FPM

Faculty of Pain Medicine
ANZCA

Appropriate opioid analgesic prescribing

How do you audit prescribing and dispensing rates?

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Assessing the use of modified-release opioid analgesics within the facility is key to working towards compliance with Quality Statement 5 of the Australian Commission on Safety and Quality in Health Care Clinical Care Standard (CCS[1]). Obtaining information and prescribing data on medication use is the first step of achieving compliance in this area.

There are a number of methods that can be used to help determine facility prescribing rates. It is relatively easy to obtain usage data electronically in most facilities, even in the absence of an electronic medical record or electronic medication chart.

It is important to note however that while there are a lot of advantages of using electronic systems to obtain usage data, there are limitations with the information obtained (See Table 1). The use of electronic systems audits does not eliminate the need for manual audits which remain essential to ensure good opioid stewardship.

Electronic systems and data sources

Every facility will have a pharmacy service that supplies medications to the hospital or unit and they should be able to provide usage data that can be obtained from whatever local dispensing system is used.

Often there is a pharmacist who is a local data specialist who can assist in generating reports.

In facilities that utilise an electronic medication chart, usage data may be easily obtained from interrogation of these systems.

Table 1 – Electronic sources of usage data

Electronic data source: Pharmacy dispensing software (e.g., iPharmacy™)	
Provides information on	• All medications supplied to the clinical area by the pharmacy. • Provides information with respect to quantity (number of tablets) supplied. • May be interrogated to determine supply based on; clinical area, medical team, month/year, and product. • Should be able to distinguish discharge supply. **Note:** Depending how the system is used to record supply, the number of patients and medical team may not be available for each transaction.
Limitations	• Assumes that the medication supplied is administered to the patient. • Is unable to capture information on number of prescriptions written on discharge that are provided to patients for dispensing by an external pharmacy. This requires examination of other sources of information, for example prescription monitoring platforms. • Is dependent on the software vendor to be able to generate a report that can extract the required information or the ability to develop a report that is appropriate to your facility and needs. (see iPharmacy™ below)
How to generate report	• Liaise with the director of pharmacy or pharmacist in-charge in your facility • Seek advice from the dispensing system administrator, IT or pharmacy member who is trained in the development of crystal reports

Electronic data source: Electronic medication chart	
Provides information on	• Provides robust data as these systems can capture all information associated with every prescription and administrations of both IR and MR formulations. • Can provide prescribing data specific to individual patients. • Provides data that is specific to both specialty and individual prescribers • May provide information on multimodal prescribing and co-prescribing of medications such as aperients, antiemetics and benzodiazepines. • Helps provide information that can be used as evidence for Statement 6 and HAC data.
Limitations	• Potentially requires the review of a large dataset and filtering through numerous episodes of medication administration. • Generally, will not be able to capture medications that are supplied at discharge. • May require combining of datasets if a facility uses different applications across different clinical areas (eg Cerner eMR for inpatient wards and eRIC in ICU).
How to generate report	• Request assistance from clinical information systems manager or eMeds / eMR Lead within your facility

Extracting data from your dispensing platform

- Many hospital pharmacies may use iPharmacy™ as their dispensing software.
- iPharmacy™ does have a range of standard crystal reports that extract usage data, however a system administrator with crystal reporting capability may be required to obtain the data required. Check with your director of pharmacy.
- In NSW, PharmaLytix, a QlikView® system developed by eHealth NSW can be accessed with approval from the director of pharmacy. The systems allows users to access iPharmacy™ data without the need for crystal reports. Discuss with your director of pharmacy.

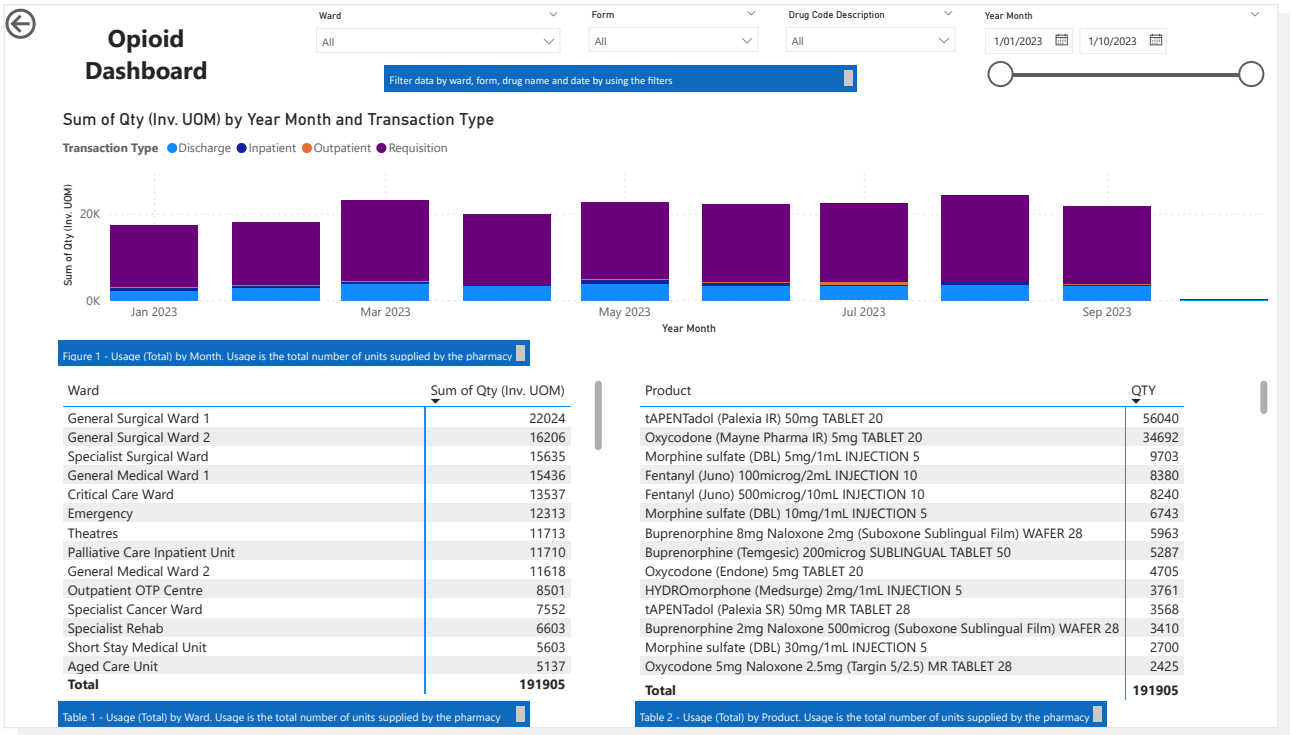
Manual audits

Manual audits may be the only option to collect usage data in facilities that use paper-based medication charts. Whilst this is a time-consuming process it is essential to ensure prescribing habits align with the recommendations against the use of MR opioids. In addition, manual audits may be the only way to determine if a medication is newly initiated.

To assist with data collection consider using applications such as SurveyMonkey®, Microsoft® Forms or REDCap®. These applications not only simplify the collection process but also ensure seamless extraction of data into Excel or CSV formats. This enables the analysis and feedback of prescribing habits to individual prescriber teams.

How to convert your data into a dashboard

Data extracted in an Excel or CSV file is the easiest to analyse. Find someone in your facility who is trained in the use of excel pivot tables and graphs. Microsoft® Power BI® is a new tool that enables the development of reports and dashboards using data sources such as excel. Most facilities use Power BI and this platform is available to users with an existing Microsoft Office account. An example of a report developed using Power BI® can be viewed here:



Ward	Sum of Qty (Inv. UOM)
General Surgical Ward 1	22024
General Surgical Ward 2	16206
Specialist Surgical Ward	15635
General Medical Ward 1	15436
Critical Care Ward	13537
Emergency	12313
Theatres	11713
Palliative Care Inpatient Unit	11710
General Medical Ward 2	11618
Outpatient OTP Centre	8501
Specialist Cancer Ward	7552
Specialist Rehab	6603
Short Stay Medical Unit	5603
Aged Care Unit	5137
Total	**191905**

Table 1 - Usage (Total) by Ward. Usage is the total number of units supplied by the pharmacy

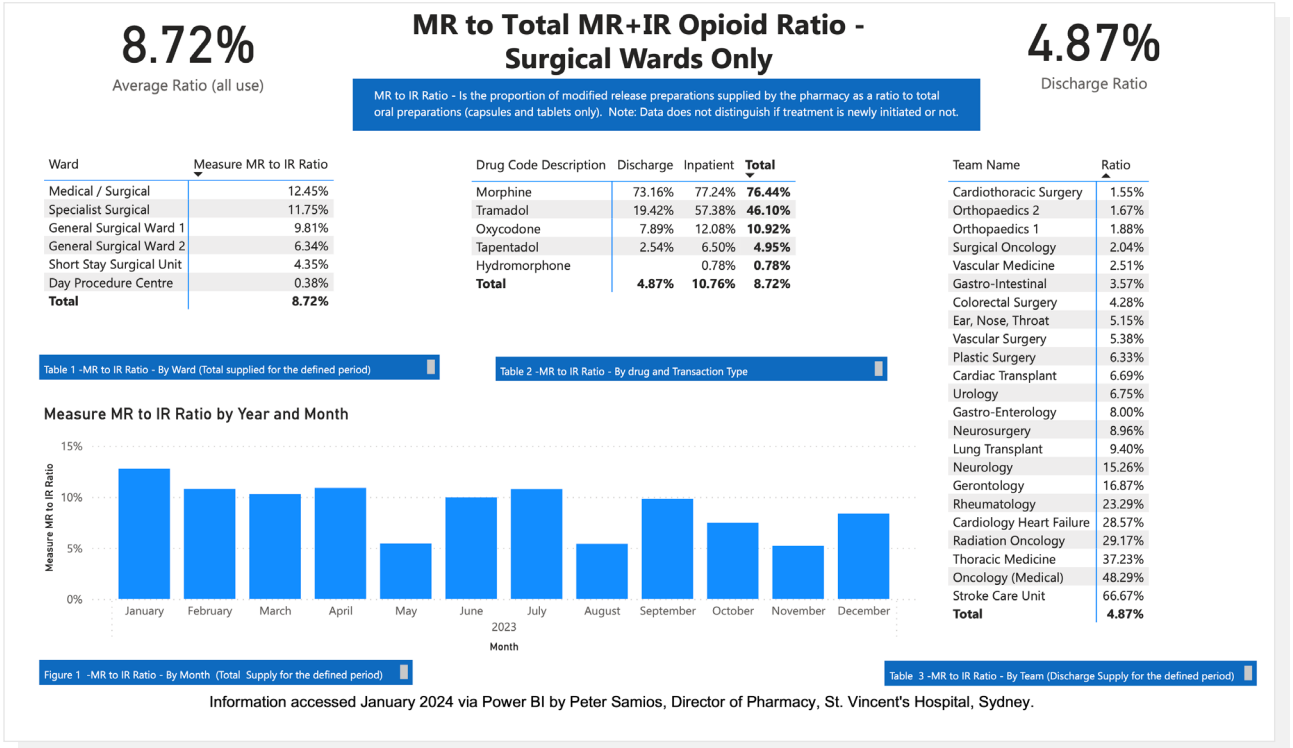
Product	QTY
tAPENTadol (Palexia IR) 50mg TABLET 20	56040
Oxycodone (Mayne Pharma IR) 5mg TABLET 20	34692
Morphine sulfate (DBL) 5mg/1mL INJECTION 5	9703
Fentanyl (Juno) 100microg/2mL INJECTION 10	8380
Fentanyl (Juno) 500microg/10mL INJECTION 10	8240
Morphine sulfate (DBL) 10mg/1mL INJECTION 5	6743
Buprenorphine 8mg Naloxone 2mg (Suboxone Sublingual Film) WAFER 28	5963
Buprenorphine (Temgesic) 200microg SUBLINGUAL TABLET 50	5287
Oxycodone (Endone) 5mg TABLET 20	4705
HYDROmorphone (Medsurge) 2mg/1mL INJECTION 5	3761
tAPENTadol (Palexia SR) 50mg MR TABLET 28	3568
Buprenorphine 2mg Naloxone 500microg (Suboxone Sublingual Film) WAFER 28	3410
Morphine sulfate (DBL) 30mg/1mL INJECTION 5	2700
Oxycodone 5mg Naloxone 2.5mg (Targin 5/2.5) MR TABLET 28	2425
Total	**191905**

Table 2 - Usage (Total) by Product. Usage is the total number of units supplied by the pharmacy

Example 1 - MR to total MR + IR opioid ratio

This measurement was used in the scholar role activity undertaken at Wollongong Hospital and is a key metric for tracking success of an opioid stewardship program.

- An example of a way to assess MR usage is to calculate the MR to total MR + IR opioid ratio.
- MR to total MR + IR opioid ratio is the proportion of modified release preparations supplied by the pharmacy as a ratio to total oral preparations (capsules and tablets only).
- Ratio = total quantity of MR tablets/capsules supplied ÷ total quantity tablets and capsules (MR and IR)
- **Note:** Data does not distinguish if treatment is newly initiated or not. In this example, data also includes medical and oncology patients in discharge supply.
- An example as to how this ratio can then be presented using Power BI® can be viewed here:



This example provides information associated with surgical wards and teams. Data can be manipulated to provide feedback as required.

Developing reports

Table 2 outlines the recommended data fields to be included in a usage report generated by the pharmacy department from the local dispensing system.

These data fields are based on information that can be obtained via iPharmacy™. For facilities within New South Wales, PharmaLytix can provide extensive and comprehensive reports on local prescribing habits, and can also extract this data.

For organisations outside NSW Health, similar reporting platforms will likely exist. In most hospitals, you'll typically find a pharmacist experienced and interested in this type of data gathering and audit process. Alternatively, your organisation's quality and risk managers can likely connect you with IT experts who can help build and generate a report based on the data that has been obtained through the review of paper charts or other prescribing platforms.

Table 2 - Data Fields:

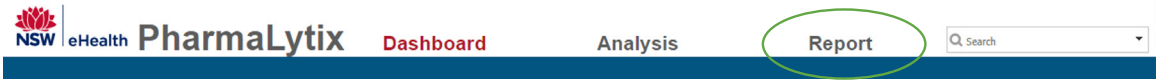
Data fields (mandatory)	Comment
Drug code	Enables the user to filter specific medicines or groups of medications. Drug codes between 2300000 and 2399999 would capture all narcotic analgesics. Drugs acting principally on the central nervous system (2000000) Analgesics - narcotics (2300000)
Drug code description	Displays generic name of the medicine
Team	Enables the user to filter the result by team
Ward / cost centre	Enables the user to filter the result by clinical area
Form	Enables the user to filter between immediate release and modified-release preparations
Transaction type	Enables the user to filter between discharge and inpatient supply
Year month	Enables the user to display the data over time
Quantity	Main measure for usage

Data fields (recommended)	Comment
Product	PhamaLytix Pick Dimension that displays the generic name, brand, strength, form, pack size. The usage data is specific to that exact product, therefore other fields like drug code description help to group the various products, but this field gives the user more information if required.
Strength	The strength of the product supplied may also be available in other fields, such as “product”.
Charge centre	Depending on how this is set up, it may be able to grouped usage into streams (e.g surgical vs medical)
Site	Required to filter down to the facility level if more than one facility is using iPharmacy™
Number of patients	Would only capture number of patients when the item is dispensed to a named patient. Using the distribution function to record a transaction of supply to a ward imprest would not capture patient numbers. Other sources of information such as a manual audit of a paper chart or extracting data from an electronic medication chart would be required to obtain accurate patient numbers for inpatient use.
Number of transactions	Measuring transactions is another way to capture activity and usage, but does not indicate the extent of supply, merely frequency of supply / use.

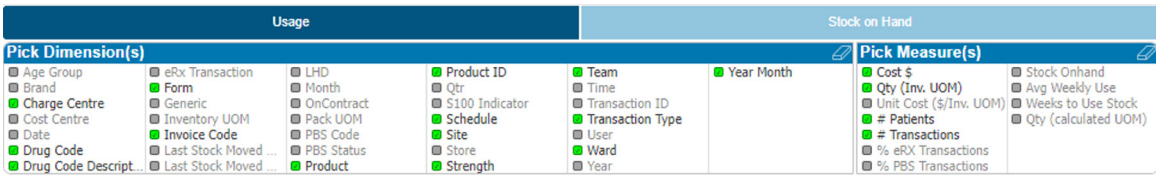
Accessing the data using PharmaLytix dashboard

1 Individual access to the PharmaLytix dashboard is required.

2 Log in and navigate to the “Report” section.



3 Select the data fields required.



4 Extract the data to excel.

Accessing NSW eHealth PharmaLytix dashboard

More information can be found on the NSW eHealth SharePoint (NSW Health employees only)

https://nswhealth.sharepoint.com/sites/EHNSW-ClinicalApplicationsHub-Solutions/SitePages/Service-Delivery-Pharmalytix.aspx

How to collect MR opioid prescribing data for analgesic stewardship on electronic prescribing platforms

1 Determine the following inclusive criteria for the audit:

a. Patient population
b. Time period
c. Medications
d. Location/hospital(s)

2 Ensure those patients are receiving medications that have been prescribed on an electronic prescribing platform.

3 Contact your local data/electronic prescribing specialist to retrieve raw data from the electronic prescribing platform (this may take a few weeks to pull depending on availability).

Use the following template as a guide for data collection and collation.

Note: this is a sample request for data collected across a local health district (LHD) in New South Wales.

Time period:	Admitted and discharged between 01/01/23-31/01/23
Location:	All hospitals within LHD
Specialties:	Emergency and all surgical specialties ONLY
Prescribed Medications	• paracetamol (all routes) • All NSAIDs • oxycodone IR and MR (PO) • tapentadol IR and MR (PO) • buprenorphine (SL) • morphine IR (IV & SC) • fentanyl IR (IV & SC) • paracetamol + codeine IR (PO) • tramadol IR (PO) Include: • Generic name • IR or MR • Drug form (tablet, solution-injection, etc.) • Prescribed route • Dose (including units) • Dose frequency • PRN or regular • Amount of doses given (if possible)
Other Fields to include	• Unique medical record number (MRN) • Unique encounter number • Name • Age • Date of birth • Admission date and time • Discharge date and time • Medication prescribed date and time • Admitting specialty only • Prescribing physician
Format	In an Excel document with each individual line being a time a medication was prescribed for an individual patient.

This is not an exhaustive list of medications/fields and does not include medications given off paper charts. However, if the sample size of patients is large enough it should provide a good representation of prescribing trends.

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Take the Excel document to a local data specialist in your health network (this is often a pharmacist) with a request for the following:

Data cleaning	1. Remove duplicates of lines that contain the same: **Unique encounter ID** AND medication AND **IR or MR**. Make sure to keep the line that has the earliest date and time of medication prescribed 2. Remove duplicates of lines that contain the same: **Unique Encounter ID** AND **MR opioid**. Make sure to keep the line that has the earliest date and time of medication prescribed 3. Copy this sheet into a new sheet named 'Sheet 2' 4. In 'Sheet 2', create a new column. In this column, add the DRUG TYPE that has been prescribed for the patient: paracetamol, NSAID, IR opioid, MR opioid. 5. In 'Sheet 2', remove duplicates of lines that contain the same: **Unique encounter ID** AND **DRUG TYPE**. 6. In 'Sheet 2', remove all **Unique Encounter IDs** that do not have either an **MR Opioid or IR Opioid DRUG TYPE** also prescribed for that same **Unique Encounter ID**. This should two sheets: Sheet 1: A list that has the first time a medication was prescribed for each patient during each admission. Sheet 2: A list that has the first time each DRUG TYPE was prescribed for each patient during each admission. This sheet should now only include patients who were prescribed opioids.
Create visualisations	**1. Bar chart** sourced from 'Sheet 2' with the **Admitting Specialty** on the x-axis and count of lines that have an **MR opioid** DRUG TYPE on the y-axis. This will show you the number of patients being prescribed MR opioids by specialty. **2. Bar chart** sourced from 'Sheet 2' with the **Admitting Specialty** on the x-axis and count of lines that have an **MR opioid** DRUG TYPE as a proportion of the total number of **Unique Encounter IDs** on the y-axis. This will show you the proportion of patients that each specialty is prescribing MR opioids for. **3. Bar chart** sourced from 'Sheet 2' with the **DRUG TYPE** on the x-axis and number of **Unique Encounter IDs** on the y-axis. This will show the amount of MR opioids, paracetamol and NSAIDs being prescribed as a total portion of IR opioids being prescribed for patients in your cohort. **4. Calculation** showing the AVERAGE of **Admission date and time** subtracted from **Medication prescribed date and time** for all lines containing an MR opioid in 'Sheet 2'. This should be expressed in hours or days. This will give you the average time it took from admission to prescription of a MR opioid.

If resources allow extension of the audit to include reviewing detained review of the clinical history and medical record of a small cohort of patients to determine if their were opioid naive prior to admission.

This will provide a more comprehensive understanding of the proportion of patients who are commenced on opioids whist an inpatient.

Abbreviations: **MR** = modified-release, **IR** = immediate release

Reference:

1. Australian Commission on Safety and Quality in Health Care. The National Safety and Quality Health Service (NSQHS) Standards. From https://www.safetyandquality.gov.au/standards/nsqhs-standards Accessed January 2024.

The Resources for Opioid Stewardship Implementation (ROSI) have been developed by Ms. Bernadette Findlay, Clinical Nurse Consultant, and Associate Professor Jennifer Stevens, Anaesthetist and Pain Medicine Specialist at St. Vincent's Hospital, Sydney, in conjunction with the Faculty of Pain Medicine. Thanks to Peter Samios, Director of Pharmacy at St. Vincent's Hospital, Sydney, and Jaiden Fullerton-Harvey Clinical Pharmacist at Wollongong Hospital for their assistance with these resources. Development of the ROSI has been supported by an unrestricted educational grant from CSL Seqirus. CSL Seqirus were not involved in the creation of intellectual property or any other content contained within the ROSI.