Brazos Family Medicine Residency Retreat

Nancy W. Dickey Leadership in Medicine Lecture

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Knowledge and Practice

Acquiring and applying medicine's complex knowledge base effectively will require a fundamental shift in physician approach to information.

EMR Creates Opportunity

Electronic medical records provides the means for that shift but does not dictate that such a shift will take place.

Often EMR used as a glorified transcription tool without:

- Providing significant advantages in processing information
- Patients profiting from sound science.

The Fifth Discipline

Peter Senge addresses "**systems thinking**" which applies to health care delivery via an electronic format as legitimately as it applies to other business enterprises.

Senge states:

"Learning has come to be synonymous with 'taking in information'…(which) is only distantly related to real learning."

"System thinking needed because humankind has the capacity to:

- Create more information than anyone can absorb
- Foster greater interdependency than anyone can manage
- Accelerate change faster than anyone's ability to keep pace."

“Complexity can undermine confidence and responsibility.”

Confidence is undermined when the vastness of available, valuable and applicable information is such that it appears futile to the individual to try and “keep up.”

Responsibility Surrendered

Without confidence, responsibility is surrendered as healthcare providers tacitly ignore best practices, substituting experience as a decision-making guide.

Senge argues:

"Systems thinking is the antidote to this sense of helplessness that many feel, as we enter the 'age of interdependence.'"

In healthcare the solution to helplessness is to “see” the:

- Interrelatedness of one disease aggravating or precipitating another
- dynamic interaction between the treatments of simultaneous pathological processes.

Systems thinking and Health

Systems-thinking and the data display designed on those principles allow the provider to "see" how the treatment of one disease augments the treatment of another.

Medical Knowledge Base

- 4,000-7,000 medically-related journals published.
- Over 1,000 medically-related journal articles published each day.

Primary Care Literature

"How Much Effort is needed to keep up with the literature relevant to primary care?"

- 341 journals relevant to primary care.
- 7,287 articles published monthly
- 627.5 hours per month to read and evaluate these articles. (722 hours in a month)

1997: Medical Articles

The British Medical Journal:

- Over 10,000,000 Medical articles on library shelves
- 1/3rd are indexed in the National Library of Medicine Medline

Dr. Archie Cochrane opined:

"It is surely a great criticism of our profession that we have not organized a critical summary… adapted periodically, of all relevant randomized controlled trials."
(1997)

Cochrane Centers

- 15 Cochrane Centers today
- 1,098 complete reviews
- 866 protocols (reviews in progress)

It is estimated that it will take 30 years to complete reviews On random-controlled studies (RCTs) in all fields of medicine which presently exist.

Knowledge and Access

Without medical knowledge, quality-of-care initiatives will falter, but the volume of medical knowledge is so vast that it can overwhelm healthcare providers.

The good news: the state of our current knowledge is excellent. The bad news: the form in which that knowledge is stored.

Metanoia: Change required

"The most accurate word…to describe what happens in a learning organization is "metanoia.' It means a shift of mind…To grasp (this) is to grasp the deeper meaning of 'learning,'."

Challenges to change

To create excellence in healthcare, which is more of a process than a product, providers must continually be "learning.," which will require a change in the understanding of the nature of learning and will also require the elimination of barriers to learning.

Learning Disabilities

"Learning disabilities" afflict organizations or disciplines attempting to make this shift.

These prevent organizations or individuals from making the changes which would alter outcomes and increase effectiveness.

Fixation on Events

This disability results because we become mesmerized with things which occur rather than looking at their cause.

Events occur suddenly and demand our attention, while the processes which provide the leverage for effecting change are subtle and occur slowly over time.”

Linear Thinking and Events

In a biological system, this is also true. The Primary threat is not the heart attack but the weight gain, the inactivity, the cigarette smoking, and the cholesterol.

Linear thinking focuses on the event and not The long-standing problems which caused in the event.

Parable of the Boiled Frog

"Learning to see slow, gradual processes requires slowing down our frenetic pace and paying attention to the subtle as well as the dramatic."

Slow "Boiling" creates learning disability

The slow "boiling" which comes from the deterioration of health requires a new methodology for **effecting change in patient and provider behavior**.

Creating Discomfort in Patient

Patient change will be achieved by enhancing the capability of a Provider to create discomfort in the patient in order to effect change which will benefit the patient in the long run.

Creating Discomfort in Provider

Creation of discomfort in the provider via self-auditing at the point of care allowing the provider to measure his/her performance against an accepted standard.

Data Display Creates Discomfort

Because the processes which ultimately destroy health are painless and invisible, effective intervention requires making those processes "felt."

Data display which is longitudinal and comparative can create discomfort in the patient and provider which can contribute to change.

Delusion of Learning from Experience

The slow change in systems, particularly Biological systems, make it impossible to associate personal experience with effective treatment.

Treatment based on personal observation be inadequate as the consequences are seen long after the intervention.

Learning From Experience

Learning from experience results not only in very slow change in patient care but also results in reluctance by providers to make changes which will benefit patients.

“Treatment inertia”

- “Lack of treatment intensification in a patient not at evidence-based goals for care.”
- “Learning disabilities” prevent a healthcare organization from adopting a learning culture.

Core of Systems Thinking.

Shift of mind which is fundamental to learning more even than memorizing new information:

- Requires focusing upon the slow processes which cause deterioration in biological systems
- Requires willingness to subject personal experience to critique of evidenced-based care.

Summarizing systems thinking

"It is a discipline of seeing wholes …a framework for seeing Interrelationships rather than things and patterns of change rather than static 'snapshots.'"

Medical Records are Snapshots

Historically, medical records have been **snapshots** of a patient's condition without connection between the past and the future.

EMR has the potential of providing a **longitudinal portrait** of the patient where patterns and directions of change can be viewed.

Design of tools for change

The medical application of these concepts provides a framework for the design of tools used to change the behavior of patients and physicians, and to shift from information and experience to evidenced-based outcomes and data analysis over time.

"Dynamic Complexity"

The final systems-thinking concept guiding the design of an EMR which will:

- Facilitate active learning
- Avoid learning disabilities
- Result in dynamic data management
- Change physician and patient behavior

Point of Leverage

Most healthcare analysis focuses upon multiple variables and a plethora of data. This is "**detail complexity**."

The greatest opportunity for effecting change in an organization or an organism is in what Senge calls "**dynamic complexity**."

“Dynamic Complexity”

This occurs when “cause and effect are subtle, and where the effects over time of interventions are not obvious.”

The applications to medical research design are intriguing but beyond this discussion, but “the real leverage in most management situations lies in understanding “dynamic complexity.”

Data Display

Data display can obscure effective management if it simply presents more detail while ignoring, or further obscuring, the dynamic interaction of one part of a biological system with another.

Circular Complexity

The circle describes a biological system much more effectively than a straight line.

Yet, most medical data is displayed in a linear fashion.

Seeing Circles of Causality

"Reality is made up of circles, but we see straight lines…Western languages…are Biased toward a linear view. If we want to see system-wide interrelationships, we need a language of interrelationships, a language of circles."

(*The Fifth Disciple*)

Application of *Fifth Discipline*

It is here that we see the application of *The Fifth Discipline* to medical information technology. These seven concepts derive from systems-thinking principles:

Systems Thinking: Application One

Healthcare delivery is not improved simply by the providing of more information to the healthcare provider at the point of care.

Systems Thinking: Application Two

Healthcare is improved when the organization of information creates a dynamic interaction between the provider, the patient, the consultant and all other members of the healthcare team, as well as creating the simultaneous integration of that data across disease processes and across provider perspectives, i.e., specialties.

Systems Thinking: Application Three

Healthcare delivery is not necessarily improved when an algorithm for every disease process is produced and made available on a handheld pocket computer device but it is improved when the data and decision-making tools are structured and displayed in a fashion which dynamically changes as the patient's situation and need change.

Systems Thinking: Application Four

Healthcare delivery also improves when data and information processed in one clinical setting are simultaneously available in all settings. This improvement does not only result from efficiency but from the impact the elements contained in that data set exert upon multiple aspects of a patient's health.

Systems Thinking: Application Five

Healthcare is improved when evaluation of the quality of care as measured by evidenced-based criteria is automatically determined at the point of. Healthcare is improved when the data display makes it simple for the provider to comply with the standards of care, if the evaluation demonstrates a failure to do so.

Systems Thinking Application Six

Healthcare **is also improved** when data can be displayed longitudinally, demonstrating to the patient over time how their efforts have affected their global well-being.

This is circular rather than linear thinking. A person begins at health. Aging and habits result in the relative lack of health. Preventive care and positive steps preserve, or restore health.

Systems Thinking Application Seven

Healthcare improvement via systems will require dynamic auditing tools giving providers and patients immediate feedback on the effectiveness of their healthcare.

If excellent healthcare requires healthcare organizations to:

- **Be** "learning organizations"
- Avoid "learning disabilities"
- Think in a circular rather than a linear fashion
- Look at dynamic complexity rather than detail complexity

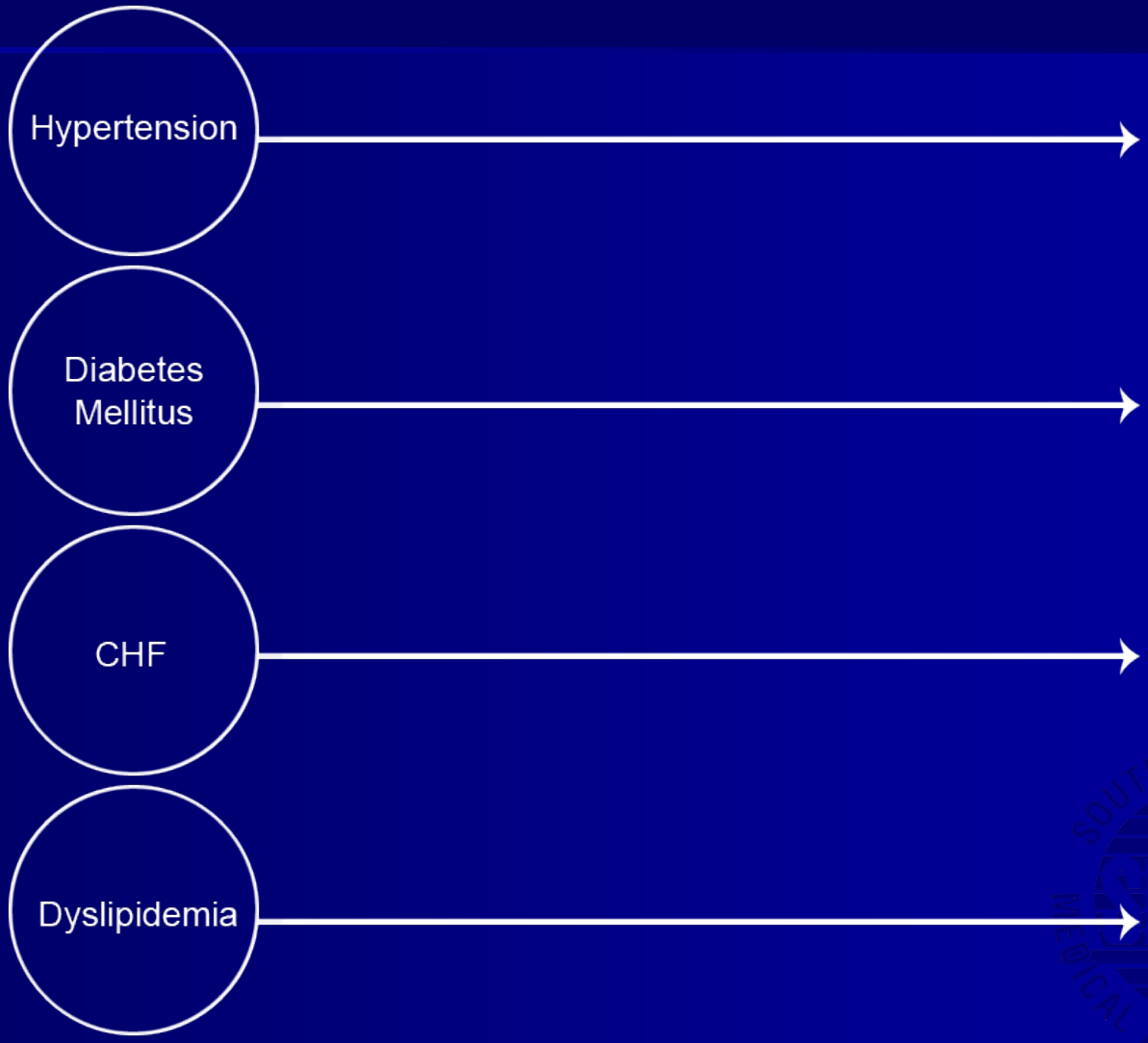
If health science has the capacity:

- To create far more information than anyone can absorb,
- To foster far greater interdependency than anyone can manage
- To accelerate change far faster than anyone's ability to keep pace.

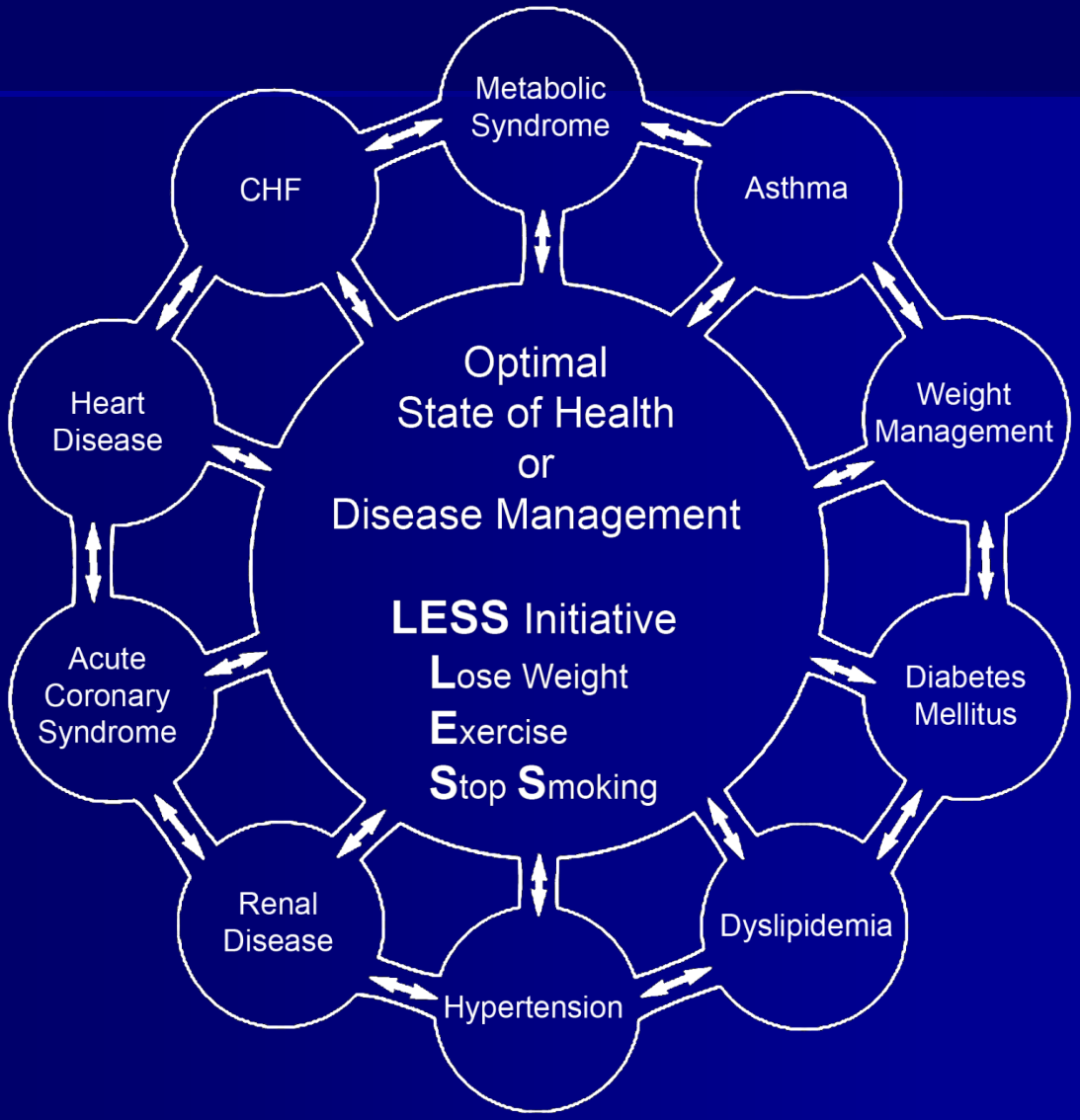
EMR Power

How can electronic patient records and/or electronic patient management help solve these problems and make it possible for healthcare providers to remain current and fulfill their responsibility of caring for patients with the best treatments available?

Linear Thinking



Circular Causality



Data flow to and from the patient's core information, and to and from interactive disease management capabilities:

- Acute condition data
- Longitudinal data
- Standards of care which reflect a positive state of health
- Automatically-populated-treatment reflecting best practices based on random controlled trials
- Auditing tools which reflect provider excellence
- Automatically-populated-patient follow-up instructions
- Automatically-created-patient education

Can this be done? What would it look like?

While Southeast Texas Medical Associates' EMR Data Base, which is built on NextGen's platform, is not perfect, it is a significant step forward in addressing healthcare delivery utilizing *Fifth Discipline* principles.