Electronic Patient Records in a Ubiquitous Setting
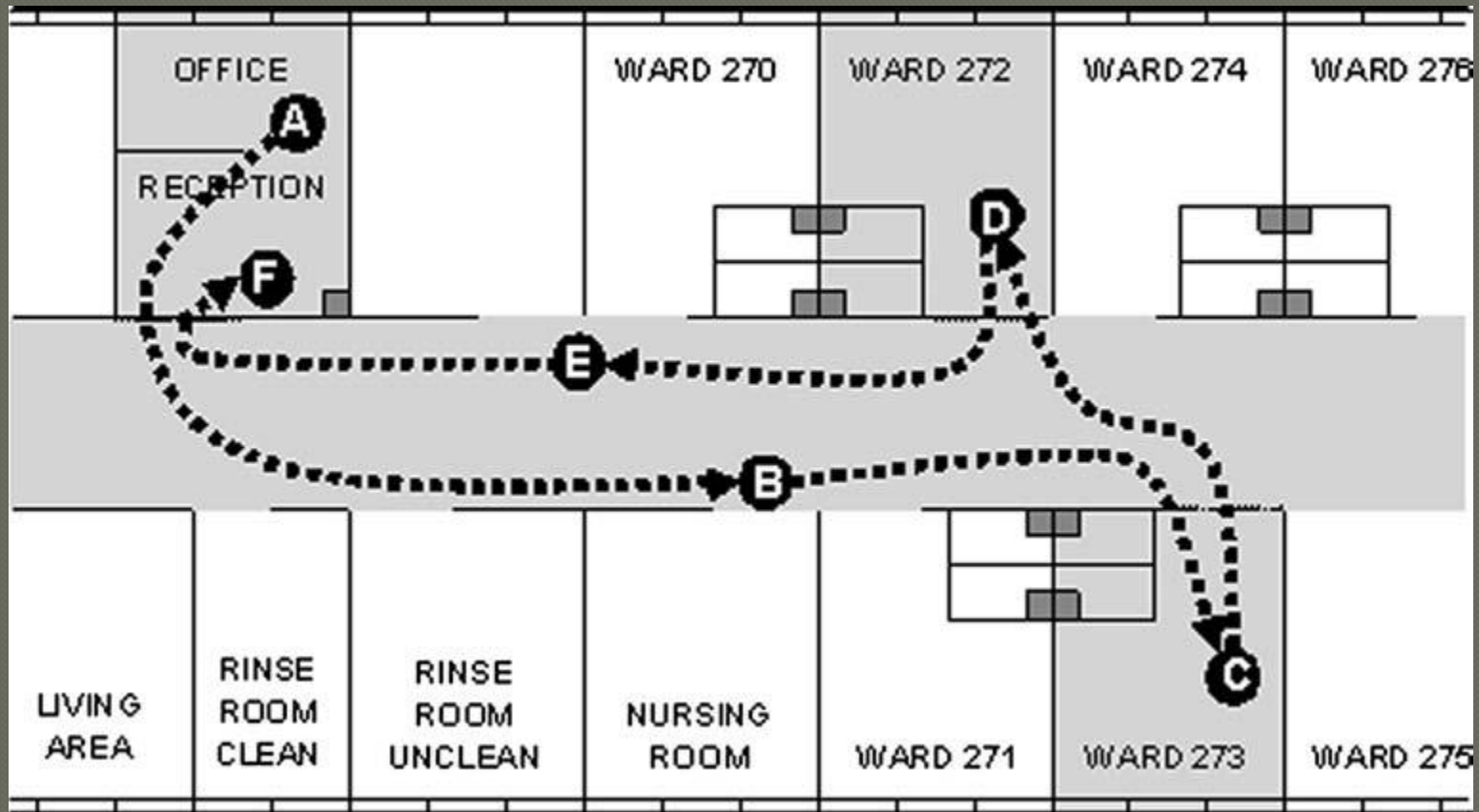
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Brandon Botzet
botze010@umn.edu

Using Paper Records

Taken from [1]

Outline

- Paper Records
- Goals of EPR
- MobileWard
- Ward-In-Hand
- Study EPR in Use
- Paper vs. EPR
- Conclusion

Goals of EPR

- Workload on Staffing
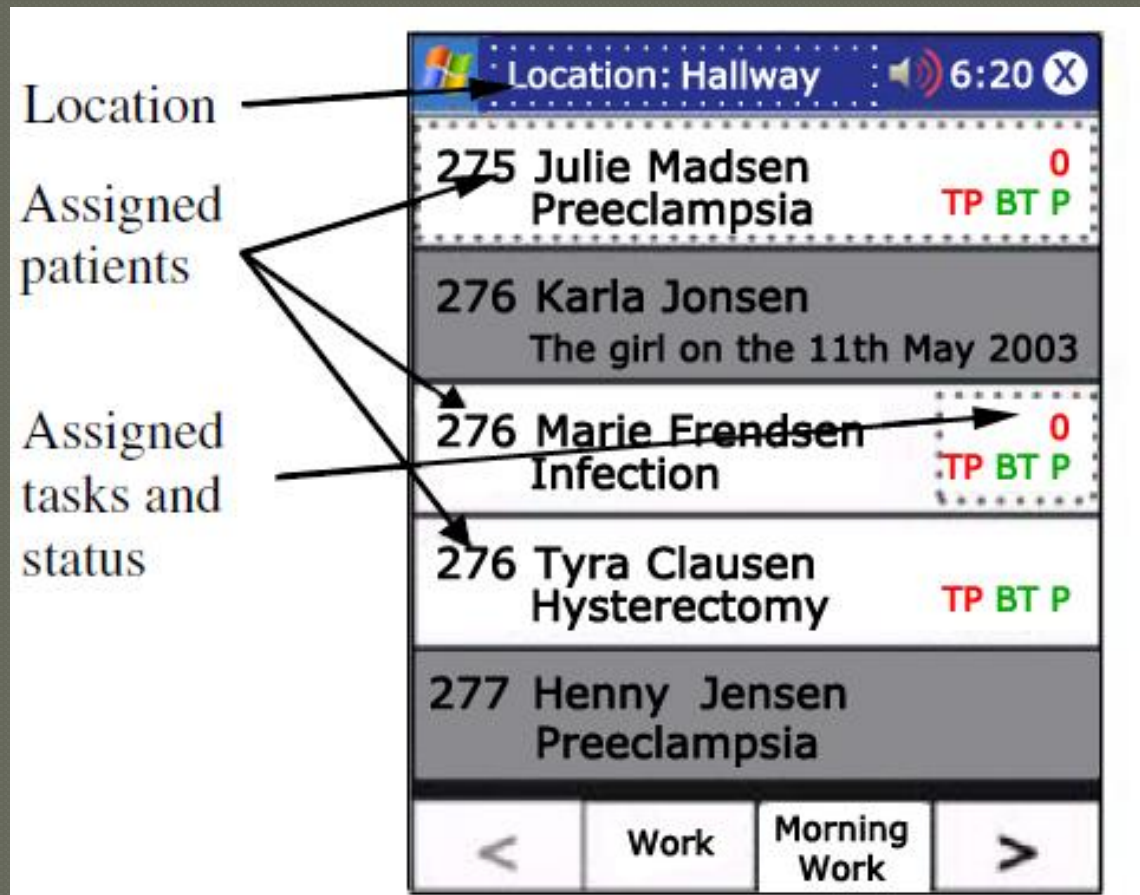
- Reduce Medical Errors

- Ease of Accessing Information

MobileWard

- PocketPC

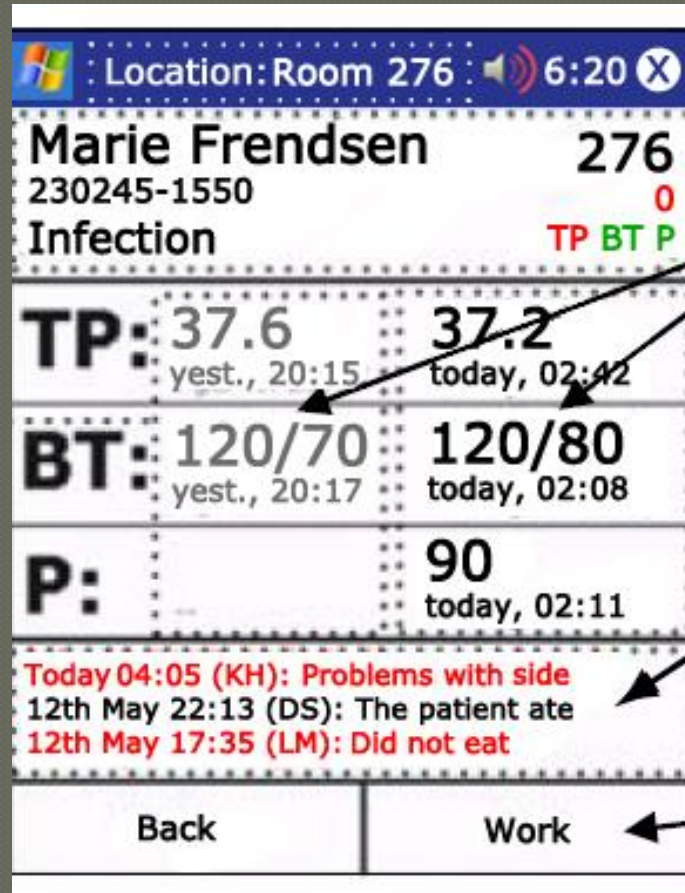- Context-Aware

- View and Record Patient Records

- Scanner

Taken from [1]

MobileWard UI

Taken from [1]

MobileWard UI
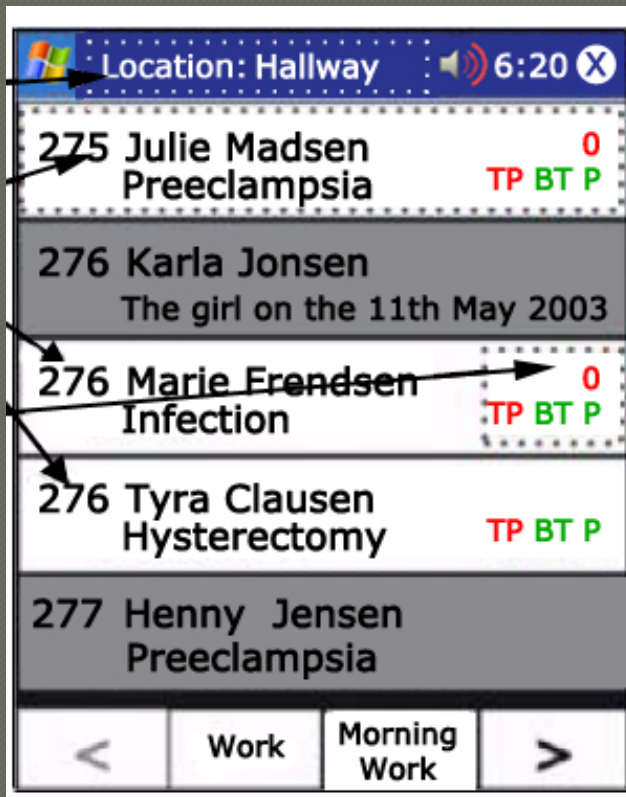
Taken from [1]

Problems from MobileWard

- Screen changing with context-awareness

- Fragmented Information

- Confuse with keyboard layout

  "Tab, Caps, and Shift"

  vs. "Tablets, capsules, and shift medication"

- Fear of Spreading Bacteria

Ward-In-Hand

- Mobile

- Context-Aware with using minimum of three WLAN access points
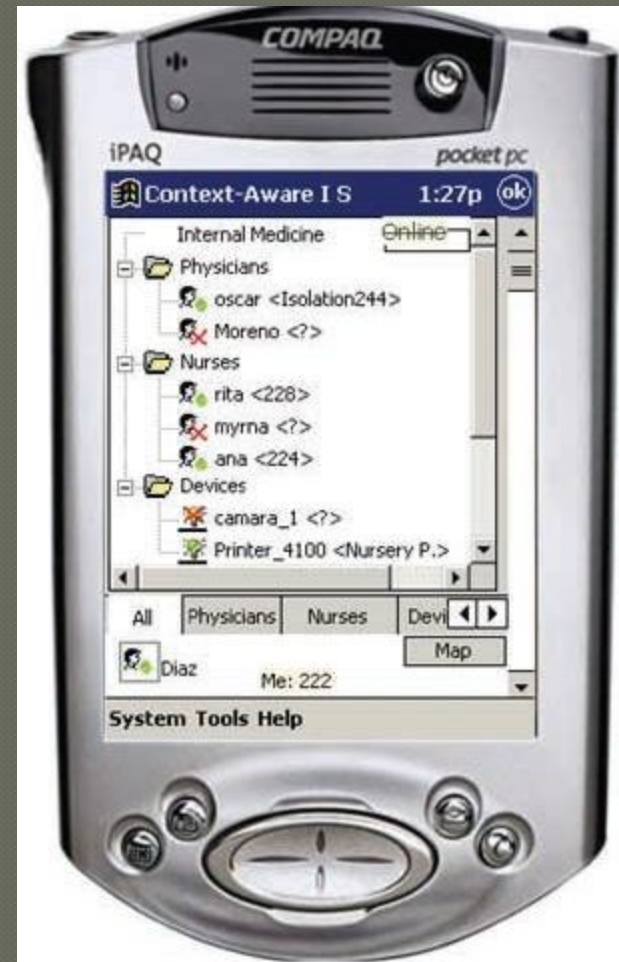
- Smart Messaging through use of Agents

Taken from [2]

Ward-In-Hand Survey

	Disagree	Neither	Agree
It is useful to know who is in the hospital and where they are in relation to me	1	0	27
It is useful to send messages that depend on context for their delivery	1	0	27
It is useful to have access to the patient's medical record through a handheld computer	1	0	27
Receiving messages can distract me from my daily work*	20	3	4

Taken from [2]

*One person did not respond to this question

Security and Reliability

- Wireless Local Area Network (WLAN)

- Encryption

- Common Language for Sharing

Studying EPR in use

- Study with 26 million patient records in system, Denmark.

- Looked at team conferences, nursing handovers, and ward rounds in six categories

- NASA task load index (TLX) to measure stress, 0 (low stress) – 100 (high stress)

- 20 of 31 categories showed significant improvement*
*Using multiple variable significance test (Anova) with a CI of 95%

Results of EPR in Use

	Mean	Mean	Significance p
Mental Demand	40.28	8.85	< .001
Physical Demand	28.89	6.54	< .001
Temporal Demand	49.94	15.77	< .001
Effort	42.50	9.62	< .001
Performance	26.39	3.08	< .001
Frustration	27.78	3.08	< .001

Mental Workload for ward rounds

Taken from [3]

Paper vs. EPR

- Efficiency
"The emergency room uses pre-printed [paper] forms for orders… this paper 'workaround' is more efficient/ expedient"

- Knowledge/ Skill/ Ease of Use
"Physicians will get frustrated and say where is it?"

- Memory
"Without a sheet of paper, I sometimes forget about [walk-in] patients"

Conclusion

Using EPR has the potential to help:

- workload on hospital staff,

- reduce medical errors,

- and increase the quality of medical care provided

Electronic Patient Records in a Ubiquitous Setting, by Brandon Botzet   December 3rd, 2011

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[2] M. A. Munoz, M. Rodrguez, J. Favela, A. I. Martinez-Garcia, and V. M. Gonzalez. Context-aware mobile communication in hospitals. Computer, 36:38-46, September 2003.

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[5] M. Skov and R. Hegh. Supporting information access in a hospital ward by a context-aware mobile electronic patient record. Personal Ubiquitous Comput., 10:205-214, March 2006.

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