

Ogden Surgical-Medical Society

72nd Annual CME Conference – Medicine in Tomorrowland

Shepherd Union Building, 3rd Floor, 3848 Harrison Boulevard, Ogden, Utah

Tuesday, 16 May 2017 – 7:30p - 8:15p

Status of American Medicine 2017



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Disclosures

Neither I, Brent C. James, nor any family members, have any relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated with or without recognition within the presentation.

I have no financial relationships beyond my employment at Intermountain Healthcare.

Brent's crystal ball *(hah!)*

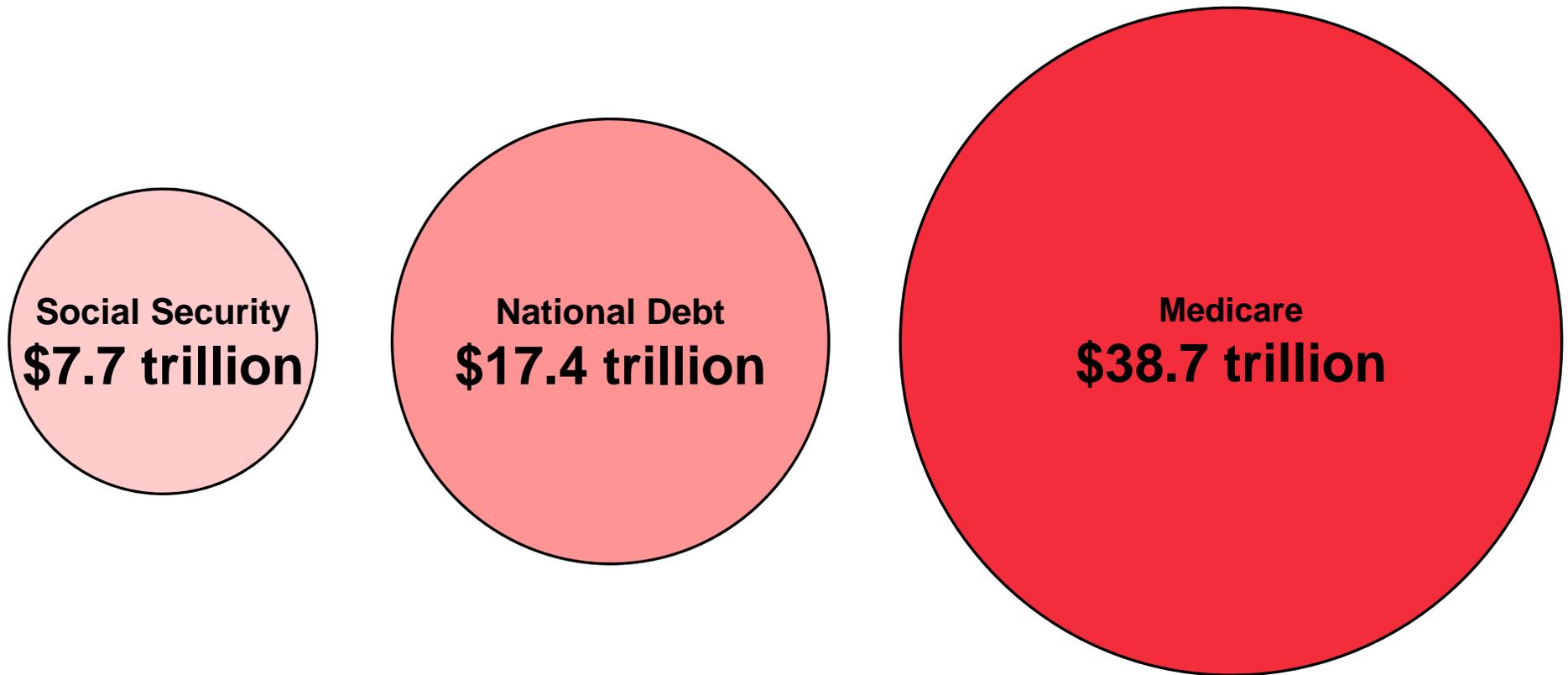
Point 1:

The federal government is out of money

- *This is driving their behavior*
- *Commercial payers, as usual, are “shadowing” off CMS*

The Fiscal Gap

Unfunded federal obligations, 2014 *(all NPV -- net present value)*



Total = \$63.8 trillion+

CMS Office of Actuary (Foster): ~\$120 trillion, \$211 trillion

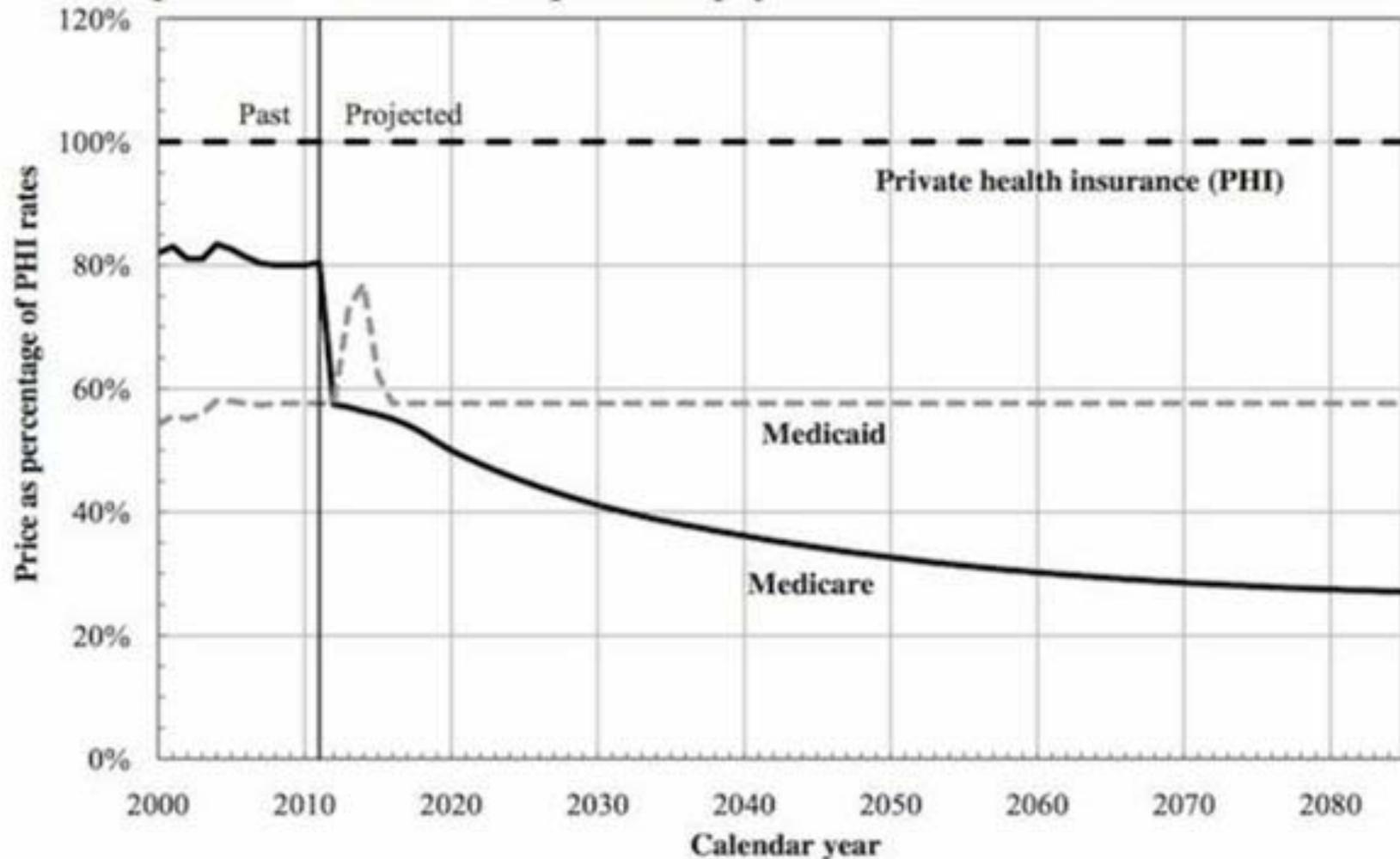
PPACA Medicare payment reductions

-- \$760 billion over 10 years

- **Hospitals** **\$260 billion**
- *Managed care* (Medicare Advantage) **\$156 billion**
- Home health care **\$66 billion**
- Uncompensated care payments **\$56 billion**
- Complex imaging **\$1.2 billion**
- **MD payment update factor** **\$196 billion**

Physician payments under PPACA

Figure 2—Illustrative comparison of relative Medicare, Medicaid, and private health insurance prices for physician services under current law



Shatto & Clemens. Projected Medicare expenditures under the PPACA. Washington, DC: Medicare Office of the Actuary. May 18, 2012.

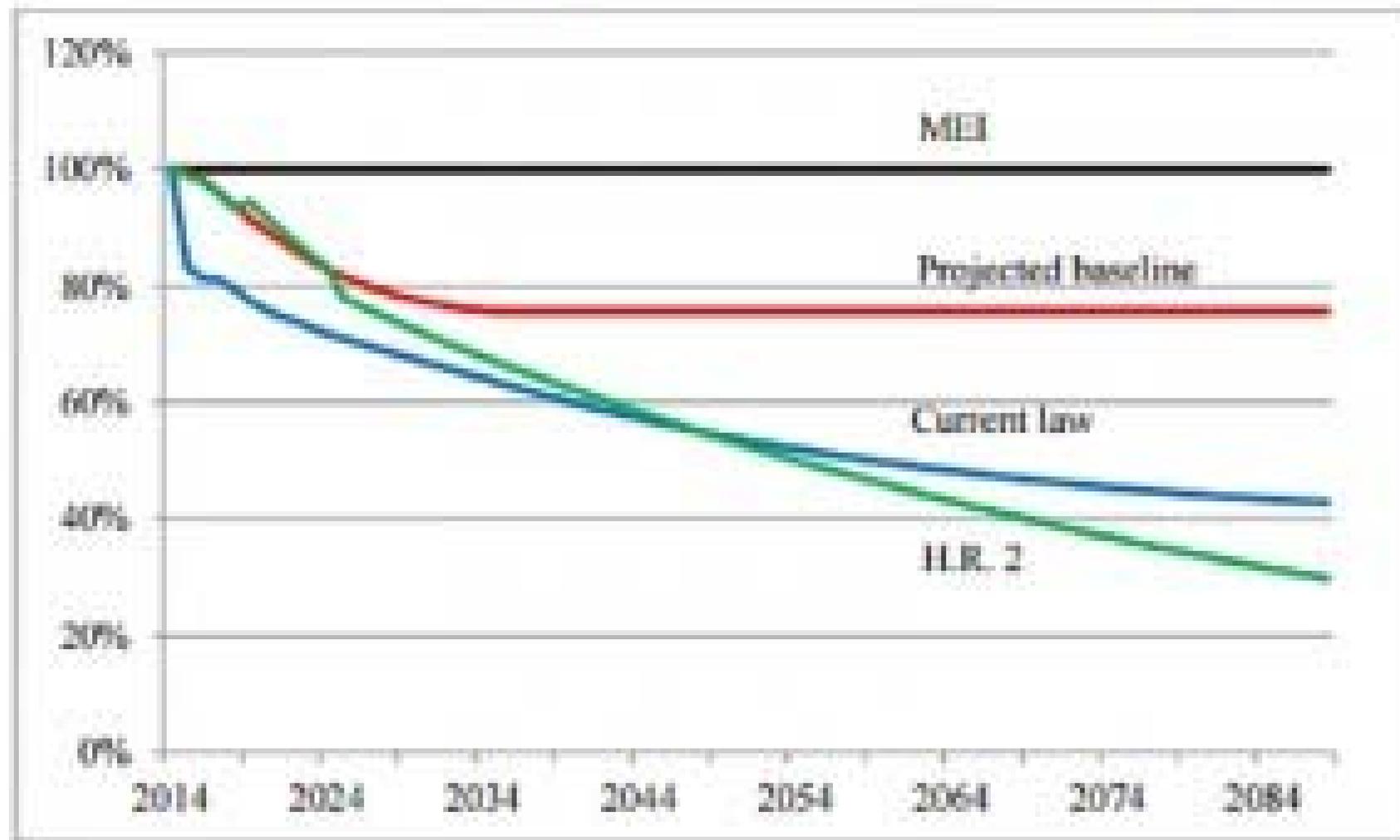
Sustainable Growth Rate (SGR)

- **Passed Congress in 1998, first implementation in 2003** *(by law)*
- **Limited Medicare Part B** *(professional fee)* **payment rate increases to growth rate of economy (GDP)**
- **17 “11th hour” implementation delays in next 11 years** *(23+% accumulated fee decrease waiting in the wings)*

The “Doc Fix” – H.R. 2

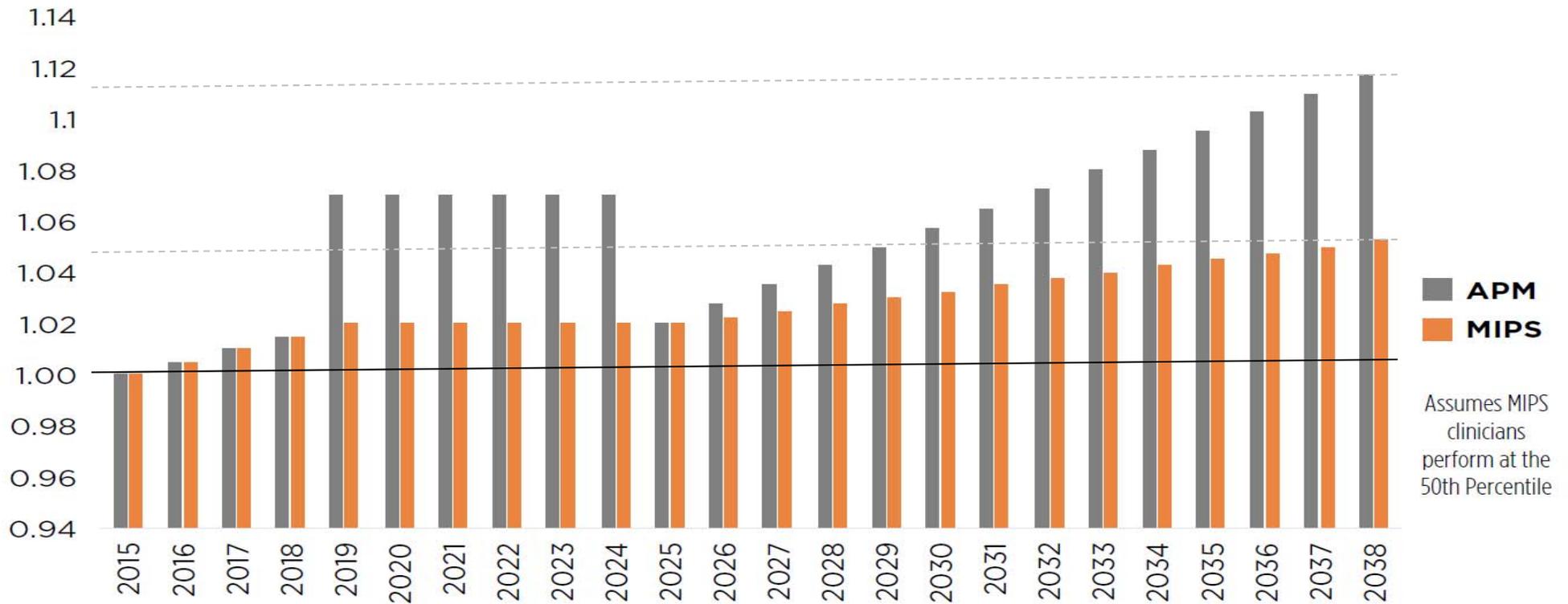
- **Medicare Access and CHIP Re-Authorization Act (MACRA) passed Congress on April 16, 2015; implementation starts in 2019**
- **Replaced SGR formula**
- **Cost: \$205 billion over next 11 years**
(\$64 billion funded, \$141 billion added to national deficit)
- **Streamlines and combines multiple physician quality incentive program**
- **Shifts from FFS “pay for volume” to “pay for value”**
 - **Merit-Based Incentive Payment System (MIPS)**
 - **Alternative Payment Model (APM)**

Figure B : Illustrative Comparison of Medicare Prices for Physicians' Services under Current Law, the Projected Baseline, and H.R. 2 relative to the MEI



Source: Paul Spitalnic, "Estimated Financial effects of the Medicare Access and CHIP Reauthorization Act of 2015 (H.R. 2)," Centers for Medicare & Medicaid Services, April 9, 2015, p. 8.

MACRA MD payment rates over time



Point 2:

MACRA will continue to soften

- *What we have today is not what we will have tomorrow*

but ...

Point 3:

Movement into “value-based payment” will accelerate

- *The “salad days” of fee-for-service payment are gone; they are not coming back*
- *Physicians must develop skills and systems to manage care under “provider at risk” payment*



Point 4:

Physician practices will continue to consolidate

- *Eddy's fundamental truth: "The complexity of modern medicine exceeds the capacity of the unaided expert mind"*
- *Physicians will be forced to "group up" to **manage clinical knowledge**, optimize care delivery, and **survive financially***
- *hopefully under a **renewed model of medical professionalism***



MD led / controlled “*managed care*”

Tools to

- ***Manage and apply complex clinical knowledge; leading to***
- ***A new generation of electronic medical records (EMRs)***

Clinical uncertainty *(a hundred years of science ... the primary sources of practice variation)*

1. **Lack of valid clinical knowledge** *regarding best treatment
(poor evidence)*

2. **Exponentially increasing new medical knowledge**
(doubling time has decreased to <8 years; at current rates, a clinician will need to learn, unlearn, then relearn half of her medical knowledge base 5+ times during a typical career)

3. **Continued reliance on subjective judgment**
(subjective recall is dominated by anecdotes, and notoriously unreliable when estimating results across groups or over time)

4. **Limitations of the expert mind when making complex decisions** *(Miller, 1956: The magic number 7, plus or minus 2:
some limits on our capacity for processing information)*

Which, when combined with the craft of medicine, leads to:

Enthusiasm for unproven methods ... Mark Chassin, MD

The maxim, "If it might work, try it" ... David Eddy, MD, PhD

Quality means "spare no expense" ... Brent James, MD, MStat

Evidence based medicine?

◆ *Of what we do in routine medical practice, what proportion has a basis as best practice in a specific circumstance, in published scientific research?*

- **Williamson (1979):** < 10%
- **OTA (1985):** 10-20%
- **OMAR (1990):** <20%
- **ACC (2009):** 48% **Level C** (16 guidelines, 2711 recommendations)

◆ ***The rest is opinion***

- *That doesn't mean that it's wrong -- much of it probably works*
- *but it may not represent the best patient care*

Williamson *et al.* Medical Practice Information Demonstration Project: Final Report. Office of the Asst. Secretary of Health, DHEW, Contract #282-77-0068GS. Baltimore, MD: Policy Research Inc., 1979).

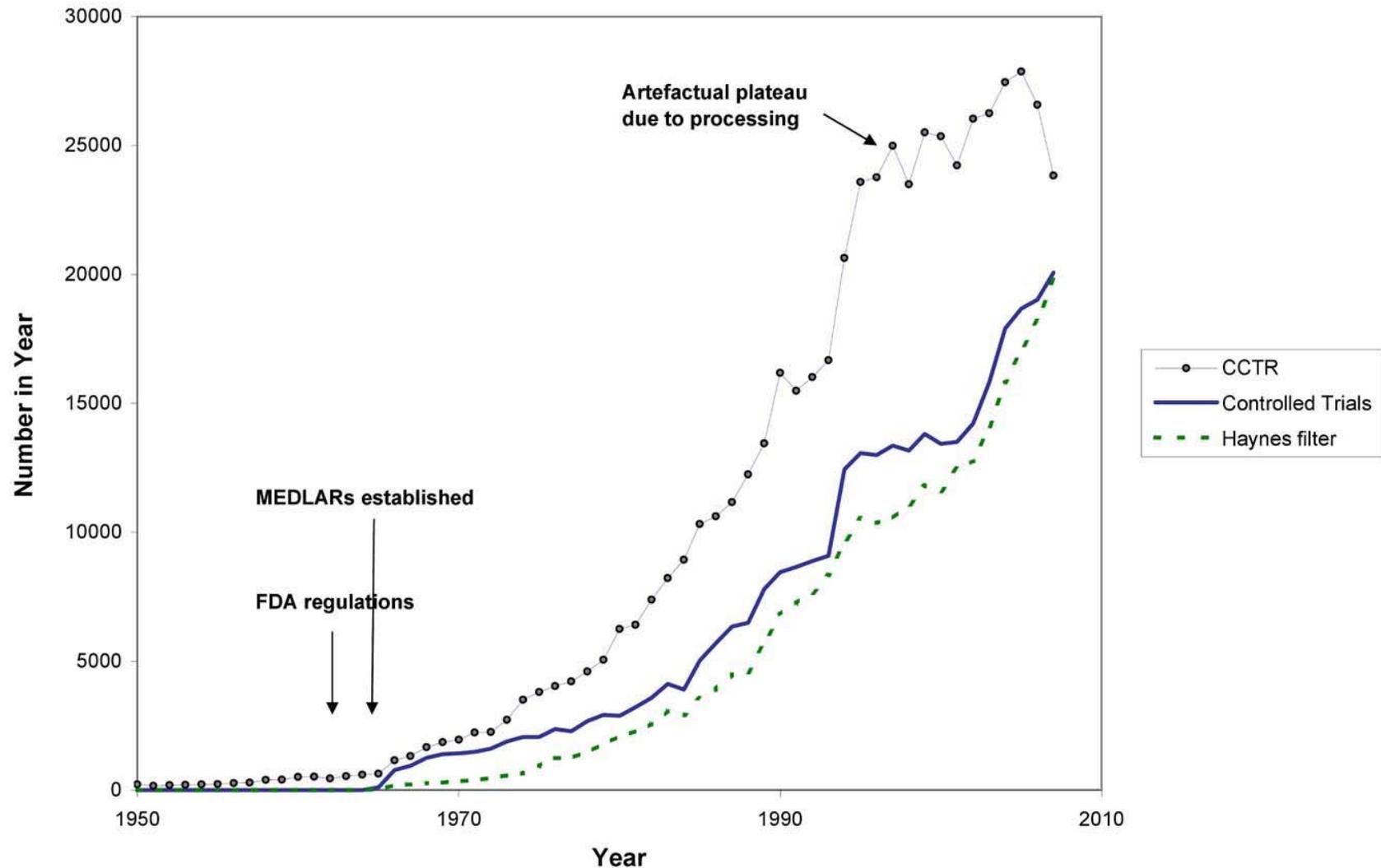
Institute of Medicine. *Assessing Medical Technologies*. Washington, D.C.: National Academy Press, 1985:5.

Ferguson JH. Forward. Research on the delivery of medical care using hospital firms. Proceedings of a workshop. April 30 and May 1, 1990, Bethesda, Maryland. *Med Care* 1991; 29(7 Suppl):JS1-2 (July).

Tricoci *et al.* Scientific evidence underlying the ACC - AHA clinical practice guidelines. *JAMA* 2009; 308(8):868-9 (Feb 25).

Shaneyfelt TM & Centor RM. Reassessment of clinical practice guidelines: Go gently into that good night. *JAMA* 2009; 308(8):868-9 (Feb 25).

Growth rate for Level I evidence



Bastian H, Glasziou P, Chalmers I. Seventy-five trials and 11 systematic reviews a day: how will we ever keep up? PLoS Med 2010; 7(9):e1000326 (Sep).

Exploding knowledge base

- ◆ *3 to 4 years after board certification, internists -- both generalists and subspecialists -- begin to show "significant declines in general medical knowledge" ...*
- ◆ *14 to 15 years postcertification, ~68% of internists would not have passed the American Board of Internal Medicine certifying exam ...*
- ◆ *To maintain current knowledge, a general internist would need to read*
 - *20 articles per day,*
 - *365 days of the year*

an impossible task ...

Shaneyfelt, TM. Building bridges to quality. JAMA 2001; 286(20):2600-2601 (Nov 28).

Expert consensus?

Experts' estimates of outcomes following implantation of artificial heart valves:

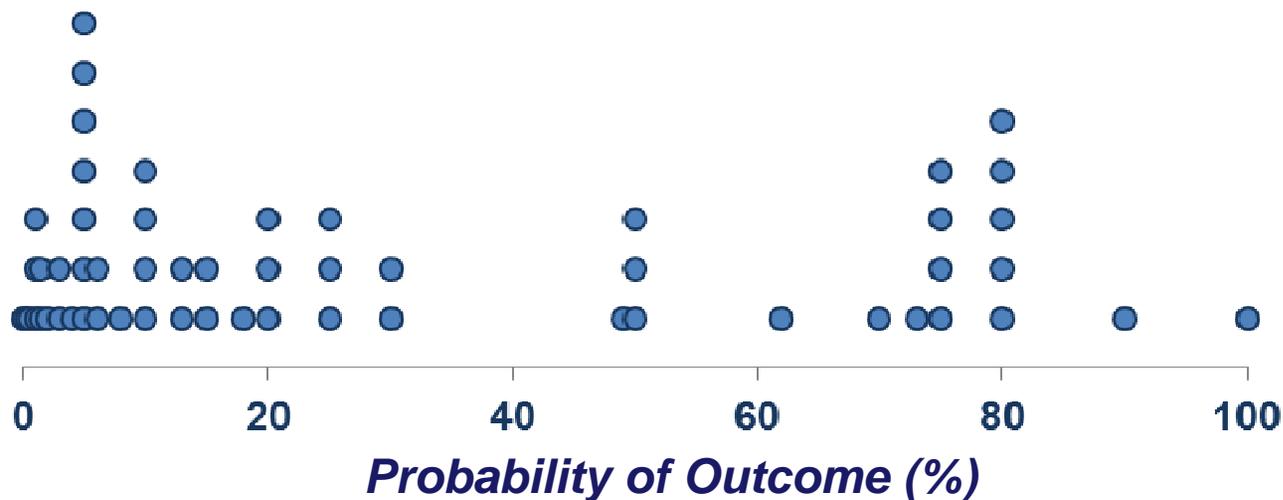
	<u><i>Xenograft</i></u>	<u><i>Mechanical</i></u>
<i>Valve failures</i>	3% - 95%	0% - 25%
<i>Death</i>	3% - 40%	2% - 50%
<i>Hemorrhage</i>	0% - 30%	1% - 65%
<i>Embolization</i>	0% - 30%	2% - 50%

c/o David Eddy

Expert consensus?

"The practitioners, all experts in the field, were then asked to write down their beliefs about the probability of the outcome" ... "that would largely determine his or her belief about the proper use of the health practice, and the consequent recommendation to a patient."

(chance of a spontaneous rupture of a silicone breast implant - 57 expert physicians)



Eddy: "You can find a physician who honestly believes (and will testify in court to) anything you want."

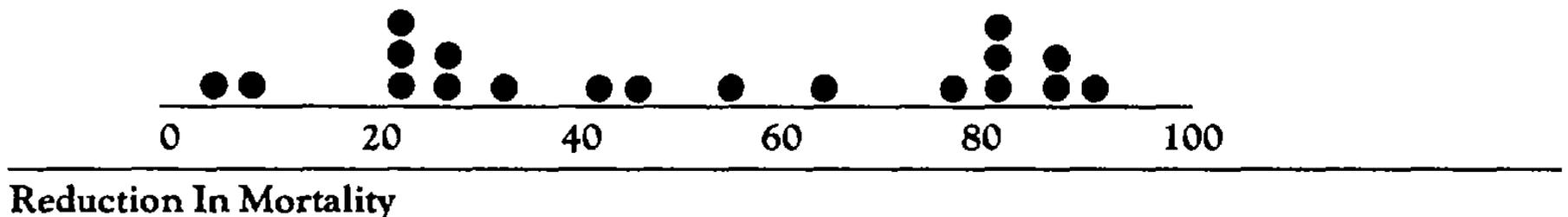
Eddy, DM. *A Manual for Assessing Health Practices & Designing Practice Policies: The Explicit Approach*. Philadelphia, PA: The American College of Physicians, 1992; pg. 14.

Expert consensus?

"At a recent meeting of experts in colorectal cancer detection ... the attendees were asked ... 'What is the overall reduction in cancer incidence and mortality that could be expected ...' The answer to this question is obviously central to any estimate of the value of fecal occult blood testing ..." and flexible sigmoidoscopy.

Reduction In Incidence

(19 expert physicians)



Reduction In Mortality



Eddy. Variations in physician practice: the role of uncertainty. Health Affairs 1984; 3(2):74-89.

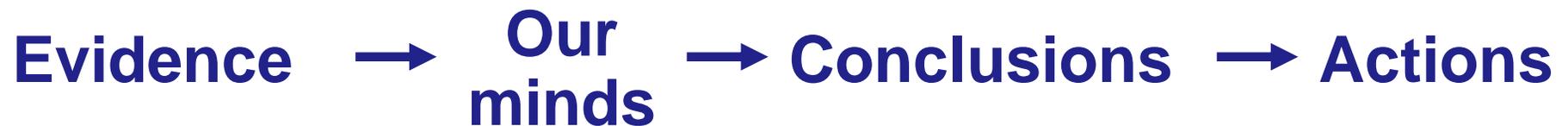
Miller, G.A.

***The magic number seven, plus or minus two:
some limits on our capacity for processing information.***

Psychological Review 1956; 63(2):81-97

The core assumption *of a craft-based approach*

"Our minds are interpreters of evidence. We can accurately convert all forms of evidence (*formal evidence from the literature, observations of a particular patient, similar prior experiences, colleague's experiences*) **into conclusions, which in turn determine our actions."**



"Therefore, no one has to tell us what to do. Just give us the evidence and we will figure it out. Besides, there are lots of other factors that need to be considered. This can only be done with clinical judgment."

Dr. David Eddy

The core assumption is untenable

- ◆ *Poor evidence for most practices*
- ◆ *The inherent complexity of modern medicine, versus well-documented limitations of the expert human mind*

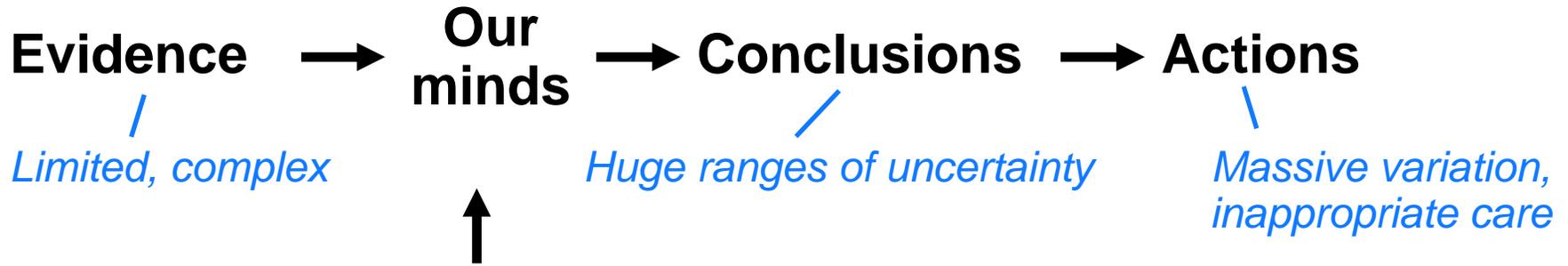
lead to

- ◆ *Huge variations in beliefs*
- ◆ *Massive variations in practices*
- ◆ *High rates of inappropriate care*
- ◆ *Unacceptable rates of preventable patient injury*
- ◆ *A striking inability to "do what we know works"*
- ◆ *Wasted resources on a large scale (= decreased access to care)*

Dr. David Eddy

Other factors affect our decisions

If our minds can't do the work very well, there are all sorts of other things to fill the void:



- ◆ **Professional interests**
- ◆ **Financial interests**
- ◆ **Clinician preferences and personal tastes**
- ◆ **Desire to have something to offer** (*Rule of Rescue*)
- ◆ **Love for the work**
- ◆ **Wishful thinking**
- ◆ **Selective memory**
- ◆ **Pressure from patients and family** (*direct to consumer advertising*)
- ◆ **Legal considerations** (*defensive medicine*)

Dr. David Eddy

***Today's problems
are often
yesterday's solutions.***

*(We can't solve problems using the same kind
of thinking we used when we created them)*

(It works better if you plug it in)

Albert Einstein

*He that will not apply new remedies must expect new evils; for
time is the greatest innovator.*

Francis Bacon (1561 - 1626); in Essays (1625), Of Innovations

Shared Baseline “Lean” protocols *(bundles)*

1. **Identify a high-priority clinical process** *(key process analysis)*
2. **Build an evidence-based best practice protocol**
(always imperfect: poor evidence, unreliable consensus)
3. **Blend it into clinical workflow** *(= clinical decision support; don't rely on human memory; make "best care" the lowest energy state, default choice that happens automatically unless someone must modify)*
4. **Embed data systems to track (1) protocol variations and (2) short and long term patient results** *(intermediate and final clinical, cost, and satisfaction outcomes)*
5. **Demand that clinicians vary based on patient need**
6. **Feed those data back** *(variations, outcomes) in a **Lean Learning Loop*** - constantly update and improve the protocol;
provide true transparency to front-line clinicians

Results:

- **Survival** (for ECMO entry criteria patients) **improved from 9.5% to 44%**
- **Costs fell by ~25%** (from ~\$160,000 to ~\$120,000 per case)
- **Physician time fell by ~50%** (a major increase in physician productivity)

Lesson 1

We count our successes in lives

Lesson 2

there is nothing new here

except the idea that

“it takes a team ...”

(and, perhaps, better process-aligned data systems)

It should have started in medicine

Lesson 3

Most often
(but not always)

better care is cheaper care

The waste opportunity is **HUGE**

35-50+% of all health care resource expenditures are

quality-associated waste:

- *recovering from preventable foul-ups*
- *building unusable products*
- *providing unnecessary treatments*
- *simple inefficiency*

Institute of Medicine Roundtable on Value and Science-Driven Healthcare. *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. Yong, Pierre L., Saunders, Robert S., and Olsen, LeighAnne, editors. Washington, DC: National Academy Press, 2010.

Waste leverage is **MUCH** higher

5 – 9% contribution

for each case added on the revenue side



**Net
Operating
Income**
(NOI; margin)

50 – 100% contribution

for each case avoided on the cost side



Financial incentives for waste elimination under different payment mechanisms

WASTE REMOVAL LEVEL	% of all waste	PAYMENT METHOD			
		Cost plus	FFS	Per case	Provider at risk
3. Case-rate utilization <i>(# cases per population)</i>	45%	▼	▼	▼	▲
2. Within-case utilization <i>(# and type of units per case)</i>	50%	▼	▼	▲	▲
1. Efficiency <i>(cost per unit of care)</i>	5%	▼	▲	▲	▲

Note: For green arrows, savings from waste elimination accrue to the care delivery organization; for red arrows, savings go to payer organizations.

Today's electronic medical record (EMR) systems

- Replace traditional hand-written documentation, with a **primary aim** to **maximize fee-for-service billing**
 - Clinicians spend as much as 50% of their time on electronic documentation
 - Most common cause cited for clinician burnout ...
and burnout rates are increasing dramatically
- Such systems then bolt **clinical decision support (CDS)** onto that chassis
... which is a good thing, as far as it goes



courtesy of Dr. Keith White, Intermountain Healthcare

Flip the traditional approach 180° ...

- ~2006: Intermountain's ECIS Envisioning group forms
 - Primary aim: Design an **ideal EMR system to support CDS**
 - CDS method: Intermountain's **Care Process Models (CPMs)** – “shared baseline” evidence-based best practice protocols, deployed into clinical workflows, with proven effectiveness
 - Must support **very high rates of content change** especially at initial CPM deployment
 - Must **tolerate and facilitate clinician-directed variation** for each individual patient (“no guideline perfectly fits any patient”)

Secondary effects arising from an activity-based design:

- **> 95% of all clinical documentation captured as computable data** – context-sensitive semantic concepts; a fundamental restructuring of natural language processing; foundation for full interoperability
- **Very efficient, clinically natural, documentation** – via real-time voice recognition and “tap to verify” documentation by exception; templates, “legal text,” and short notes summarizing essential findings
- **Embedded coding (taxonomies and ontologies)** – drastic reductions in post-discharge chart abstraction; much lower coding error rates; every code links back to explicit clinical documentation
- **Embedded activity-based costing** drawing from all forms of documentation, at a very granular level
- **Plus others:** automated regulatory reporting, direct patient query, deployment of care standards, data-driven staffing models, etc.

Current functioning use case areas, built w/ prototype ABD software

- **Emergency Department: clinical decision support**
 - appropriate use criteria for low back pain w indicated imaging / management (extending to PAMA, etc.)
- **Physical therapy: triage and treatment assignment**
- **Radiology reporting** – chest x-ray, mammography, lung cancer screening, abdominal films, etc.
- **Inpatient acute care nursing** – IV placement (sterile hands = can't touch computer), newborn pulmonary assessment (as part of conversation w mother), initial adult admit evaluation, etc.

Things to watch for:

- Time required to initially build or modify/update a clinical application
- Clinician acceptance – time required to generate complete, accurate, and timely care documentation – ABD as a real-time clinical scribe
- Effective clinical decision support leading to optimal care
- Generation of computable data
- Code production for billing and regulatory compliance
- Complete, granular activity-based costing data

Pediatric abdominal radiography example

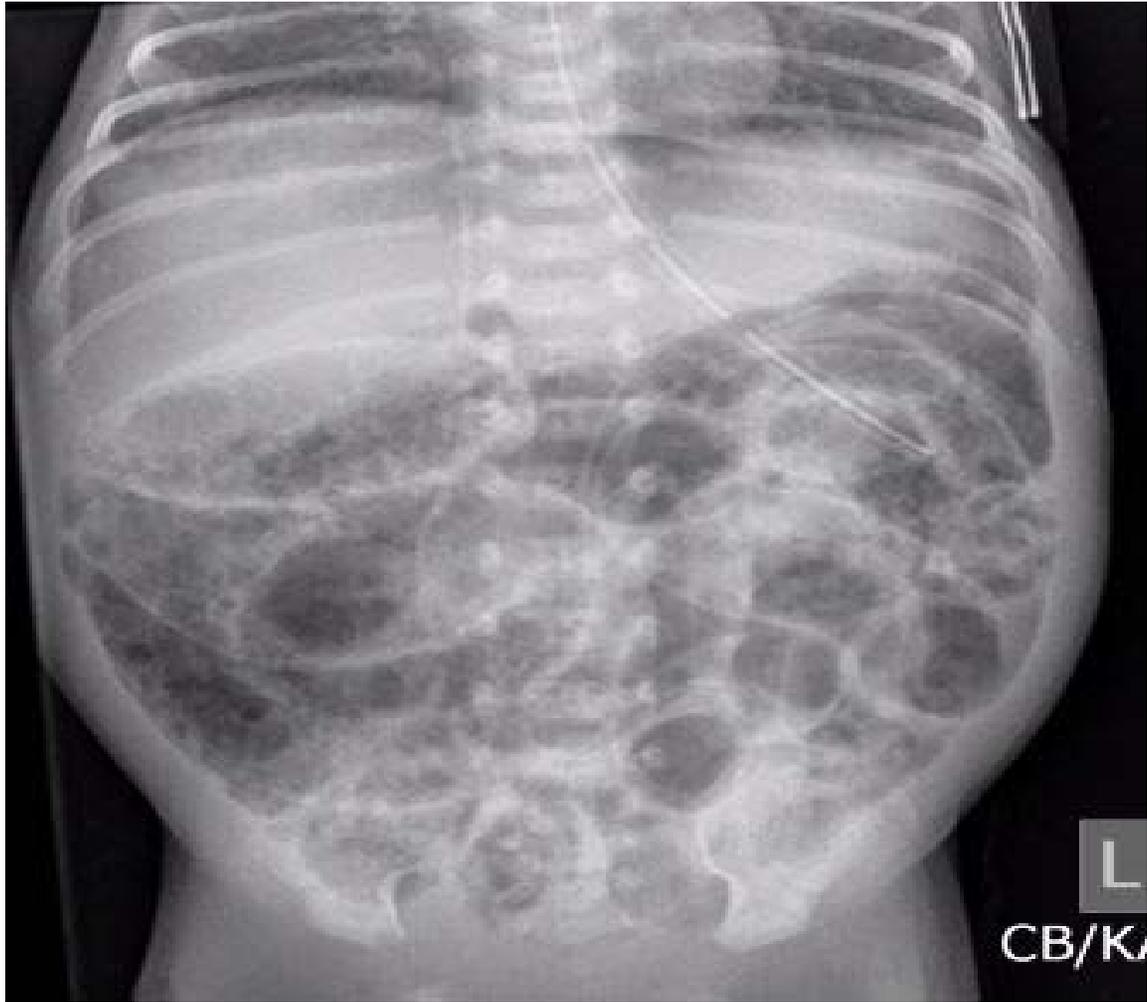
-- a complex application --

Built from scratch by a practicing clinician – no IT involvement

Total effort required:

- Prelim work/paper draft: 1:45h
 - Authoring initial version: 2:00h
 - Revisions through iterative testing: 1:00h
- Total: 4:45h**





Embedded decision support

Patient ID: 1 First name: **John** Last name: **Doe** Gender: **Male** DOB: **1984-12-03** -- Select patient:

Running Activity

[Restart](#) [Cancel](#) [Commit](#)

Views:	
Devices:	
Bowel:	
Diaphragm:	
Bone:	
Calcifications:	
Soft Tissue:	
Other:	
Impression	

Interactive [on demand](#) ▾



Stop

[Costing Summary](#) 0 ▾

Better has no limit ...

an old Yiddish proverb