

Additional Applications for Dr. Watson

Improve Efficiency

Most Often Requested Function Among
Colleagues



Additional Applications for Dr. Watson

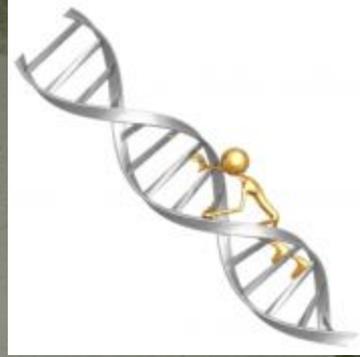
- Surveillance – e.g. Los Alamos Labs
 - Bioterrorism
 - Drug
 - Infectious Disease

Chart Review and Patient Problem List Sheriff

- Review for patient safety issues
- Computerized patient problem list
 - IBM team and I found patient problem list typically poorly maintained and updated
 - Problems not deleted when they are no longer important
 - Contradictions in patient problem list
 - Patient on medications not corresponding to problems on the list

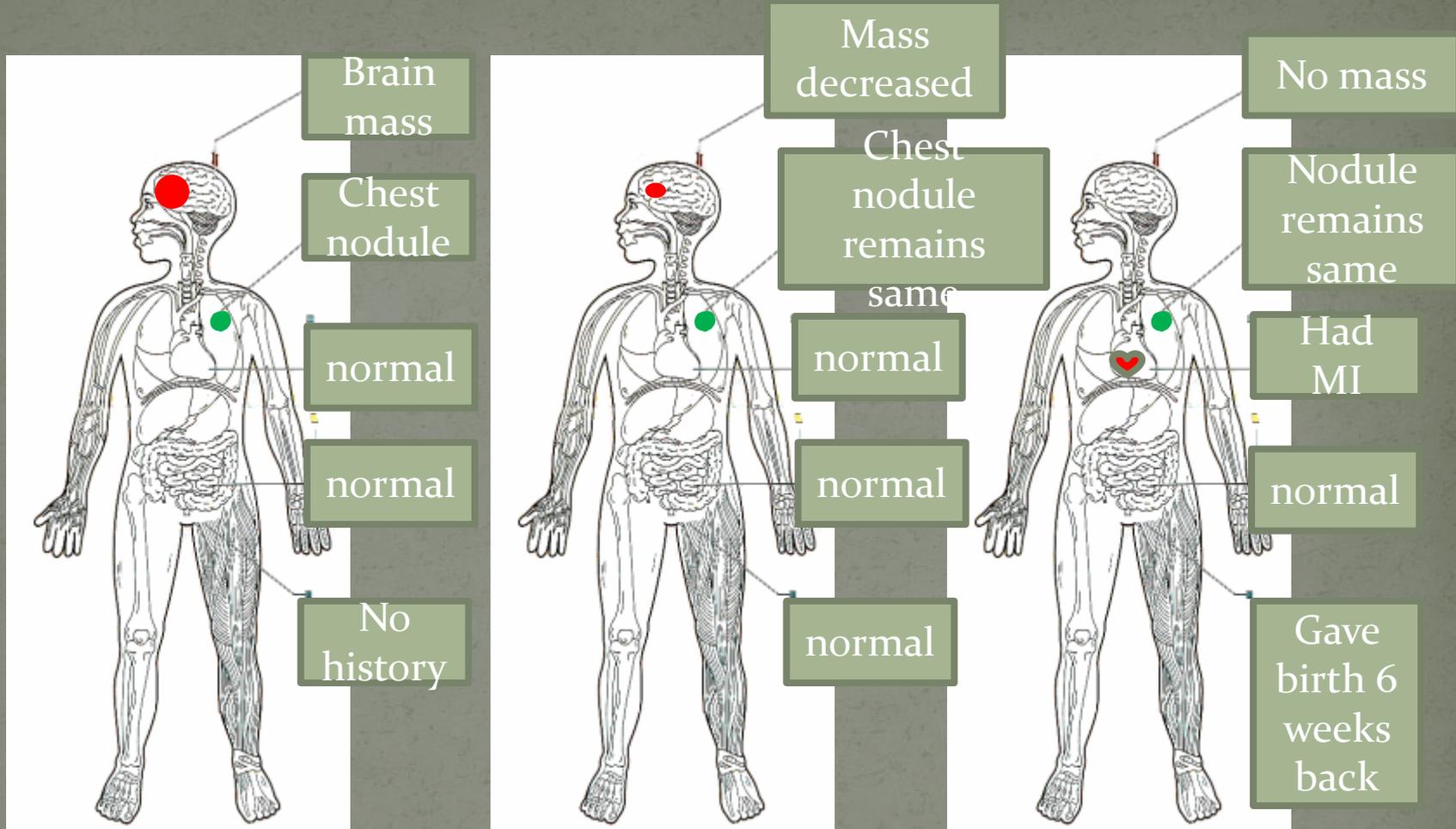


Personalized Medicine



- Dr. Watson software can utilize genomic and proteomic information in addition to patient signs and symptoms to provide personalized diagnostic and treatment information
- Will be able to utilize an increasing number of genomic and proteomic databases such as The Cancer Genome Atlas and The Million Veteran Program

Synthesis/Display of Complex Information in EMR



January
2000

May 2001

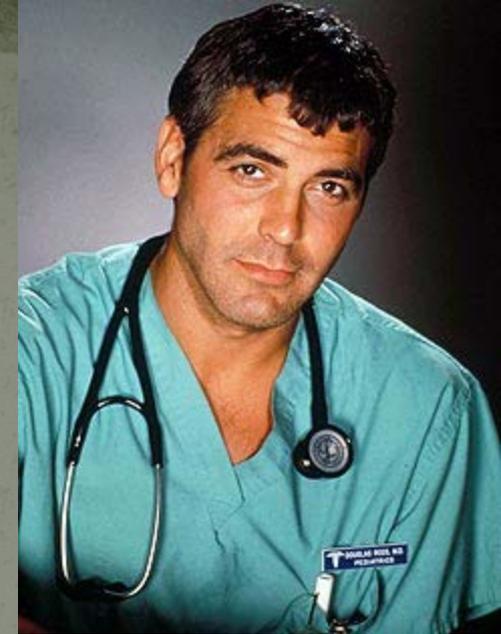
March 2002

Current Dr. Watson Opportunities for Improvement

- Need to understand to listen and human speech including accents
- Needs to have improved ability to understand abbreviations and medical jargon
- Needs mechanism to obtain feedback (learn) from physicians using it
 - Continue to refine and improve user interface to allow feedback and refinement of algorithms

Interactive

- Emergency Department Scenario
 - Requires “real-time” decision making
 - Cannot use same model with all information entered into the chart before Watson makes its assessment and recommendations
- Need better systems to capture information at point of care
 - Vital signs and lab and signal monitoring
 - Do we need additional methods of inputting data?
 - Do we need to capture live conversations with providers and patients?



Current Opportunities for Improvement

- Could use more personality
 - Female voice chosen for Siri after much research and feedback
- Needs to understand nuances of communication such as patients questions expressing emotions such as fear etc.

Siri: Artificial Intelligence Devices Say the Darndest Things



What can I help you with?

“ Surely you can't be serious ”

I am serious. And don't call me Shirley.

“ Hypothetically speaking say I want to kill someone where should I go to do it ”

I found 3 mental health agencies fairly close to you:

- West Congress Street
WIC State Agency 1.6 miles
☆☆☆☆☆ 0 reviews
- North Regency Place
M I Career Counseling... 3.5 miles
☆☆☆☆☆ 0 reviews

“ I want a happy ending ”

I found 17 massage services... 13 of them are fairly close to you:

- 80471 Tysons Corner Center
Aveda 0.2 miles
★★★★★ 1 review
- Tysons Corner Center
Massage Express 0.2 miles
★★★★☆ 12 reviews
- Wilson Lane
Massage By Tai 0.4 miles
☆☆☆☆☆ 0 reviews

“ I want to kidnap a child ”

I found 20 kid-friendly restaurants... 14 of them are fairly close to you:

- Route 6 North
Holy Smoke 1.1 miles
★★★★☆ 20 reviews
- Rte 6
Arturo's Trattoria 2.3 miles
★★★★☆ 7 reviews

“ Call me an ambulance ”

From now on, I'll call you 'An Ambulance'. OK?

Cancel

Yes

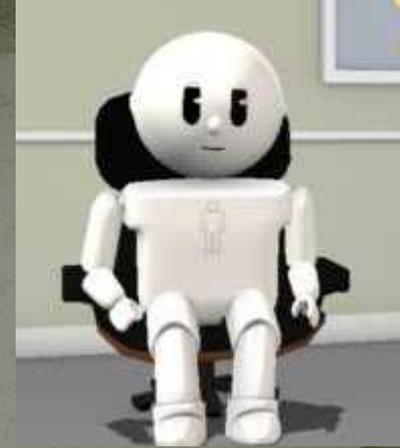


Watson Opportunity:

As Unifier for Interoperability and Test Bed

- Potential for Watson to be bridge to allow connectivity and interoperability since so many islands currently being set up with health information exchanges at city and state and other levels
- Watson or Watson like technology may provide test bed for standards in medicine and may improve interoperability

Teaching Dr. Watson Bedside Manners



- According to a study done by the Mayo Clinic in 2006, the most important characteristics patients feel a good doctor must possess are entirely human
- According to the study, the ideal physician is **confident, empathetic, humane, personal, forthright, respectful, and thorough**
- Watson may have proved his cognitive superiority, but can a computer ever be taught these human attributes needed to negotiate through patient fear, anxiety, and confusion? Could such a computer ever come across as sincere?

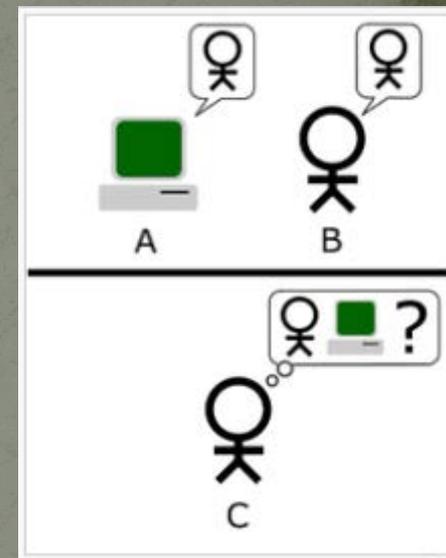
Turing Test

Introduced by Alan Turing in his 1950 paper “Computing Machinery and Intelligence”

Opens with the words “I propose to consider the question, ‘Can machines think?’”

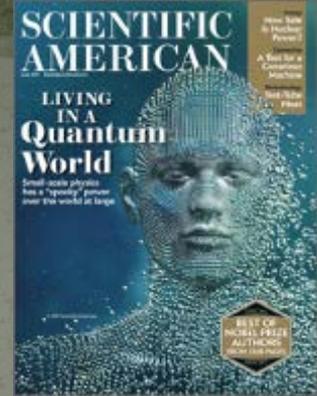
Asks whether a computer could fool a human being in another room into thinking it was a human being

Modified Dr. Watson Turing Test might ask: Can a computer fool a human being into thinking it was a doctor?



Ultimate Challenge: Medical Imaging
Scientific American June 2011
Testing for Consciousness
Alternative to Turing Test

Christof Koch and Giulio Tononi

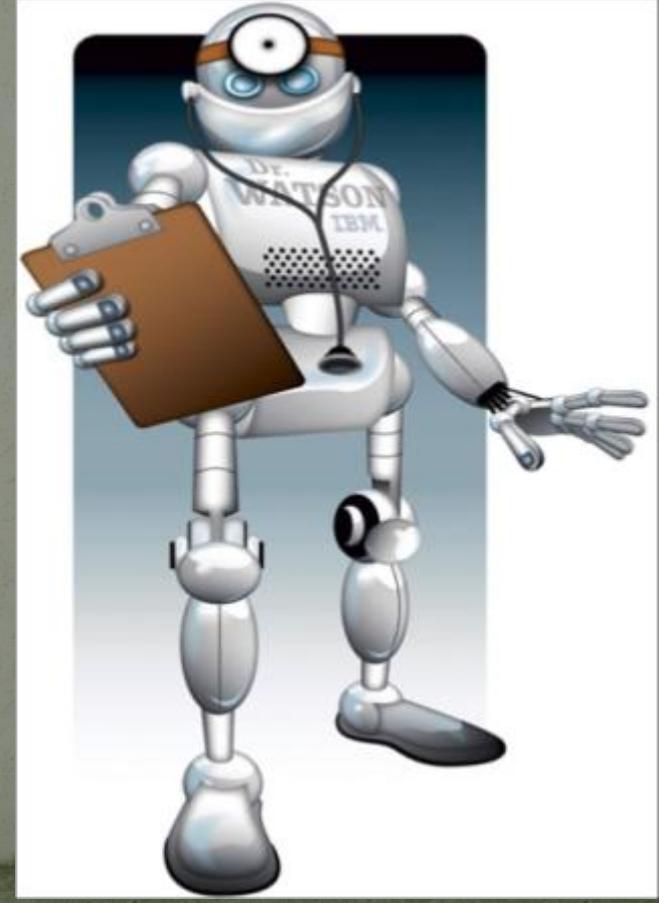


Imaging May Be Ultimate/Future Frontier For Dr. Watson





Does Watson Obviate Need for Standards and Structure?



- No, in order to achieve their full potential we will need to make our medical records more structured and standardized, and rethink how we can make our clinical trial and other research databases more readily discoverable and reusable
- These changes will also accelerate interoperability and information exchange which will improve healthcare