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REDUCING OVERPRESCRIBING OF ANTIBIOTICS FOR ARI'S USING NURSE-LED CLINICAL DECISION SUPPORT TOOL

Presenter: Dr. Ruth Agbakoba, PhD
Post-Doctoral Innovation Fellowship | Digital Health Rewired Conference
Digital Nursing and Midwifery Summit | March 12 – 13, 2024 | NEC Birmingham



ANTIBIOTICS ISSUES

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Overprescribing and Inappropriate Use

Overuse of antibiotics for Acute Respiratory Infections (ARIs) in primary care is an established risk factor for increased Antibiotic Resistance (AR)

- Major Global Public Health Threat
- **47M** prescribed for infections that don't need antibiotics!
- **80-90%** occurs in outpatient setting
- 35,000 Deaths in US | 12,000 in UK



ESSENTIAL REFORM

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Worldwide Antibiotic Stewardship Efforts

Global effort to improve how antibiotics are prescribed by clinicians AND used by patients. Help to treat infections, protect patients + combat AR

- WHO Global Response – AMR SDG's
- NYU Antibiotic Stewardship Program
- UK National AMR Programme
- ***Solution: Clinical Decision Support?***



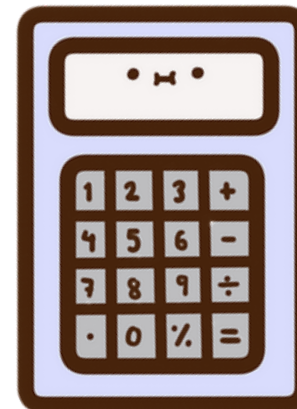
DECISION SUPPORT

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Clinical Prediction Rules for Antibiotic Prescribing

- Front-line decision aid
- Risk Calculator
- Calculate Likelihood
- Integrate into EHR



Pneumonia Risk Scoring Tool - Pneumonia

Time taken: 2359 5/18/2016

Values By Create Note

Pneumonia Risk Scoring Tool - Click Close

Presence of Crackles/Rales?	<input type="button" value="1=Yes"/> <input type="button" value="0=No"/>
Decreased breath sounds?	<input type="button" value="1=Yes"/> <input type="button" value="0=No"/>
Presence of Asthma?	<input type="button" value="0=Yes"/> <input type="button" value="1=No"/>
Last Heart Rate	105
Last Temperature (F)	101
Pneumonia Total Score (out of 5)	5
Approx. Risk of Pneumonia	High (35-56%)

PREVIOUS EFFORTS

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Review of Evidence Base: Bacterial Pneumonia or Group A Strep

Doctors experienced implementation barriers: workflow and usability making it harder to stem the tide of inappropriate prescribing for ARI's

- ⤴ Initial Study: **Version 1** – Doctor-Led (Single)
- ⤵ Follow-up Study: **Version 2** – Doctor-Led (Multi)
- ⤶ Current Study: **Version 3** – Nurse-Led (Multi)



STUDY PROTOCOL

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5 year National Institute of Allergy and Infectious Diseases (NIAID) study
2020 - 2025 | Large-Scale effort including partners across United States

 University of Utah



 University of Wisconsin



 Northwell Health



 NYU Langone Health



STUDY AIMS

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Our Hypothesis: Implementing a Nurse-Led ICPR CDS tool will reduce antibiotic prescribing for ARIs across diverse primary care settings

- 1 Determine Impact: Diagnostic Test Ordering Rate + Antibiotic Px Rates
- 2 Examine resource use patterns + cost-effectiveness of Nurse Visits
- 3 Determine the impact on Patient Satisfaction
- 4 Determine Effect of intervention on Nurse and Clinician Burnout

*Study will focus on low acuity patients with ARIs. Determine risk of having bacterial infection: **Bacterial Pneumonia** (Cough) OR **Strep Pharyngitis** (Sore Throat) and to enable a tailored course of care to be determined*



SETTING AND CRTIERIA

GIM ~ General Internal Medicine | FM ~ Family Medicine Primary Care | UC

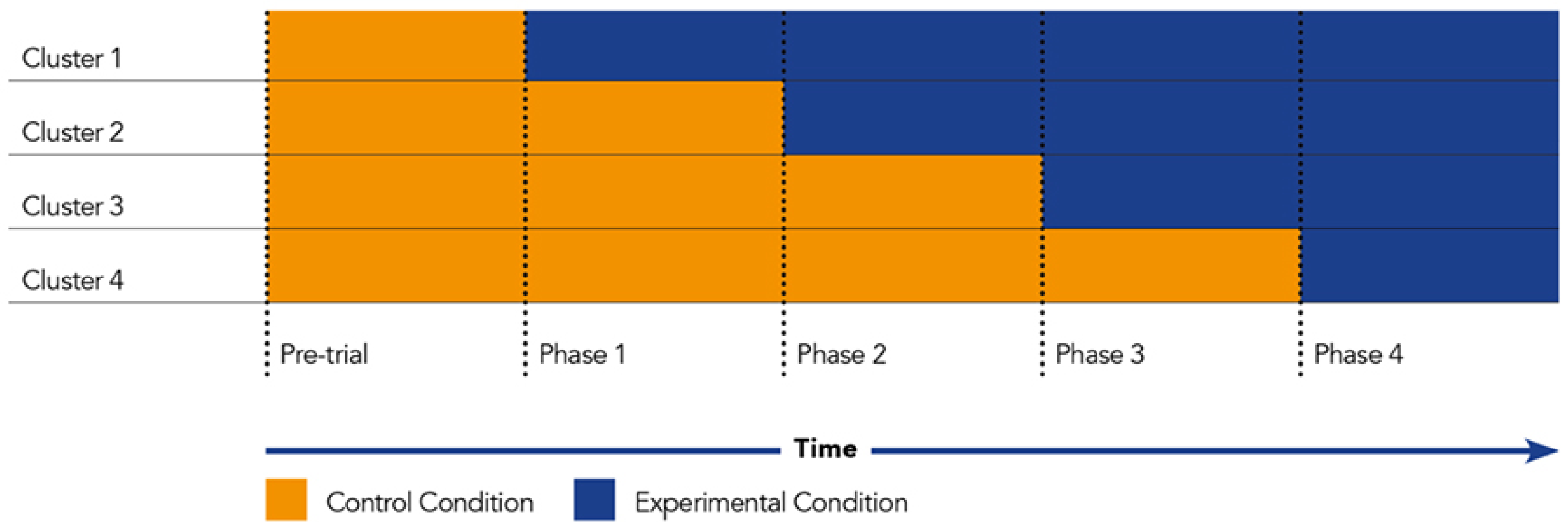
- **N=48** Primary + Urgent Care Clinics with FT Nurse
- **Patient Criteria:** Cough or Sore Throat (Low Aquity)
- FM: 3–70 Sore Throat 18–70 Cough | GIM Ages 18–70
- Each practice serves as its own control prior to intervention implementation – ‘Step-In’




STUDY APPROACH

Step-Wedge Randomized Control Trial

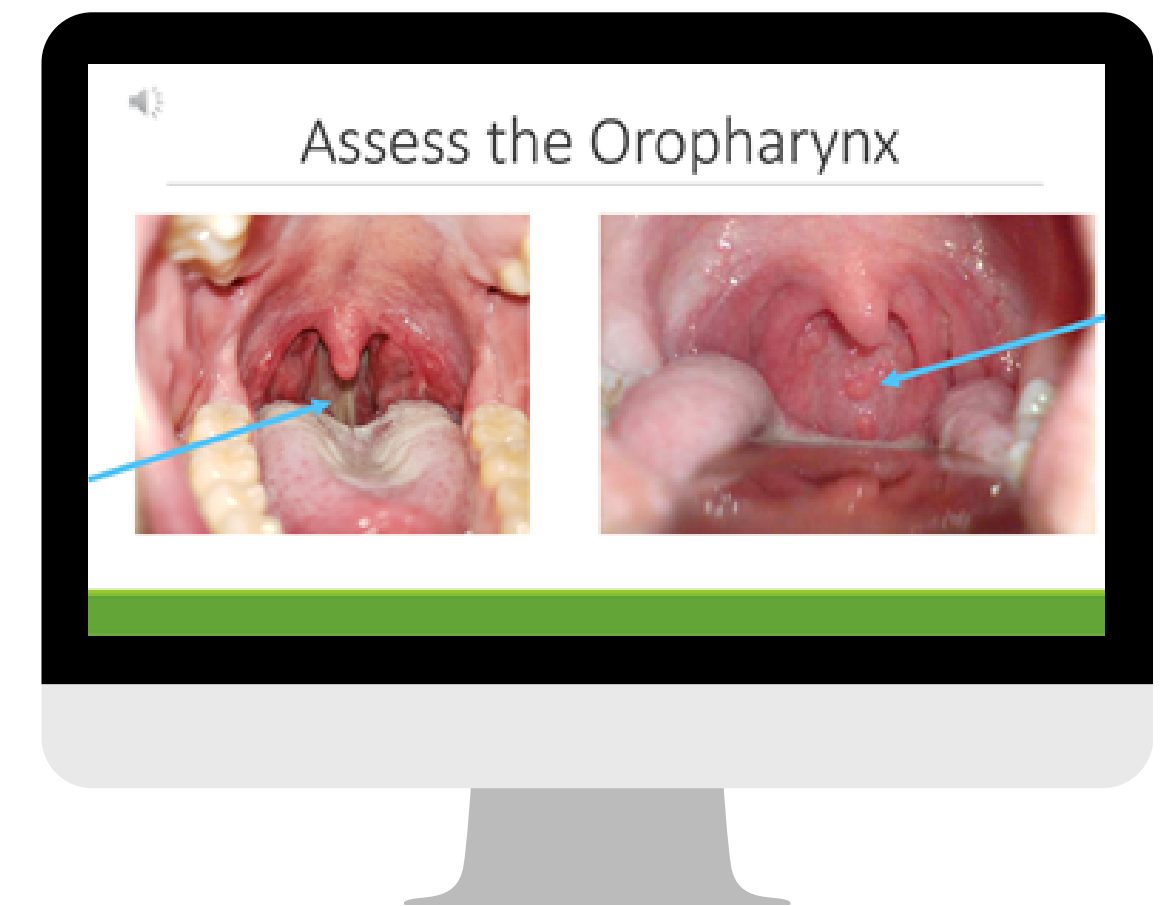
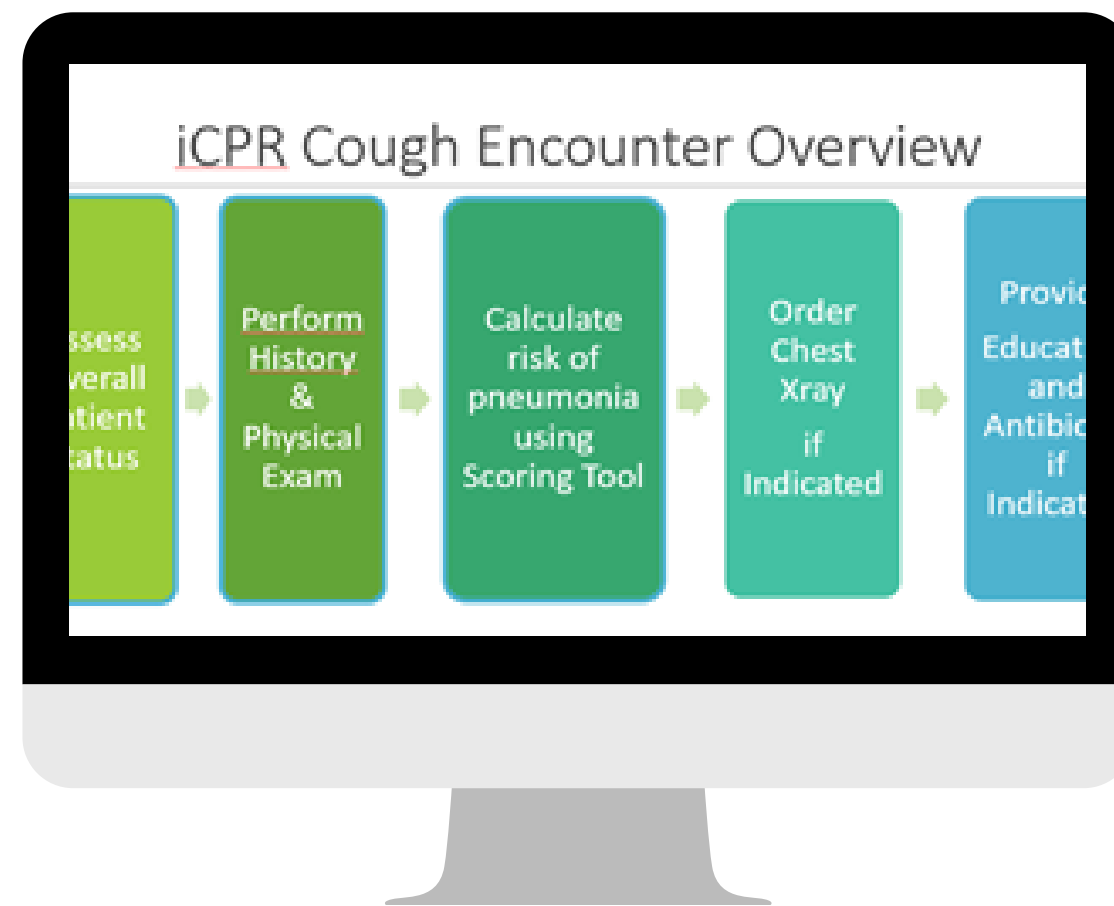
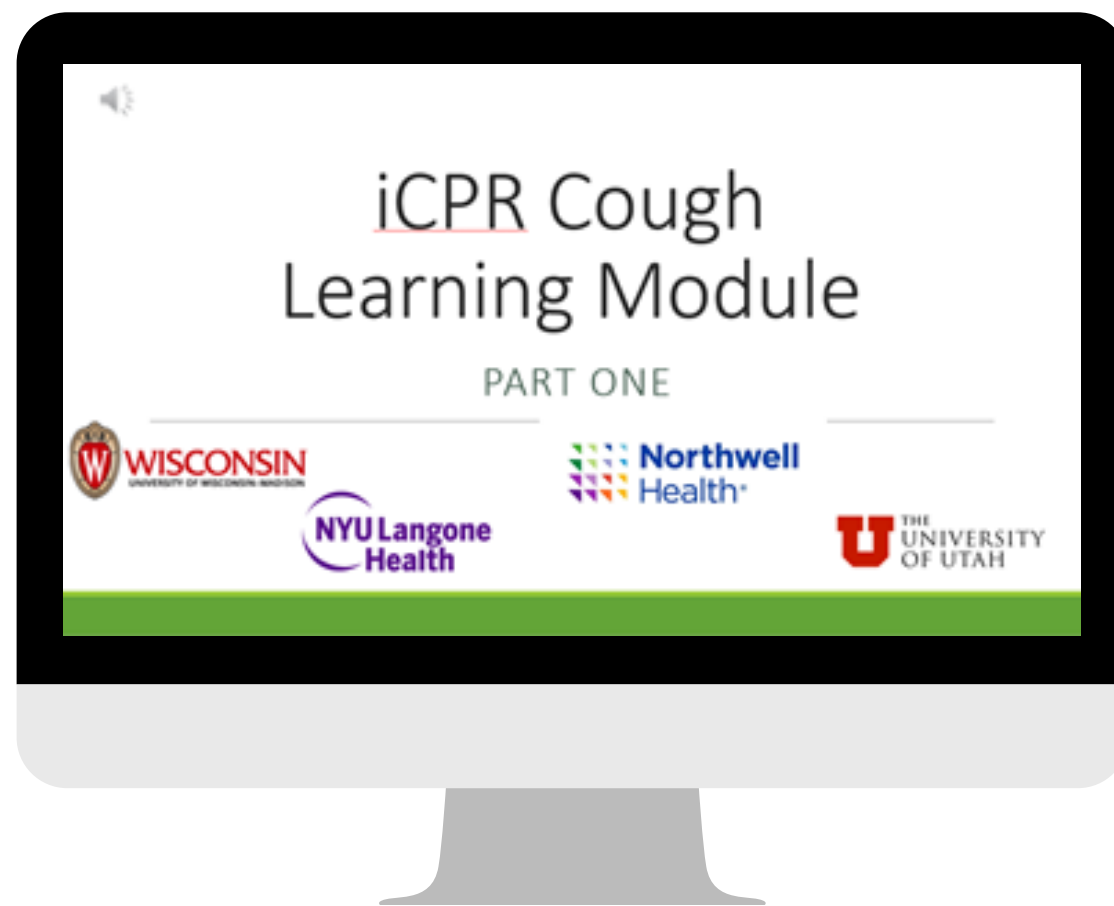
4 Clinics will be enrolled every 2 months to serve as control + intervention



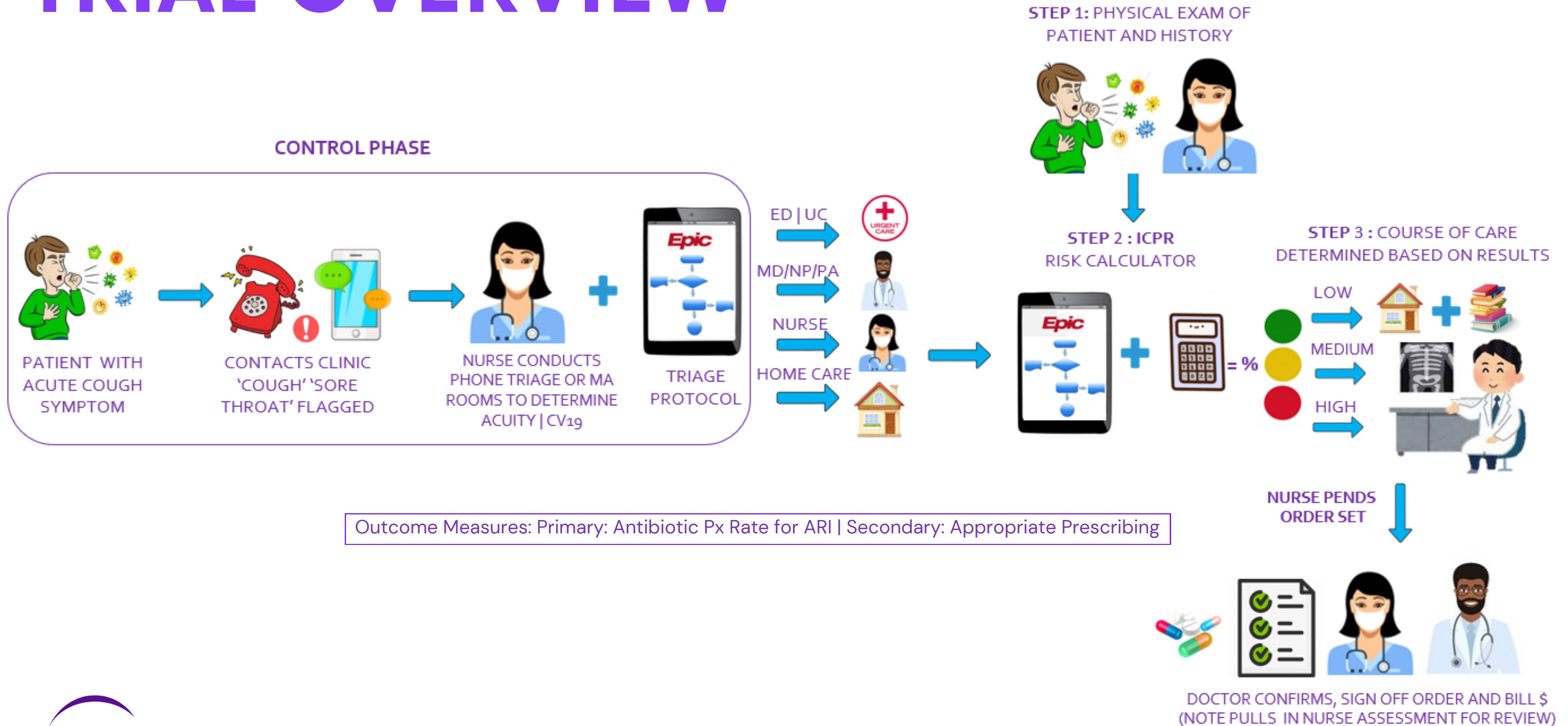
NURSE TRAINING MODULE

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15min Online modules | 1 Hour in-Person Training



TRIAL OVERVIEW





DATA COLLECTION

Via each institution EHR. Data elements built into triage tool will be used to collect triage outcomes + Patient Appropriateness for a Nurse Visit

- Outcomes of Clinical Encounters will be collected for all patients
- Surveys will be sent to patients 2 weeks after an ARI visit
- Nurses + Doctors will complete surveys at 0, 6, 12 months Post +
- Interviews with Medical Directors, Nurse managers + Key Stakeholders



NOVEL CONTRIBUTION

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A novel EHR-supported antibiotic stewardship implementation study

It is innovative because ...

- Enable Nurses to practice at top of their license!
- Uses Evidence Based implementation framework to evaluate outcomes Barriers, Facilitators + Lessons Learned
- **Fills Critical Gap!** This study is the first of it's kind! The first protocol to study the use of a nurse-led model of ICPR CDS implementation for antibiotic stewardship



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BMC Medical Informatics and Decision Making

Elizabeth R. Stevens and Ruth Agbakoba are Co-first authors 1†

STUDY PROTOCOL **Open Access**

Reducing prescribing of antibiotics for acute respiratory infections using a frontline nurse-led EHR-Integrated clinical decision support tool: protocol for a stepped wedge randomized control trial

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