A Framework for Incorporating Patient Preferences to Deliver Participatory Medicine via Interdisciplinary Healthcare Teams

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Overview

• Background
• Method
• Conceptual framework
• Case study
• Discussion
Background

- We are seeing more care delivery by interdisciplinary healthcare teams (IHTs)
- A big challenge of care delivery via an IHT is integrating the various workflows and information flows of the different IHT members (Kuziemsky et al., 2011)
- Clinical workflows often focus on individual providers and do not scale up well to support IHTs (Unertl et al., 2012, Ozkaynak et al, 2013)
Participatory medicine refers to the equal participation of patients and/or their family members and clinical IHT members in decisions about care delivery.

Similar challenges in supporting patient workflow have been experienced (Ozkaynak et al., 2013).

Health information systems (HISs) are well suited to support participatory medicine but existing HISs, however, often focus on individual workflows (Dorr et al., 2007).
Background cont.

• “healthicant,” activities require active elicitation of patient preferences (Sherer, 2014)

• We need more formal approaches for developing distributed models of IHTs that support the dynamic integration an IHT including patient preferences
Method

• Develop a framework for participatory medicine that integrates different IHT members and workflows including the incorporation of patient preferences about care delivery options

• Two phase modeling approach – conceptual framework and domain ontology
Conceptual Framework

• A semi-formal (textual) description of important concepts needed for modeling an IHT (e.g., team, patient, preferences, and workflow), relations between them, and strategies to operationalize these concepts

• Assume that an IHT manages a patient according to a presentation-specific workflow

• The team has a leader responsible for overseeing the execution of the workflow, for handling exceptional situations and for assigning workflow tasks to appropriate team members
Domain Ontology

• Domain ontology that formalizes the PM-IHT framework
• Three main parts of the ontology: team, patient and workflow related concepts and relations
Ontology

Patient-related concepts and relations

- Episode
- Patient
- Partner
- Preference Model
- Team
- Practitioner
- Presentation
- Specific Workflow
- Clinical Workflow
- Generic Sub-workflow
- Valued Capability
- Preference Model
- Arc
- Node
- Sub-workflow Node
- Event Node
- Activity Node
- Leadership Node
- Task Node
- Gateway Node
- Parallel Gateway Node
- Decision Gateway Node
- Start Event Node
- End Event Node

Workflow-related concepts and relations

Team-related concepts and relations

- Patient
- Partner
- Team
- Practitioner
- Leader
- Members
- Possessed capabilities
- Required capabilities
- Preference Model
- Episode
- Presentation
- Execution

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Incorporating Patient Preferences

• Explicit preference model to enable patient preferences to be elicited as part of care delivery
• Leader is responsible for implementing the preferences
Case study: Palliative Care Pain Management

• Pain management is a significant component of any palliative care management protocol but is very patient specific, particularly treatment protocols.

• Starts with assembling a palliative care team according to the framework presented earlier in order to execute the appropriate workflow.

• Establish an IHT leader who possesses the capabilities specified in the workflow and then enact the workflow.

• Patient preferences then drive the therapy implementation workflow.
Pain Management Workflow

Therapy Planning Sub-workflow

Pharmacological Therapy Planning

Occupational Therapy Planning

Therapy Reconciliation

Therapy Planning

Pain Evaluation Sub-workflow

PQRST Assessment

Pharmacological Therapy Planning

Psychosocial Assessment

Clinical Assessment

Leader Selection

Plan Pharmacological Therapy Planning

Plan Occupational Therapy Planning

Evaluate Psychosocial Condition

Evaluate Clinical Condition

Consult with Partner

Leadership Selection

Initial Assessment

Therapy Planning

Therapy Reconciliation

Assessment Sub-workflow

Therapy Revision

Yes

No

Patient Stable

Evaluate Psychosocial Condition

Evaluate Clinical Condition

Consult with Partner

Reconcile Therapy

Therapy Planning

Initial Assessment

Therapy Reconciliation

Therapy Planning

Therapy Reconciliation
Workflow and Capabilities

Do **not** do role based assignment

From previous workflow

<table>
<thead>
<tr>
<th>Practitioner</th>
<th>Possessed valued capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative care physician</td>
<td>access_PQRST (2), classify_pain (2), evaluate_clinical_condition (3), reconcile_therapy (3), plan_pharmacological_therapy (3), plan_occupational_therapy (2)</td>
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<tr>
<td>Clinical nurse specialist</td>
<td>assess_PQRST (3), classify_pain (3), evaluate_clinical_condition (2), evaluate_psychosocial_condition (2), implement_pharmaceutical_therapy (2), implement_occupational_therapy (3)</td>
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<tr>
<td>Nurse practitioner</td>
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### Considering Partner’s Preferences in Therapy Planning

<table>
<thead>
<tr>
<th>Pharmacological</th>
<th>Adjuvant</th>
<th>Non-pharmacological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapy 1</td>
<td>Acetaminophen administered orally</td>
<td>Antidepressant medication</td>
</tr>
<tr>
<td>Therapy 2</td>
<td>NSAID with transdermal administration</td>
<td>Antidepressant medication</td>
</tr>
<tr>
<td>Therapy 3</td>
<td>Cannabinoids by oral mucosal spray</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Drowsiness</th>
<th>Marginal value</th>
<th>Overall value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>Marginal value</td>
<td>Evaluation</td>
<td>Marginal value</td>
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<tr>
<td>low</td>
<td>0.4</td>
<td>minimal</td>
<td>0.6</td>
</tr>
<tr>
<td>medium</td>
<td>0.2</td>
<td>moderate</td>
<td>0.2</td>
</tr>
<tr>
<td>high</td>
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</tr>
<tr>
<td>Therapy 3</td>
<td>low</td>
<td>minimal</td>
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</tr>
</tbody>
</table>
Discussion

• There is a shortcoming of studies that illustrate how to operationalize participatory medicine through an IHT

• We developed a framework for IHTs to support participatory medicine that includes patient participation

• The basis of our work is a workflow, practitioners (IHT), patient preferences and assembling the IHT for a specific situation
Discussion

• Introduce the notion of capabilities and to assign IHT members to tasks as part of the workflow

• A preference model enables the patient or family member to make an informed decision about their preference

• Next step is HIT design based on the framework
Questions

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