Clinical Decision Support and Natural Language Processing: Where Next?

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NLM/NIBIB Workshop on Natural Language Processing:
State of the Art, Future Directions, and Applications for Enhancing Clinical Decision Support

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“The chief merit of language is clearness, and we know that nothing detracts so much from this as do unfamiliar terms.”

Galen

*On the Natural Faculties*

*Book I*
CDS and NLP: Where Next?

- National Quality Strategy
- National Healthcare Quality and Disparities Reports

Challenges
National Quality Strategy

- Part of Affordable Care Act; report submitted to Congress in 2011
- Builds on work of federal, state, local and private initiatives; identifies what works and what needs improvement
- Move from provider-level transparency to a patient-focused approach

http://ahrq.gov.workingforquality.nqs
National Quality Strategy: Three Broad Aims

Better Care
Improve the overall quality, by making health care more patient-centered, reliable, accessible and safe

Healthy People/Healthy Communities
Support proven interventions to address behavioral, social and environmental determinants of health, in addition to delivering higher-quality care

Affordable Care
Reduce the cost of quality health care for individuals, families, employers and government

www.ahrq.gov/workingforquality/#iwg
Strategy Identifies Six Initial Priorities

- Make care safer by reducing harm caused in the delivery of care
- Ensure that each person and family is engaged as partners in care
- Promote effective communication and coordination of care
- Promote most effective prevention and treatment practices for leading causes of mortality, starting with cardiovascular disease
- Work with communities to promote wide use of best practices to enable healthy living
- Make quality care more affordable for individuals, families, employers and government by developing/spreading new delivery models
New editions released Friday

- Overall health care quality in the US continues to improve at a slow rate
- Access to health care is not improving for most racial and ethnic groups
- On average, Americans receive appropriate acute care services, recommended chronic disease management services and preventive care services most of the time
- Cardiac care has improved significantly
Overview: 2011 NHQR/DR

- Expanded to include new data on children’s health, musculoskeletal diseases
- New data on adoption of EHRs
- As with the 2010 reports, benchmarks are aligned with six priorities in the National Strategy for Quality Improvement in Health Care
  - Making Care Safer
  - Ensuring Person- and Family-Centered Care
  - Promoting Effective Communication and Coordination of Care
  - Promoting Most Effective Prevention and Treatment for Leading Causes of Mortality
  - Working with Communities To Support Better Health
  - Making Quality Care More Affordable
“It is the great mystery of life itself which is at the bottom of all the mysterious language we are obliged to employ concerning it.”

Peter Mere Latham
Collected Work, Book II
CDS and NLP: Where Next?

- Evidence report on Clinical Decision Support systems
- Funding opportunities to understand consumer and clinician information needs
- Institute of Medicine recommendations

New research directions
New AHRQ-funded EPC Report
On Clinical Decision Support

- Impact of Clinical Decision Support Systems: A Systematic Review
- Published April 23 in *Annals of Internal Medicine*
- Report online at www.ahrq.gov
- Key findings:
  - CDS improves process measures
  - Limited impact on clinical and electronic outcomes
  - Successful implementation features named
  - More research needed
“The graveyard of failed products and services is populated by things that people *should* have wanted… understanding the job that customers are trying to do is a major issue in every healthcare innovation.”

Clayton Christensen
*The Innovator’s Prescription*
Health IT R01 FOAs

- Understanding Clinical Information Needs and Health Care Decision Making Processes in the Context of Health Information Technology (IT) (R01) FOA:

- Understanding User Needs and Context to Inform Consumer Health Information Technology (IT) Design (R01) FOA:
“The best part of human language, properly so called, is derived from reflection on the acts of the mind itself.”

Samuel Coleridge

*Biographia Literaria*
IOM Recommendation

- Guideline developers should structure the format, vocabulary, and content of CPGs to facilitate ready implementation of CDS
- CPG developers, CPG implementers, and CDS designers should collaborate in an effort to align their needs with one another
CDS and NLP: Where Next?

- Natural Language Processing

Opportunities
“It is impossible to dissociate language from science or science from language… To call forth a concept a word is needed; to portray a phenomenon, a concept is needed. All three mirror one and the same reality.”

Lavoisier

_Traite Elementaire de Chimie_
“There are 50 who can reason synthetically for one who can reason analytically.”

Arthur Conan Doyle
“Poets in our civilization, as it exists at present, must be difficult... The poet must become more and more comprehensive, more allusive, more indirect, in order to force, to dislocate if necessary, language into its meaning.”

T.S. Eliot

The Metaphysical Poets
Thank You

AHRQ Mission
To improve the quality, safety, efficiency, and effectiveness of health care for all Americans

AHRQ Vision
As a result of AHRQ's efforts, American health care will provide services of the highest quality, with the best possible outcomes, at the lowest cost

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