**INTRODUCTION**

- **The Electronic Health Record Financial Incentives**: Recently the Center for Medicare and Medicaid Services enacted strong financial incentives for the adoption of Electronic Health Records (EHR) with the goal of improving care quality and efficiency. Medicare and Medicaid Services focused on physician tasks (e.g., order entry, drug alerts, electronic prescriptions). With less attention to nursing tasks and decision making.

- **Study Aim**: We examined the effects of changing from a hybrid paper/electronic (H-EHR) to a Meaningful Use EHR (MU-EHR) on physician and nurse workload, and whether the effects reflect perceived EHR usability, as suggested by models of technology acceptance (Holden & Karsh, 2010).

**METHOD**

- **Setting & Participants**:
  - Design: Pre-intervention. (H-EHR) vs. post-intervention (MU-EHR)
  - Setting: 2 non-academic UCC clinics in a suburban Midwestern medical system
  - Participants: 9 physician staff (5 MDs, 1 PA, and 4 APNs) and 16 nursing staff (8 RNs and 8 MAs) participants in two ambulatory clinics

**RESULTS**

1. NASA-TLX Ratings (0 = Very Low, 10 = Very High)

   **Physician Staff**

   - Frustration
   - Combined Effort
   - Physical Activity
   - Temporal Demand
   - Mental Demand

   **Nursing Staff**

   - Frustration
   - Combined Effort
   - Physical Activity
   - Temporal Demand
   - Mental Demand

2. EHR System Usability Scale (1 = Strongly Disagree, 5 = Strongly Agree)

   **Physician Staff**

   - I needed to learn a lot of things before I could get going with this system.
   - I found the system very cumbersome to use.
   - I would imagine that most people would learn to use this system very quickly.
   - I thought there was too much inconsistency in this system.
   - I found the various functions in this system were well integrated.
   - I thought the system was easy to use.
   - I found the system unnecessarily complex.
   - I thought that I would like to use this system frequently.

   **Nursing Staff**

   - I needed to learn a lot of things before I could get going with this system.
   - I found the system very cumbersome to use.
   - I would imagine that most people would learn to use this system very quickly.
   - I thought there was too much inconsistency in this system.
   - I found the various functions in this system were well integrated.
   - I thought the system was easy to use.
   - I found the system unnecessarily complex.
   - I thought that I would like to use this system frequently.

3. Time-Motion Observation: Percent of Time Using Computer

   **Physician Staff**

   - CPU
   - Reading
   - Writing

   **Nursing Staff**

   - CPU
   - Reading
   - Writing


**FINDINGS**

- Physicians perceived workload increased when shifting from H-EHRs to MU-EHRs while nursing staff reported less change.
- Workload differences appeared to reflect usability: SUS ratings largely mirrored the staff differences in workload, with physicians viewing the MU-EHR as less usable.
- Workload differences also reflected change in work: Physicians used the computer to accomplish more tasks to comply with MU-EHR adoption had dramatic effects on how both physician and nursing staff performed their work, with reduction in using paper to collect, store and exchange patient information.

**TAKEAWAY**

- The effects of EHR system change on physician and nursing workload differ, with physicians required to perform more computer-based tasks with MU-EHR system. MU-EHR usability problems will likely be magnified for them.
- Increased mental workload for physicians, who already have high cognitive demands, may have negative implications for the quality and safety of healthcare delivery.