A Methodology and Supply Chain Management Inspired Reference Ontology for Modeling Healthcare Teams

Craig Kuziemsky, Sara Yazdi
Telfer School of Management
University of Ottawa
MIE2011
August 30, 2011
Overview

• Background
• Methods
• Results
• Discussion
1. Background

• Frameworks are advocating more team based healthcare delivery (IOM, 2001)

• Information and communication technologies (ICTs) will play a key role in supporting team based care delivery

• Electronic health records (EHR) and other ICTs have been shown to support individual needs (Dorr, 2008)

• Difference in care delivery - Teams provide care as a *continuum of services*
1. Background cont.

Overall we see two key shortcomings to existing informatics research on team based care delivery:

1. One is that it has tended to consider all teams as the same. They are not. (Choi and Pak, 2006)

2. Much of the existing modeling work on teams has focused on specific objectives such as error provision or specific tasks such as decision making, handoffs or information needs for team meetings (isolated events)
1. Background - Inspiration from Other Fields

• This work is influenced by Supply Chain Management (SCM) and their struggle with implementing ICTs

• Developed a common reference model – Supply Chain Operations Reference Model – macro and micro linkage (Stephens, 2001)

• Architecture for best practices, metrics, ICT design and standards
2. Methods

- Objective was to develop a healthcare team equivalent to the SCORM
- Several case studies (Kuziemsky et al., 2009; Kuziemsky, Borycki, Brassett-Latulippe, 2010) and literature review on teams
- Qualitative content analysis was used to analyze the data (Hseih and Shannon, 2005)
3. Results

- Two Parts - An ontology and methodology for modeling teams
- Ontology was designed in OWL
- Teamwork is both a common structure and set of supporting concepts
- Continuum ontology concept and its five sub-concepts is our equivalent to the SCORM
Ontology
3. Results – Methodology for modeling teams

• The starting point for modeling healthcare teams is the five sub processes of the continuum as they are consistent across all teams...BUT....

• The most significant modeling factor is the team structure as that will impact implementation of the continuum and other concepts

• Interdisciplinary (coordinated) vs. multidisciplinary teams (parallel)

• Team structure influences other concepts such as information access, communication channels and roles/mandates
4. Discussion

• Developed a standard model of healthcare teams that defines structure and concepts
• Continuum is a reference model that is common amongst all teams
• The supporting concepts that implement the continuum vary by team structure and context of where the team is
• No one size fits all ICT design exists, but rather design must be flexible as it will vary by context (i.e. team structure, providers, location)
Next steps

• Formally evaluate the ontology
• Mapping formalized clinical terminologies to ontology concepts
• Use the ontology to develop an ICT infrastructure to design and evaluate team based ICTs
• Simulation modeling of team networks
Acknowledgement

• This work was supported by a Discovery Grant from the Natural Sciences and Engineering Research Council of Canada
Questions?

Craig Kuziemsky, PhD
Associate Professor, Director, MSc Health Systems Program
Telfer School of Management
University of Ottawa
kuziemsky@telfer.uottawa.ca
http://business.admin.uottawa.ca/~kuziemsky/