Basic Knowledge of Clinical Microsystems and Success Characteristics of Great Clinical Microsystems

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Director, Population Health and Measurement
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Topics

1. Health care systems & microsystems
2. Success characteristics of microsystems
3. Developing microsystems to sustain high performance
4. Resources to improve your microsystems
1. Health Care Systems & Microsystems

- Every day, everywhere around the world, patients and families enter or activate health care systems.
- The results?

Variations in practice and spending
_The Dartmouth Atlas: Medicare per-capita spending_

$6000 to $17,000
Percent of Diabetic Medicare Enrollees Receiving Annual HbA1c Testing

>80% to <20%

International Variation
“Every system is perfectly designed to get the results it gets.”

Paul B. Batalden, MD

Founding Director, Healthcare Improvement Leadership Development

The Dartmouth Institute for Health Policy and Clinical Practice

Co-Founder Institute for Healthcare Improvement

We all have health care experience stories

What if we deeply immersed ourselves in the clinical microsystems of care?
Patient Experience: Within, Between, Across

Micro
OP  ED  IP  OP

Meso

Macro

How children move
Through CCHMC,
e.g., asthma

Coordination
or
Fragmentation?

The “True” Structure Of The Delivery System?

- As experienced by the patient ....
  - People working together (or against each other)
  - In front line clinical teams (or tangles)
  - Often embedded in larger organizations (or Byzantine bureaucracies)
  - That are more or less loosely connected (or totally disjointed)
  - And provide more or less perfect (or deadly dreadful) care
Health Care System: The “Must Do’s”

1. Better patient outcomes … including costs & value of care
2. Better system performance … including professional development
3. Better professional development … including new learners and lifelong learning
Microsystem Assumptions

• Many have heard of the idea and have various notions of what it means
• We all have more experience living in, working in, and using them; than we have studying, changing, and leading them
• They exist now…

Definition

A health care clinical microsystem can be defined as the combination of a small group of people who work together in a defined setting on a regular basis—or as needed—to provide care and the individuals who receive that care (who can also be recognized as members of a discrete subpopulation of patients.)

It has clinical and business aims, linked processes, a shared information environment and produces services and care which can be measured as performance outcomes. These systems evolve over time and are (often) embedded in larger systems/organizations.

As any living adaptive system, the microsystem must: (1) do the work, (2) meet staff needs, (3) maintain themselves as a clinical unit.
How can we see the “clinical microsystem?”

- A small population of patients
- Small group of doctors, nurses, other clinicians
- Interdependent for a common aim
- Some administrative support
- Some information and information technology
Clinical Microsystem

- *Clinical reflects the essential priorities of health and care giving*
- *Micro reflects the smallest replicable unit of health care delivery*
- *System reflects that this frontline unit has an aim and is composed of people, processes, technologies, and patterns of information that interact and dynamically transform one another*
- The clinical microsystem is the place where patients, families, and caregivers meet
- It is the locus of value creation in health care

Microsystems Are The *Building Blocks* That Come Together To Form Macro-organizations

The health system can be no better than the small systems …
Basic Concepts

- The **Microsystem** is the place where patients and families & health care teams meet.
- The **Mesosystem** is the “collection” of other systems that facilitate processes in the index microsystem.
- The **Macrosystem** is the global system in which care is provided.

A Picture of a Clinical Microsystem

**The Anatomy**
Building a Team to Manage A Panel of Primary Care Patients

Purpose

Processes

Professionals

Patterns

Microsystem

The Physiology
A “Generic” Clinical Microsystem Model

- Satisfaction of need, monitoring, assessment of outputs

Beneficiary knowledge, including knowledge of life while not in direct contact with the health care system

Supporting Microsystems

People with Healthcare Needs

Prevention

Acute

Chronic

Palliative

People with Healthcare Needs Met

Satisfaction

Functional

Biological

Expectations

Costs

Functional

Biological

Satisfaction

Costs

- Very High Risk
- People with Healthcare Needs Met
- Functional & Risks
- Biological Costs
- Satisfaction

Chronic

Healthy

Prevention

Acute

Chronic

Palliative

Enrollment

And

Assignment

Initial and Continuous

Orientation

Assess & Plan

Clinical Care

Access System

Clinical Issue

- Triage: visit vs. non-visit
- Non-visit management
- Open access scheduling
- Prescription Refill
- Follow-up
- Information
- Telephone
- Web
- Printed Material
- Shape Demand

Other Care Locations

Hospital

Home Health

ED/Urgent Care

Nursing Home

Other Clinical Offices

Physical Space

Billing

Referrals

Pharmacy

Radiology

Laboratory

Medical Records

Scheduling

Phone

Nurse

First Info

Systems & Data
Supporting Microsystems Have Many Roles: 
*Within* their own microsystem 
and as *members of other* microsystems
At The End of the Day…

- Patient care is only as good as the care that is *delivered by frontline staff*.
- The “front line staff” are in places where patients, families and care teams meet which we call *Clinical Microsystems*.

**Oh, by the way**

**Microsystem ≠ Team**

1. Providers + beneficiaries
2. People + Information Technology
3. People, Work in a setting
4. Purpose
Continual Imp. of Health Care

J. Brian Quinn, PhD

World-wide research and study of best service organizations
Batalden, Nelson Research and Knowledge Development
• Deming
• Caring for Pts & Populations
• Clinical Value Compass

IOM and Julie Mohr and Molla Donaldson

Robert W. Johnson Foundation Study

Information & Information Technology
• Staff focus
• Education & Training
• Interdependence of care team

Patients
• Patient Focus
• Community & Market Focus

Performance
• Performance results
• Process improvement

Leadership
• Leadership
• Organizational support

Evolution of “Clinical Microsystems”

Late 1970’s & 1980’s
World-wide research and study of best service organizations
Batalden, Nelson Research and Knowledge Development
• Deming
• Caring for Pts & Populations
• Clinical Value Compass

1992
CECS course on Micro-units
1998
Hierarchy of Systems
2000
IOM 21st Century
2001
Robert W. Johnson Foundation Study
2001
Website Formed
2002-3
JQI Articles
2003
AHA Microsystem Toolkits
2005
Microsystem Textbook
2006
European Clinical Microsystem Network
2006
CF Foundation Action Guide

Future

2. Success Characteristics of High Performing Microsystems

- Quinn & world’s best service organizations
- Dartmouth study of North America’s best microsystems
Health systems will have to break into new space for High Q & V &
This will take high performing clinical teams … or clinical microsystems.

J Brian Quinn

- World's best of the best service organizations culminated in publication of the seminal work, *Intelligent Enterprise*.
- Quinn discovered the world's most successful service organizations placed a major focus on what he called the *smallest replicable units (SRUs)* or *minimum replicable units (MRUs)* within their enterprise.
- These were the places where true value transfer took place, where suppliers interacted directly with the customers, and where service was delivered.
At Same Time, Brian Quinn Was Asking:

“Why are some service organizations enjoying explosive growth and margins?”

He found that the “big” focus on the “smallest replicable units” AKA “microsystems”

- Front office fixated on front line perfection
- Quality, efficiency, timeliness, service excellence designed into front line
- Value and loyalty created at customer-provider interface

Quinn Research

The front office was fixated on the ongoing perfection of frontline services within SRUs because value and loyalty are created at the customer-provider interface.

Quality, efficiency, timeliness, service excellence, and innovation were designed into frontline work processes of SRUs.

Information flows were engineered into frontline work of SRUs to create supportive, real-time information environments that facilitated swift and correct delivery of services.

The smallest units of activity within frontline SRUs were measured and tracked over time for monitoring, managing, and improving performance.

Increasingly rich information environments were created for the frontline SRUs. Data systems were designed to feed information forward and to feed information back so the right information was at the right place at the right time at the right level of aggregation.

Based on systemic learning, ongoing improvements, and standardization of most effective practices, these best in the world service sector leaders could rapidly grow by replicating frontline SRUs through time and across space, reliably extending the delivery of high-value services.
Case 1. STRICU

High Performing Clinical Microsystems Exist for a Set of Reasons

Terry Clemmer & Vicki Spuhler
Site Visit Reveals Best Practices

- HIT enabled interdisciplinary rounds for care plan and treatment goals
- Computer assisted vent management using 80 parameters
- Local epidemiological surveillance of micro-organisms to aid Abx selection
- Routine use of PDSA tests of change leading to ....
- Best practice notebook: continuous development of best practice protocols in 1 page summaries
- Data on walls for public display: run charts, dashboards
- Outreach to smaller hospitals on guidelines for appropriate and timely transfer of patients to and from STRICU
- (But if you walked down the hall to the next ICU ... you would have seen few of these innovations in use)

High Performing Clinical Microsystems

- Leadership
  - Leadership
  - Organizational support

- Staff
  - Staff focus
  - Education & Training
  - Interdependence of care team

- Performance
  - Performance results
  - Process improvement

- Patients
  - Patient Focus
  - Community & Market Focus

A Special Blend
Stricu Key Lesson

High performing clinical Microsystems exist for a set of reasons ... but they do not spread automatically

3. Developing Microsystems

“Microsystems are the vital component in any execution strategy”

Uma Kotagal, MD
Cincinnati Children’s Hospital Medical Center
Case 2. 4W & 6N

Average Clinical Microsystems Can Be Improved
Laurie Bausk, Greg Morgan & Maren Batalden

Nested Systems of Care Delivery
- Patient and family
- Outpatient primary care team
- **Inpatient unit (4W or 6N)**
- Supporting microsystems within hospital
- CHA institutional policy/leadership
- Public health and health care policy
Rapid Review of Path Forward

- Maren Batalden visits Cooley Dickinson Hospital
- Participates in Coach the Coach program
- Meets with organization leaders to set expectations
- Partners with nursing leaders for each unit
- Begins applying principles and methods in 4W & 6N
- Establishes rhythm and discipline: daily huddles, weekly team meetings, monthly all staff meetings, monthly meetings with COO and CNO
- Starts working the “ramp of improvement”
- 5 P assessment
- PDSAs
- Story boards and data walls
- Early victories

Microsystem Development at CHA: First Year Timeline
Continual Imp. of Health Care

Dartmouth Microsystem Improvement Curriculum

Cause and Effect Diagrams
Process Mapping

Change Ideas
Specific Aim
Global Aim
Theme

Assessment
Effective Meeting Skills

Dartmouth Clinical Microsystems Toolkit
A Path to Healthcare Excellence Toolkit

www.clinicalmicrosystem.org
www.jcrinc.org
“Green Books”
- Cystic Fibrosis
- Home Health
- Primary Care
- Specialty Care
- Brain Trauma
- NICU, Etc.

Unit Based Improvement in a Community Teaching Hospital
Starting Where You are with a Clinical Microsystems Approach

Maren Batalden, MD MPH
Greg Morgan, RN
Patient Satisfaction: HCAHPS Data
4 Med Surg (Oct-Dec 2009)

Patient Satisfaction: HCAHPS Data
4 Med Surg (April-June 2010)
Ready Room Initiative Data

Room Ready Process Tracking

4W & 6N Key Lesson

Average clinical Microsystems can be improved … but it takes
leadership and knowledge and rhythm and discipline
To do things differently, we must see things differently. When we see things we haven’t noticed before, we can ask questions we didn’t know to ask before.

John Kelsch, Xerox

Front Line Development

To develop people
• Head
• Hand
• Heart

To improve care & respond to new pressures for quality

To grow your microsystem from the inside out
Clinical Microsystems Create the Conditions for Reflection

- Organized, disciplined method for the reflection
- Patient and family focus
- Systems thinking
  - Move from only thinking about assignments and shifts
  - Subpopulation focus and study
  - Process evaluation
- Learning to work in interdisciplinary teams

Reflective Practitioner

- Move from task orientation only
- Reflect on processes and outcomes
  - Notice patterns
  - System perspective
  - Population perspective
- Learn to work with other professionals with a focus on the patient and family
Interdisciplinary Teams

• Find ways to do better at meeting each patient’s needs
• Make the work experience for every staff person meaningful & joyous
• Increase each staff person’s ability to improve his/her own work & contribute to betterment of system

4. Resources for Improving Microsystems

• What resources can you use to improve and innovate?

Start with www.clinicalmicrosystem.org
www.clinicalmicrosystem.org
Click Materials
Click Toolkits
“Getting Started”
http://www.clinicalmicrosystem.org/toolkits/getting_started/

Clinical Microsystem Improvement Workbooks

Greenbook “Discoveries”
The Microsystem Academy

- Resides in The Dartmouth Institute for Health Policy and Clinical Practice (TDI)
- Actively researching, coaching, and leading clinical microsystem development since the early 1980s.
- Through the integration of professional experience, empirical and cutting-edge research methodologies and information, “Coach the Coach” offers an exciting, and rigorous curriculum of experiential learning in the art and science of interdisciplinary microsystems coaching. (Web based & Face-to-Face)

Microsystem Academy Education

- There are several existing venues for education related to Clinical Microsystems
  - TDI course
  - Coach the Coach Series
  - LPM Residency
  - VA Quality Scholars
  - Meetings
    - National (Lake Morey)
    - International (Sweden)
- Non-Degree On Line Program
On Line Non-Degree Programs

Coaching Health Care Improvement

"…Building relationships among people who are continuously learning about the changing environments in which they live and work, intervening in and moving to set aside ineffective and counter-productive habits, and building new skills, practices, habits, and platforms for collaborating in this ever changing world."
### Team Coaching Model

<table>
<thead>
<tr>
<th>Pre-Phase</th>
<th>Action Phase</th>
<th>Transition Phase</th>
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<tbody>
<tr>
<td><strong>Getting Ready</strong></td>
<td><strong>Art &amp; Science of Coaching</strong></td>
<td><strong>Reflection, Celebration &amp; Renew</strong></td>
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<tr>
<td><em>Context</em></td>
<td><em>Relationships</em></td>
<td><strong>Reflection on improvement journey</strong></td>
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<tr>
<td>- Review of past improvement efforts and lessons learned - tools used</td>
<td>- Helping</td>
<td>- What to keep doing or not do again</td>
</tr>
<tr>
<td>- Preliminary system review - Micro/Meso/Macro</td>
<td>- Keep on track</td>
<td>- Review measured results and gains</td>
</tr>
<tr>
<td><em>Site Visit</em></td>
<td><em>Participation</em></td>
<td>- Assess team capability and coaching needs &amp; create coaching transition plan</td>
</tr>
<tr>
<td><em>Resources</em></td>
<td><em>Communication</em></td>
<td><strong>Celebration! Renew and re-energize for next improvement focus</strong></td>
</tr>
<tr>
<td><em>Logistics</em></td>
<td>- Virtual</td>
<td><strong>Evaluate coaching</strong></td>
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<tr>
<td><em>Expectations</em></td>
<td>- Face-to-Face</td>
<td>Godfrey, MM (2012) In Press</td>
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<tr>
<td>Clarity of aim</td>
<td>- Available &amp; accessible</td>
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<tr>
<td>Leadership &amp; Team discussions about roles and logistics</td>
<td>- Timely</td>
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<tr>
<td><em>Relationships</em></td>
<td>- Improvement Knowledge</td>
<td></td>
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<tr>
<td>- Helping</td>
<td>- Expectations</td>
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<tr>
<td>- Keep on track</td>
<td><strong>Feedback</strong></td>
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<tr>
<td><em>Participation</em></td>
<td><em>Clarifying</em></td>
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<tr>
<td>- Different perspectives</td>
<td>- Feedback</td>
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<tr>
<td>- Possibility</td>
<td>- Reframing</td>
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<tr>
<td><em>Participation</em></td>
<td>- Different perspectives</td>
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<tr>
<td>- Group dynamics-new skills</td>
<td>- Possibility</td>
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<tr>
<td><strong>Improvement Technical Skills</strong></td>
<td><strong>Feedback</strong></td>
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<tr>
<td>- Teaching</td>
<td>- Feedback</td>
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### Coaching Intensity Over Time

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<tr>
<th>INTENSITY</th>
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<tr>
<td>High</td>
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*Godfrey, MM (2012) In Press*
Continual Imp. of Health Care

Team Coaching Framework Over Time
Pre-Phase, Action Phase, Transition Phase

Science of Improvement

Dartmouth Microsystem Improvement Curriculum

Fishbones

Measures

Change Ideas

Specific Aim

Global Aim

Theme

Assessment

Meeting Skills/Group Dynamics

Continual Imp. of Health Care

February 2011

Final Points
Transformation

Fixing Health Care on the Front Lines
by Richard M.J. Bohmer

The only realistic hope for substantially improving care delivery is for the old guard to launch a revolution from within.

Existing players must redesign themselves. What does “redesign” mean? Revamping core clinical processes.

It’s time for a revolution — led from within.

Developing Microsystems:
The Strategic Advantage

“Organizations that have intentionally developed pervasive improvement capability in their microsystems have a strategic advantage when it comes to accelerating and sustaining system-level improvement. These organizations have an efficient and effective means of getting everyone involved to accomplish their strategic campaign.”

Moving beyond projects

“No single initiative or set of unaligned projects will likely be enough to produce system-level results. Even aligned projects alone will not be sufficient. It will be necessary to have a pervasive understanding of work as a collection of processes. The responsibility of managers and supervisors includes continual improvement of work processes under their control.”

Evolution in approaches to improving health system quality: from projects to microsystems to mesosystems to macrosystems
Selected References


11. www.clinicalmicrosystem.org (refer to this for workbooks, tools, articles and other resources and information on using microsystem principles and methods to improve health system performance)