System-level Thinking to Effectively Achieve Shared Goals
21th Annual ASHP Conference for Pharmacy Leaders

Learning Outcomes
- Apply concepts of systems thinking & its application to leading the pharmacy enterprise
- Illustrate a process to establish goal clarity for all stakeholders defined by clear performance parameters
- Evaluate the concept of failure as a positive growth strategy, exploring the notion of learning together to fail faster
- Identify strategies for shared understanding of system-level solutions and a culture of accountability at every level to ensure consistent results

Today’s Environment is Complex

Like a school of fish, Facebook, a gaggle of geese, NAFTA, or a swarm of bees, healthcare organizations—indeed, the entire healthcare delivery process—are complex systems.

The Power of Center
- An adaptable vision is essential
- Understanding complex systems to finding a path forward to achieve vision
- Leaders must have ability to center for full power, engagement, heightened awareness to perform at your highest level
- Finding your center to be “in the zone”
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SYSTEMS THINKING WITHOUT SYSTEMS THINKERS WILL CHANGE NOTHING.
FOR SYSTEMS THINKING TO TRULY WORK, ALL PEOPLE NEED TO BETTER APPROXIMATE REALITY NOT JUST SCIENTISTS WITH THEIR CONTROLLED EXPERIMENTS, BUT CITIZENS WITH THEIR DAILY EXPERIMENTS.

Thinking Differently

“Our life is what our thoughts make of it.”
Marcus Aurelius, Meditations

Image: SME glass art

Four Revolutions Transforming Healthcare

- Life sciences
- Information/communication technology
- Social justice/equity
- Systems thinking to transcend complexity

Frenk J. Acknowledging the past, committing to the future. @
Photo image SME North Georgia

What’s a System

- Organized, purposeful structure
  - Interrelated and interdependent elements
  - Continually influence one another
  - Collectively achieve the goal of the system.
- Systems
  - Have inputs, outputs and feedback mechanisms
  - Maintain an internal steady-state (called homeostasis) despite a changing environment
  - Parts display properties that are different than the whole (called emergent properties)
  - Have boundaries that are usually defined by the system observer.

Read more: http://www.businessdictionary.com/definition/system.html

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Asking what is systems-thinking is akin to asking what is life.

Meaning-making, thinking, creating & sharing knowledge, learning together

What is Systems Thinking

- “Systems” is an approach to problem solving where “problems” are part of a wider, dynamic system
- Systems thinking is “thinking about how we think”, individually & collectively & demands deep understanding of linkages, relationships, interactions & behaviors
- Systems thinking is about awareness of our mental models & implications of actions

Image courtesy J. Trowbridge, with permission

Mental Models & Unique Personal Schema

- Mental model is an explanation of thought process about how something works in the real world
- A representation of the surrounding world, the relationships between its various parts and a person’s intuitive perception about his or her own acts and their consequences

A schema [plural schemata or schemas] describes an organized pattern of thought or behavior that organizes categories of information and the relationships among them
- People have varying levels of complexity & detail associated with their personal schema

Photo image: SME STJ, USVI

Picture of a Typical Traditional Decision Maker

- Linear thought process
- Mental models are poorly mapped and cause us to often ignore
- Feedback
- Causation
- Time delays
- Non-linear relationships
- Face more beliefs than can be handled
- Overly simplify connection to policy
- Then act rationally within an overly simplified context

Photo image SME Colorado
**Systems Thinking Requires a Paradigm Shift**

**Traditional**
- Static thinking
  - Focus on specific events
- Systems-as-effect thinking
  - Behavior through the lens of external forces
- Tree-by-tree thinking
  - Focus on details
- Factors thinking
  - Listing factors that impact or correlate
- Straight-line thinking
  - Simple linear causality, ignoring interdependence and interaction

**Systems Thinking**
- Dynamic thinking
  - Problems framed in behavior patterns over time
- Systems-as-cause thinking
  - Behaviors driven by system policies & “plumbing”
- Forest thinking
  - Understanding of relationship contexts
- Operational thinking
  - Focus on causality & behaviors
- Loop thinking
  - Continuous analysis & feedback on causality

**Wicked Problems: Main Reason We Need Systems Thinking**
- Clear problem definition
- Single organization or unit involved
- Leadership structures in place for solution
- Clear & finite problem with urgent need for solution
- Single organization or unit involved
- Leadership structures in place for solution
- Unclear & non-finite problem
- Requires innovation & learning across multiple units for solution
- Demands adaptive leadership to create cross-boundary experiments

**Wicked problems result from the mismatch between how real-world systems work and how we think they work**

**Systems-thinking approaches attempt to resolve this mismatch**

The problems we have created in the world today will not be solved by the level of thinking that created them . . .

*If you can't explain it simply, you don't understand it well enough.*  
- Albert Einstein
Four Simple Rules for System Thinking

- **Distinction Rule (D)**
  - Any idea or thing can be distinguished from other ideas or things it is with
  - Thing -- Otherness

- **Systems Rule (S)**
  - Any idea or thing can be split into parts or lumped into a whole
  - Part -- Whole

- **Relationships Rule (R)**
  - Any idea or thing can relate to other ideas or things
  - Action -- Reaction

- **Perspectives Rule (P)**
  - Any idea or thing can be the point of the view of a perspective
  - Point of View

Distinctions Assume Boundaries That Create Meaning

Adapted with permission Kosta Stavreus

Systems Rule

- **Wholes & Parts**
  - Construction vs deconstruction
    - Wholism & partism are both essential
    - Part implies whole, whole has a part
  - Any thing or idea can be a whole or part
    - The lens you use defines the state of being

Image: SME
**Systems Rule**

**Relationships**
- Relationships are ubiquitous across systems
  - Implies connections, links, feedback, causality, likes, friendship
- Drawing relationships is instinctive
- Mapping relationships is revealing
- Combining relationships with the other rules takes more thought

**Perspectives Rule**
- A point of view (POV) or a lens for developing a perspective or viewpoint
  - Comprised of a point & a view
  - Two angles on the same problem can yield very different viewpoints
- Differing perspectives factor complexity into wickedness of problems

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**Complex Adaptive Systems in Healthcare**

**Complex, Adaptive & Emergent Phenomena Based on Simple Rules**
- Fuzzy boundaries
- Agent’s behavior based on internalized rules
- Agents & systems are adaptive
- Systems embedded in systems, embedded . . .
  - They coevolve
- Tension & paradox are natural phenomena . . .
  - Not necessarily resolvable
- Interaction leads to novel behavior
- Patterns exist everywhere, as clues

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**Characteristics of Complex Adaptive Systems**
- Nothing is linear
  - Small differences lead to huge downstream outcomes
- Everything is unpredictable
  - Non-linear, changeable elements sensitive to small changes defies predictability
- Attractor behavior
- Inherent self-organization through simple, locally applied rules
- Everyday behaviors emerge from simple rules

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Plsek PE, Greenhalgh T. The challenge of complexity in healthcare. BMJ Vol 323; 091501

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Decision-making in the Zone of Complexity

- Good enough planning
- Multiple actions
- Listen to the “shadow” system
- Use intuition and muddle through
- Experiment
- Provide minimum specifications
- Chunking
- Metaphors
- Wicked questions

Complex Adaptive Systems in Healthcare

View Dependent on the Lens

Applying Systems Thinking and CAS to Practice
Clinical Care & Promoting Health

- Human body is a CAS
- Healthcare system, teams are CAS’s subject to simple rules
- Relationships form a web of determinants of outcome
- Systems within systems influence outcomes in novel ways & are dynamic & fluid
- Small changes lead to larger changes & amplification
## Applying Systems Thinking and CAS to Practice

**Leadership & Teaming**

- Simple rules, minimum specifications
- Attraction for change not battling resistance
- Use natural variation to advantage

*Photo image: M Enright with permission*

## Simple Rules for Healthcare

- Care based on visits
- Professional autonomy drives variation
- Professionals control care
- Information is a record
- Training/experience-based decisions
- “Do no harm” is personal responsibility
- Secrecy is essential
- System reacts to needs
- Cost reduction is desirable
- Preference to professionals over system

*IOM Committee on Quality of Health Care in America*

## Developing Systems Sensitivity & Awareness

**A Culture of Learning Together**

- Knowledge, skills and competency alone won’t get it done
- Capability (personal) and capacity (organizational)
  - Feedback
  - Stretch challenge outside comfort zone
  - Non-linear methods
    - Storytelling
  - Small group learning together
- Capacity

*Image with permission. Joseph Chan*
Complexity in the Learning Process

- Knowledge is spread & should be shared
- Concepts built & modified through dialog
- We are all learners at different stages
- Learner centric & competency-based
- Learning asynchronous & individualized
- QI/PI embedded in learning

Take Home Thoughts

- What will it take to transform from self-interest to interest in the common good?
- How do we foster that belief system in a team and organization? What is your role as a leader?
- Why are we too busy to ask “What do you think of this?” or “How would you react to . . . ?” or “Have you considered . . . ?”
- How will you begin the dialog?

Building Systems Thinking Individuals & Organizations

Take Home Thoughts

- What will it take to transform from self-interest to interest in the common good?
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Model a New Kind of Logic

- Orchestral efficiency
- Resilience & needed redundancy
- Esprit de corps activity/rituals
- Drinking the Kool-Aid
- Dissent = Off reservation
- “We’ve always done it this way”
- Reward Initiative
- Celebrate cowboys/mavericks
- Gifts focused on diversity
- Brown-nose/suck up behavior
- Disharmony
- Bottlenecks: personal strengths
New Logic, New Inquiry

What do you know about ____ by DSR Ping it?

- Distinctions
  - What is ____? What is not?
  - How would you distinguish between ______ & ______?
  - How would you compare & contrast?

- Systems
  - What are the parts of ____?
  - What is ____ a part of?
  - What are the parts of the relationship between ______ & ______?
  - What are the parts of ____ when viewed from the viewpoint of ______?

- Relationships
  - What ideas are related to ____?
  - What idea relates ____ & ____?
  - How are the parts of ____ related?

- Perspectives
  - What are the parts of the viewpoint ______ when looking at ___?
  - How are ____ & ____ related when looking at them from a new perspective?
  - Can you think of ____ from multiple perspectives & differing viewpoints?

Developing System Thinkers

- Start with teachable individuals
- Develop a shared mental model
  - Reflective of complex adaptive systems
  - Focused on vision & mission
- Build your culture around for a systems thinking, learning organization
- Teach concepts & DSRP
- Develop life-long learners & problem-solvers
- Foster emergence of complex adaptive organizations that operate like living super-organisms

Systems Leaders Needed for Complex Adaptive Organizations

Focus on VMCL

- Vision
  - Concise future state or goal
- Mission
  - Simple, repeatable rules that lead to the vision
- Culture
  - Shared mental models that support the mission
- Learning
  - Incremental improvement of the culture and mission through systems thinking

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Metacognitive Self-Awareness

- Everything is framed as a mental model
- Awareness of distinctions & factors that influence them
- Everything we think is influenced by varying perspectives
- Many ways to organize & relate ideas & things
- Ability to distinguish among
  - Cognition/thinking
  - Emotion/feelings
  - Purpose/motivation

Super-Organisms

- Multiple independent organisms acting in unison
- Accumulation of self-interested, autonomous agents (aka employees)
  - Transforming them into an adaptive, organic, social, intelligent organization,
  - Capable of far more than individual agents acting alone
- Getting everyone on the same page takes leadership, simple rule

Transforming Organizations with VCML

- Adapted with permission: Cabrera Research Lab

Distinguishing Traditional & Systems Thinking Leadership

Traditional

- Over-engineered plans
- Command hierarchies
- Control processes
- Manage people through command & control
- Top down management of outcomes focused on circle of concern

Systems Thinking

- Adaptive culture with evolving mental models
- Complex social networks
- Realism in mental models, clear vision, shared mental models for mission
- Inspire talent to constantly learn/improve
- Bottom-up management of outcomes focused on circle of influence

Photo image: D. Devereaux with permission
10 Systems Thinking Questions You Need to Answer

- Can you define a system?
- How do you describe the system you work in?
- How well does that system work?
- How would you analyze & diagnose where that system can be improved?
- How would you identify & prioritize change?
- How do you participate in interdisciplinary teams?
- What are the different systems your system interacts with and how?
- How is your system financed?
- How are new team members trained?
- How is education integrated for success?


Systems, Within Systems, Within . . .

Photo image: SME

New Thinking, Reflection, Wide View

Distinctions, Systems, Relationships, Perspective

Vision, Mission, Culture, Learning

Key Takeaways

- Key Takeaway #1
  - Complex and rapidly changing healthcare environment characterized by wicked problems that cannot be solved with the thinking that created them
- Key Takeaway #2
  - Systems thinking and complex adaptive system science – thinking differently – are essential to transforming our practice(s) and resolving complex emerging issues
- Key Takeaway #3
  - Systems based practice demands a paradigm shift that must include understanding of system interdependencies, effective teaming, a learning culture (learning together) and a multifactorial view of healthcare organizations and health systems