

COLLEGE OF POPULATION HEALTH

## *PopTalk Webinar Series*

# Women in Health Data Science and Statistics

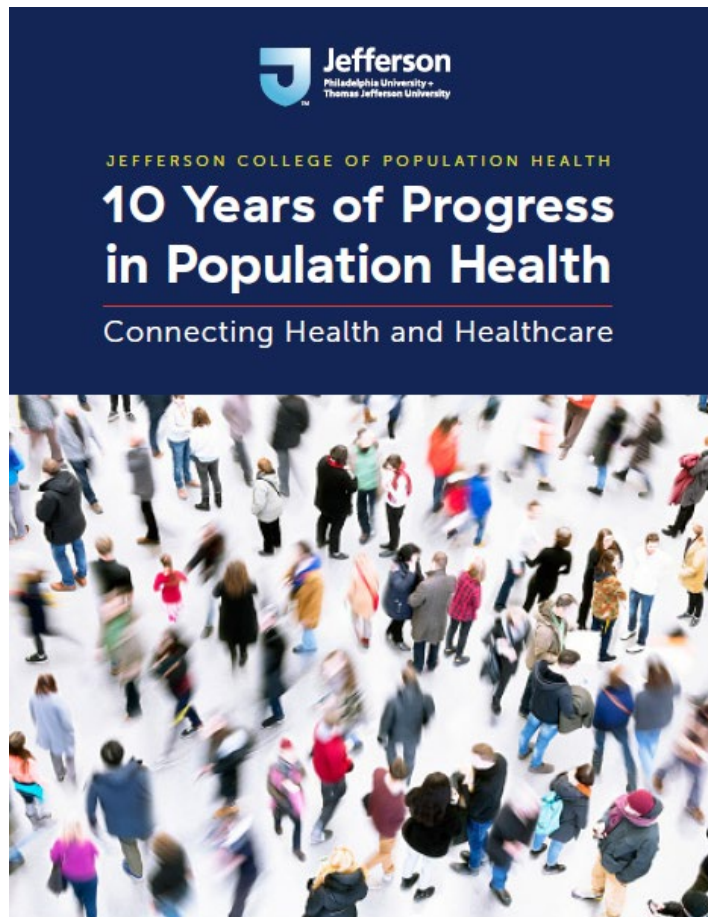
June 2, 2021

Marianna LaNoue, PhD, MS  
Sueanne McKniff, MBA, BSN  
Emily Zhao, PhD

Kay Schwebke, MD, MA, MPH  
Gloria Phillips-Wren, PhD  
Karen Walsh, DHSc, MS, MBA



# Jefferson College of Population Health



To prepare leaders with global vision to *develop*, *implement* and *evaluate* health policies and systems that improve the health of populations and thereby enhance the quality of life

# Women in Health Data Science and Statistics



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## ORIGINAL ARTICLE

# Overcoming Resistance to Big Data and Operational Changes Through Interactive Data Visualization

Gloria Phillips-Wren<sup>1,\*</sup> and Sueanne McKniff<sup>2</sup>

Women in Health Data Science and Statistics Webinar  
June 2, 2021



# BIG DATA



Volume



Value



Veracity



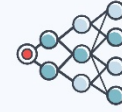
Visualization



Variety



Velocity



Virality

Three primary characteristics: **Volume – Velocity – Variety**

# Background & Objective

## ■ Background: Research has shown:

- *In healthcare, decisions based on big data analytics lead to better patient outcomes*
- *'Best evidence' influences clinical decision making ONLY if put in front of physicians as the decision makers*
- *Resistance to change, organizational culture, absorptive capacity, adoption and diffusion of technology*
- *Interactive data visualization allows humans to directly interact with data, gain insight, draw conclusions, and ultimately make better decisions*

## ■ Research Question:

*Can visualization of qualitative data influence decision makers to change operational processes and adopt real-time, big data technology in healthcare operations?*

# The Project:

## ■ Why:

Enterprise-wide electronic health record (EHR) implementation

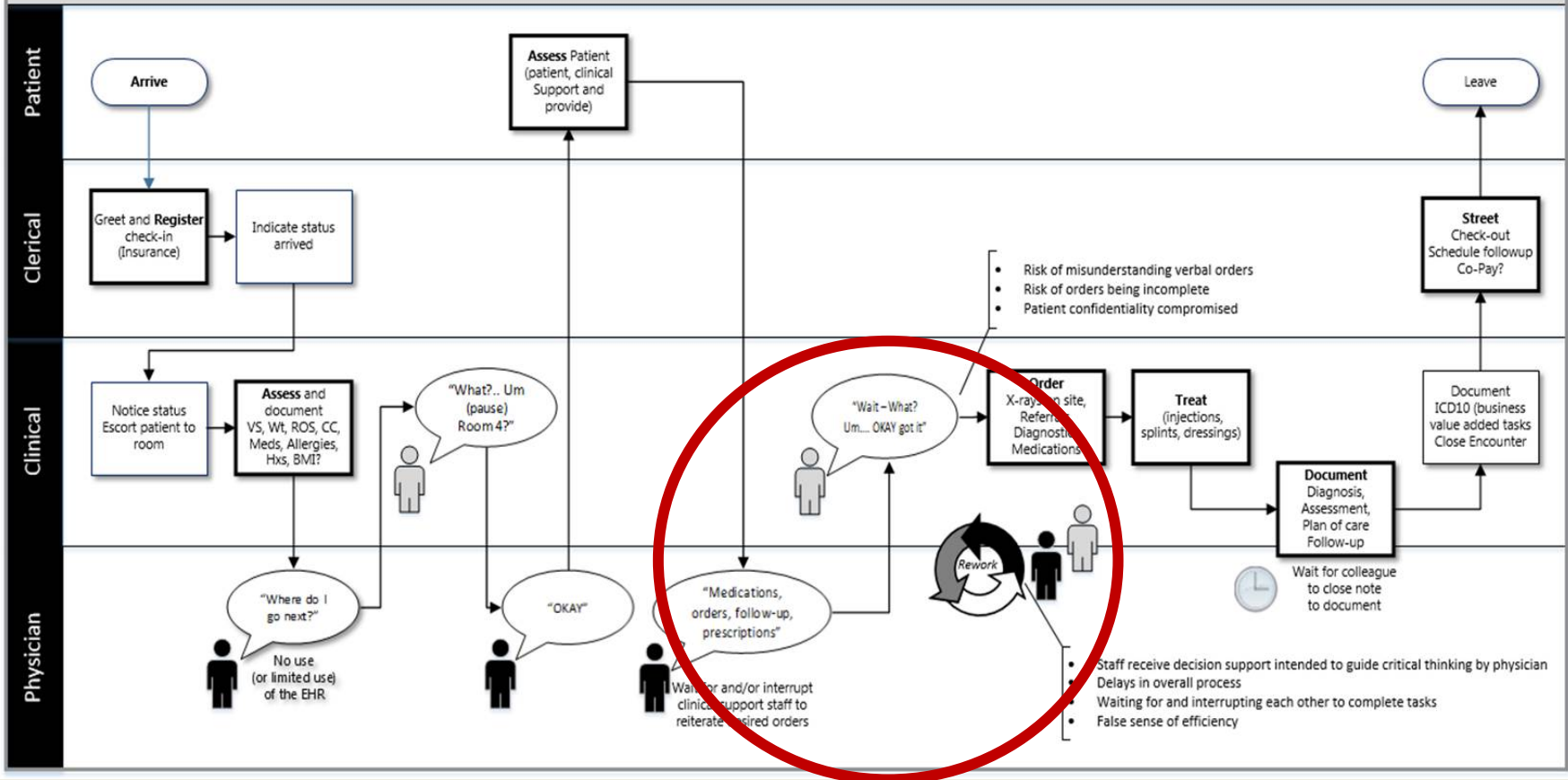
End-user enthusiasm for process changes

## ■ Plan:

- Collaborate with senior leadership
- Obtain physician and management team acceptance
- Prepare observers (clinical backgrounds/Lean methodologies)
- Select a focus area of value: Computerized Provider Order Entry (CPOE)
- Perform direct observation of end-to-end, multi-disciplinary, clinical office workflows
- Create traditional, cross-functional workflow diagrams to illuminate the opportunities for improvement

# Observed workflow process

## Current State – Office Throughput

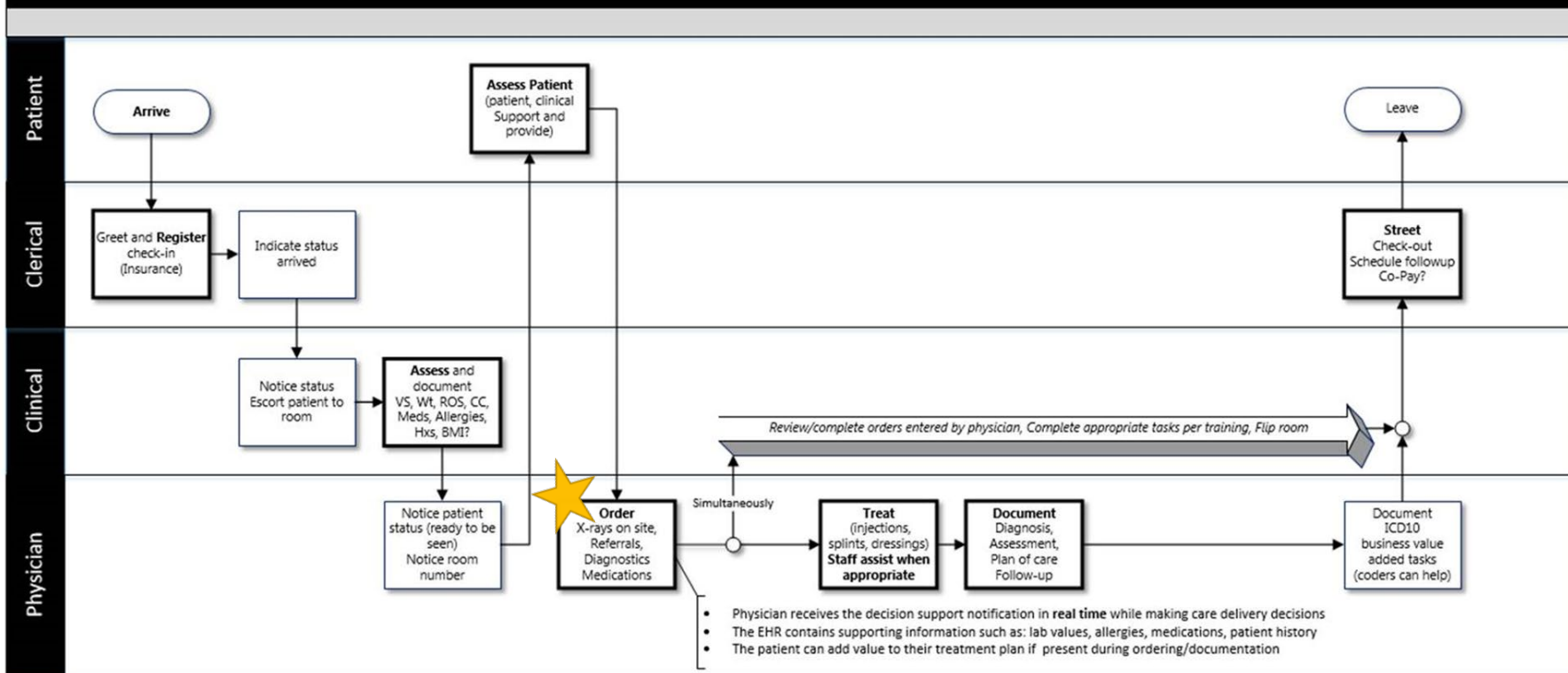


**REJECTED AS INACCURATE**



# Proposed workflow process

## Future State – Office Throughput



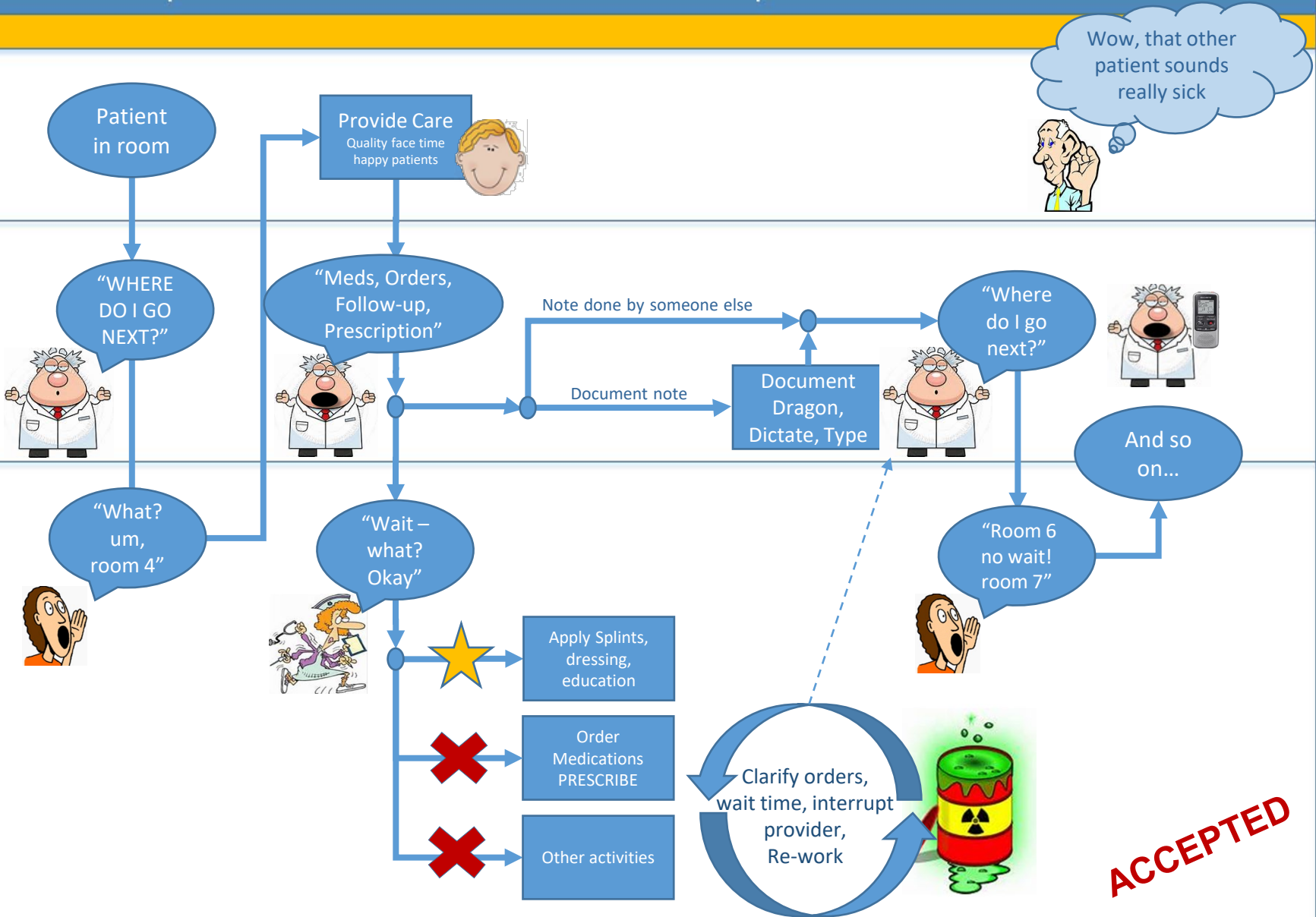
**Failure of knowledge transfer – time to get creative...**

# Hypothetical Outpatient Office Visit – Current State of Complex Variation

Patients

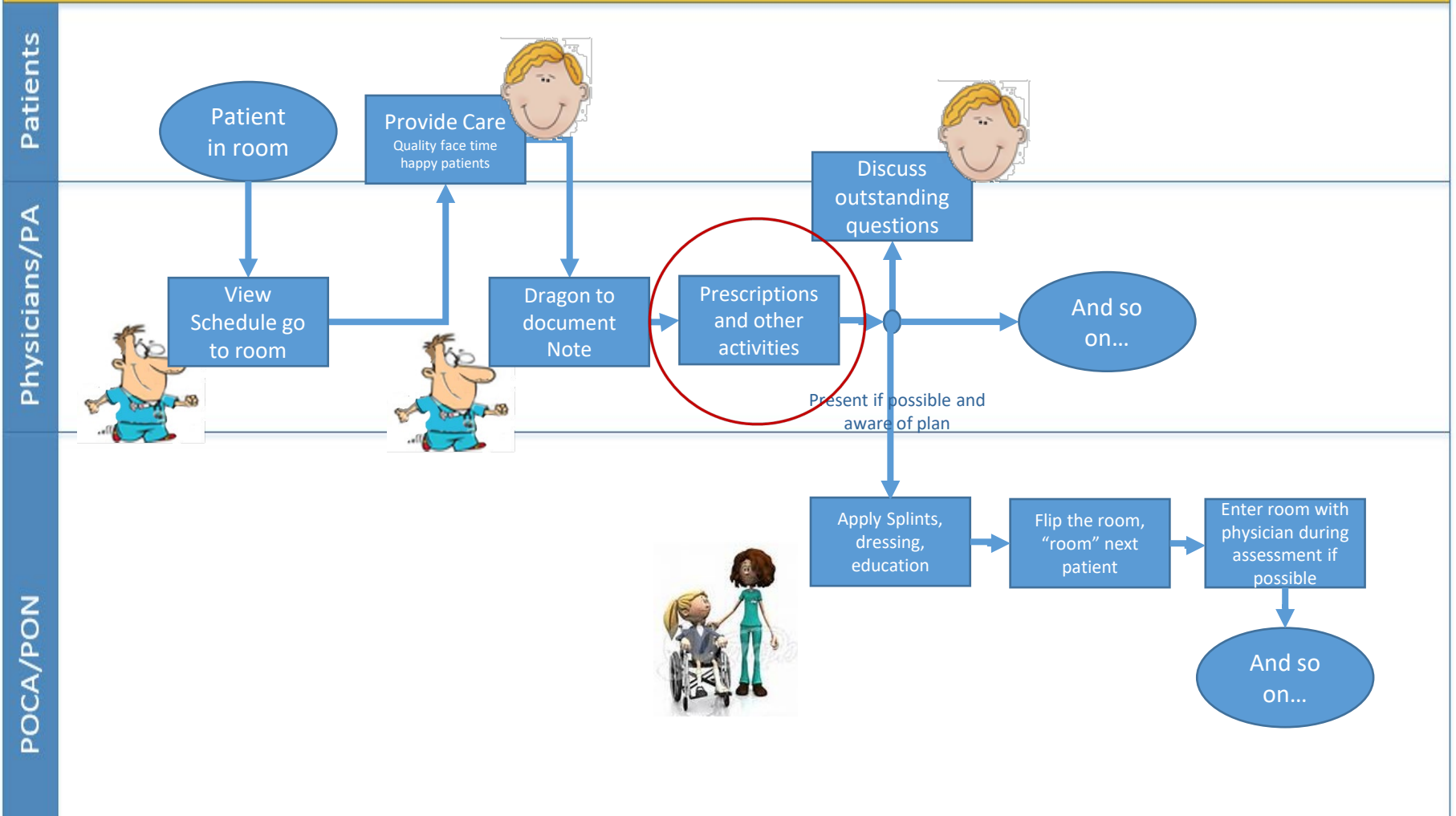
Physicians

PA/POCA/PON



**ACCEPTED**

# Hypothetical Outpatient Office Visit – Desired State



**SUCCESSFUL IN CHANGING OPERATIONS & GETTING PHYSICIANS TO LOOK AT 'BEST EVIDENCE' USING BIG DATA**

# Conclusions

- Simply having big data EHR is not enough
- Getting data in front of the right people at the right time is key
- Optimization of clinical operations appears to be a key first step for adoption of EHR systems
- Interactive data visualization is an effective approach to overcoming organizational resistance

# Panel Discussion

Thank You!

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