

# Medication safety as an infrastructural problem

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*Keynote at Infrahealth 2017, Aarhus*



# Overview of talk

- Reflections on medication prescribing
- Medication safety
- Role of information technology
- Infrastructure: pulling together people, technology and organizational context
- Conclusion





A female figurine (1500 BC) seeks healing from a deity ('Poppy goddess', 1200 BC)

*Heraklion Archeological Museum*



# Prescribing medication

It is cultural

It is about a relation

It is about a contract



The healing hand of the doctor reaches the patient through the prescription and the medicine

Whyte et al. *Social lives of medicines*, Cambridge University Press, 2002







# Medication as a social act

Contract between patient and physician

Recognition of authority of physician

Patient's complaint recognized as disease



# Prescribing

## Antibiotic prescribing in hospitals: a social and behavioural scientific approach

*Marlies E J L Hulscher, Richard P T M Grol, Jos W M van der Meer*

Antibiotics have dramatically changed the prognoses of patients with severe infectious diseases over the past 50 years. However, the emergence and dissemination of resistant organisms has endangered the effectiveness of antibiotics. One possible approach to the resistance problem is the appropriate use of antibiotic drugs for preventing and treating infections. This Review describes how the volume and appropriateness of antibiotic use in hospitals vary between countries, hospitals, and physicians. At each specific level—cultural, contextual, and behavioural—we discuss the determinants that influence hospital antibiotic use and the possible improvement strategies to make it more appropriate. Changing hospital antibiotic use is a challenge of formidable complexity. On each level, many determinants play a part, so that the measures or strategies undertaken to improve antibiotic use need to be equally diverse. Although various strategies for improving antibiotic use are available, a programme with activities at all three levels is needed for hospitals. Evaluating these programme activities in a way that provides external validity of the conclusions is crucial.

*Lancet Infect Dis 2010;  
10: 167-75*

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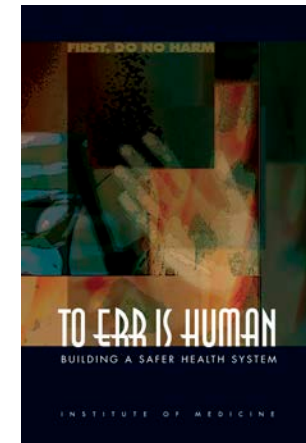
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# Medication safety

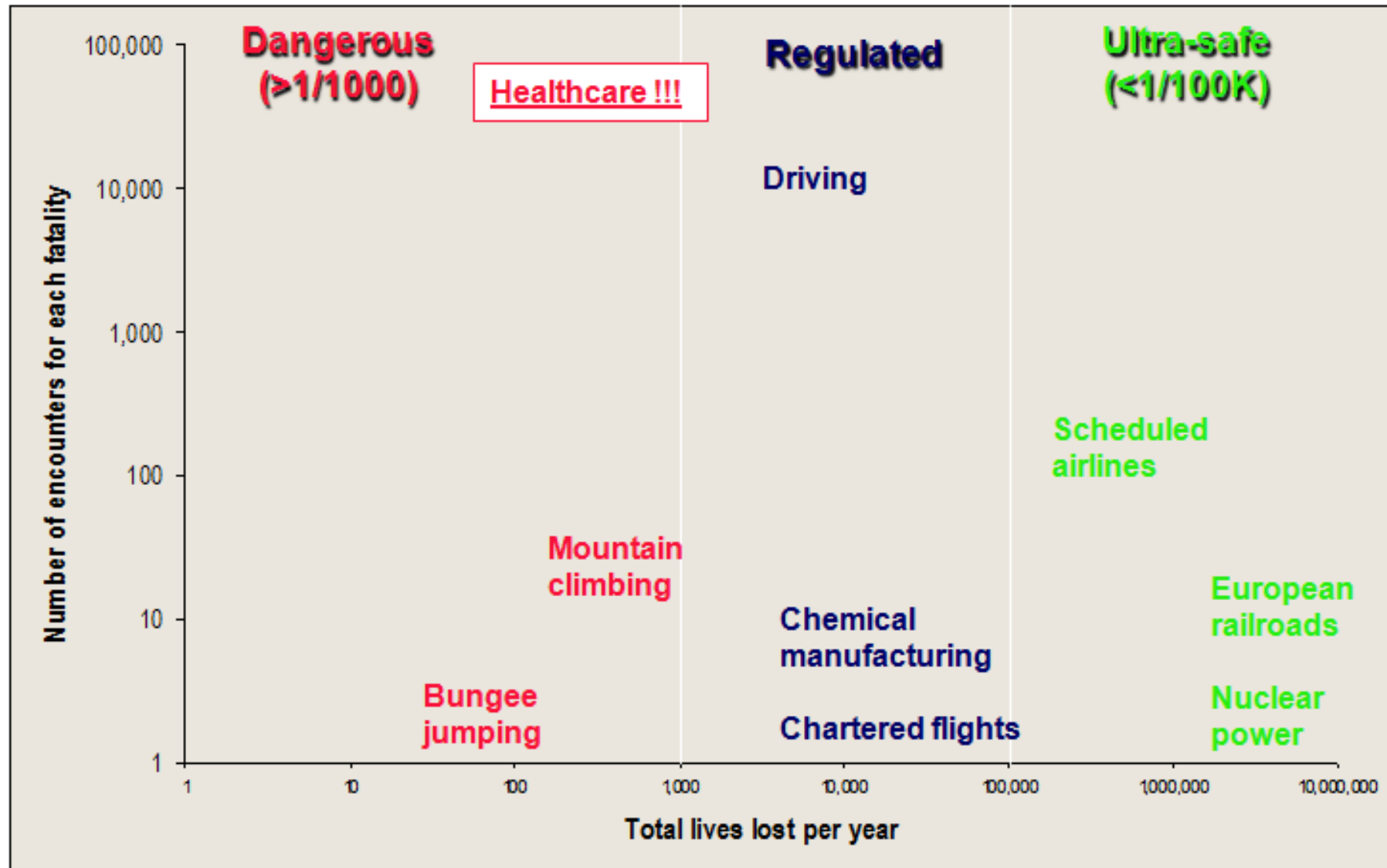


Lucian Leape





# How hazardous is health care?







(Leif Parsons)





"We're all pretty much in agreement that this  
is what your doctor scribbled as your prescription."



# Safe but Sound

## Patient Safety Meets Evidence-Based Medicine

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Kaveh G. Shojania, MD

---

Bradford W. Duncan, MD

---

Kathryn M. McDonald, MM

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Robert M. Wachter, MD

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**T**HE INSTITUTE OF MEDICINE'S SEMINAL REPORT *To Err Is Human*<sup>1</sup> highlighted the risks of medical care in the

### Defining Patient Safety

In the evidence report,<sup>2</sup> we defined patient safety as a type of process or structure within the health care system that reduces the probability of adverse events related to the health care system across a range of procedures. We intentionally avoided the word "error" in this definition, both because of the ambiguity of the term and the difficulties in specifying

JAMA 2002;288(4):508-13





David Westfall Bates: Electronic prescribing increases medication safety and doctors should use it.



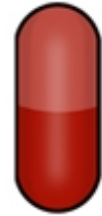
# Electronic prescribing (CPOE)

- Embedded norms
- Structured workflow
- Disciplining provider behavior



Embedded norms

# PILLS: Take them for everything!



tired



achy



sad



fat



bored



pukey



stupid



old



poor



uptight



smelly

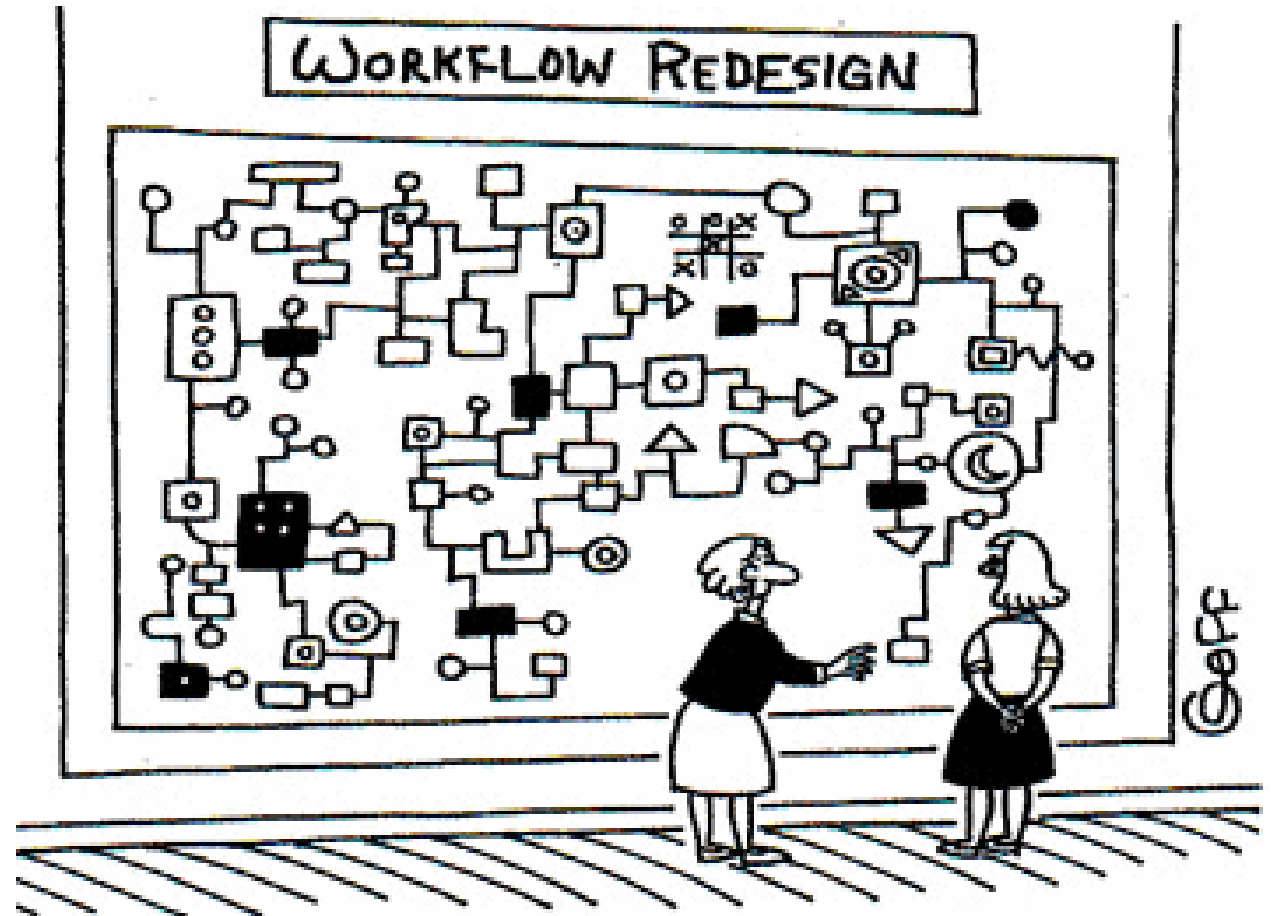


addicted to  
pills

Natalie Dee.com



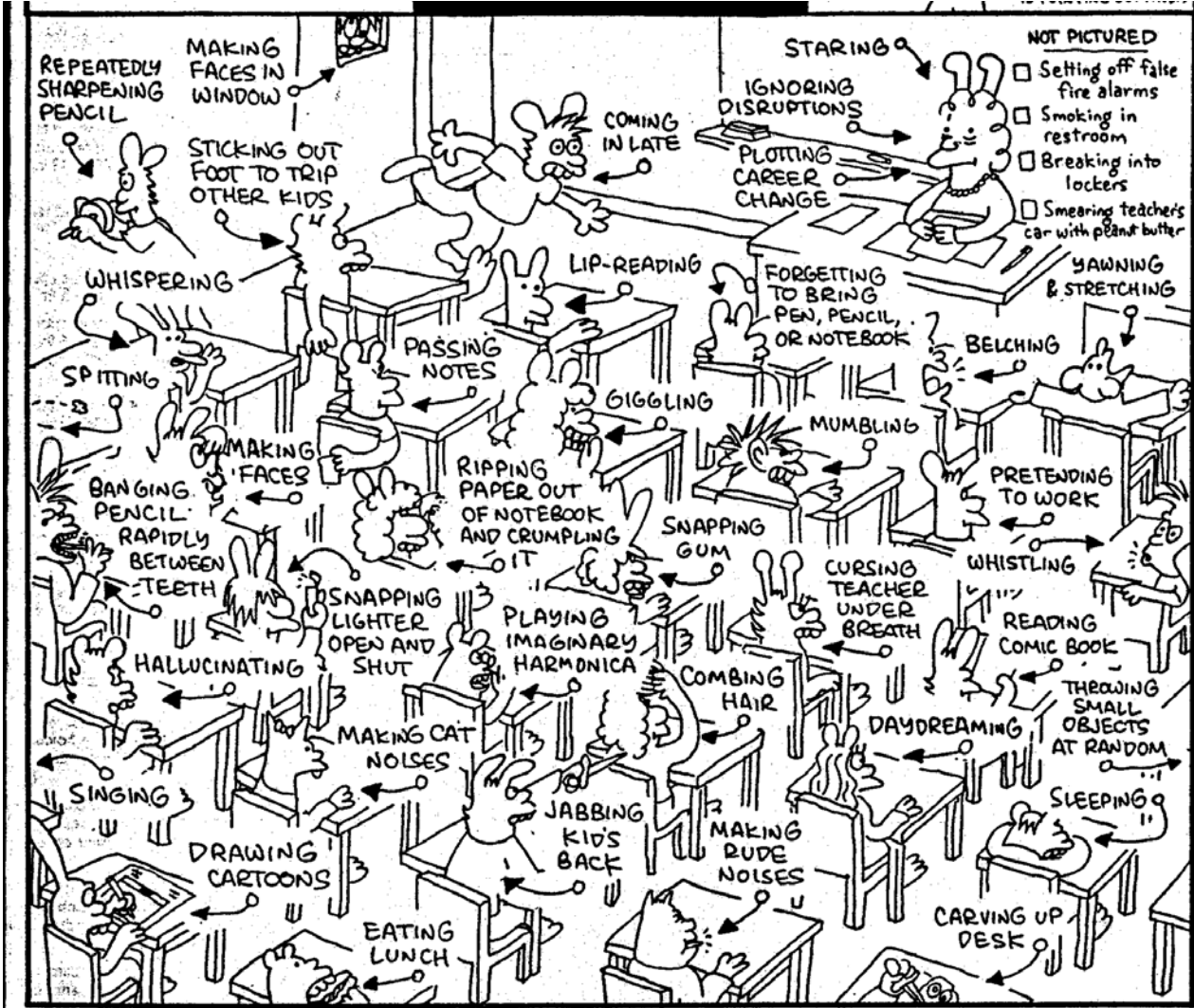
Structured workflow



*"And this is where our ED workflow redesign team went insane."*



Disciplining provider behavior





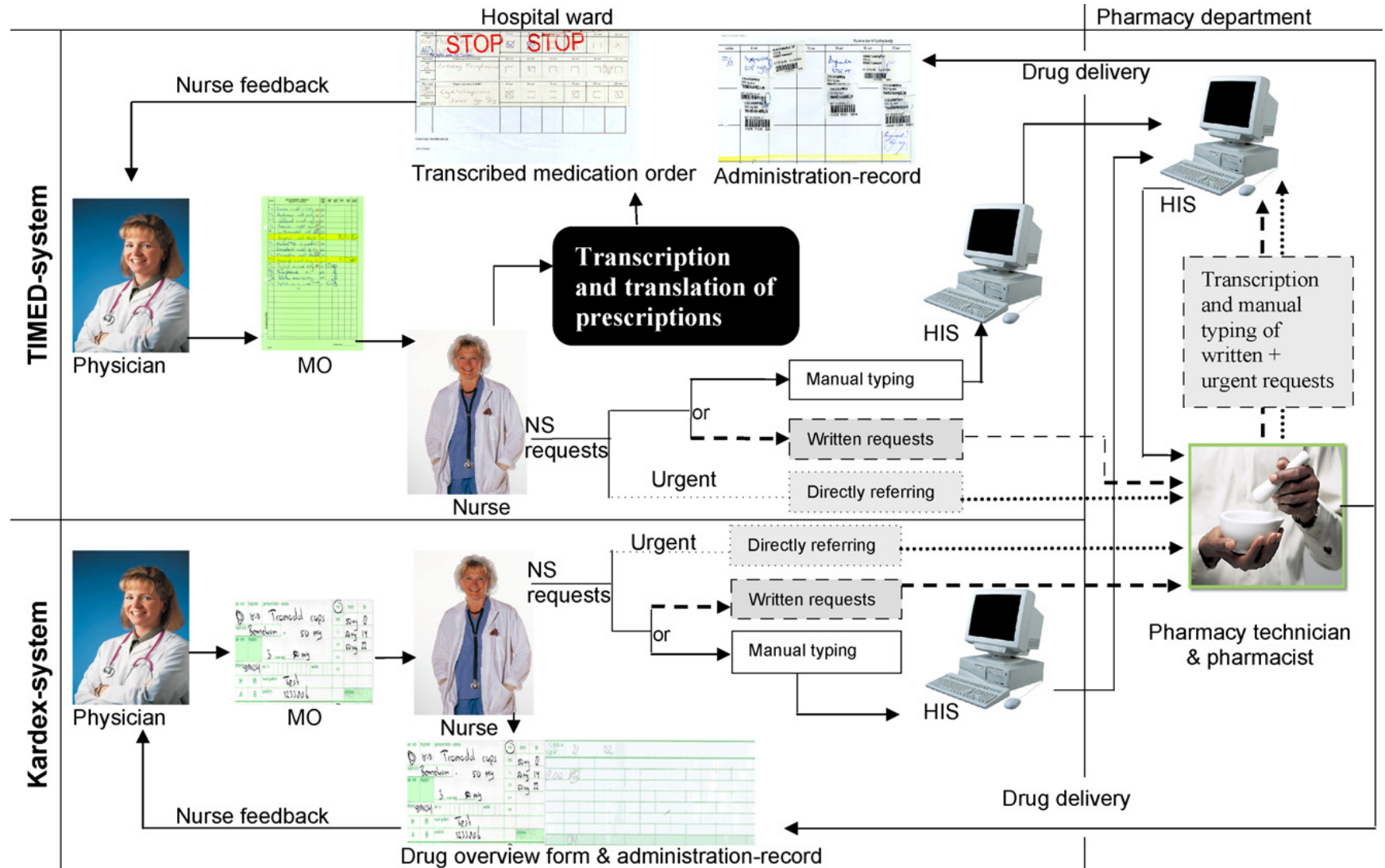
# Infrastructures of electronic prescribing

- Technology
- Organizational
- Social



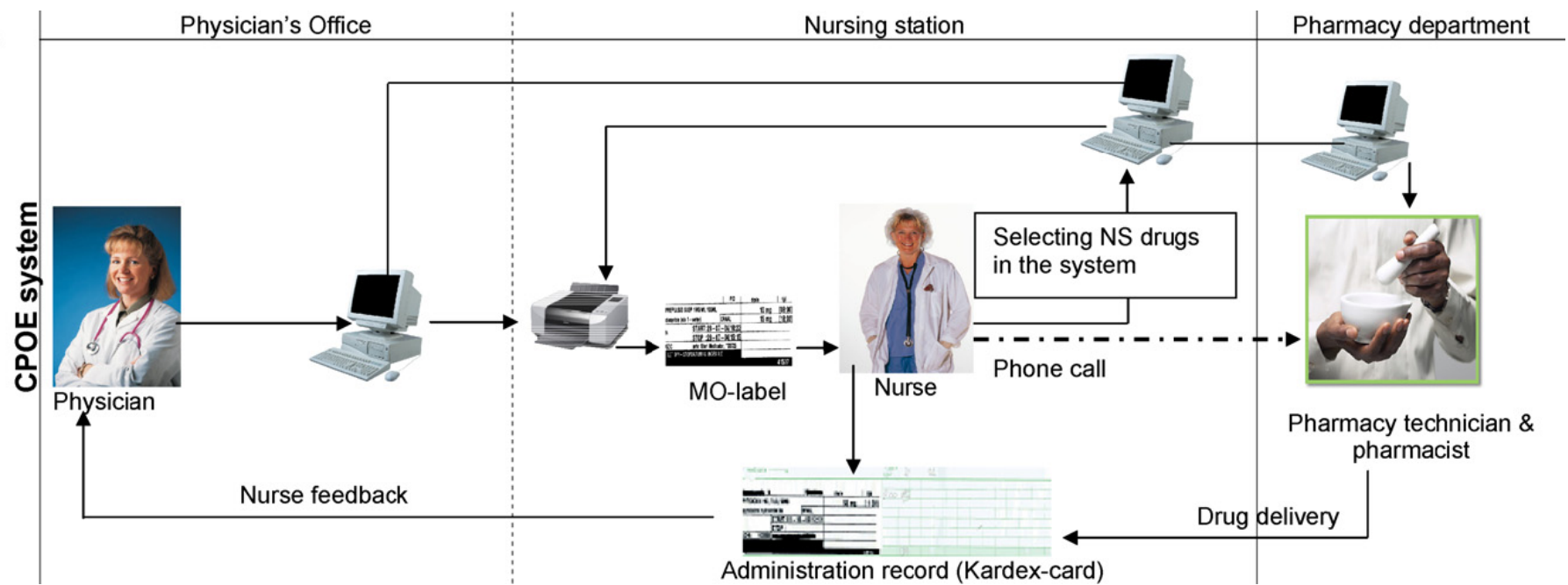
A subtle  
manifestation of  
infrastructure  
effects

*Before  
implementation of  
electronic prescribing  
in Erasmus MC*





*After implementation  
of electronic  
prescribing in  
Erasmus MC*

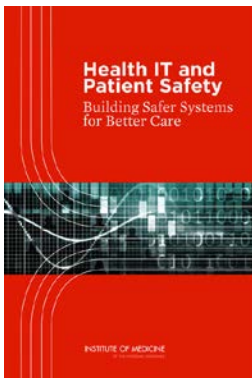




## Electronic prescribing creates some challenges

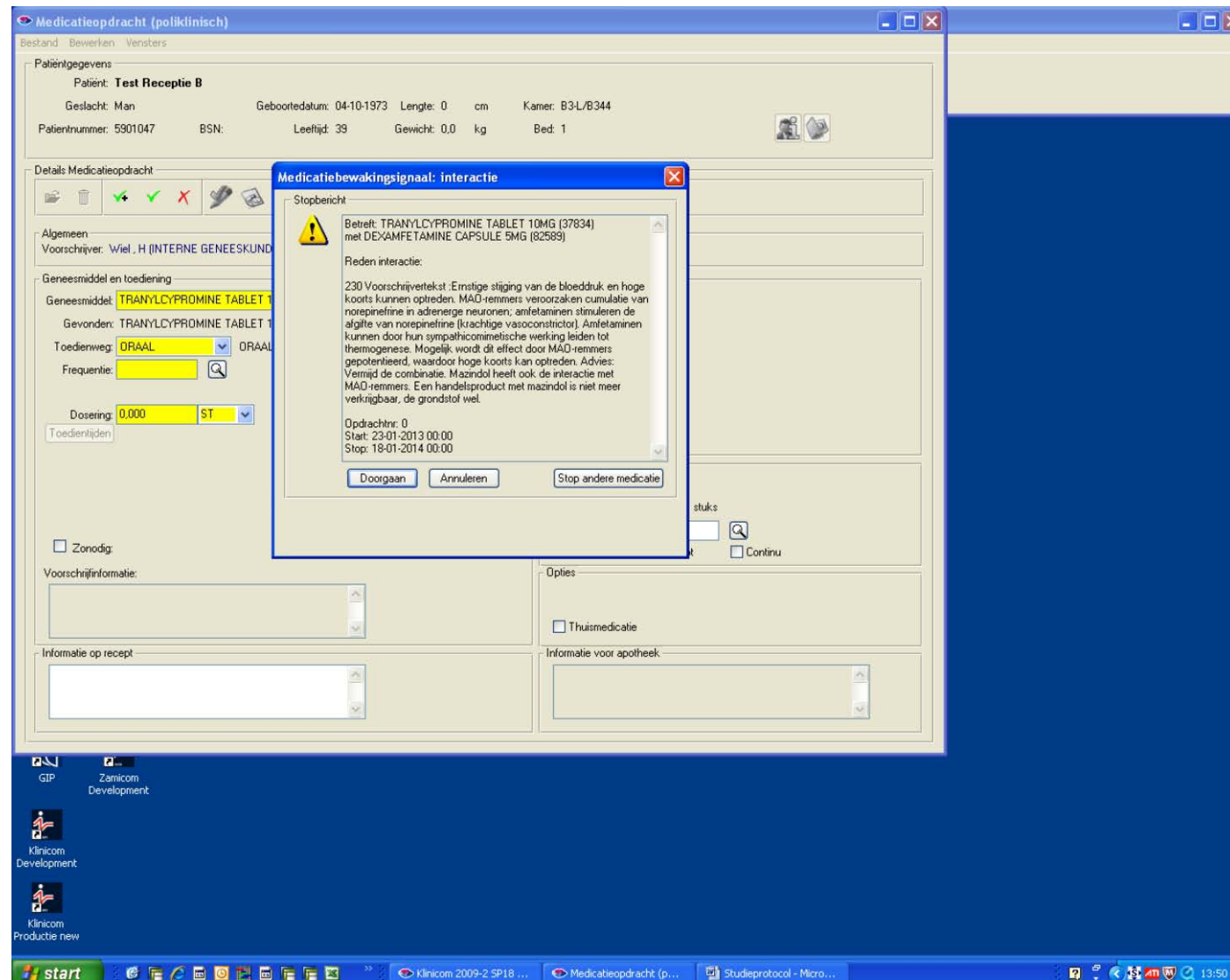


**"Your physician has to have more confidence in e-prescribing. He followed up with a fax, an e-mail, and a phone call."**





Decision support feature  
of electronic prescribing:  
reminders and alerts





Alert fatigue





So far my focus on providers and their individual organizations



How about patients?



Elderly patients take a lot of medicines: polypharmacy





WHAT MEDICATION ARE YOU TAKING  
FOR YOUR BLOOD PRESSURE?



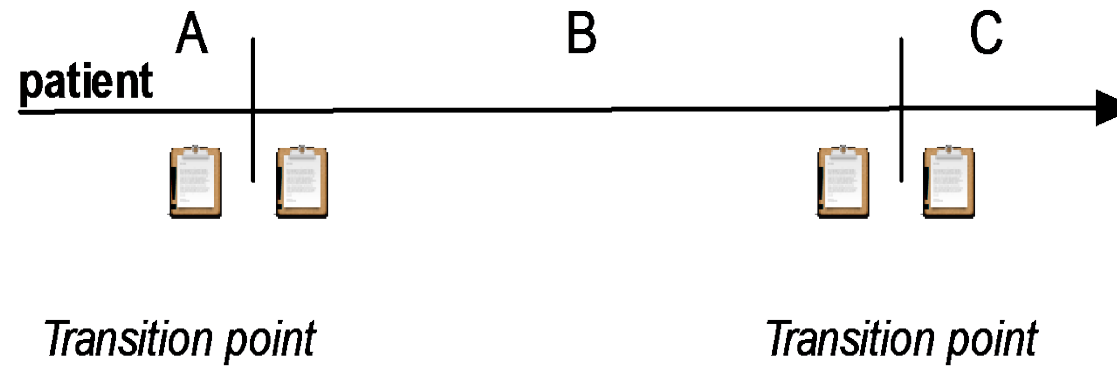
\* HAS ~25% CHANCE  
OF STARTING WITH E



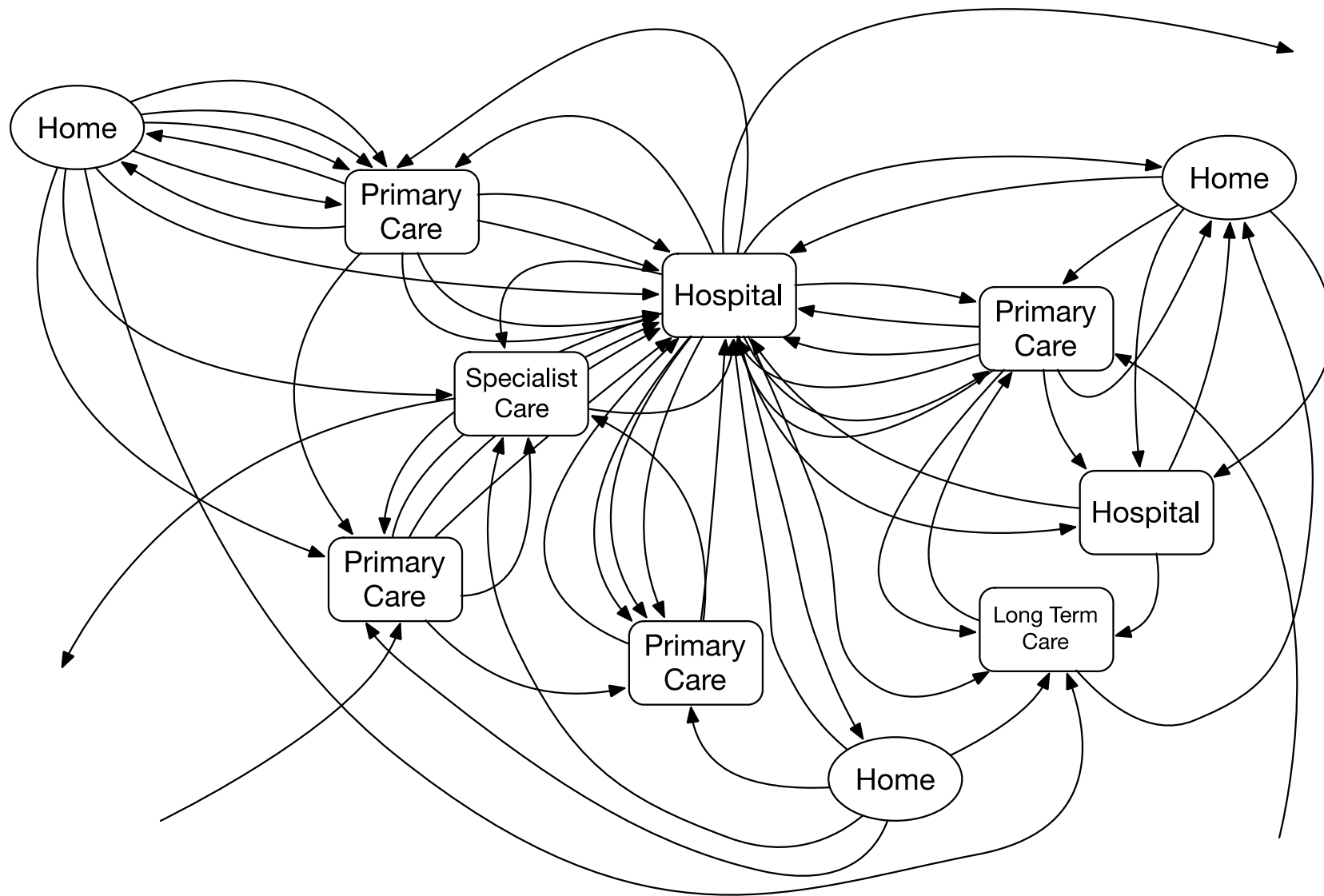


Patients travel the health system

*Continuum of care*

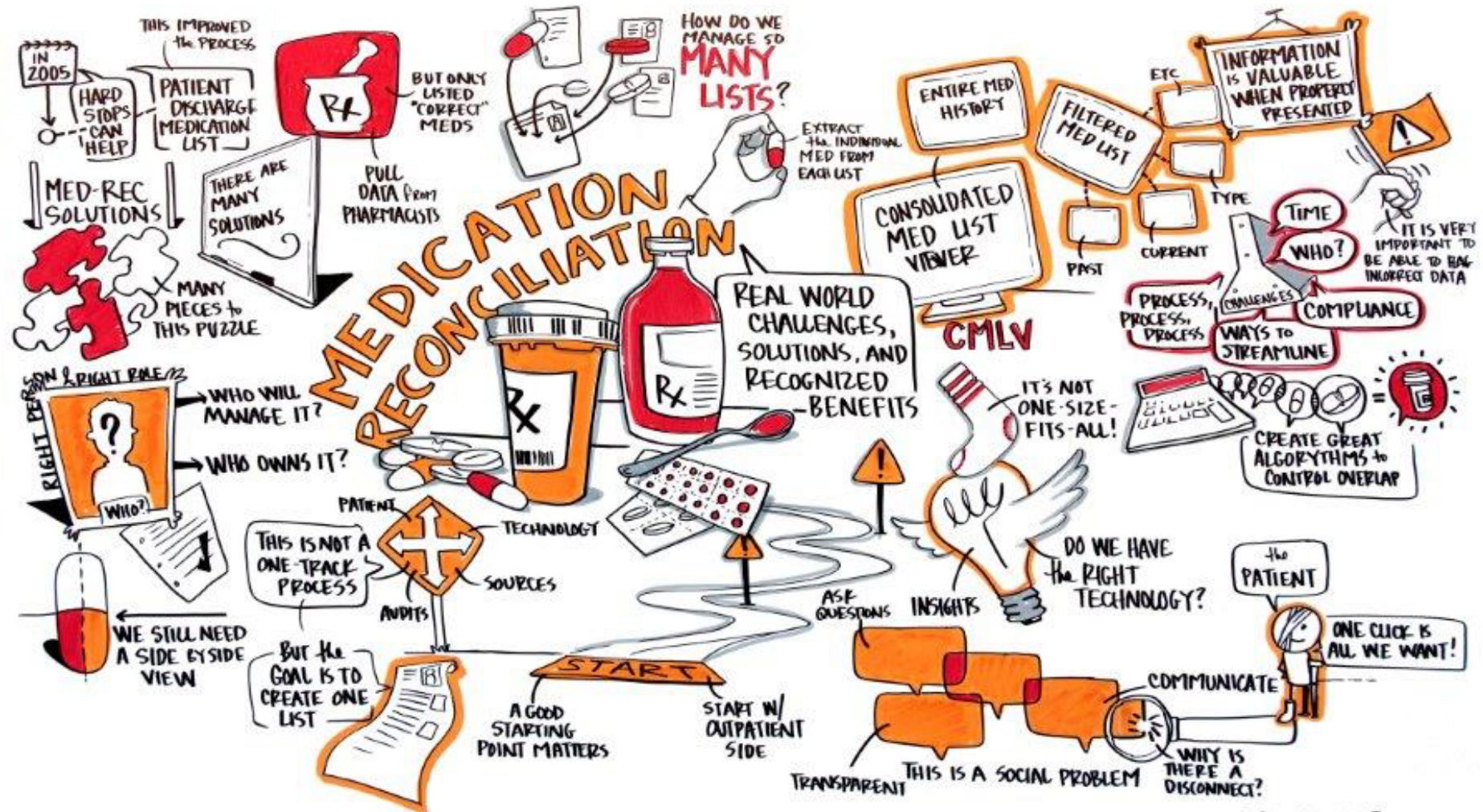








# Medication reconciliation





Patient focused infrastructure of medication safety



# Online Patient Portal

Convenience at your fingertips



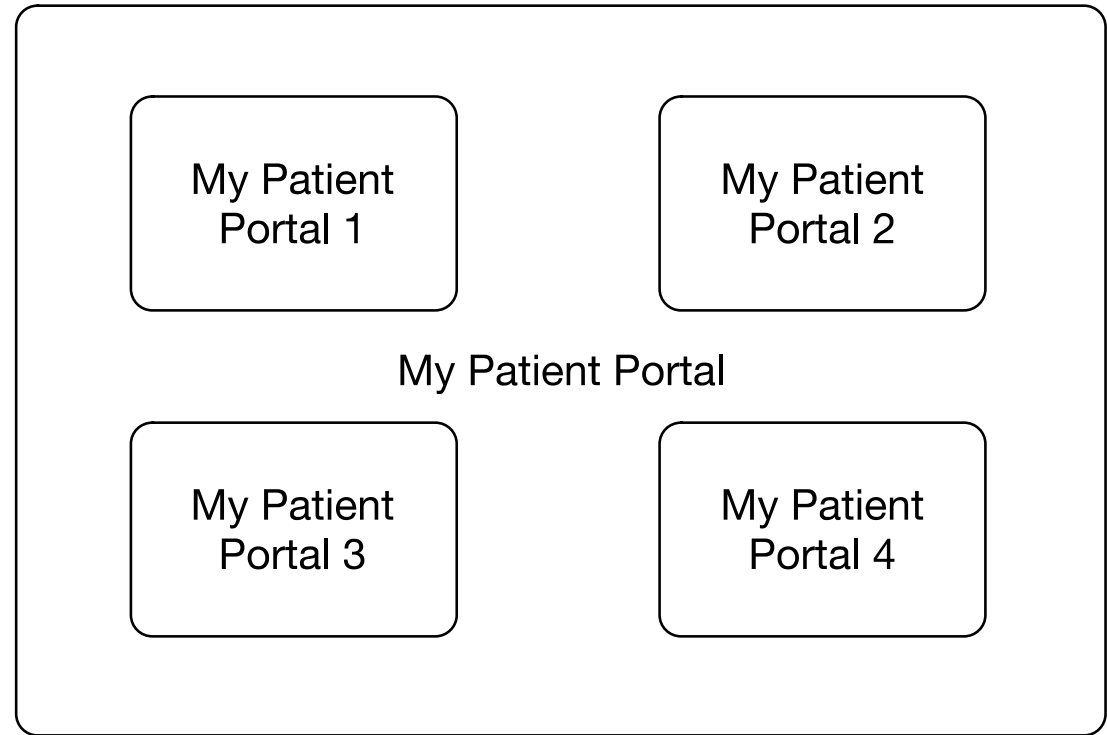


# PATIENT-CENTERED CARE



*Concept by Sachin Jain, Art by Matthew Hayward © 2014 All Rights Reserved*









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## 2016 Report to the Community

*With a continued focus on expansion and deeper use of the HIE, HEALTHeLINK marked a number of significant milestones highlighted in our 2016 report.*

[Read more](#) →





## Providers of Clinical Data to HEALTHeLINK

The following data providers are making patient clinical records available via HEALTHeLINK. Access to these records began on the dates indicated. Please note that corrected records or updates may exist prior to these dates.

	<b>Admission, Discharges, Transfer (ADT) Messages</b>	<b>Radiology</b>	<b>Radiology Images</b>	<b>EKGs</b>	<b>Labs</b>	<b>Transcribed Reports</b>	<b>ER Reports</b>	<b>Medication History</b>
<b>REGIONAL HOSPITAL SYSTEMS</b>								
<a href="#">Bertrand Chaffee Hospital</a>	11/18/2013	12/4/2013	12/4/2013	TBD	1/9/2014	2/5/2014	TBD	TBD
<a href="#">Brooks Memorial Hospital</a>	7/27/2011	8/31/2011	9/5/2012	TBD	12/27/2011	8/31/2011	TBD	TBD
<a href="#">Catholic Health System</a>	7/22/2008	7/25/2008	4/21/2017	TBD	8/19/2008	11/14/2013	TBD	Discharge Medications 9/26/2012
<a href="#">Eastern Niagara Hospital</a>	11/12/2013	11/14/2013	11/14/2013	TBD	12/10/2013	11/14/2013	11/14/2013	TBD





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Senior

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## SENIOR CARE BLOG

Learn about the risks falls can pose in the older population, tips for staying connected with your loved ones, how to make your loved ones' home safer, and much more in our Senior Care Blog.

### KEEP YOUR INDEPENDENCE: 3 WAYS A PERSONAL MEDICINE DISPENSER HELPS YOU STAY AT HOME

#### RECENT POSTS

- What's New With Safe Life Senior?
- Senior Valentine's Day Ideas



# Infrastructure challenges for medication safety

- Defining the patient role in medication (safety)
- Cross-organizational integration
- Professional collaboration
- Integrated IT approach
  - HIE
  - Patient portals
  - Smart devices
  - Interoperability



And what happened to the patient with the swollen leg?





# Thank you for your attention

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