A Continuum of Sociotechnical Requirements for Patient-Centered Problem Lists

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Background

- Patient-centered care is:
  - “The consideration of “patients’ cultural traditions, their personal preferences and values, their family situations, and their lifestyles” (Institute for Health Care Improvement)

- Specific requirements remain ill-defined

- Problem Lists
  - Summarize & overview
    - Clinical state
    - Transitions
    - Future needs
  - Logical => should be patient centered

- Problem lists are evolving
  - A simple list => to coordinated shared applications
    - All disciplines/professions, specialties
    - Patient identified problems

- Current state: Varied functionality & silos
Problem Lists

Patient-centered care delivery for Nursing and Medicine

Without this we will propagate isolated care planning, poor communication & poor outcomes

Nursing

Intra
disciplinary
patient care

Inter
disciplinary work to coordinate
Patient care delivery

Medicine

Intra
disciplinary
patient care

• Standardized terminologies
  • ICNP, CCC, NANDA
  • SNOMED CT
• Terminology Model
  • ISO 18104 Reference Ter
nology Model (RTM) for
  nursing diagnostic concepts

Requires explicit linkages (SNOMED CT)

• Standardized terminologies
  • ICD9/10
  • SNOMED CT
Why a sociotechnical focus?

- **Shared list:**

  - Collaborative activity
    - With different perceptions of responsibility and rewards
      - Disciplines have distinct *and* overlapping needs
        - Increases complexity
          - Profound implications on its design
Aim

- To understand the sociotechnical requirements for patient-centered problem lists
Methods

- **Literature review** (PubMed 1990 - June 2012, English)
  - *Inter*-disciplinary and *Intra*-disciplinary problem list system requirements
- Requirements from Partners Healthcare System (PHS) interdisciplinary problem list work
- Iterative thematic analysis of requirements
Results

- 33 studies reviewed (out of 647 retrieved)
  - 2 SRs, 1 RCT, 26 case studies, 4 expert opinions

- 5 themes to enhance care planning
  1. Viewing and searching for problems by discipline
  2. Categorizing problem states to meet discipline-specific needs
  3. Sharing and associating problems between disciplines
  4. Associating problems with assessments, tasks, interventions and outcomes within and across disciplines for care coordination, knowledge development, and quality reporting
  5. Engaging patients

**Variable difficulty of implementing each theme…
….hence 5 step continuum**
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**Continuum of Sociotechnical Requirements for Patient-Centered Problem Lists**

- **Increasing Complexity**
- **Increasing Patient-Centeredness**

- **Intra-disciplinary Care Planning:** Viewing and searching for problems by discipline
- **Multi-disciplinary Care Planning:** Categorizing problem states to meet discipline-specific needs
- **Interdisciplinary Care Planning:** Sharing and associating problems between disciplines
- **Integrated & Coordinated Care Planning:** Associating problems with assessments, tasks, interventions and outcomes within and across disciplines for care coordination, knowledge development, and reporting
- **Patient-Centered Care Planning:** Engaging patients in maintenance of their problem list
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Viewing & searching for problems by discipline

- **Rationale:** enhance user experience
- **Viewing Requirements**
  - Tailored sorting and viewing of problems
    - View all problems
    - View overlap
    - View & manage my discipline’s problems
- **Search Requirements**
  - Enhance precision and recall
    - Consistency in choosing the correct or most specific problem
      - Commonly used diagnoses vary among clinical disciplines
    - Classification of useful clusters
    - Personalized “lists of favorites”
    - Restricting problems per discipline is **NOT** an identified requirement
- **Design implications => Discipline-specific subsets**
  - Flexibility to support and maintain content overlap between disciplines
  - Functionality to meet the specific requirements of each discipline
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- **Increasing Patient-Centeredness**
Categorizing problem states for discipline-specific needs

- **Rationale:** Decrease problem list clutter
  - User types, views, and transient problem states
    - active, resolved, modified, re-activated, subsumption, categorizations (e.g., family history)

- **Requirements**
  - Handle uncertainty
    - Actual, potential, and transient problems, differential diagnoses
    - Automated tools to infer state
      - Conceptual differences
        - Medical diagnoses - Relate to pathological disease processes
        - Nursing diagnoses - Relate to a patient’s physical, sociocultural, psychological, and spiritual response to an actual or potential illness or health problem
        - SNOMED CT modifiers => misclassifications
          - Useful model: ISO 18104 RTM for nursing diagnostic concepts
            - E.g., “potentiality” concept can facilitate grouping – actual vs potential problems
    - Priority rankings vary between clinicians, this actually provides useful information
Continuum of Sociotechnical Requirements for Patient-Centered Problem Lists

Increasing Complexity

Increasing Patient-Centeredness

Intra-disciplinary Care Planning: Viewing and searching for problems by discipline

Multi-disciplinary Care Planning: Categorizing problem states to meet discipline-specific needs

Interdisciplinary Care Planning: Sharing and associating problems between disciplines

Integrated & Coordinated Care Planning: Associating problems with assessments, tasks, interventions and outcomes within and across disciplines for care coordination, knowledge development, and reporting

Patient-Centered Care Planning: Engaging patients in maintenance of their problem list
Sharing and linking problems between disciplines

- **Rationale:** Critical for continuity of care, ensure usefulness & relevance
- **Requirements**
  - Refine signs and symptoms to a more accurate diagnosis
    - Policy to govern shared responsibility for maintenance (socio)
    - Linkages & historicity (technical)
  - Model for nursing diagnoses includes a ‘focus’ - may be signs/symptoms
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Increasing Complexity

Increasing Patient-Centeredness
Assessing problems with interventions & outcomes

- **Rationale:**
  - Value-based care requires linkages between care provided and outcomes achieved
  - Problem-centric “pointer” search for patient data vs author-based list of notes
  - Linkages facilitate advanced decision-support & automated surveillance (e.g., drug interactions)

- **Requirements**
  - Problem based care planning

Nursing process (scientific process) + Shared task lists (medicine's hospital-based care planning)
Associating problems with interventions & outcomes

- **Barriers**
  - Current EHR infrastructures limit linkages/associations
  - Knowledge bases remain disease focused, not patient focused

- **Facilitators**
  - **Ontology**
    - Generic and flexible information model for associations
  - **Discipline-specific terminology models**
    - Index knowledge concepts & link to external knowledge sources (care plans or order sets)
    - Atomic SNOMED CT concepts for consistent mapping between disciplines
      - ISO RTM for Nursing
  - **Learning System & Analytics**
    - Capture and process these associations
    - Development of patient-centered knowledge bases
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Increasing Complexity

Increasing Patient-Centeredness
Engaging patients

- **Rationale:**
  - Linking patients to clinical trials & online patient communities
  - Increased identification of specific problem types => patient centered care
    - Past significant events & procedures
    - Psychosocial problems
    - Signs and symptoms
    - Patient perspectives (preferences regarding end-of-life care)

- **Requirements**
  - Consumer health vocabularies
    - Mapping of patient’s descriptions of signs /symptoms to standardized terminologies
  - Data management tools with clear policies and procedures for use

- **Challenge assumptions**
  - Where should problem list reside?
    - Patient-controlled problem lists within PHRs as the “source of truth”?
      - Pros
        - Centralized list
        - Visualization of competing and misaligned priorities faced by the patient
        - Natural starting point for patient-centric shared-decision making
      - Cons…
Conclusion

- Continuum toward patient-centered care
  - Provides guidance for minimum functionality
    - Known sociotechnical requirements
  - Vision for incremental advancement
  - First step toward standardized, useful, cooperative, and patient-centered interdisciplinary care planning via problem lists

- Needs
  - Socio
    - Governance policies and guidance for use/maintenance of shared list
    - Patient’s role
  - Technical
    - Flexible and customizable software
    - Discipline-specific/consumer health terminology models
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Questions?

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