Slide 1: Using Electronic Health Records to Better Coordinate Decision Making for Complex Patients: What Can We Learn From Wiki?
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Slide 2: Outline

- Introduction and Aims
  - Caring for complex, multimorbid patients
  - Communication among collaborating physicians
- Models of Collaboration and Communication
  - Conceptual model of communication among clinicians
  - Using Electronic health records to enhance collaboration
- Implicit and Wiki Communication in Health Care
  - Current examples of Wiki-style communication
  - Future directions

Slide 3: Introduction

- Case Presentation: Mr. Smith
- 68 year old male with type 2 diabetes mellitus, chronic heart disease with history of coronary artery stent
- Now presents with diagnosis of colon cancer
- Medical decision making is complicated by the involvement of numerous physicians.

Slide 4: Traditional Model of Coordination
Image of a circle in the middle, labeled “PCP” and surrounded by 3 boxes labeled from left to right: “Endocrinologist,” “Cardiologist,” “Oncologist.” Triangle at the top of the image is labeled, “Mr. Smith”

Slide 5: Communication among Multiple Specialists Co-managing Care
Image of a triangle in the middle, labeled “Mr. Smith” and surrounded by 3 boxes labeled from left to right: “Endocrinologist,” “Cardiologist,” “Oncologist.”

Slide 6: Aims of the Paper

- Define terms and communication model
- Role of Electronic Health Records (EHR)
  - Using EHRs within this communication model
- Applications of EHR-based coordination
  - Current examples of Wiki-style communication
  - Future applications using Wiki hyperlinks

Slide 7: Taxonomy of Care Coordination

- **Traditional Clinician Roles**
  - Primary Care Provider
  - Specialist
    - Procedural
    - Cognitive—diagnosis and/or treatment

- **Co-Management Roles**
  - Co-manager with principal care
    - Oncologist coordinating all aspects of cancer care
  - Co-manager with shared care
    - Medical and surgical oncologist sharing cancer care

Slide 8: Communicating Accountability

- **Primary Care Providers**
  - Ultimate accountability, filled in gaps
  - Served as communication hub
  - Conducted necessary explicit communication

- **Communication is critical to Decision Making**
  - Limits quality and safety gaps
  - Costs of care rise without communication
  - Electronic Health Record as potential bridge

Slide 9: Improving the Process and Outcome of Complex Care Coordination

- **How are medical decisions made without coordinator (PCP)?**
- **Communication is key**
  - Accountability: defining roles and responsibilities
    - Tradition and social norms define most interactions
  - Quality: achieving appropriate outcomes, ensuring safety
    - Redundancy can aide outcomes
    - But poses safety risks—communication can mitigate
  - Reducing waste and lowering costs

Slide 10: Conceptual Model of Communication Among Clinicians

- **Synchronous Communication**
  - Occurs explicitly and simultaneously between two or more parties in real-time
    - Examples include face-to-face communication, cellular and phone calls, and video and teleconferences.
  - **Advantages**

- Direct, explicit
- Real time, immediate responses
  - Disadvantages
    - Interruptive, inefficient
    - Reliance on working memory increases cognitive load
    - Potential source of medical errors

Slide 11: Asynchronous Communication

- Process of communication that allows involved parties to transmit and respond to communicative information at their own time of choosing
- **Explicit** – communication directed at a specific person(s)
  - Methods include email, voicemail, written letters, and clinical referrals
- ** Implicit** – communication without a specific target individual(s)
  - Methods include electronic and traditional medical progress notes or innovative forms of electronic media

Slide 12: Implicit, Asynchronous Communication

- Increasing favored form of communication in co-managed, integrated health systems
- Electronic Health Records are the common medium
  - Advantages
    - Efficient, uninterrupted
    - Potential to reduce cognitive load and associated errors
    - Facilitated by integration of Electronic Medical Record Systems
  - Disadvantages
    - Potential gaps in accountability for roles
    - Lack of explicit rules guiding responsibilities and role transitions

Slide 13: EHRs & Implicit Decision Making

- EHR provides window to decision making process
  - Can see how other clinicians make decisions
  - Inconsistency of behavior in similar situations
    - Past experience does not always predict future actions
- EHR implementation doesn’t clarify roles/responsibilities
  - What’s missing: “Bounded Expectations”
  - Establish boundaries that define clinicians’ roles
  - Collaborating clinicians have confined range of expectations regarding others’ actions
    - Integrated systems have this advantage as well

Slide 14: EHRs: What they could do but often don’t

- Coordinate activity towards shared outcomes
- Communicate where a patient is along a care pathway
- Integrate iterative changes in health status into a fixed disease management plan
- Integrate individual disease management plan into a disease management registry

Slide 15: Care Coordination: Fits and Starts

- Heavy reliance on Synchronous Communication
  - “Why I have had to unlearn my love for Interdisciplinary Team meetings”
    - My inner Geriatrician resists
  - IDT meetings discuss complex cases
    - Often discuss routine, mundane facts
    - Not just outlier cases or irregularities
  - Clinician’s record of disease management
    - Often doesn’t integrate with a central record
    - Doesn’t integrate other providers’ progress notes

Slide 16: Care Coordination: Fits and Starts

- EHR haven’t made goals concordant and implicit
  - Many care goals are similar across patients
    - Reduces need for discussion of routine care processes
  - Haven’t made goals and treatment plans concordant across all clinicians
    - Clinicians have vague confidence about goals and processes
    - Not with the specificity and certainty needed for care coordination

Slide 17: Wiki-inspired Model of Care Coordination

Diagram that shows the progression of care coordination from synchronous communication to explicit asynchronous communication to implicit wiki communication.

Slide 18: Diabetes in Cancer Care Program

- Mr. Smith’s Oncologist and Endocrinologist develop a care coordination program
  - Face to face meetings
    - Bounded expectations about roles and responsibilities
    - Set clinical goals for typical, usual patients
    - Create pre-established medical orders and treatment plans for typical patients

Explicit Asynchronous communication from Oncologist
  - New patients enrolled into program
  - Shared patient is to start new chemo regimen

**Slide 19: Wiki-inspired Model of Care Coordination**
Diagram that shows the progression of care coordination from synchronous communication to explicit asynchronous communication to implicit wiki communication.

**Slide 20: Wiki-style Communication**
- **From foundation of Bounded Expectations**
  - Oncologist and endocrinologist co-manage: diabetic patients receiving chemotherapy for colorectal cancer
    - Most communication is implicit and asynchronous
    - Each describes usual and expected actions into EHR
  - Explicit asynchronous or synchronous communication limited
    - Adverse events of usual actions
    - Atypical cases that require “off-template” care

**Slide 21: Hyperlinking EHRs: Going Full Wiki**
- Using hyperlinks to integrate disease management plans
  - Link to the patient’s diabetes disease management plan
    - Process and intermediate markers of care
    - HbA1c, lipids, eye clinic referrals
  - Link to a page documenting prior glycemic responses to chemo regimens
- Linking one user’s edits to shared progress notes
  - Endocrinologist’s latest foot exam is simultaneously linked to disease management plan without extra inputs

**Slide 22: Disease Management and Cost Containment**
- **Have not meet expectations about costs**
  - Reliance on synchronous and explicit communication
  - Redundancies in routine, usual, and expected care
  - Lack of shared goals and pre-set treatment plans
  - Limited automation of laboratory and radiology results into patient’s disease management record and population registries
  - Simultaneous update of patient’s dz management record whenever a clinician, lab, radiology, etc. has new information
    - All relevant clinicians open access to dz management record

*Wiki-style care coordination may address gaps*
Slide 23: Questions and Discussion??