

# Optimising an eMeds system using a Community of Practice approach to deliver patient safety benefits

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## Background

**Ryde Public Hospital** is a medium metropolitan hospital with an emergency department. It offers acute and rehab care across approx. 200 beds. It is located in the Northern Sydney suburb of Eastwood, NSW.

In December 2017 Ryde Hospital was the first facility in Northern Sydney Local Health District (NSLHD), to "go-live" with the eMeds Cerner Millennium® electronic Medication Management (eMM) system.

Over the subsequent 10 months a further 6 facilities went live across NSLHD and Central Coast Local Health District (CCLHD) in a stacked approach.

NSLHD and CCLHD share information communication & technology (ICT) infrastructure. As a result a single eMeds system was designed and implemented across both LHDs.

Once a facility was "live", the eMeds project team would offer on site support for the first few weeks before then transitioning to the next facility.

By March 2018, the Ryde Medication Safety Committee (MSC) Members voiced concerns around the number of eMeds related issues being raised with limited ability for the eMeds team to support.

A process was required to help facilitate issues being identified and channelled into the existing medicines governance committees for management and oversight.

## Method

One champion or eClinical Practice Lead (eCPL) as they were locally described, was identified from each ward, department or clinical speciality within the hospital.

A facilitator supported establishment of the online team domain, which hosted a discussion board, an issues and mitigations register, a document repository and a team contacts list.

Members were trained in the use of the team site and informed about the potential benefits in adoption.

Anyone could join the group, however the nominated eCPL took on the responsibility to orientate them to the online team domain.

Face to face meetings supplemented e-discussions and were used to gain consensus on how issues should be managed through three categories; Fix, Recommend or Refer.

The Community of Practice (CoP) effectiveness was evaluated after 12 weeks using a triangulated approach;

- Review of the information contributed by the group.
- A qualitative online survey emailed to stakeholders.
- A quantitative analysis of medicine specific incidents, pre and post implementation.

## Aims

To evaluate the feasibility and potential benefits of a clinically led CoP group in managing an eMeds 'risks and mitigations' register aligned with both governance oversight from the facility MSC and system capabilities and constrains oversight provided from the ICT eMeds clinical design team.

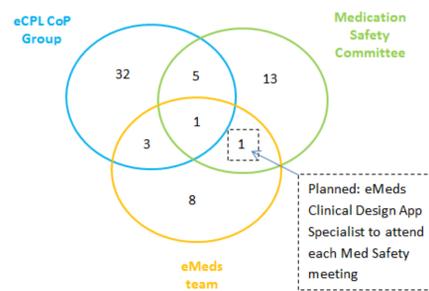


fig 1. Venn diagram of stakeholders within the community of practice

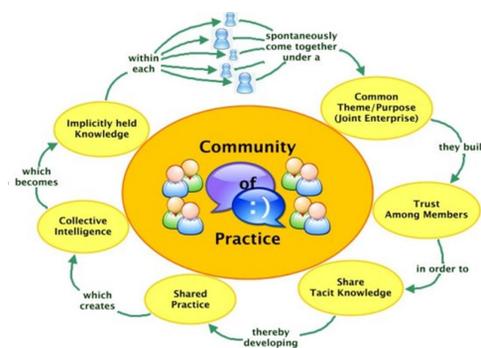


fig 2. Overview functions of a Community of Practice Group

## Results

21 entries were recorded in the eCPL issues and mitigations register by the group during the evaluation period, (1 entry was non eMeds related).

Problem solving and review	4
Error identification, workflow and human factors	2
Build issue identified by eCPL member	2
Training and knowledge seeking, enhanced skills and competency	1
Sharing lessons learned with the group	1
Error identification, system design and human factors	1
Sharing good ideas for future enhancements	1
Error identification, workflow and human factors, legislation and policy breach	1
Sharing ideas	1
Human factors, system changes made	1
Sharing outcomes from other reviews (Incident Management Investigations)	1
Knowledge seeking	1
Workflow review and eMeds QUM question	1
Problem solving	1
Problem solving and lessons learned	1

table 1. Overview of eCPL register themes

Fix (Resolved) (We know what to do)	11
Recommend (Mitigated) (We know what to do, but need help, governance of a MedSafety Committee)	4
Refer (Escalate) (We need to escalate for guidance, governance, assurance)	4
Good Ideas - Parking Station	1

table 2. Overview of eCPL register actions

Issue Description	Issue mitigation / solution recommendation	Theme	Recommended action
All cytotoxic drugs are supposed to be two signature as per the policy however eMeds allowed dispensing hydroxyures with one signature?	You are correct! For some reason hydroxyures did not have the correct settings applied to that medication. This has been rectified now. Thank you for raising this issue	Build issue identified by eCPL member	Fix (Resolved) (We know what to do)

fig 3. Example of an issue raised to the eCPL issues and mitigations register

22/62 (35%) of stakeholders returned an evaluation survey. All stakeholder groups noted an improvement in eMeds user ranked safety post eCPL CoP trial (fig 4).

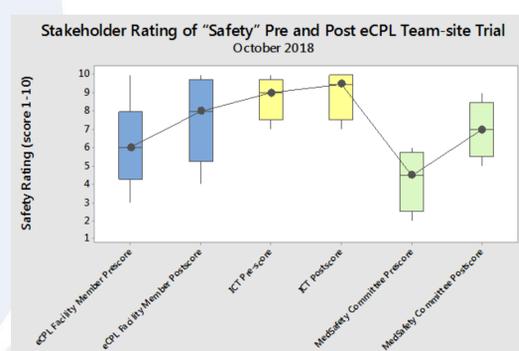


fig 4. Box plot diagram of stakeholder ratings of "perceived Safety" with eMeds (Where a score of 1 = very unsafe and 10 = very safe)

20/22 (91%) of the stakeholders who responded to the survey wanted the CoP group to continue at Ryde Hospital.

22/22 (100%) of the stakeholders wanted the CoP group to be rolled out to other facilities within the district.

When the NSW Incident Information Management System (IIMS) was evaluated for Ryde Hospital, a statistical significant reduction in the number of weekly medication incidents were noted post CoP, from 6 to 3.5. (fig 5).

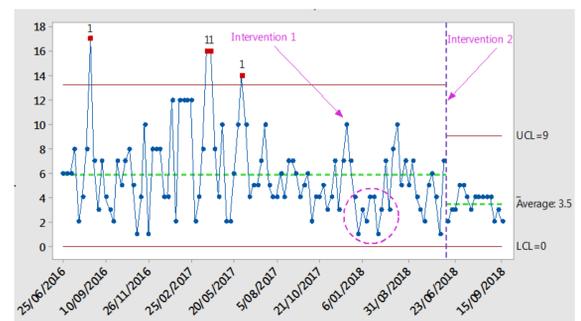


fig 5. Weekly number of IIMS reported medication incidents 23 June 2016 – 12 Sep 2018

**Intervention 1 (eMeds Implementation at Ryde)**  
Following the introduction of intervention 1, there was a reduction in incidents (circled) but this was not sustained.

**Intervention 2 (Ryde Community of Practice Group Established)**  
With the introduction of intervention 2, there was a statistically significant decrease in the weekly number of reported medication incidents demonstrated by nine or more data points below the centre line (green dotted horizontal line). This has seen weekly medication incidents reduce from 6 to 3.5 which has been sustained.

## Discussion

While the results demonstrate a reduction in error reports the perception of 'safety' is experienced by an individual and is influenced by that individuals interactions with the system. Expert users of the system ranked the system as being "safer" compared to users that did not use the system e.g. hospital administrators from the MSC.

System optimisation is best driven by the whole community where all frames of reference can be considered, expert to novice, front line clinician to senior hospital executive.

The results of the evaluation would suggest that a CoP approach can influence clinician knowledge and staff engagement to guide optimisation. These actions help to build resilience in the healthcare sociotechnical system, delivering patient safety benefits because the optimisation is driven from the bottom up not the top down<sup>1</sup>.

## Conclusion

A CoP eMM focussed group offers a feasible way to facilitate clinician eMM optimisation discussions and drive continuous practice improvements. Where eMMs don't currently interface, this approach could support cross application workflow discussions and drive collaborative solutions transcending professional, department and facility boundaries.

## References

1. Towards safer, better healthcare: harnessing the natural properties of complex sociotechnical systems. **J Braithwaite, WB Runciman, AF Merry** - BMJ Quality & Safety, 2009 - qualitysafety.bmj.com

## Acknowledgments

- Ryde Hospital eCPL group members and MSC Members
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