

eHealth 2014 – June 2

Design and evaluation of a system to improve communication between clinicians for complex medical patients in hospital

Robert Wu, MD, MSc, FRCPC
Sherman Quan, MSc



Agenda

- The Problem
- Our Journey
- Clinical Message
- Evaluation and Results
- Next Steps

Conflicts of Interest

- QRS, co-developed application, Clinical Message

The Problem

In an analysis of root causes of errors, 84% had a breakdown of communication as a major cause (Joint Commission)

Healthcare Benchmarks and Quality Improvement, 2002

The Problem

14% of pages (1,409 of 10,190) were sent to wrong physician (47% were urgent/emergency pages)

Wong et al, Frequency and clinical importance of pages sent to the wrong physician. Archives of Internal Medicine, 2009

Paging provided 67% response rate

Wu, et al The intended and unintended consequences of communication systems on general internal medicine inpatient care delivery: a prospective observational case study of five teaching hospitals. JAMIA 2013

Our Journey

Addressed issues with numeric paging



Our Journey

Built a physician sign-out tool



Our Journey

Developed process for nurses to send text messages (email) to physicians in a structured fashion



Clinical Message

- Co-developed with industry partner
- Learned from previous solutions
- Fully deployed across Medicine at UHN in June 2011
- Web application on internal network
- Accessible by desktop, mobile devices

Physician Sign-out

The screenshot shows a web application interface for a physician's sign-out. On the left, there is a table listing patients with columns for Location, Patient Name, A/S, LOS, and Mgt. The patient 'Montrose, Jack (1184739)' is highlighted. On the right, there are tabs for 'Physician Notes', 'Kardex', 'Send Message', and 'View Messages'. The 'Physician Notes' tab is active, displaying a detailed medical note for the selected patient, including a diagnosis of 'FAILURE TO COPE / WERNICKE'S ENCEPHALOPATHY' and active issues related to alcohol abuse and severe depression.

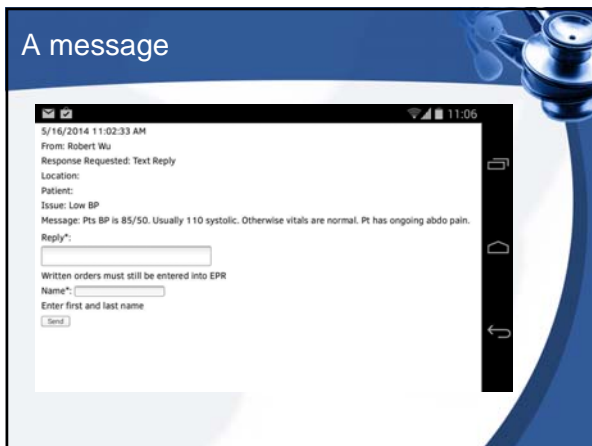
Clinical Message

- Interprofessional – nurses, physicians, pharmacists, allied health
- Communication is linked to patient
- Template for message (issue, details, desired response method, immediate vs delayed)

Secure Messaging

The screenshot shows a secure messaging interface. It features a patient list on the left, similar to the previous screenshot, with 'Montrose, Jack (1184739)' selected. On the right, there is a 'Send Message' form. The form includes fields for 'To:' (Team 5), 'From:' (Sherman Quan), 'Urgency:' (Allow Time to Respond, Interrupt), 'Response Type:' (Text Reply, Call Back), and 'Response By:' (15:15, 20:00, 23:00). There are also fields for 'Issue*', 'Call Back No:', and 'Details*'. A 'Send' button is at the bottom.

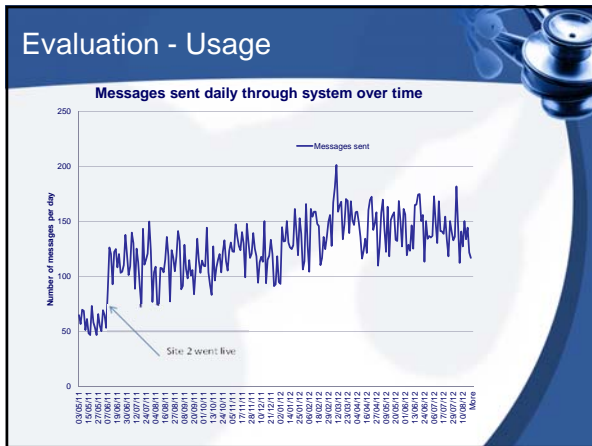
A message



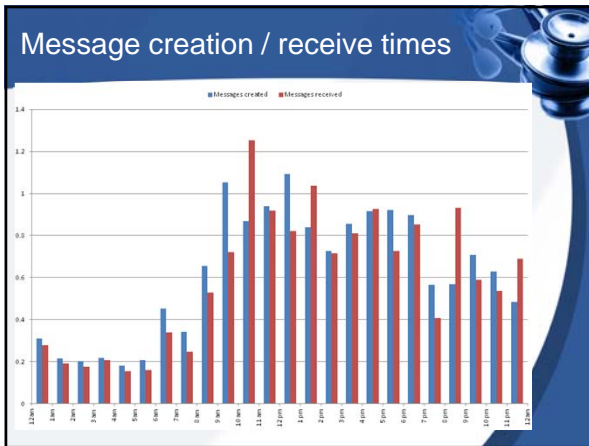
Evaluation - Usage

- Total messages over 3 years: 100K+
- 2/3 sent as immediate
- 3/4 requested Text Reply
 - Call Back ~10%, Info Only ~15%
- Response time 2.3 minutes (median)

Evaluation - Usage



Message creation / receive times



Survey

82 residents, 83 nurses (response rate 82%)

- Efficiency improves
 - 83% MDs, 78% RNs
- Increased accountability
 - 70% MDs, 81% RNs
- Reduced face-to-face communication
 - 61% MDs, 76% RNs
- Comments: not good for complex issues, too many interrupting messages

Current context

- Rapid advances - smartphones
- Secure texting apps
 - Amcom, cureatr, Voalte, Vocera
- EPR
 - Communication not part of standard offering (HIMSS adoption model)
- Still texting PHI... and emailing...
- No evidence that it improves care

Summary

- Designed, implemented system to improve hospital communication
- High usage
- Perceived to increase efficiency
- Issues:
 - Minimal technical issues
 - Increased interruptions?

CM - Future

- Tension – interruptions vs better care
- Linking to patient – “small data”
- Goal – evaluate if improves care
- Any collaborators, developers, early adopters?

References

1. Quan et al. Demonstrating the BlackBerry as a Clinical Communication Tool: A Pilot Study Conducted through the CICC. *Healthcare Quarterly* 2009
2. Locke et al. Beyond Paging: Building a Web-based Communication Tool for Nurses and Physicians. *JGM* 2009
3. Wong et al. Frequency and Clinical Importance of Pages Sent to the Wrong Physician. *Arch Intern Med* 2009.
4. Wong et al. Implementation and Evaluation of an Alphabetic Paging System on a Resident Inpatient Teaching Service. *Journal of Hospital Medicine* 2009
5. Quan et al. Apples or BlackBerries? Clinical Use and Evaluation of the iPhone Platform in a BlackBerry dominated hospital environment. *Healthcare Quarterly* 2010
6. Wu et al. The Use of Smartphones for Clinical Communication on Internal Medicine Wards. *Journal of Hospital Medicine* 2010
7. Wu et al. An Evaluation of the Use of Smartphones to Communicate Between Clinicians: A Mixed-Methods Study. *JMIR* 2011
8. Wong et al. Getting the message: a quality improvement initiative to reduce pages sent to the wrong physician. *BMJQS* 2011
9. Smith et al. Understanding interprofessional communication: a content analysis of email communications between doctors and nurses. *Applied Clinical Informatics* 2012
10. Le et al. The use of smartphones in general and internal medicine units: A boon or a bane to the promotion of interprofessional collaboration? *Journal of Interprofessional Care* 2012
11. Wu, Tran et al. Systematic review of interventions to improve communication. *LJM* 2012
12. Wu et al Improving Hospital Care and Collaborative Communications for the 21st Century: Key Recommendations for General Internal Medicine. *Internat J Med Res* 2012
13. Wilson et al Effects of Smartphones on Pharmacist-Physician Clinical Communication. *Journal of Pharmacy Technology* 2012
14. Quan et al Perception of Urgency: Defining the Gap Between What Physicians and Nurses Perceive to be an Urgent Issue. *LJM* 2012
15. Quan et al It's Not About Pager Replacement: An In-Depth Look at the Interprofessional Nature of Communication in Healthcare. *JHM* 2013
16. Wu, Lo, Morris et al The intended and unintended consequences of communication systems on general internal medicine inpatient care delivery: a prospective observational case study of five teaching hospitals. *JAMIA* 2013
17. Wu, Rise of the Cyborg - Use of iPads, smartphones, androids. *Journal Graduate Medical Education* 2013
18. Wu et al Educational impact of using smartphones for clinical communication on general medicine. *JHM* 2013
19. Berbrer et al Evaluation of the Accuracy of Smartphone Medical Calculation Apps. *JMIR* 2014
20. Wu et al Short Message Service or disservice: Issues with text messaging in a complex medical environment. *LJM* 2014
21. Tran et al Medical Students and Personal Smartphones in the Clinical Environment: The Impact on Confidentiality of Personal Health Information and Professionalism. *JMIR* 2014

• **Edison Award Winner 2012.** Science/Technology, Online tools/Apps

Questions?



sherman.quan@triliumhealthpartners.ca

robert.wu@uhn.ca