BMJ Open Quality

Prescribe, Review, Now!: an assessment of adequate PRN analgesia and associated laxative prescribing using Hospital Electronic Prescribing and Medicines Administration (HEPMA)

Matthew McMillan, Alexandra Jayne Burgess

To cite: McMillan M, Burgess AJ. Prescribe, Review, Now!: an assessment of adequate PRN analgesia and associated laxative prescribing using Hospital Electronic Prescribing and Medicines Administration (HEPMA). *BMJ Open Quality* 2023;**12**:e002090. doi:10.1136/bmjoq-2022-002090

Received 9 August 2022
Accepted 31 January 2023

Morriston Hospital, Swansea Bay University Health Board, Port Talbot, UK

Correspondence to
Dr Matthew McMillan;
matt.mcmillan7@outlook.com

ABSTRACT

Introduction On HEPMA there is no way to notify a prescriber if patients are regularly accessing PRN (as-required) analgesia. We aimed to assess how well PRN analgesia use is identified, the WHO analgesic ladder and whether laxatives were prescribed with opioid analgesia.

Methods 3 data collection cycles were carried out for all medical inpatients between February-April 2022. Medication was reviewed to determine: 1) PRN analgesia prescribed? 2) Is the patient accessing it >3 times in 24hours? 3) Con-current laxatives prescribed. Between each cycle, an intervention was implemented. Intervention 1: Posters were placed on each ward and circulated electronically as a cue to a review and change analgesia "Prescribe. Review. Now!" Intervention 2: A presentation on data, the WHO analgesic ladder and laxative prescribing was created, and circulated.

Results See Figure 1 – Comparison of prescribing per cycle. Cycle 1 - 167 inpatients surveyed, 58%female, 42%male, mean age 78(±13.4). Cycle 2 - 159 inpatients,65% female, 35% male, mean age of 77 (±15.7). Cycle 3 - 157 inpatients, 62% female, 38% male, mean age 78 (±15.7). Adequate prescriptions on HEPMA improved by a total of 31% ($p<0.005$), over 3 cycles and 2 interventions.

Conclusions After each intervention there was a significant statistical improvement in prescribing analgesia and laxatives. However, there is still room for further improvement, especially in ensuring adequate laxative cover is prescribed for all patients either >65 years old, or those on opioid-based analgesia. Visual reminders on wards of regularly checking PRN medication showed to be an effective intervention.

BACKGROUND

Hospital Electronic Prescribing and Medicines Administration (HEPMA) has recently been introduced to our District General Hospital. There is no standardised method of prescribing and reviewing analgesia, and there is no automatic notification to a prescriber if patients are regularly accessing PRN (from the latin Pro re nata meaning as-required) analgesia. Prescribers rely on nursing assessments of pain, for example, Abbey Pain Scale, or patients notifying staff, in order to escalate analgesia if indicated. Inadequate analgesia and associated laxative prescribing, can adversely affect patients' care, and lengthen stays in hospital.[1] Opioid-induced constipation increases the risk of delirium in older adults.

AIM

To assess whether prescribers identify a patients' use of PRN analgesia, and the necessary escalation of the WHO analgesic ladder and whether laxatives were prescribed with opioid analgesia, due to the increased risk of delirium in older adults.

METHODS

Three separate data collection cycles were carried out for all medical inpatients at Singleton General Hospital between February and April 2022. Medication was reviewed using HEPMA, to determine three key outcomes. First, was any PRN analgesia prescribed for each patient. Second, were patients requiring three or more doses of PRN analgesics in a 24-hour period, if so, recommendations were made as per WHO analgesic ladder.[2] Third,

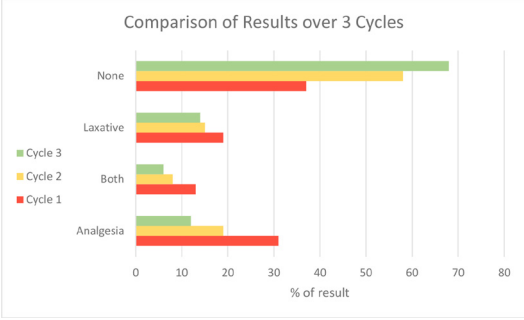

Figure 1 Graph depicting the comparison of three data collection cycles.

Table 1 Table comparison of cycle results

	Comparison of prescribing per cycle			
	None	Analgesia	Laxatives	Both
Cycle 1 (n=167)	37% (n=62)	31% (n=52)	19% (n=32)	13% (n=21)
Cycle 2 (n=159)	58% (n=92)	19% (n=30)	15% (n=30)	8% (n=13)
Cycle 3 (n=157)	68% (n=107)	12% (n=19)	14% (n=22)	6% (n=9)
Improvement	31%	19%	5%	7%

were concurrent laxatives prescribed for those patients either on opioid-based analgesia or those aged 65 or above.[3]

Between each data collection cycle, a new intervention was implemented. For the first intervention, posters were designed and placed on each medical ward as a cue to a review and change analgesia when appropriate as well as providing information on the WHO analgesic ladder. This poster was circulated electronically to all medical prescribers in the hospital.

Following the second data collection, a teaching presentation was made, focusing on the collected data, with focus on good prescribing principles (as per the WHO analgesic ladder) and laxative recommendations, depending on the patient's age/analgesia. The presentation was also electronically circulated to all medical prescribers.

RESULTS

Statistical analysis was done using a paired t test.

Cycle 1 (n=*167*)%–58% women, 42% men, with a mean age of 78 (±*13.4*). 37% (n=*62*) had analgesia and laxatives appropriately prescribed, as per WHO. hirty-one per cent (n=*52*) had inadequate analgesia, 19% (n=*32*) had no laxatives prescribed, and a total of 13% (n=*21*) where prescribing recommendations for both analgesia and laxatives were made.

Cycle 2 (n=*159*)%–65% women, 35% men, with a mean age of 77 (±*15.7*). Fifty-eight per cent (n=*92*) had appropriate prescriptions. Nineteen per cent (n=*30*) had inadequate analgesia, 15% (n=*24*) had no laxatives prescribed and 8% (n=*13*) had both prescribing recommendations.

Cycle 3 (n=*157*)%–62% women, 38% men, with a mean age of 78 (±*15.7*).Sixty-eight per cent (n=*107*) had appropriate prescriptions. Twelve per cent (n=*19*) had inadequate analgesia, 14% (n=*22*) had no laxatives prescribed and 6% (n=9) had both prescribing recommendations.

As seen in figure 1, the percentage of patients who did not require prescription changes increased after each intervention. Table 1 shows a direct comparison between all data collection cycles. There was a total improvement of 31%, whereby no changes were required on prescriptions. Adequate analgesia prescriptions improved by 19%. The number of patients requiring laxative prescriptions improved by 5%, and patients requiring both analgesia and laxative changes improved by 7%.

CONCLUSIONS

Adequate analgesia and laxative prescriptions on HEPMA improved by a total of 31% (p<0.005), over three cycles and two interventions. After each intervention, there was a significant statistical improvement in prescribing analgesia and laxatives. However, there is still room for further improvement, especially in ensuring adequate laxative cover is prescribed for all patients either >65 years old or those on opioid-based analgesia. Visual reminders on wards of regularly checking PRN medication showed to be an effective intervention to improve patient care and safety.

As electronic prescribing is being introduced into more hospitals in Wales, the need for regular reviews of PRN medication needs to be emphasised. By showing a significant improvement in one hospital, using simple interventions, we hope to improve patient safety, comfort and possibly reduce rates of inpatient delirium.

We aim to undertake similar studies at other hospitals within the health board once HEPMA has been introduced.

Contributors MM and AJB contributed equally to this paper.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval This is a quality improvement study. The Swansea Bay University Health Board Research Ethics Committee has confirmed that no ethical approval is required. The study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

1 Linton A. Improving management of constipation in an inpatient setting using a care bundle. *BMJ Qual Improv Rep* 2014;3:w1002.
2 Anekar AA, Cascella M. WHO analgesic ladder. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing, 2022. Available: https://www.ncbi.nlm.nih.gov/books/NBK554435/
3 Cardin F, Minicuci N, Droghi AT, *et al*. Constipation in the acutely hospitalized older patients. *Arch Gerontol Geriatr* 2010;50:277–81.