

Doing more to support electronic management of clozapine initiation: aligning paper-based protocols with electronic prescribing



H. Dharmawardana, V. Huynh, O. Nigro
Enterprise Patient Administration System (EPAS), SA Health

BACKGROUND

- Translating complex, paper-based protocols from customised medication charts to an electronic medication management (eMM) system can be problematic without specific configuration to support clinical processes
- The implementation of an eMM system can be challenging for users if it is perceived that tasks take longer than they did on paper
- Clozapine initiation is particularly complex because of the titration regimen and associated documentation and monitoring
- A comparative review of clozapine paper-based prescribing using the National Inpatient Medication Chart (NIMC) and electronic prescribing using EPAS (SA Health's electronic medical record) demonstrated the complexity of ordering clozapine initiation

AIM

- To develop a new electronic solution based on the state-wide paper-based clozapine initiation protocol (see Figures 1 and 2) to support prescribers in safely and intuitively ordering the initiation regimen in EPAS

METHOD

- A multi-disciplinary group of current and future EPAS users from multiple hospital sites was convened to design the solution
- This group included prescribers, clozapine co-ordinators, nurses, pharmacists and EPAS specialists

RESULTS

- The solution included a new electronic clinical document (see Figure 3) and group of EPAS 'order sets' (see Figure 4), which were modelled on the existing paper-based state-wide clozapine initiation protocol
- System prompts are embedded in the solution to ensure patients and prescribers are registered with the mandatory clozapine monitoring service
- The clinical document guides the users through each stage of clozapine initiation
- The 'order sets' support the users through the first 18 weeks of initiation when dosing and monitoring is most complex:
 - The week-at-a-time order set format follows usual ordering workflows
 - Prefilled information streamlines prescribing and prevents accidental omissions
 - Instead of entering dosing information for five separate clozapine orders to complete week 1 titration, prescribers now simply select the start date**
 - Instead of entering 11 separate tests and monitoring orders for week 1 without prompting, the orders are now pre-selected and pre-filled**

Figure 3: EPAS - excerpt from the clozapine commencement clinical document

Dosing: Doses are pre-filled with the recommended titration regimen; the start date for clozapine (Day 1) can be adjusted and will automatically update the dates for every order

Tests: Required pathology and cardiology tests can be ordered quickly and easily for the correct date

Observations: Required nursing interventions can be ordered quickly and easily for the correct dates and times

Recommended titration regimen

From day 14 dose can be increased in 50mg intervals every 2 to 3 days depending on efficacy and side effects. Maximum dose is 900mg. Clozapine levels should be assessed as per commencement protocol, or if: side effects are apparent, there is evidence of infection, there are changes in medications that interact with clozapine, or changes in the use of drugs such as nicotine (see clozapine smoking cessation procedure) and caffeine.

Dose (mg)	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	AM	PM												
	12.5	-	25	-	25	-	25	25	25	25	25	50	25	75

Dose (mg)	Day 8		Day 9		Day 10		Day 11		Day 12		Day 13		Day 14	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	25	100	50	100	50	100	50	125	50	125	50	125	50	150

Figure 1: Paper-based state-wide protocol excerpt - recommended titration regimen for week 1 and 2 of clozapine commencement

Figure 2: Paper-based state-wide protocol excerpt - weekly monitoring record

Figure 4: EPAS - clozapine order set - week 1

DISCUSSION & CONCLUSION

- Designing the EPAS order sets according to the existing paper-based state-wide protocol allowed for a simpler transition from paper-based prescribing to electronic prescribing
- Grouping the related orders together and creating an electronic clinical document provided the opportunity for a streamlined ordering and documentation process for clozapine initiation in EPAS to support safe prescribing
- Following testing by EPAS users who were familiar with the clozapine initiation regimen, the EPAS clozapine initiation solution was accepted and successfully deployed
- Feedback so far has been positive and an audit to review the medication error rate before and after these changes is currently underway