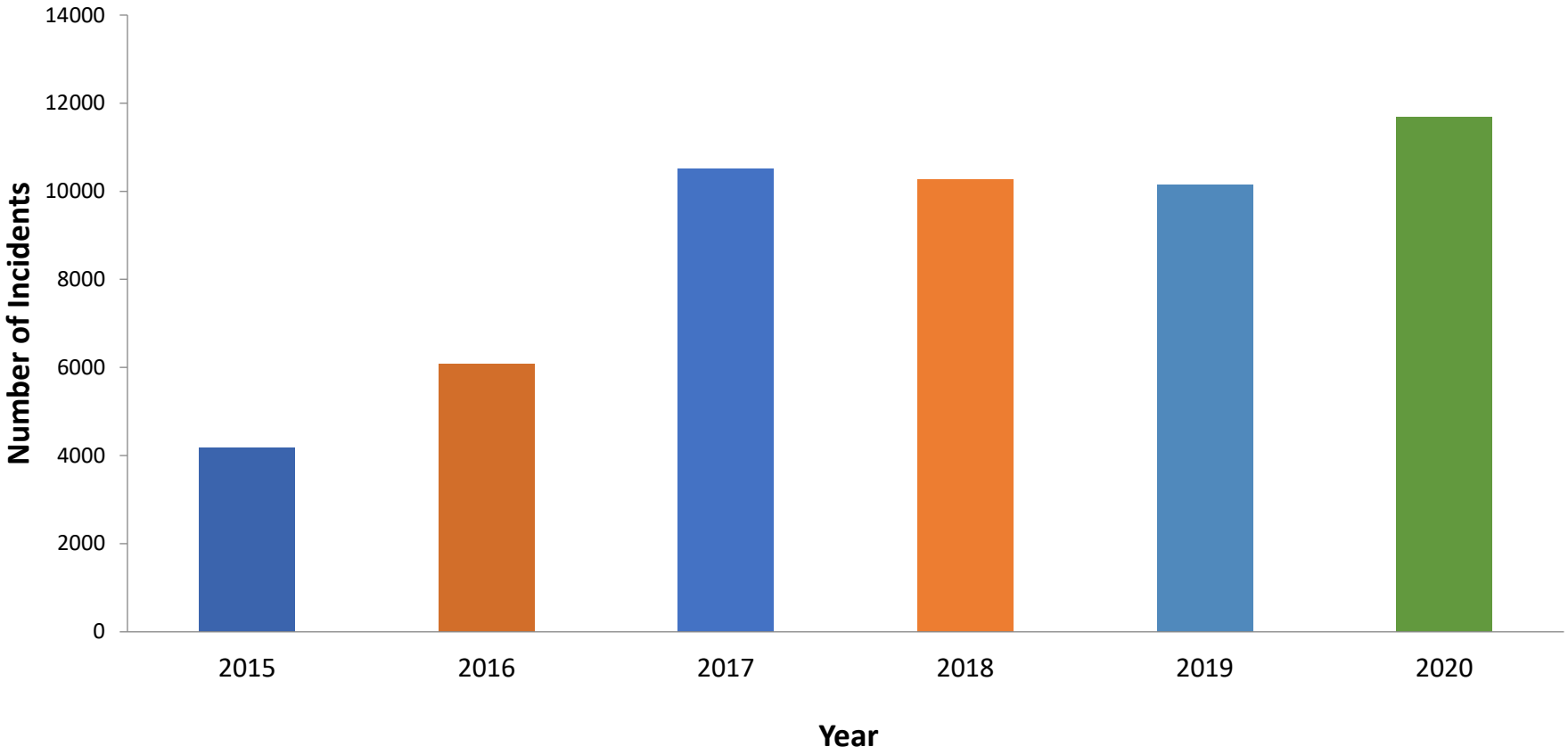
Quantitative analysis

Medication incidents reported by Irish acute hospitals, 2015-2020



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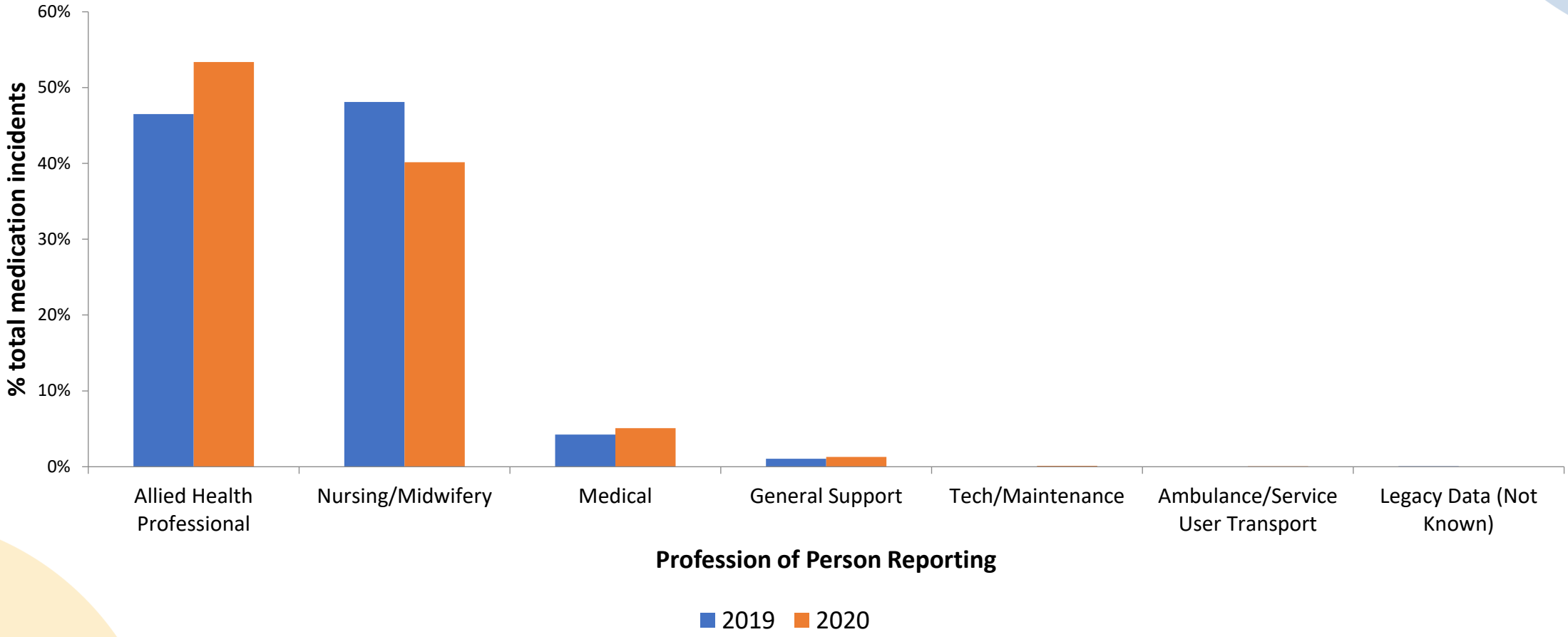
Who reports medication incidents?



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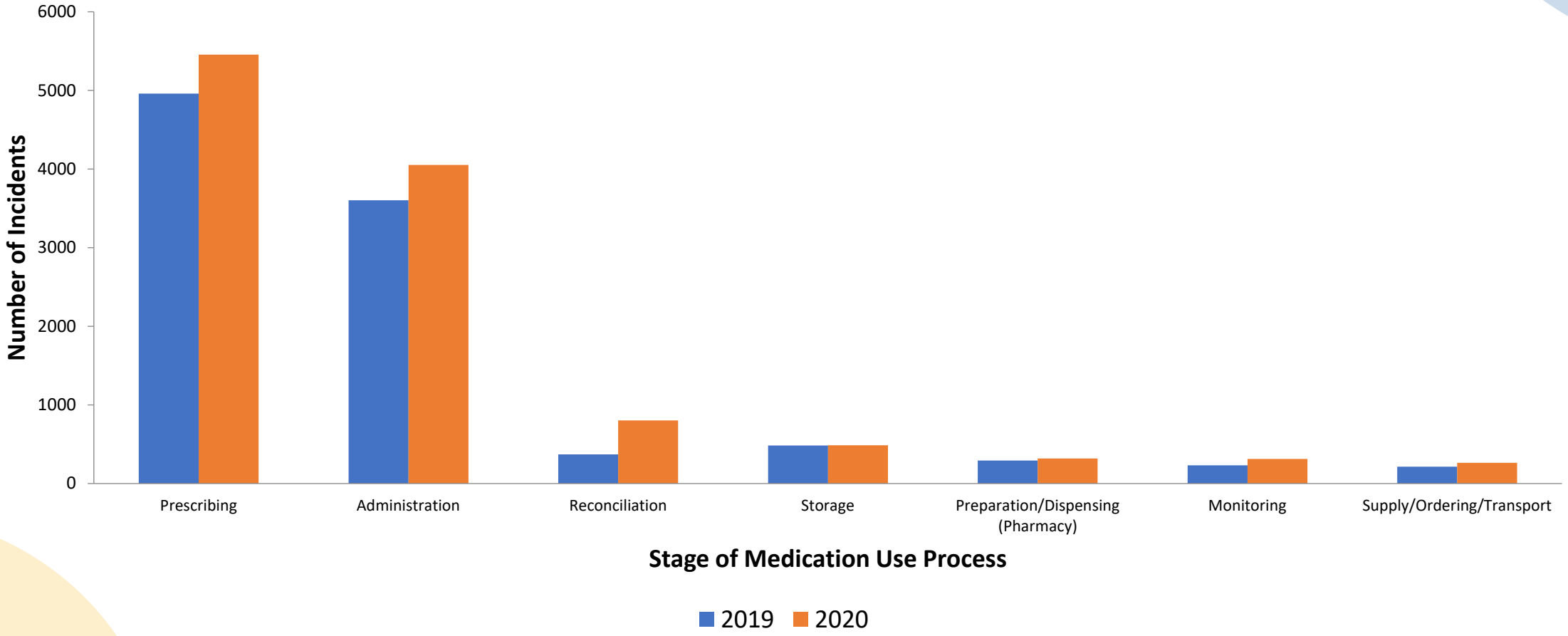
Medication incidents by severity rating

Severity	2019	2020	Total
Extreme	3	7	10
Major	3	1	4
Moderate	532	405	937
Minor	252	325	577
Negligible	9,362	10,948	20,310
Grand Total	10,152	11,686	21,838

Table 1. Medication incidents by severity rating

Medication incidents by stage of the medication use process



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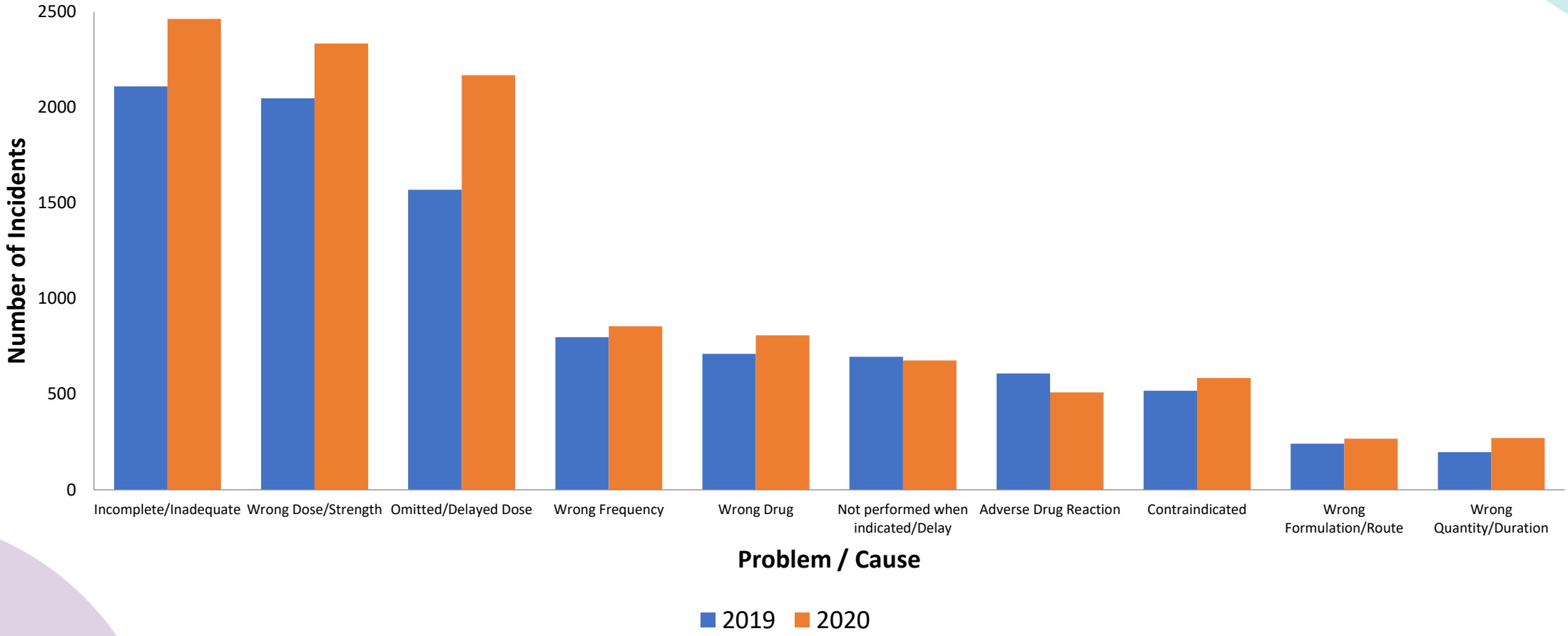
Medication incidents by incident category



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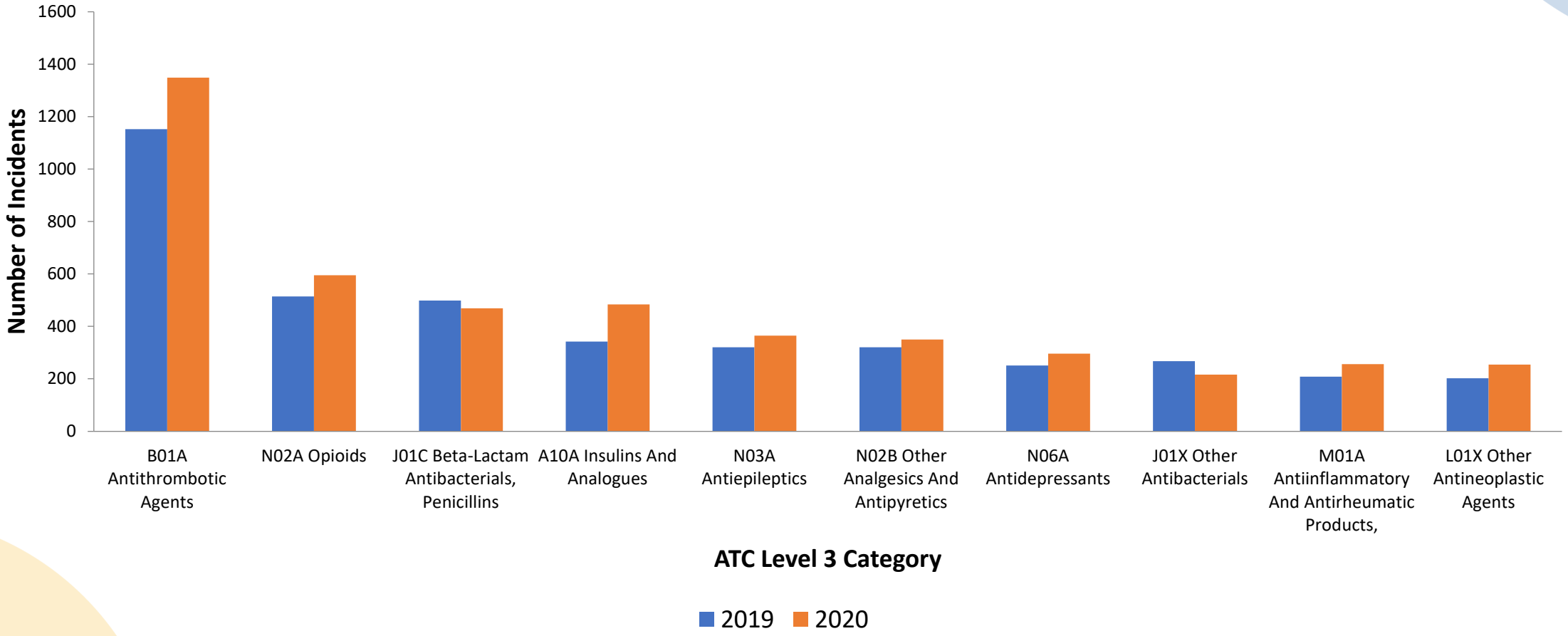
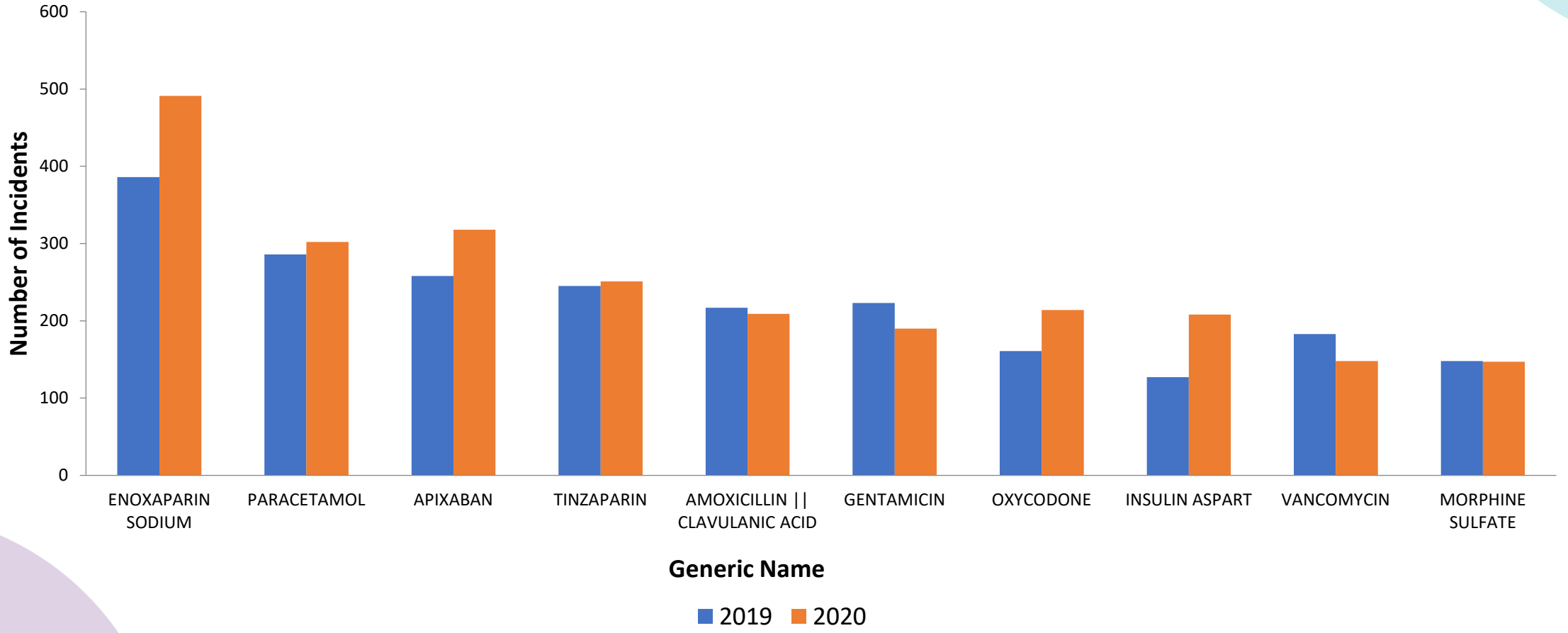
Top 10 medication groups involved in medication incidents



Top 10 medications involved in medication incidents



Focus on Data Quality

Year	Medication Incidents logged as "Unknown Medication(s)"	"Unknown Medication(s)" as % of All Medication Incidents
2019	1,086	10.7%
2020	937	8.0%
Total	2,023	9.3%

Table 2. "Unknown Medication(s)" as % of All Medication Incidents

Solution

- When logging a medication incident on NIMS complete the medication details section – avoid use of ‘Unknown Medication(s)’ where possible

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Qualitative analysis

Medication incident surveillance and analysis

- Manual review of medication incidents to identify incidents of interest
- Five focus areas emerged, four of which are presented here*

NB: The number of incidents presented under each focus area does not represent all such incidents reported

*Drug allergy incidents are the subject of a separate ongoing review

Opioid dosing

Gentamicin dosing

Insulin incidents

Sound-alike look-alike drugs (SALADs)

Drug allergy*

Focus area 1: opioid dosing

- Opioids are high-risk (high-alert) medications (WHO, 2019)
- Six opioid dosing incidents identified for analysis in one quarter (Q2, 2019)
- Most incidents involved opioid overdose, some requiring IV Naloxone

NIMS incident report (Q2, 2019)

Patient on Methadone 50mg continuous subcutaneous infusion (CSCI) was administered two stat doses of Hydromorphone 20 mg SC for breakthrough pain. Two doses of 200 micrograms IV Naloxone administered to reverse respiratory depression.

Advice

- Exercise care in opioid drug and dose selection
- Use dosing equivalence tables (e.g. BNF)

Focus area 2: gentamicin dosing

- Aminoglycosides are high-risk (high-alert) medications (WHO, 2019)
- Six gentamicin incidents identified for analysis in one quarter (Q2, 2019)
- Dosing was a common theme, particularly timing of serum sampling

NIMS incident report (Q2, 2019)

Gentamicin charted for 01.00. Bloods sent to Lab at 00.00. Lab unable to read until 07.00. Checked with Dr and advised to give dose. Level came back as 4.7mg/L. Patient had initial acute kidney injury. Plan to hold next dose and repeat bloods.

Advice

- Dosing should be calculated according to the patient's weight and renal function with adjustments made according to serum concentrations

Focus area 3: insulin incidents

- Insulins are high-risk (high-alert) medications (WHO, 2019)
- 41 incidents involving insulin were identified for analysis in one quarter (Q2, 2020)
- Most incidents involved dosing errors or product name confusion

NIMS incident report (Q2, 2020)

Patient transferred from ICU to a general ward around 6pm. Last dose of insulin Humulin M3 due at 5pm, same not administered in ICU. Not recharted and not administered that evening. Patient found to be in DKA the next morning.

Advice

- Insulin doses should be prescribed in 'units' e.g. 10 units; avoid abbreviations
- Insulin syringes gradated in 'units' should be used
- Ensure a system of double checks is in place where a dose calculation is required

Focus area 4: Sound-alike look-alike drug (SALAD) incidents

SALAD pairs		
	Medication 1	***Medication 2***
1	Ceftriaxone	Cefotaxime
2	Ceftazidime	Ceftriaxone
3	Amiloride	Amlodipine
4	Cardura®	Candesartan
5	Hydralazine	Hydroxyzine
6	Azathioprine	Azithromycin
7	Amaryl®	Avamys®
8	Lithium	Librium®
9	Desferrioxamine	Deferasirox
11	Losamel®	Losartan
12	Rabeprazole	Pantoprazole

Table 3. Medication pairs identified in SALAD incidents on NIMS (n=12); (Q2, 2020)

Risk mitigation strategies to reduce SALAD incidents

01

Store medications with a potential for SALAD incidents physically apart

02

Implement a ‘purchasing for safety’ policy

03

Utilise Tall Man lettering to distinguish between medicines with similar names e.g. hydrALAzine and hydrOXYzine

04

Adopt electronic systems such as computerised prescriber order entry and barcode medication administration where resources allow

05

Report medication incidents on NIMS to allow detection of, and learning from, SALAD incidents

Key findings

- Medication incident reporting by acute hospitals continues on an upward trajectory
- 93% of medication incidents had a severity rating of negligible
- 50% of medication incidents were reported by AHPs, 44% by nursing and midwifery staff and just 5% by medical staff
- In 9.3% of medication incidents, the actual medication name was not recorded on NIMS
- Prescribing incidents accounted for 48% of medication incidents and administration incidents accounted for a further 35%
- The drug groups most frequently involved in medication incidents were:
  - antithrombotics
  - opioids
  - penicillins

Key advice

- ✓The SCA encourages medication incident reporting and timely uploading to NIMS
- ✓The SCA would welcome greater engagement by doctors in incident reporting and learning
- ✓The actual medication name should be included on all NIMS medication incident reports
- ✓The SCA encourages all health and social care organisations to quality assure their own data as logged on the platform
- ✓Hospitals should focus their medication safety strategies on high-risk medications such as those highlighted in this study

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Thank you!