

# Incorporating Business Process Management, Business Ontology and Business Architecture in Medication Management Quality

Brown Bag Lunch, March 14, 2019

Presented by: Bonnie Urquhart, PhD

# Speaker Disclosure

**Nothing to Disclose**

# Acknowledgement

- Workshop & Working Group Participants
- Interview Participants
- Planning & Performance Improvement Team
- PhD Supervisory Committee
- Northern Health for approving the research project
- Dr. Dana Cole
- Professor Mark von Rosing

# Agenda

- Introduction
- Literature Review
- Research Methodology
- Results
- Limitations & Research Contribution

# Objective 1

- Determine the impact of introducing BPM, BPMO and BA to improve medication management quality in a publicly-funded health care.
  - What performance measurements in addition to medication errors are appropriate for monitoring and controlling Medication Management?
  - How can BPM be effectively applied to a situation that involves multiple sites and multiple business units responsible for Medication Management functions?

# Objective 2

- Explore the perceived challenges and benefits of using BPM, BPMO, and BA in a healthcare organization
  - How can a Business Process Management Ontology used in other industries be effectively applied to healthcare services?
  - What are the benefits and challenges of using BPM, BA and BPMO to improve Medication Management?

# Objective 3

- To create a process reference model for medication management which could potentially be adopted by other healthcare organizations interested in applying BPM to improve medication management processes within their organization.
  - What processes should be included in a process reference model for Medication Management applicable to hospitals and long term care facilities?

# Host Organization

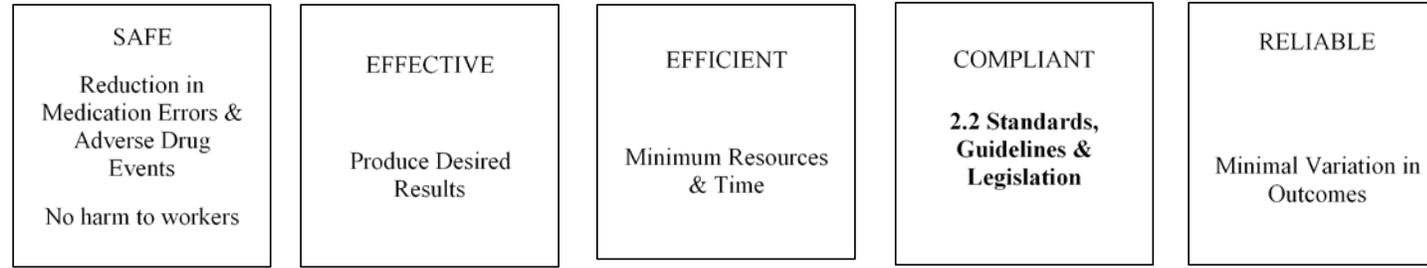
- Northern Health – one of five geographic health authorities in BC  
approximate population 300k spread across 600k square kms
  - 18 Acute Care Hospitals (including complex care beds in 10 of the smaller hospitals)
  - 9 Diagnostic & Treatment Centres
  - 13 standalone complex care facilities
  - Community and primary care services in communities across Northern BC
- Limited use of Business Architecture, Business Ontology and BPM at the initiation of the research

# Literature Review Topics

- High Quality Medication Management
- Medication Management – Standards, Guidelines & Legislation
- Business Process Management & Enterprise Architecture
- Understanding the System
- Business (BPM) Ontology
- Reference Model

## Literature Review Topics – Relationship

### 2.1 HIGH QUALITY MEDICATION MANAGEMENT PROCESSES



Enables Business Process Redesign & Continuous Improvement

MODELING

MEASUREMENT

MANAGEMENT

### 2.3 BUSINESS PROCESS MANAGEMENT

2.5 BUSINESS (BPM) ONTOLOGY

2.4 UNDERSTANDING THE SYSTEM

2.3 ENTERPRISE (BUSINESS) ARCHITECTURE

2.6 Reference Model

# Rationale for the Research

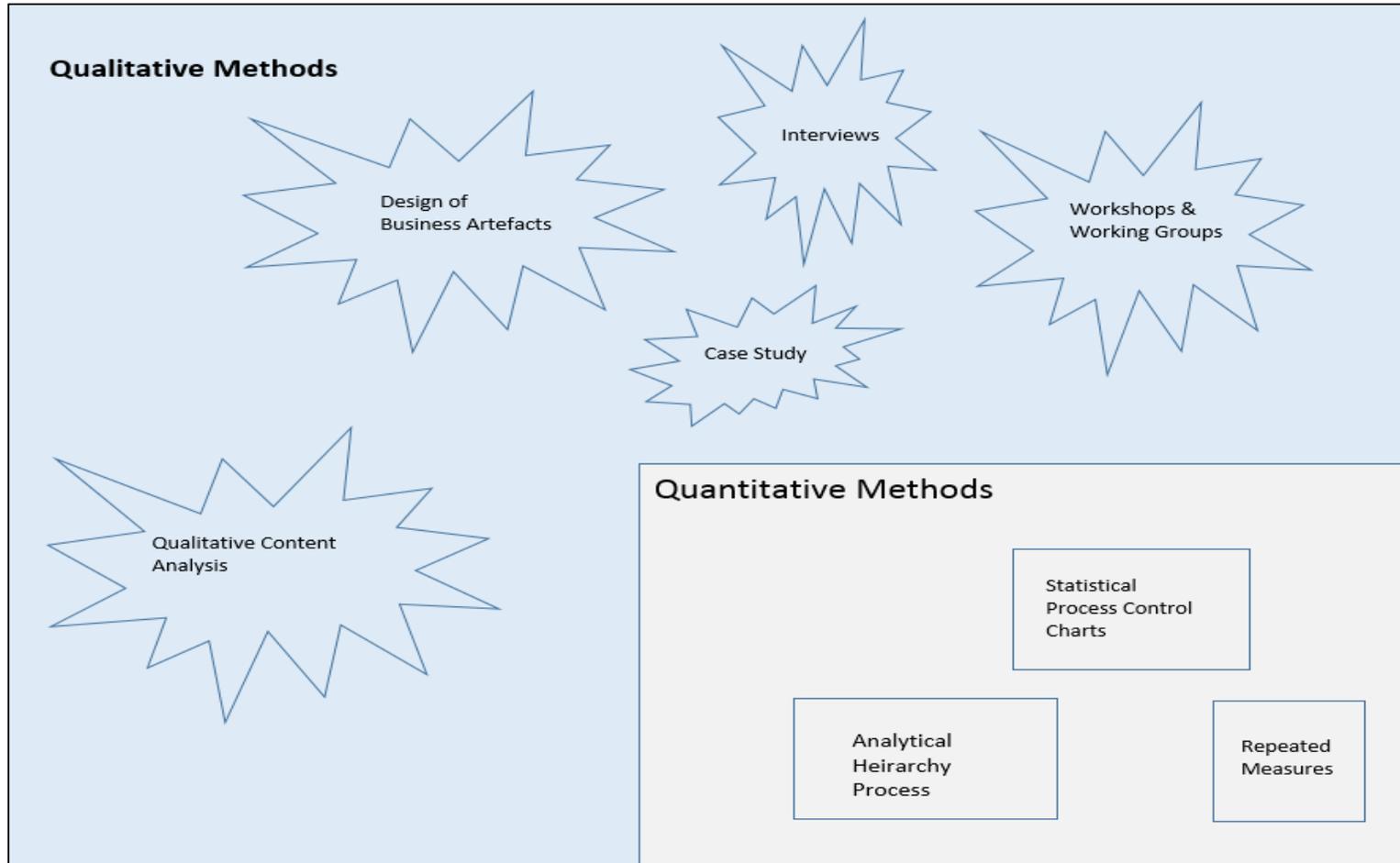
Interest in exploring a comprehensive, effective approach to quality improvement in health care organizations

Why medication management ?

Medication errors have been identified as one of the most common reported adverse events in health care settings.

Host Organization had identified medication safety as one of its top 8 strategic areas of focus for quality improvement

# Mixed Methods Research Design



# Workshops

Used to explore the end to end medication management and develop relevant business artefacts

- 3 workshops held between December 2016 and February 2017
- Attendance high of 22 low of 13 (attendees were multi-disciplinary with a specific interest in the quality of medication management within the host organization)

# Working Groups

- Monthly working group meetings February 2017 to September 2017
  - Measurement Working Group – identified key performance indicators and key process indicators to be used to monitor and control medication management within the host organization
  - Prioritization Working Group – prioritized identified process improvement initiatives using the Analytical Hierarchy Process

# Business Artefacts Developed

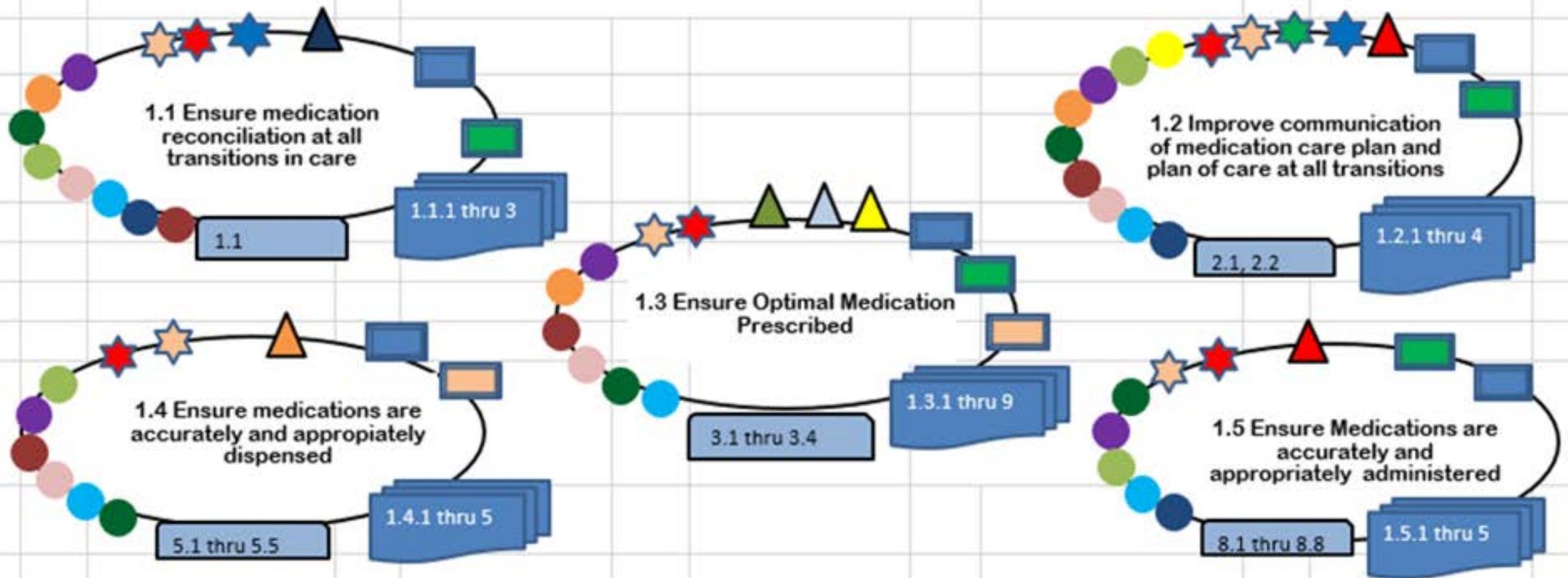
- Strategy Map
- Strategy Canvas
- Business Competency Model
- Value Chain
- Strategic Action Plan
- Prioritized List of Improvement Initiatives
- Performance Monitoring Plan

# Strategy Map – Medication Management

- 4 Strategic Business Objectives
  - Improve Clinical Outcomes
  - Improve Patient and Family Experience
  - Improve Staff, Physician and Clinical Student Experience
  - Control Per Patient Cost
- 19 Critical Success Factors
- 48 KPIs related to the Critical Success Factors

# Medication Management Fiscal 2017/2018 Strategy Canvas

## 1.0 Improve Clinical Outcomes



**Canvas Legend**

 Strategic Objective

 Critical Success Factor

**Color Legend for Organizational Business Areas (Medication Management Business Model)**

**Pharmacy Business Area Sub-groups**

- |   |  |  |   |
|---|--|--|---|
|  Medication Supply Chain |  Medication Management Governance |  Clinical Pharmacy  |   |
|  Home Based Services     |  Primary Care                     |  Records Management |  Public Health |
|  Acute Care              |  Specialized Care                 |  Long Term Care     |   |

**Color Legend for alignment with activities of Medication Safety Working Groups & Initiatives**

- |   |  |   |   |
|---|--|---|---|
|  Medication Reconciliation                   |  Improve Medication Prescribing |  Improve Medication Dispensing |  Minimize medication inventory costs |
|  Communication (Plan of Care and Care Plans) |  Improve AMS                    |  Increase Standardization      |  Improve Medication Administration   |

**Color Legend for 2016-2021 NH Strategic Plan Priorities**

- |   |   |
|---|---|
|  Coordinated & Accessible Services |  Healthy People in Healthy Communities         |
|  Quality                          |  Communication, Technology and Infrastructure |
|  Our People                      |   |

**Color Legend for alignment to NH Strategic Business Objectives**

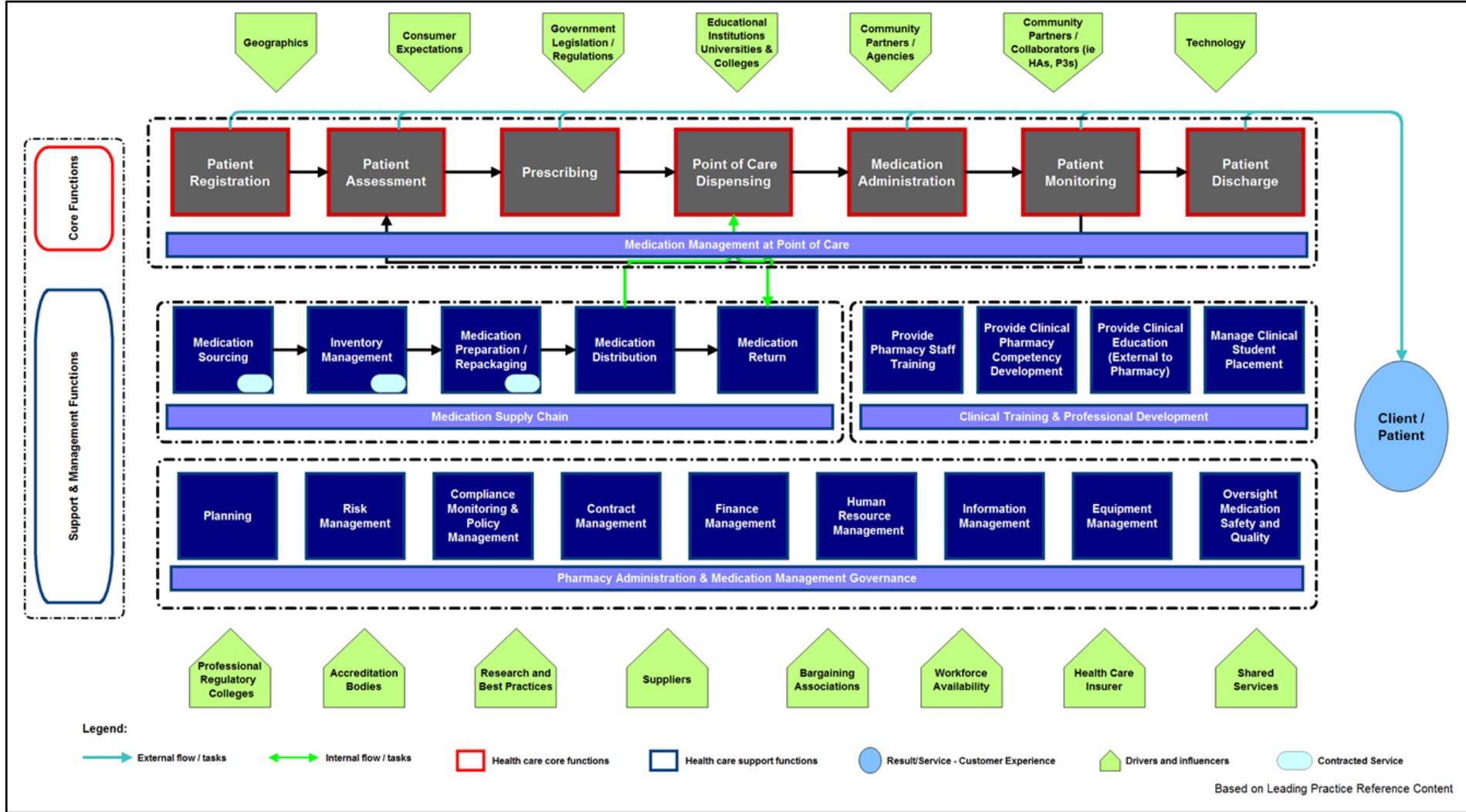
- |  |   |   |
|--|---|---|
|  Improve the Health of the Population |  Improve Patient and Family Experience |  Manage External Relations |
|  Improve Clinical Outcomes           |  Improve Provider Engagement          |  Control Per Capita Costs |

# Business Competency Model

- Business Areas

- Pharmacy (Clinical Pharmacy, Pharmacy Administration & Governance, and Medication Supply Chain)
- Acute Care
- Long Term (Complex Care)
- Home Support
- Primary Care
- Specialized Community Services
- Records Management
- Population & Public Health (Harm Reduction Program)

# Medication Management Value Chain



# Prioritization Criteria

- Business Continuity
- Feasibility
- Patient Safety
- Worker Safety
- Process Maturity
- Strategic Alignment
- Financial Impact

# Prioritization of Initiatives

- Used Analytical Hierarchy Process to prioritize 17 of the initial 29 initiatives considered
- 12 not prioritized because 8 were complete, 2 were mandatory and 2 were not suitable
- Top Three prioritized initiatives
  1. Medication Reconciliation
  2. Medication Prescribing Compliance with Safe Medication Order Writing
  3. Establish and maintain Antimicrobial Stewardship Interdisciplinary Committee

# Strategic Action Plan

- CSF
- KPI
- Key Work Element
- Milestone
- Executive Accountability
- Milestone Accountability

# Performance Monitoring Plan

- 91 Total KPIs and PPIs identified
- 48 from Strategy Map
- 61 from Strategic Action Plan (includes 27 from the Strategy Map)
- 18 suitable for Executive reporting
- 66 of the 91 total were currently available for reporting remaining 25 would need to be developed

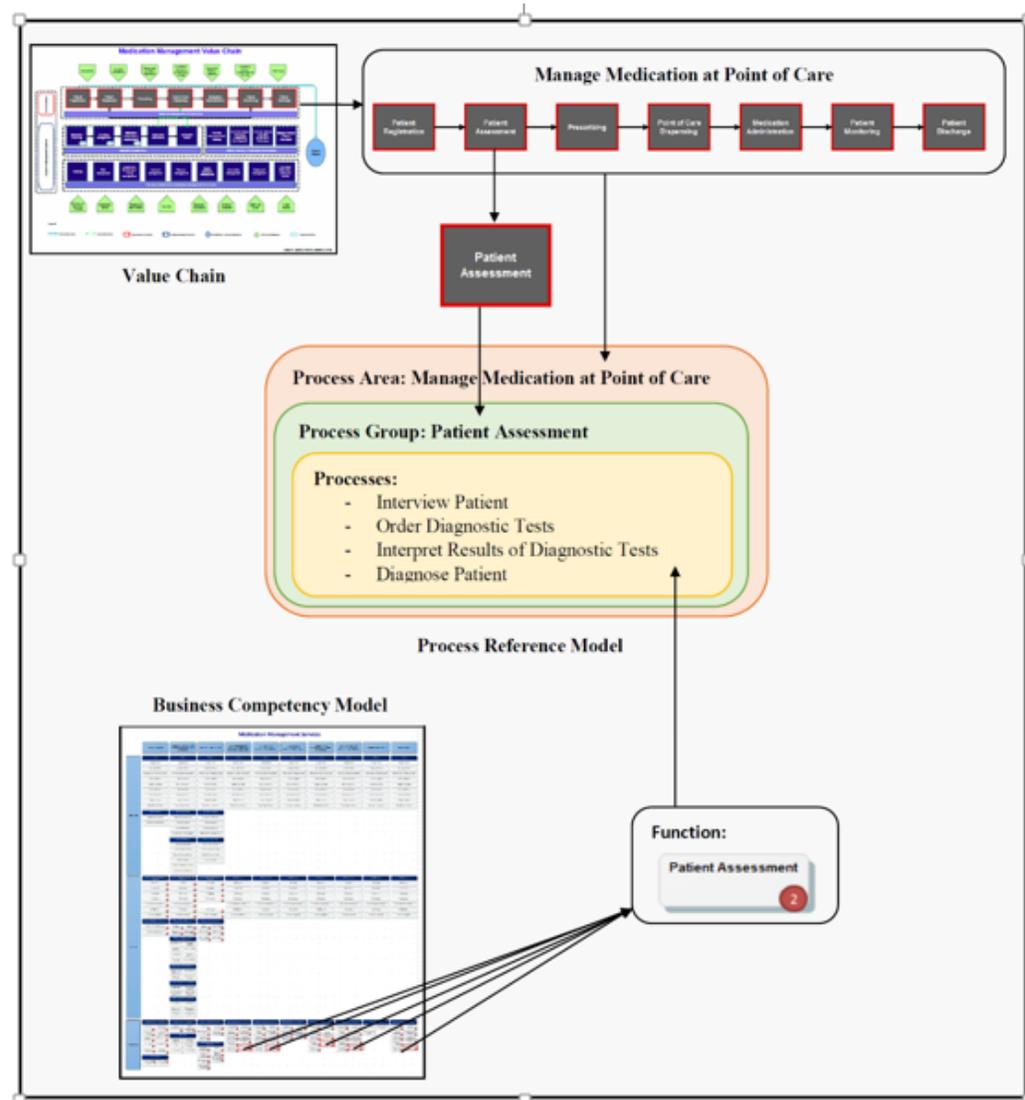
# Semi-structured Interviews

- Workshop Participants
  - 11 of potential 20 (55%)
- Organizational Senior Leaders
  - 21 of potential 73 (29%)
- Themes:
  - Capacity Building
  - Communication
  - Collaboration
  - Competing Priorities
  - Connection to Strategy
  - Culture

# Process Reference Model

- 164 Processes
- 25 Process Groups
- 4 Process Areas

# Development of Process Reference Model



# Limitations

- Timing
- Objectivity
- Transferability

# Research Contributions

- Increased organizational knowledge and understanding of the medication management process
- Documentation of a medication management process reference model
- Demonstration of the application of a comprehensive management approach to quality improvement combining BPM, BPMO and BA

# Future Research Suggestions

- Test and validate the medication management process reference model in other healthcare organizations
- Complete a longitudinal research study by repeating the interview process with organizational leaders in the host organization over the subsequent years
- Expand the use of the comprehensive approach to other end-to-end healthcare processes