Failure to Translate: Why Have Evidence-Based EHR Interventions Not Generalized?

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Failure to Translate

• Many problems in healthcare are information-related problems
• Some have evidence-based solutions, but these have not generalized well
• How do we move forward?
Then and now, information problems in healthcare well-known

- Safety – IOM “errors report” documented 48-96K deaths per year due to medical errors (Kohn, 2000)
  – Still (Classen, 2011)
- Quality – patients received appropriate care only 55% of time (McGlynn, 2003)
  – Still (Levine, 2016)
- Cost – US pays much more for same or less amount of care (Anderson, 2006)
  – Still (Squires, 2015)
- Access to information – physicians unable to access known information about patients in 44% of ambulatory visits (Smith, 2005)

Early interventions from informatics showed evidence of benefit

- 12.7% decrease in total charges, 0.9 days shorter length of stay (Tierney, 1993)
- Nonintercepted serious medication errors decreased 55%, from 10.7 events per 1000 patient-days to 4.86 events; preventable ADEs were reduced by 17% (Bates, 1998)
- Reduction in redundant laboratory tests (Bates, 1999)
- Improved prescribing behavior of equally efficacious but less costly medications (Teich, 2000)
- Improved use of “corollary orders” by 25% (Overhage, 1997)
Systematic reviews followed and made evidence-based case for EHRs

- Chaudhry, 2006
- Ammenwerth, 2008
- Goldzweig, 2009
- Buntin, 2011
- Jones, 2014

- Some caveats
  - “Voting”
  - Benefits more likely to come from “HIT leader” institutions
  - Probably some amount of publication bias

Why have these evidence-based interventions not generalized?

- Well-intentioned circumvention of EHR function for other purposes
  - Cost reduction – global and local
  - Quality measurement
  - Meaningful use
- Less noble intentioned
  - Volume-based billing
  - EHR vendor pursuit of sales
- Informatics leader institutions impart more than just technology
  - Understand healthcare and IT in context of patients and practitioners
  - Eye to big picture: standards, interoperability, user engagement
What is the role of informatics?

- Clinical informatics is the field concerned with the optimal use of information, often aided by technology, to improve individual health, healthcare, public health, and biomedical research (Hersh, 2009; Hersh, 2017)
- Large, diverse field, and (for physicians) ABMS-designated subspecialty of all specialties (Detmer, 2014) who understand benefits, limits, and best practices of applying information to health and healthcare

Informatics in fundamentally about people

- **Fundamental Theorem** (Friedman, 2009) – based on “relentless pursuit of assisting people”
  - Goal of informatics is
    \[
    (\text{Head} + \text{Computer}) > \text{Head}
    \]
  - Goal is not
    \[
    \text{Computer} > \text{Head}
    \]
- **Golden Rule** (Kuperman, personal communication, 2013):
  - “Never implement unto others that which you would not implement unto yourself”
Requirement for competence in clinical informatics is not limited to informaticians (Hersh, 2014)

Best to view in context of larger health systems science (Skochelak; 2017; Hersh, 2017)

How do we move forward?

- All we have discussed at this conference
  - Practice and IT system redesign
  - Best practices for patient-practitioner-computer triad
  - Practitioner well-being
- Reformulation, especially in context of EHR, of
  - Cost containment
  - Quality measurement
  - Billing via documentation
- Meaningful use – declare victory and go home?
- Leverage informatics experience and expertise