



A Socio-Technical Assessment of Hospital Systems to Improve Provider Well-Being Using Contextual Inquiry

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Agenda

- Introduction
- Study Description
- Key Findings
- Lessons Learned
- Conclusion
- Acknowledgements
- References





INTRODUCTION

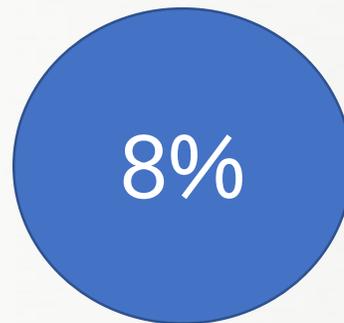
INTRODUCTION

Provider Burnout is a growing epidemic in the United States

Burnout, in a professional setting, is a reaction to prolonged stress manifesting in the form of loss of enthusiasm for work, feelings of cynicism, and a low sense of personal accomplishment.

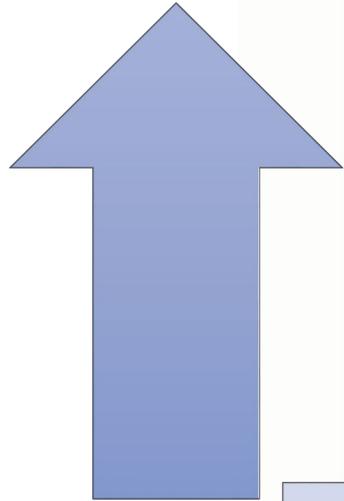


exhibited symptoms of burnout

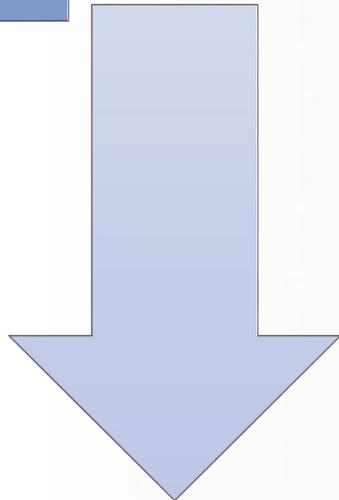


decline in satisfaction with work-life balance

Increased provider burden is associated with reduced outcomes



- Healthcare expenditure
- Staff turnover
- Risk of medical errors



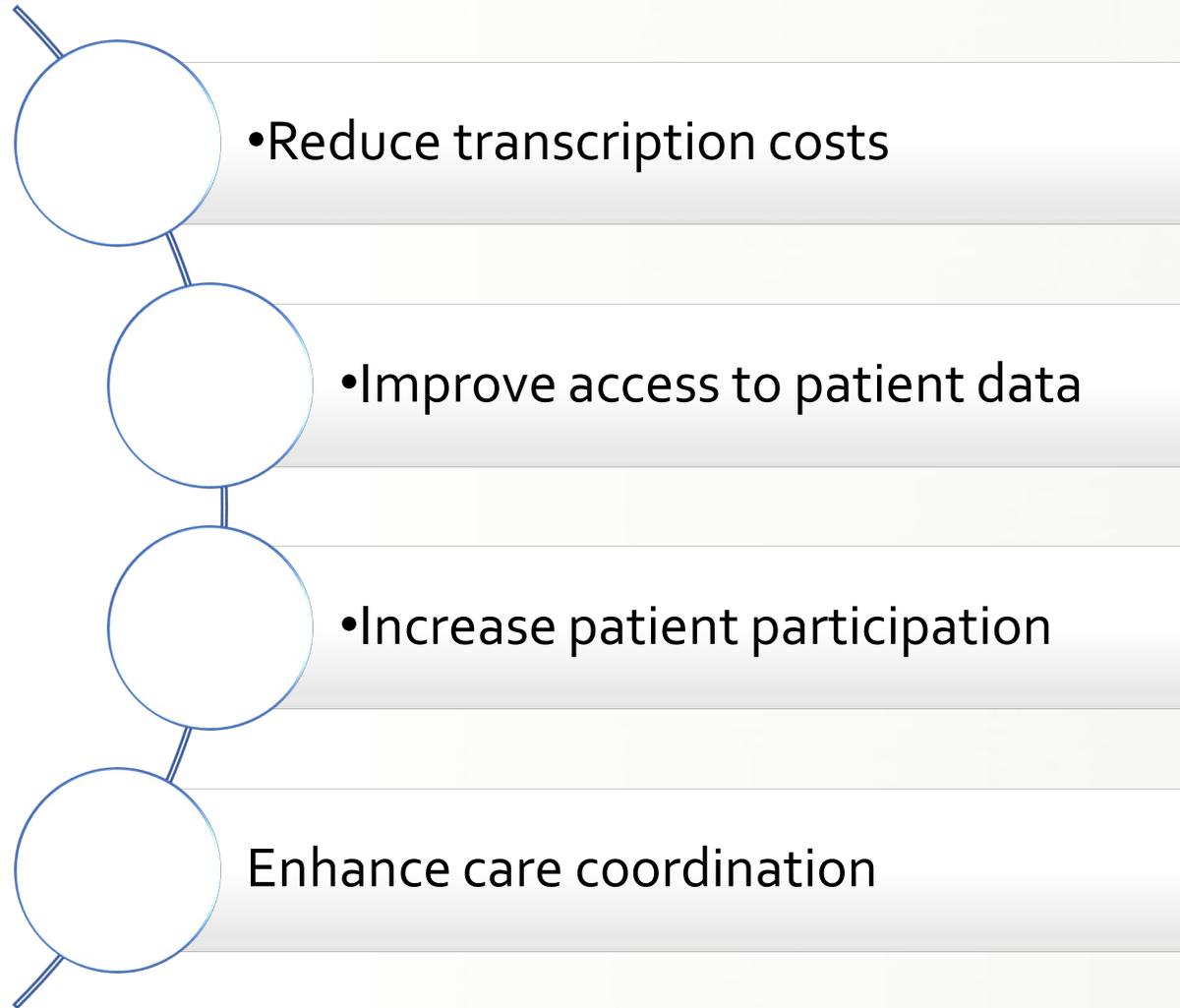
- Patient satisfaction and experience
- Judicious use of resources
- Medication adherence



High prevalence indicates systemic rather than individual causes

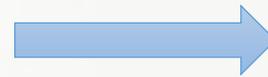


EHRs have been instrumental in improving care delivery



Research on providers' experience show unintended consequences of EHR use

- 87% cited administrative and paperwork burden as the leading cause of work-related stress
- 2013 survey found EHR technology had an adverse effect on professional satisfaction
- More than 75% complained of interference with patient care
- PCPs spent 50 minutes to respond to alerts, out of which 80% were non-emergent



Poor usability
Time-consuming data entry
Lack of interoperability

The Well-Being Program was launched to address systemic causes of provider burnout

- System-wide initiative to improve Epic@UNC and provider practice
- Goal: to meet the fourth arm of the Quadruple Aim (preventing burnout and improving work life)
- Formal adoption of wellness as a performance measure

WELL-BEING
PROGRAM

UNC
HEALTH.

UNC
SCHOOL OF
MEDICINE

UNC
PHYSICIANS
UNC HEALTH CARE



STUDY DESCRIPTION

We aimed to identify system breakdowns that contribute to provider burnout

Objectives

- Explore systemic causes of workplace stress
- Identify technological breakdowns that caused frustration
- Develop solutions to overcome technological barriers

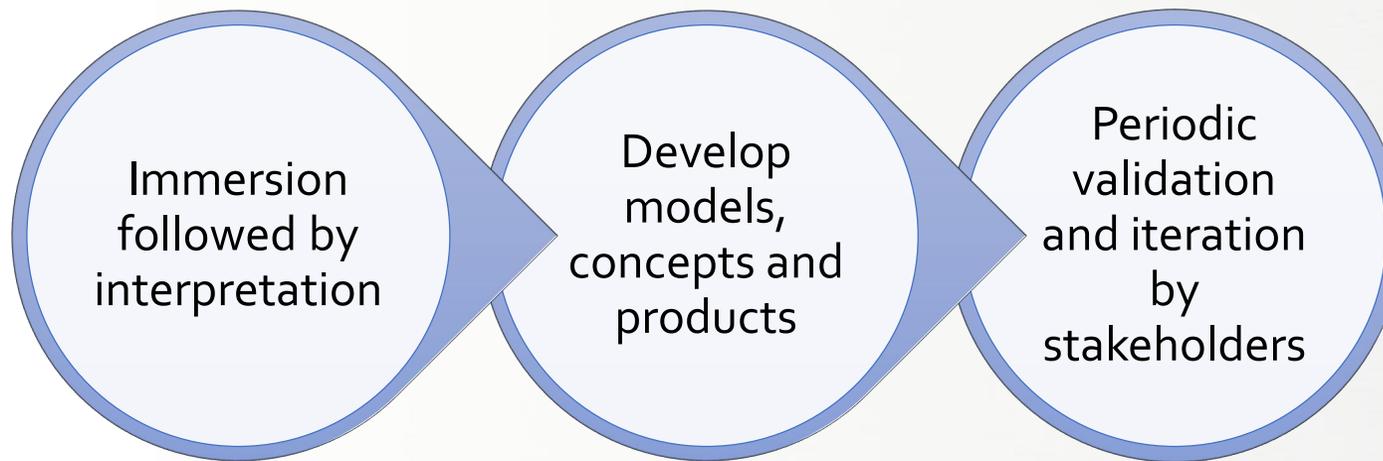
Setting

- 2 hospitals within UNC HCS
- In-patient and out-patient environments
- 2 specialties – cardiology and oncology

Duration: 6 months

Contextual Inquiry was chosen as the method of systems analysis

- Customer-centric integrated method of analysis
- Requires active participation from users at multiple steps throughout the process
- Builds upon in-depth field research



A modified version of Contextual Inquiry was applied

Immersion:

The research team shadowed providers in real-world hospital/clinic settings

Interpretation:

The findings were discussed with the team to promote shared understanding and concept mapping

Modeling:

Insights from the field and from interpretation sessions were organized into models to identify common thematic elements

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We collected data by direct observation using the CI framework

- 11 shadowing experiences over 3 months
- Goal: to gain an understanding of healthcare providers' daily workflows and team dynamics
- Attending physicians and APPs were shadowed
- Confidentiality of data maintained
- All observations coded to remove identifiable information

1	Use this sheet for recording observations made during shadowing. Remove the sample data before using this sheet!															
2	Site	Date	Observer	Subject	Co-Observer	Observation	DoNotShare	Breakdown	Follow-up	Memo	Related	Tag	Tag	Tag	Tag	Tag
3	Hospital	3/10/2019	JD	HOSMD1	JD-HOSMD1	Other MD has a different way setup of the basket, and different approach to handling cases (more reads)					Personality difference, age and experience difference					
4	Hospital	3/10/2019	JD	HOSMD1	JD-HOSMD1	Keeps checking the doors to see if patient has arrived even though EPIC will update	Y				EPIC update may be delayed if the MA / APP takes time to update after rooming					
5	Hospital	3/10/2019	JD	HOSMD1	JD-HOSMD1	PNI informs MD1 about arrival of patient before writing on whiteboard next to the exam room					Redundancy in the work process					
6																
7																
8																
9																
10																

Data Capturing Template

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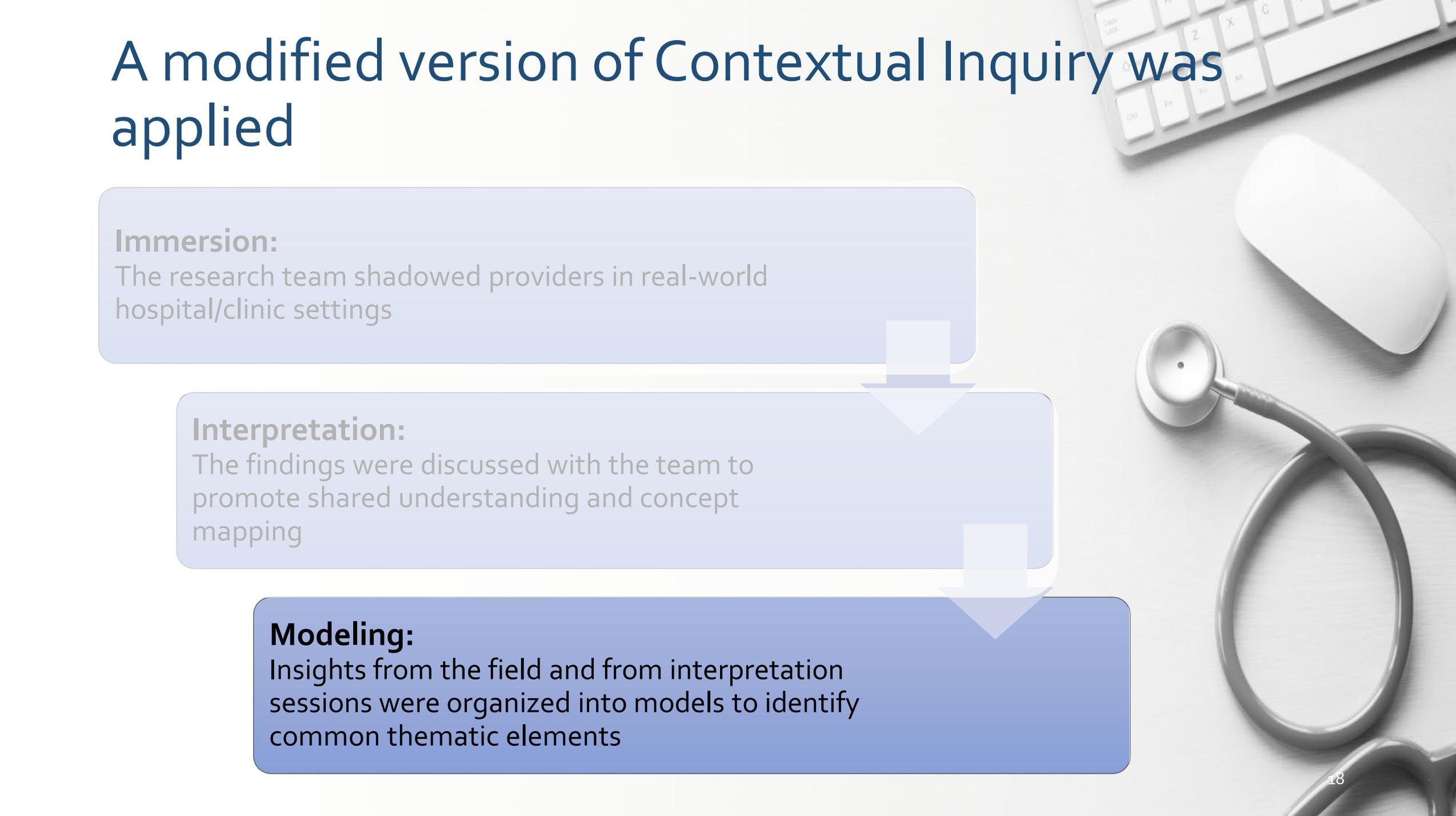
Modeling:

Insights from the field and from interpretation sessions were organized into models to identify common thematic elements

We held weekly interpretive sessions to discuss findings

- One-on-one interview with provider
- Weekly team meetings to discuss observations and potential issues
 - Moderator
 - Model developer
 - Documentation of breakdowns

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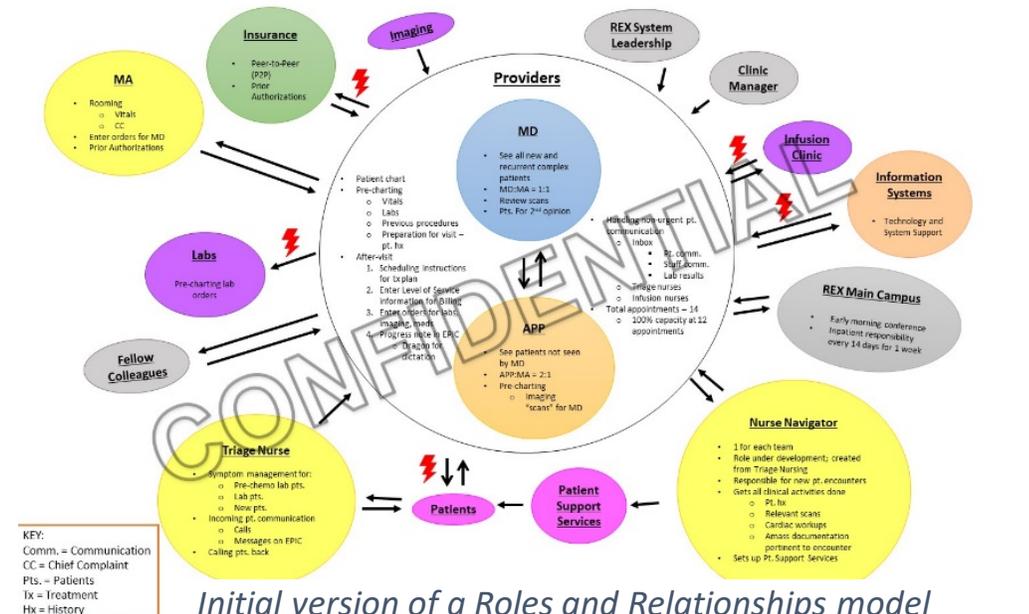
Modeling:

Insights from the field and from interpretation sessions were organized into models to identify common thematic elements

We honed and developed additional models to organize the data

Roles and Relationships Model

- Represented multidisciplinary teams
- Indicated positive relationships
- Identified relationship breakdowns



Affinity Model

- Identified common themes
- Defined significant breakdowns
- Helped visualize the scope, nature, and interconnectedness of the problem

Environment	Relationship	Role	Multidisciplinary care	Technology
Culture <ul style="list-style-type: none"> • I feel they are more of a team working rather than each providers (isolated) • Efficacy issues - E.g., lack of detail • Attention and engagement - patient care or financial success? • Disconnect around data being collected for use translating into action (including what things systems) 	Administration <ul style="list-style-type: none"> • Feeling of lack of support around problem/some development • Lack of team being support the same • Providers: Frustrating to have need • Pharmacy disconnect not feeling engaged in what is important • Gap between objectives and what is happening on ground in clinic 	Unclear or Variable Role <ul style="list-style-type: none"> • Can't find same with same team/MD/CLINIC. Lack of role clarity • AMPV is only linked with care team/MD/CLINIC. Lack of role clarity 	Imaging <ul style="list-style-type: none"> • Sometimes there radiology connected • Radiology uses different system than • JAC, no workflow because of different • REX Pre-authorization process for imaging affects how quickly to check and resources: CLINIC 	Dragon <ul style="list-style-type: none"> • Dragon not functioning as well as expected/needed
Policy <ul style="list-style-type: none"> • Always operating at more than 100% capacity every day/night as a major concern • Clinic excluded from Pharmacy decision making • Unclear system of tracking outcomes to get resources and needing resources to close numbers • Patient who have or complain not enough to provide quality care • Number of patient encounters in a day more than the scheduled patients 	In-patient Providers <ul style="list-style-type: none"> • Interactions with in-patient providers for patient appointment - some take up time and cause delay/misses 	Working outside charter <ul style="list-style-type: none"> • Addition of Access Navigator necessary to new team • There is complete team being contributes to more details for someone • Responsible sharing needs to continue • Responsibilities everyone starting to help things falling through cracks • Access Navigator role not clearly defined as what someone else support services 	Infusion Clinic <ul style="list-style-type: none"> • Staffing model based on productivity • Responsibility of getting lab/imaging • Patient experience being a major concern • The ability to get lab/imaging quickly • Patient satisfaction being a major concern • Patient satisfaction being a major concern 	Hardware <ul style="list-style-type: none"> • Patients not managed effectively • Prioritizing and time consuming
Physical Space <ul style="list-style-type: none"> • Tight, limited space with lot of noise and distraction • Having to escort people out of an important appointment - especially at clinics which have check-in • Coffee machines near infusion chairs to providers being blocked often by patients or families 	Process Gaps <ul style="list-style-type: none"> • Number of responsibilities for different people • Some things done with no responsibility • Patient safety has been a major concern • Patient safety has been a major concern 	Responsibility <ul style="list-style-type: none"> • Some things require time consuming and stressful • Feelings of being second-guessed, lack of autonomy, lack of resources, strategy, lack of respect 	Lab <ul style="list-style-type: none"> • Some they lab results are delayed • Monday morning call/consultation • Don't state the call lab and history makes the lab previous issue 	Support <ul style="list-style-type: none"> • No IT support available, difficult time requesting and tracking
Patients <ul style="list-style-type: none"> • Unrepresented patient behaviors cause interruptions, work pile-up and burden on entire care team • Late afternoon stage involves multiple communication/consultation/therapy or treatment plan (post-visit) • Higher acuity patients require more actual work for the same RVU • Time complexity of patients increases more than to accommodate their care needs 	Process	E2P Review <ul style="list-style-type: none"> • Some things require time consuming and stressful • Feelings of being second-guessed, lack of autonomy, lack of resources, strategy, lack of respect 	Pharmacy <ul style="list-style-type: none"> • Frequency of contact between Pharmacy and Clinic is not enough • Clinic had to dedicate RVU time to the care of what level formerly access pharmacy care • Most of medications not getting into pharmacy for controlled period of time is medication 	
			Triage <ul style="list-style-type: none"> • Patient messages in continuous stream of information and add-on work, especially for AMPV • Patients need number of patient messages associated by triage nurse depends on TMS expertise 	

Initial version of an Affinity Model



KEY FINDINGS

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Three significant EHR constraints were identified



Inbox Management

- Inadequate feedback mechanism for messages sent through Epic

Medication Order Entry

- Time-consuming and error-prone process of entering medication orders

Inconsistent IP vs. OP displays

- Functional differences in the EHR display depending upon the setting in which it is being used

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Status reports and messages serve as elementary starting points in inbox re-structuring

Finding

- No feedback regarding the status of the transmitted message
- User activity unknown

Implication

- Require other modes of communication
- Time-consuming, leading to frustration and stress

Recommendation

Incorporate a status report when a message has been sent using the built-in inbox in the form of a simple sentence or icons

Status reports and messages serve as elementary starting points in inbox re-structuring

✓ Read ☰

✓ Delivered 3/16/17 18:36

This message has been delivered to the intended recipient's inbox.

Three significant EHR constraints were identified



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A color-coded formulary decision support system can greatly ease medication order entry concerns

Finding

- Extensive list of medication information cannot be synthesized in one screen
- Requires the provider to make multiple clicks
- Inadequate access to drug formulary

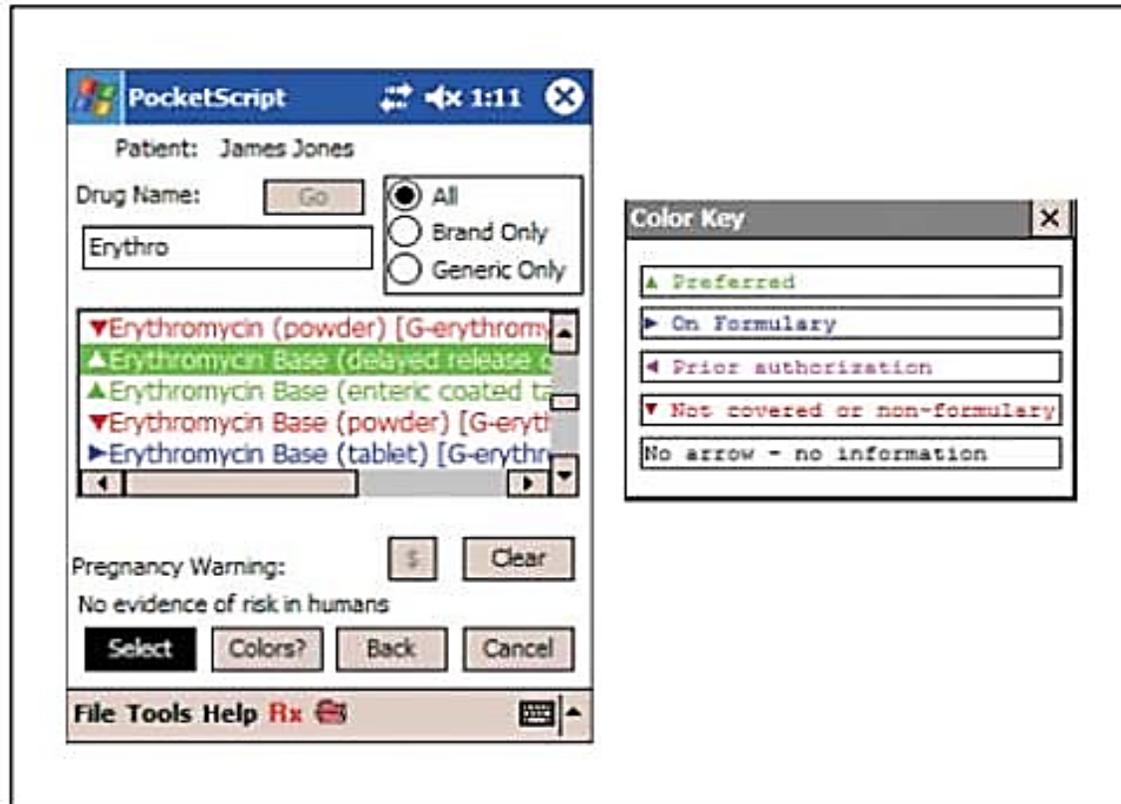
Implication

- Drug selection process is cumbersome, time-consuming, conducive to making errors in selection or dosing

Recommendation

Built-in formulary decision support within e-prescribing systems

A color-coded formulary decision support system can greatly ease medication order entry concerns



Sample prescribing screen for the PocketScript (Zix Corporation, Dallas, Texas) e-prescribing system with formulary decision support

A color-coded formulary decision support system can greatly ease medication order entry concerns

Examples of Mnemonics for Intensive Care Nursery (ICN) Formulary

Mnemonic	Description
ICN-SPRNPO	Spirolactone 4-mg/mL oral suspension
ICN-FNTNIV	Fentanyl 10- μ g/mL injection
ICN-BDSNIH	Budesonide 0.5-mg/2-mL inhalation
ICN-CHLSO	Cholestyramine 10% ointment
ICN-GNTMOS	Gentamicin 0.3% ophthalmic solution
ICN-DPMN	Dopamine drip

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Inconsistent IP vs. OP displays

- Functional differences in the EHR display depending upon the setting in which it is being used

A transitional EHR guide can help minimize confusion when providers change practice settings

Finding

- Functional differences in the display between inpatient and out-patient settings

Implication

- Inability to carry out same task
- Confusion and frustration

Recommendation

An easy-to-understand, always accessible transitional manual serves as a simple preliminary solution

A transitional EHR guide can help minimize confusion when providers change practice settings

Epic Main Screen

We'll be using Patient Lists most often, but there are few others that are useful:

Unit manager to track patient movement

ED tracking board to look at ED pts: 2 ways to see this

You can customize the tool bar with this wrench.

You can even change your Epic theme!

MAKING YOUR LIST MORE EFFICIENT

To create a list, go to Properties and Create My List (lists are alphabetically sorted, so I number the lists to get the important ones on top). Otherwise, highlight your list then click Properties

Search for the columns you want and click Add

Additional potentially useful columns:

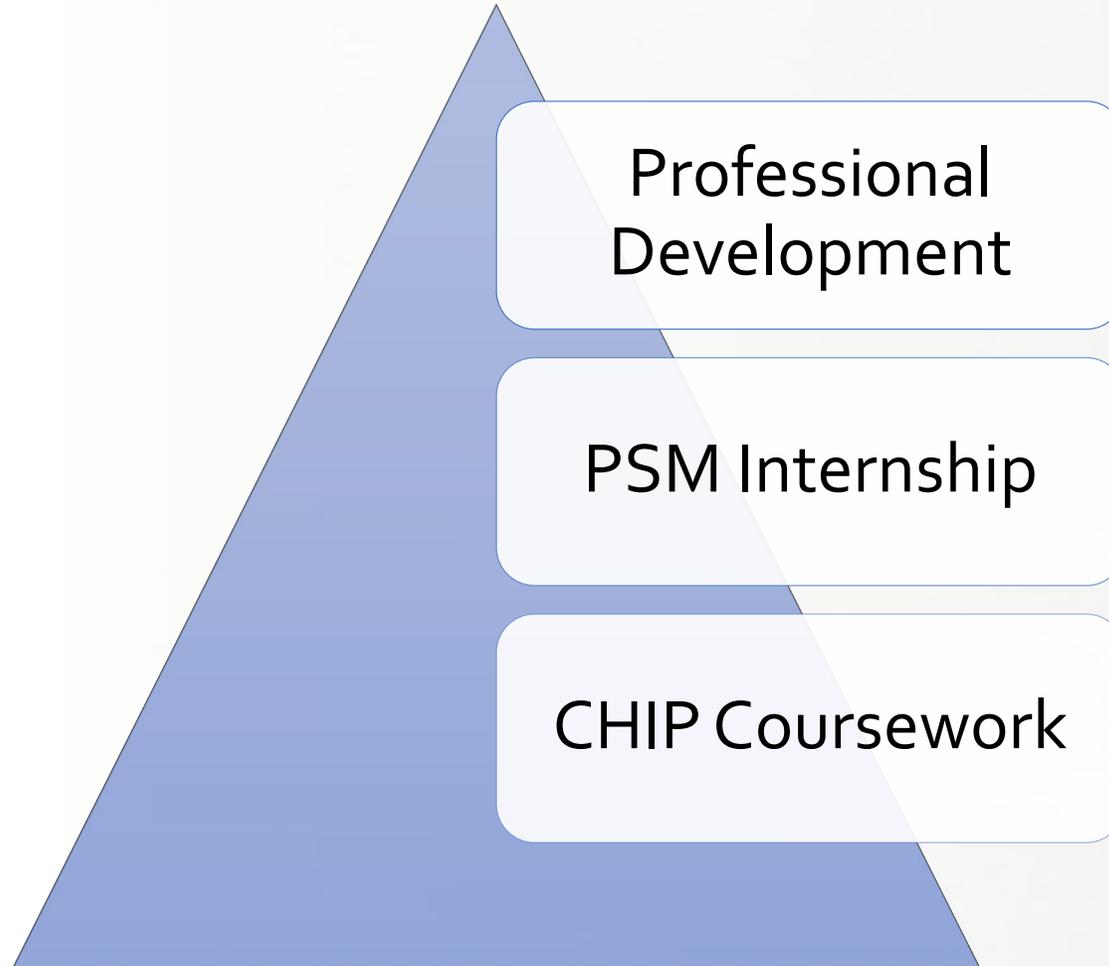
Name Age/Sex	Cr	LDA Name (lines and date placed)
MRN	CrCl	Ucath Days (days Foley has been in)
Patient/Location/Age/Gender/DOB	Hb	Therapy recommendations
Admission Date	K+	

Example of an Epic Guide | Source: The University of Maryland Medical Systems (umms.org)



LESSONS LEARNED

Theoretical and practical applications afforded opportunities to hone technical and soft skills



Limitations

- Small number of shadowing experiences
- Short duration of shadowing experience (1 or 2 days)
- Recommendations were out of scope of the Well-Being program and hence, could not be evaluated
- Subjective analysis
- Potential bias due to modification of user's natural environment



CONCLUSION

Summary and Future Steps

- Modified CI-based approach revealed bottlenecks hindering the efficient use of electronic health records
- Pilot exploratory evaluation integrating one or more of the proposed recommendations may ascertain its effect on the well-being of physicians and advanced practice providers
- Improving physician well-being is essential in the current health care climate

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