Reducing Low-value Care at Cedars-Sinai

Scott Weingarten, MD

Disclosure
CEO Stanson

Health system

- 3 hospitals

Medical Network

- 4 commercial ACOs
- Medicare Advantage
- New risk-based non-ACO PPO contracts

The New Role of the Academic Medical Center

"Charting our course under the current economic pressures won't be easy. But our AMCs have built their reputations by addressing society's most pressing health care challenges, and today's central challenge is the rising cost of health care. Fortunately, AMCs specialize in innovation. We must now apply that capability not just to scientific aspects of medical care but also to the systems delivering it."

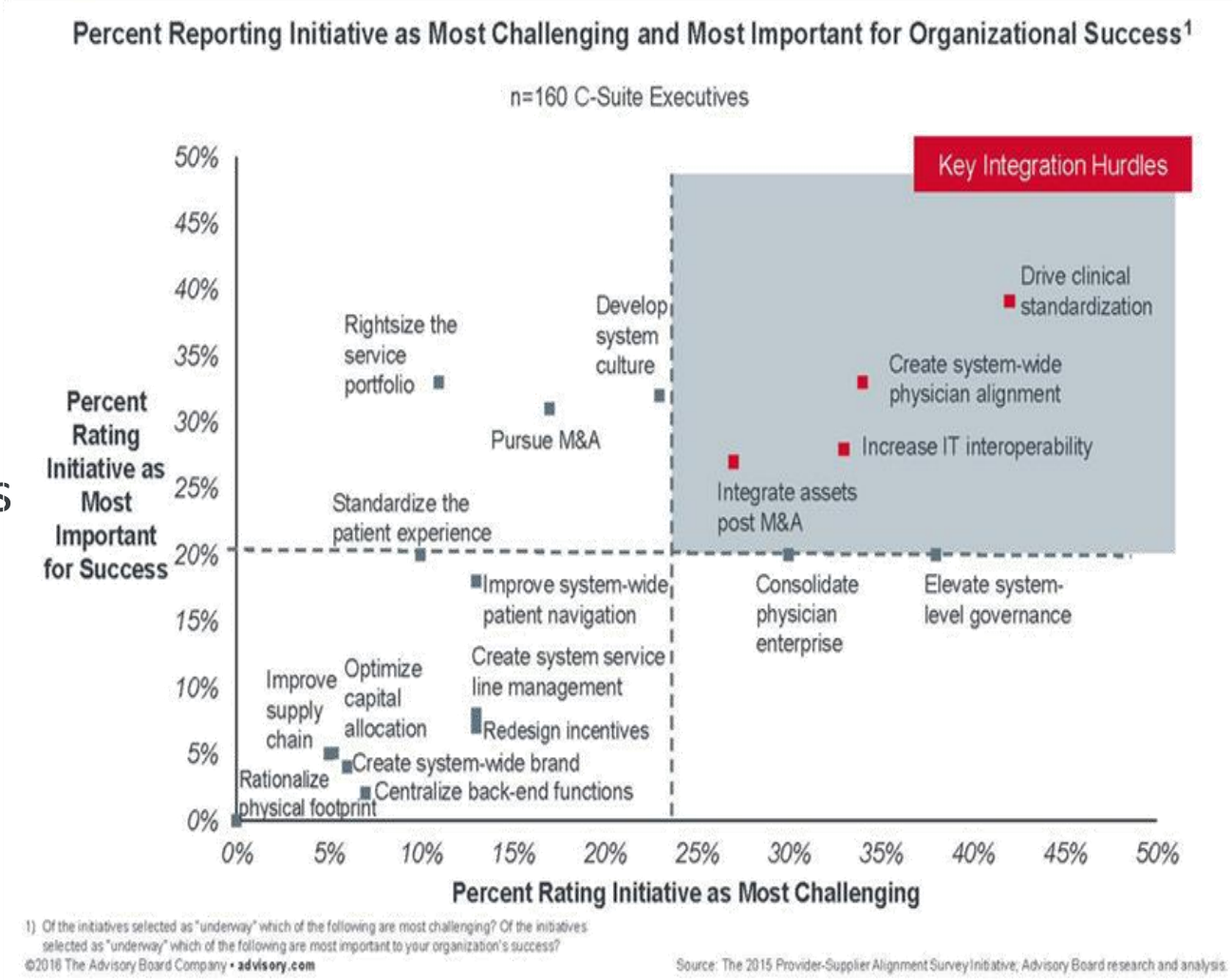
Partners Healthcare, Massachusetts General, Brigham and Women's Hospital

N Engl J Med 369;11 NEJM.org 994 September 12, 2013

Academic Medical Centers

- Cost = # units ("high value" + "inappropriate")
  times
  cost per unit
  - Maintain or increase "high value" care
  - Cost per unit (operational efficiency)
  - Opportunity to reduce "low value" care (clinical efficiency)

Health System Challenges



Source: Advisory Board

Clinical Decision Making

- 80% to 90% of costs are from clinical decisions
- Studies Show Overtreatment
  - "subjecting patients to care that, according to sound science and the patients' own preferences, cannot possibly help them"
  - $248 billion per year
  - 10% of health care expense

- NEJM 2013;369:2551-7
- Berwick DM, et al. JAMA 2012;307:1513-6

Medicare Spending and Low-Value Service Use in 2013, According to Patient Risk for High Spending.*

Group	Group Size		Medicare Spending			Low-Value–Service Use		
	No. of Patients	% of Total	Spending per Patient ($)	Total Spending ($ billion)	% of Total	Services per Patient	Total No. of Services	% of Total
All Medicare beneficiaries	29,524,850	100	9,356	276.2	100	0.37	10,924,790	100
High-risk beneficiaries†	5,014,295	17	23,076	115.7	42	0.59	2,941,475	27
Other beneficiaries	24,510,555	83	6,549	160.5	58	0.33	7,983,315	73

* Analyses were conducted using Part A and B Medicare claims and a random 20% sample of beneficiaries. Totals were multiplied by a factor of 5 to approximate totals for the entire Medicare population. Low-value–service use was assessed using 31 measures in six categories: cancer screening, diagnostic and preventive testing, preoperative testing before low- or intermediate-risk surgical procedures, imaging, cardiovascular testing and procedures, and other invasive procedures.[1,2]

† High-risk beneficiaries were defined as having both a Hierarchical Condition Category score and a count of conditions in the Chronic Condition Data Warehouse in the top quartile of the distributions of these characteristics.

Although better predictive modeling might improve targeting, this analysis reveals that patient-focused strategies applied to high-risk patients must be substantially more effective or less costly than broader strategies to justify their prominence in cost-containment efforts. Those possibilities seem unlikely. Though care coordination programs may have substantial and valuable clinical benefits, especially for high-risk patients, they haven't been convincingly shown to lower spending, let alone by amounts exceeding program costs.[3]

The NEW ENGLAND JOURNAL of MEDICINE

McWilliams JM, Schwartz AL. N Engl J Med 2017;376:807-809.

Information Challenges

Medical Research Funding

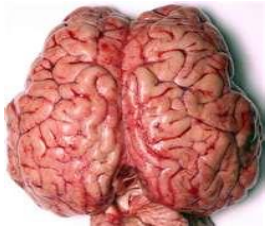
- NIH research: $31 billion in 2016
- US medical research: $95 billion/year
- Global medical research: >$140 billion/year
- $1.1 billion comparative effectiveness research

Output

- 20,000 biomedical journals
- 6,000 articles per day
- 1 article every 26 seconds
- 20,000 new lab tests in the next 5 years

Point of Care

Brain



CDS

Changing Care

Predictors of Success	Adjusted OR
Automatic provision of decision support as part of workflow	**112**
Provision of decision support at the time and location of decision making	15
Provision of recommendation rather than just an assessment	7
Computer-based generation of decision support	6

Source: Kawamoto K, Houlihan CA, Balas EA, Lobach DF. Improving clinical practice using clinical decision support systems: a systematic review of trials to identify features critical to success. BMJ. 2005 Apr 2;330(7494):765. PMID: 15767266

Clinical decision support not part of the work flow

"Nurse, get on the internet, go to SURGERY.COM, scroll down and click on the 'Are you totally lost?' icon."

Hardwiring High Value Care

Vitamin D intervention, Kaiser Permanente
"Making it harder to do the wrong thing"
Education
Removing items from preference list
"Hard stop" alerts

Results
Screening declined 3-fold, from 74 tests/1,000 to 24 tests/1,000 ($p<0.001$), 67% decrease
Appropriate care increased 56% to 70%
Inappropriate care decreased 44% to 30%
Followed rates decreased 10% to 4%, best practice internalized

JAMIA 2017;24:776-80

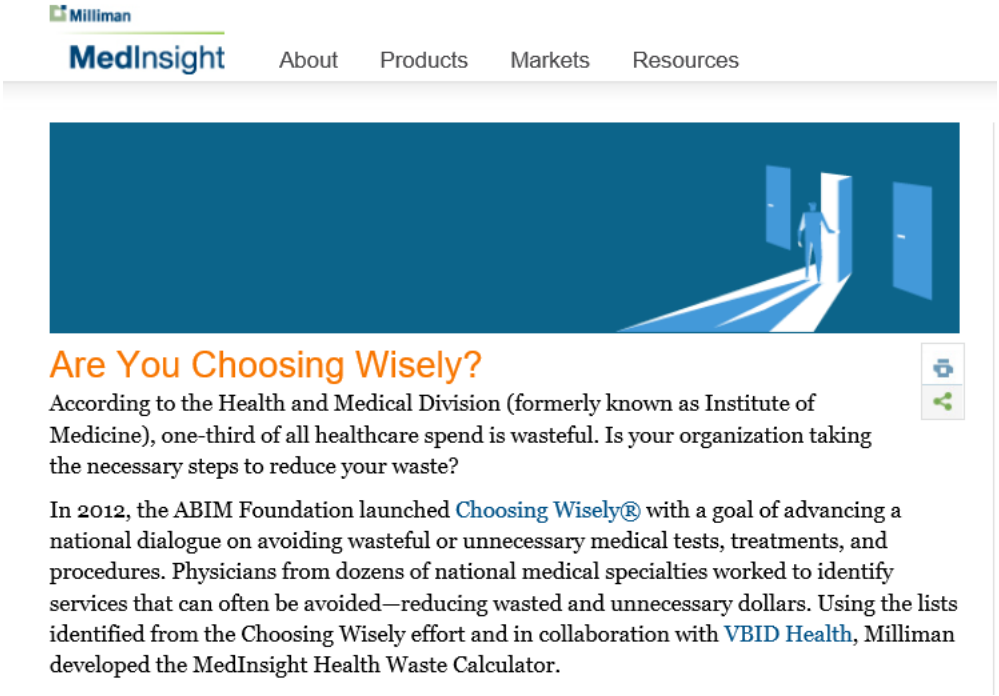
Clinical and Cost Improvement for Population Health

Cedars-Sinai Alerts Its Docs to *Choosing Wisely*

June 5, 2014

With a focus on stimulating physician and patient conversations, there is perhaps no more appropriate environment in which the *Choosing Wisely*® campaign could take hold than the examining room. Cedars-Sinai Health System has taken an important step in ensuring these conversations happen by becoming the first system in the nation to incorporate dozens of specialty society campaign recommendations into its electronic medical records (EMR) system.

To Be Forewarned is to Be Forearmed



Why?

Subject: Re: [External] Insurance

Unfortunately there is only one plan that I can select that allows me to see you (or Isabelle), and it is a PPO with a premium of nearly $1000 a month. That is unfortunately not doable for me. I will have to select a cheaper plan, and of course that means I will need to find a different doctor.

This really upsets me, as I have cherished the care you have given me over the past 27 years. I don't know what the solution is, but Medicare for all might be a good place to start.

I will be sending a request to forward my records once I have selected a new doctor. Thank you for all the care you have given me.

Choosing Wisely

≈ alerts 250 per day

About 2.5% of total alerts

Choosing Wisely®: *"Don't perform population based screening for 25-OH-Vitamin D deficiency."*

clinical logic

inclusion criterion
Vitamin D test ordered

exclusion criteria
males age > 70 years OR females age > 65 years

osteomalacia, vitamin D deficiency, osteoporosis, pathologic fracture, chronic kidney disease, intestinal malabsorption, cirrhosis, chronic liver failure, cystic fibrosis, inflammatory bowel disease, radiation enteritis, unspecified non-infections colitis, bariatric surgery, hyperparathyroidism, chronic pancreatitis, COPD, obesity/BMI > 30, sarcoidosis, tuberculosis, histoplasmosis, coccidiomycosis, other fungal infections, beryliosis, malignant lymphosarcomas, other malignant lymphomas, diabetes, history of falls

Visit related to pregnancy

Active anti-seizure, antifungal, anti-retroviral medications, glucocorticoids, or bile acid sequestrants

translation

IF Lab test order = LAB535

NOT (gender = female **AND** age >= 70 years) **OR** (gender = male **AND** age >= 65 years)

NOT ICD-9 **OR** ICD-10 diagnosis codes

268.0, 268.1, 268.2, 268.9, 733.00, 733.01, 733.02, 733.03, 733.09, 733.10, 733.11, 733.12, 733.13, 733.14, 733.15, 733.16, 733.19, 585.1, 585.2, 585.3, 585.4, 585.5, 585.6, 585.9, 579.0, 579.1, 579.2, 579.3, 579.4, 579.8, 579.9, 571.2, 571.5, 571.6, 572.2, 572.3, 572.4, 572.8, 573.0, 573.5, 277.00, 277.01, 277.02, 277.03, 277.09, 555.0, 555.1, 555.2, 555.9, 556.0, 556.1, 556.2, 556.3, 556.4, 556.5, 556.6, 556.8, 556.9, 558.1, 558.9, V45.86, 588.0, 588.81, 252.00, 252.01, 252.02, 252.08, 577.1, 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 278.00, 278.01, 278.03, 135, 010.00, 010.01, 010.02, 010.03, 010.04, 010.05, 010.06, 010.10, 010.11, 010.12, 010.13, 010.14, 010.15, 010.16, 010.80, 010.81, 010.82, 010.83, 010.84, 010.85, 010.86, 010.90, 010.91, 010.92, 010.93, 010.94, 010.95, 010.96, 011.00, 011.01, 011.02, 011.03, 011.04, 011.05, 011.06, 011.10, 011.11, 011.12, 011.13, 011.14, 011.15, 011.16, 011.20, 011.21, 011.22, 011.23, 011.24, 011.25, 011.26, 011.30, 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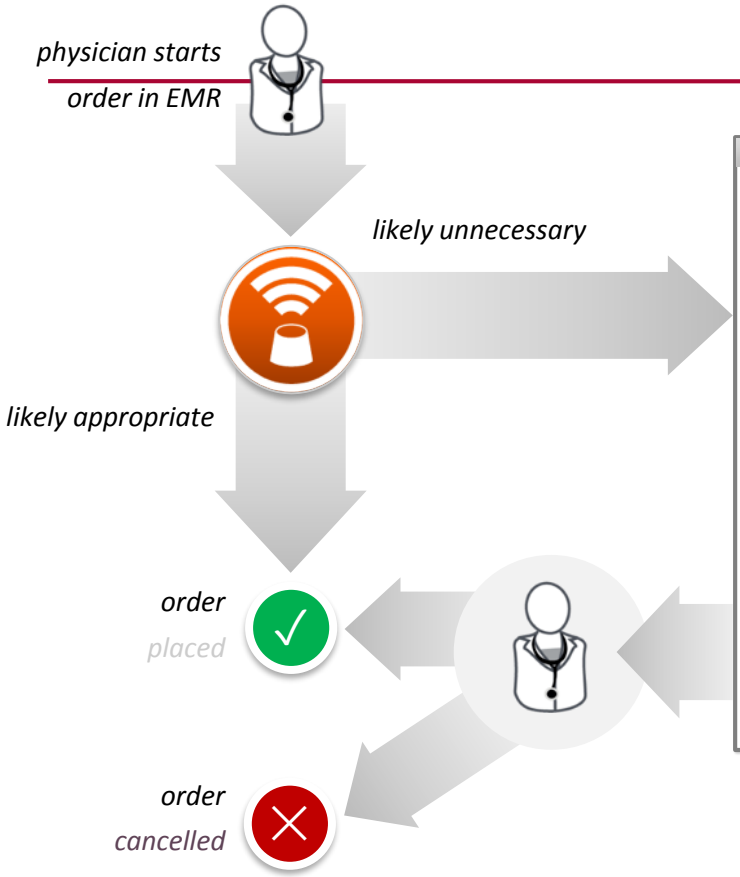
NOT medication orders

10440, 10441, 10443, 10444, 10445, 10446, 10447, 10448, , 10011, 10012, 10013, 10879, , 10015, 10016, 10017, 10018, , 3910, , 11074

NOT BMI > 30 kg/m2

THEN fire Best Practice Advisory with 11 override reasons



Choosing Wisely: Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation or delirium.
(American Geriatrics Society)[1, 2, 3]

Hyperlink: Choosing Wisely – American Geriatrics Society
Information for Patients: Use of Sedatives in Elderly Patients

Reasons for override:

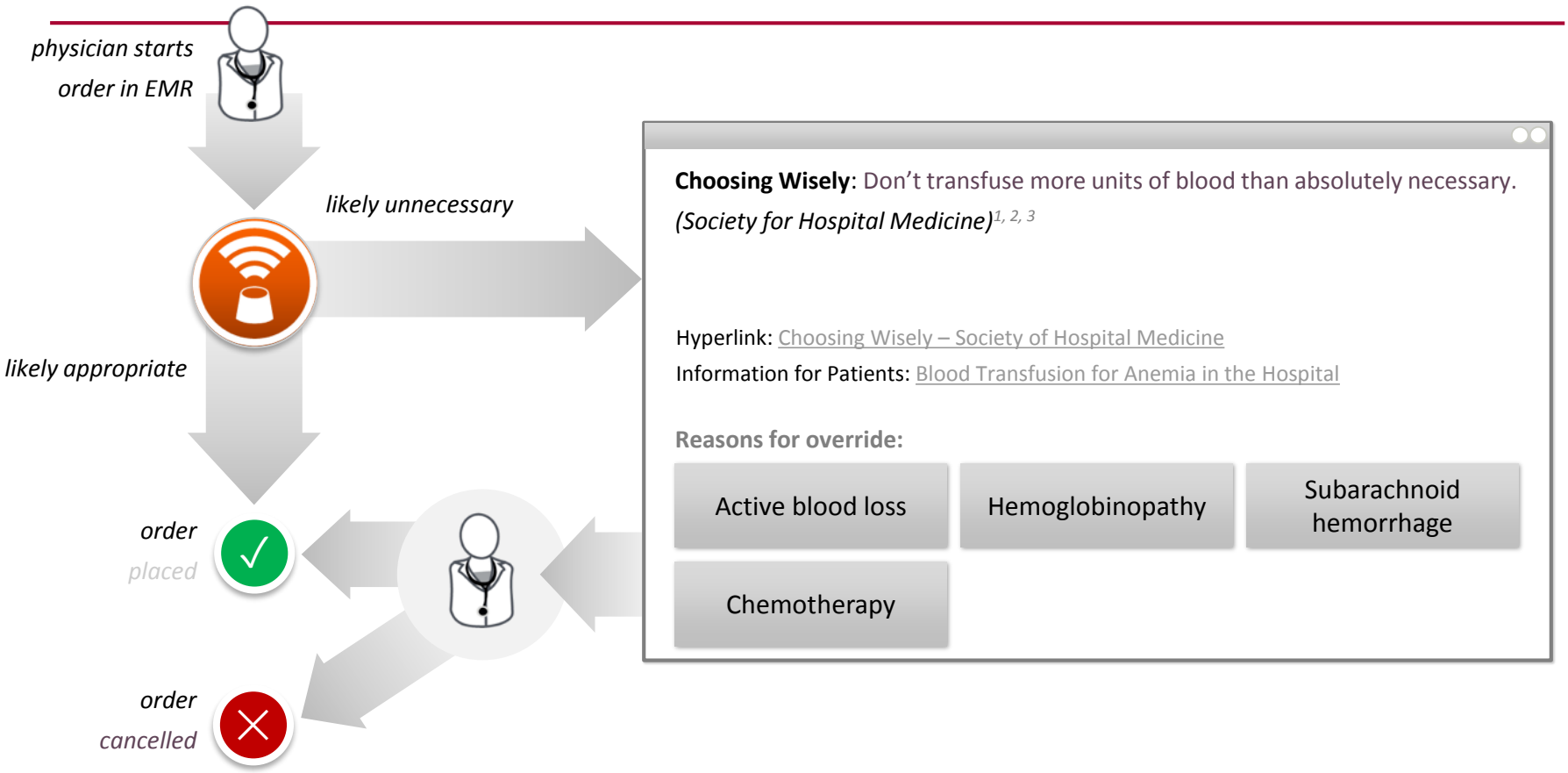
sleep disorder	end of life care	withdrawal / DT
non-drug options failed	peri-procedural anesthesia	

note: CDS alert displays using Epic's native best practice alerts; Epic does not allow use of actual screenshots

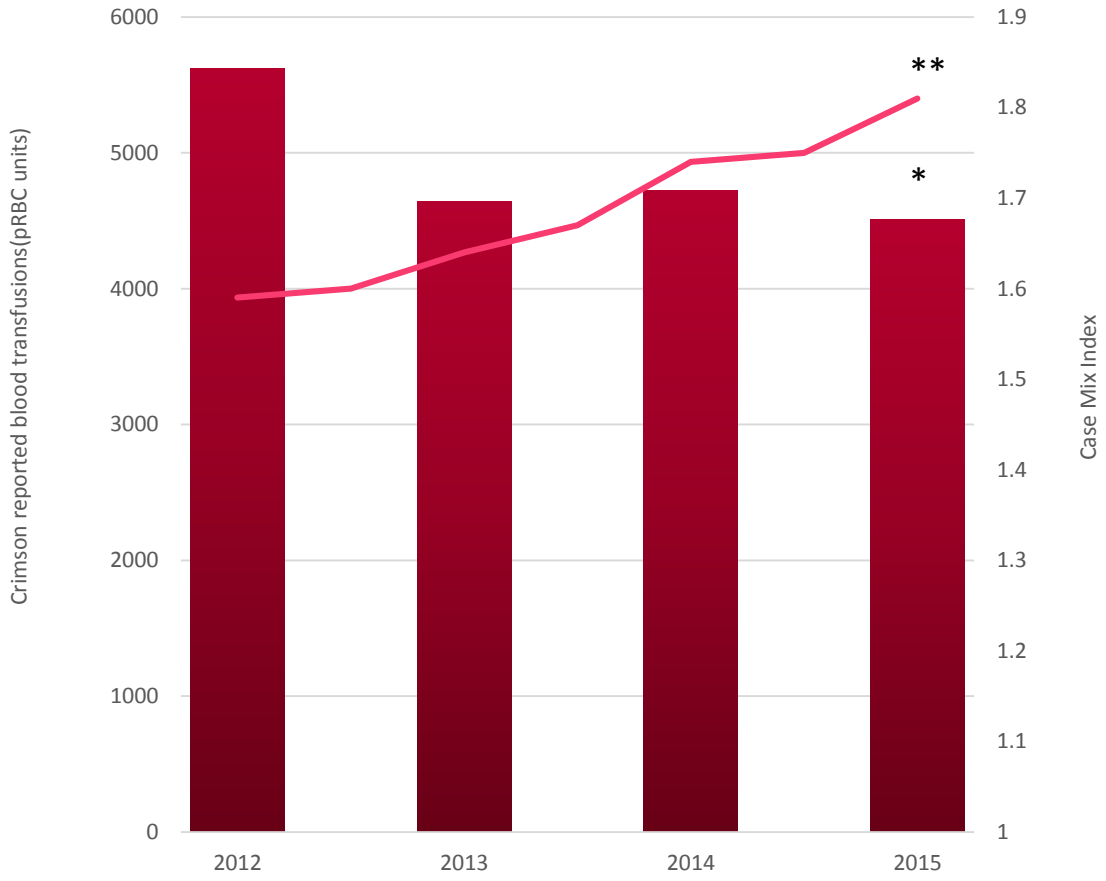
8

Don't routinely transfuse stable, asymptomatic hospitalized patients with a hemoglobin level greater than 7–8 grams.

Multiple factors need to be considered in transfusion decisions, including the patient's clinical status and oxygen delivery ability. Arbitrary hemoglobin or hematocrit thresholds should not be used as the only criterion for transfusions of packed red blood cells.


physician starts
order in EMR
likely unnecessary
likely appropriate
order
placed
order
cancelled
Choosing Wisely: Don't transfuse more units of blood than absolutely necessary.
(Society for Hospital Medicine)1, 2, 3
Hyperlink: Choosing Wisely – Society of Hospital Medicine
Information for Patients: Blood Transfusion for Anemia in the Hospital
Reasons for override:
Active blood loss
Hemoglobinopathy
Subarachnoid hemorrhage
Chemotherapy

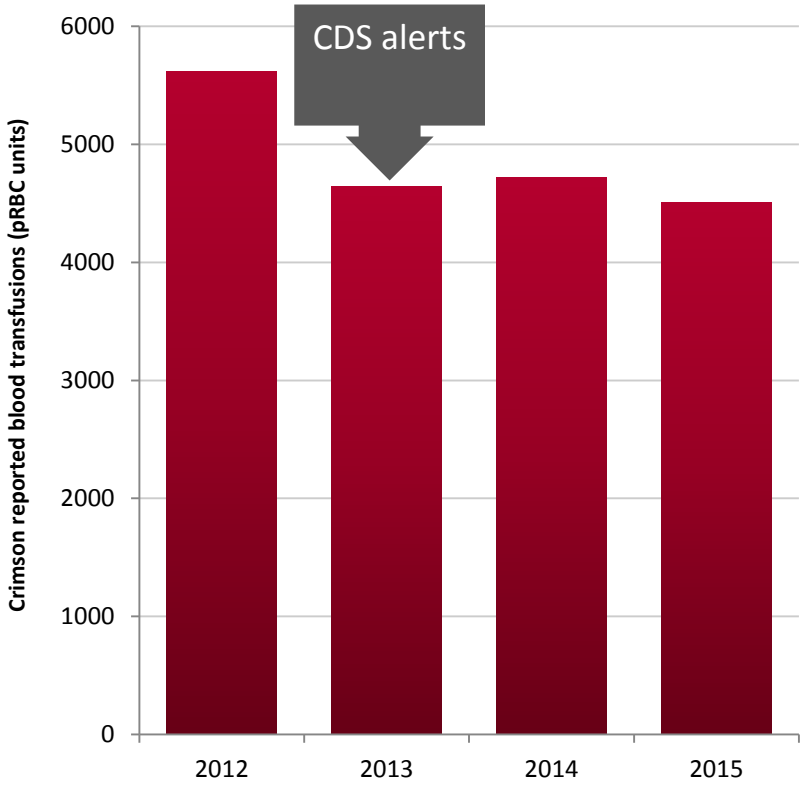
17% reduction in blood utilization while CMI increased by 14%

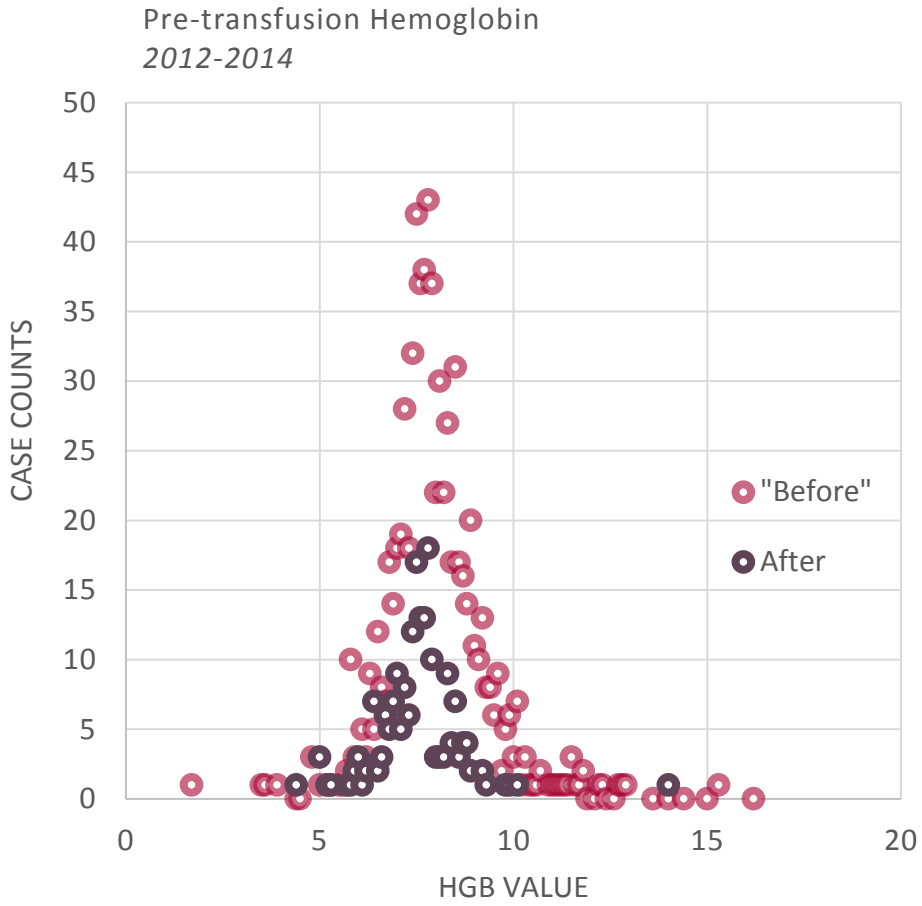


** 2015 is projected from 6 months of data*

*** 2015 Case Mix Index (CMI) value is from January-June data*

Deployment of CDS at point-of-care, RBC transfusions among patients with high hemoglobin levels declined by 46%





CDS in Context

CDS Alert Source	Followed Rate	NNC [4]
CARDIAC IMAGING FOR SCREENING LOW-RISK ASYMPTOMATIC PATIENTS	12.0%	8
Drug-disease information [5]	2.1%	34
Drug-drug information [5]	1.6%	12

Measuring Impact

Cancelled orders

Does not account for educational impact

If you trigger the same alert 10 times, do you order and cancel or anticipate the alert?

If you have already explained the test/procedure to the patient, do you cancel or wait and not order the next time?

Reduced rate of ordering/inappropriate orders avoided

Harder to measure

- *Inappropriate orders avoided design*
- *Adjusted ordering rates*

Clinical and Financial Outcomes

The American Journal of Managed Care > August 2018 – Published on: August 15, 2018

Choosing Wisely Clinical Decision Support Adherence and Associated Inpatient Outcomes

Andrew M. Heekin, PhD; John Kontor, MD; Harry C. Sax, MD; Michelle S. Keller, MPH; Anne Wellington, BA; and Scott Weingarten, MD

This analysis examines the associations between adherence to Choosing Wisely recommendations embedded into clinical decision support alerts and 4 measures of resource use and quality.

Patients whose physicians DID NOT follow the Stanson Choosing Wisely recommendations compared to those who DID

Odds of Complications	Length of Stay	Cost per patient episode	30-day readmissions
29% ↑	**6.2%** ↑	**7.3%** ↑	**14%** ↑
	(0.06 days)	($**944** per patient)	*(not statistically significant)*
		(after adjusting for patient illness severity & case complexity)	

* Median cost of encounter $12,940
Am J Manag Care. 2018;24(8):294-299

Potential Interventions

Original Investigation

February 9, 2016

Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices

A Randomized Clinical Trial

Daniella Meeker, PhD[1,2]; Jeffrey A. Linder, MD, MPH[3,4]; Craig R. Fox, PhD[5,6]; et al

Author Affiliations | Article Information

JAMA. 2016;315(6):562-570. doi:10.1001/jama.2016.0275

Peer-comparison Feedback

Randomized controlled trial

Low value care - Antibiotics for URIs

- *248 providers*
- *14,753 patient visits*

Results

- *Control (24.1% to 13.1%)*
- *Peer-comparison feedback (19.9% to 3.7%,p<0.001)*

1 year later

- *Drift*
- *Peer-comparison feedback still has some impact*

3

Avoid using medications other than metformin to achieve hemoglobin A1c<7.5% in most older adults; moderate control is generally better.

There is no evidence that using medications to achieve tight glycemic control in most older adults with type 2 diabetes is beneficial. Among non-older adults, except for long-term reductions in myocardial infarction and mortality with metformin, using medications to achieve glycated hemoglobin levels less than 7% is associated with harms, including higher mortality rates. Tight control has been consistently shown to produce higher rates of hypoglycemia in older adults. Given the long timeframe to achieve theorized microvascular benefits of tight control, glycemic targets should reflect patient goals, health status, and life expectancy. Reasonable glycemic targets would be 7.0 – 7.5% in healthy older adults with long life expectancy, 7.5 – 8.0% in those with moderate comorbidity and a life expectancy < 1 0 years, and 8.0 – 9.0% in those with multiple morbidities and shorter life expectancy.

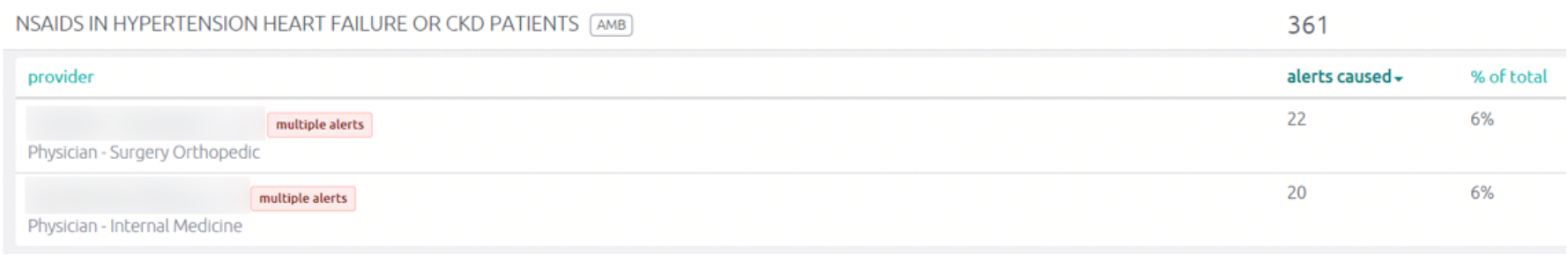
ANTIHYPERGLYCEMIC MEDS FOR AGGRESSIVE A1C GOALS IN ELDERLY PATIENTS AMB — 1955

provider	alerts caused	% of total
multiple alerts Physician - Endocrinology	171	9%
multiple alerts Physician - Endocrinology	150	8%
multiple alerts Physician - Endocrinology	101	5%

*1,750 physicians

3 Avoid nonsteroidal anti-inflammatory drugs (NSAIDS) in individuals with hypertension or heart failure or CKD of all causes, including diabetes.

The use of NSAIDS, including cyclo-oxygenase type 2 (COX-2) inhibitors, for the pharmacological treatment of musculoskeletal pain can elevate blood pressure, make antihypertensive drugs less effective, cause fluid retention and worsen kidney function in these individuals. Other agents such as acetaminophen, tramadol or short-term use of narcotic analgesics may be safer than and as effective as NSAIDs.

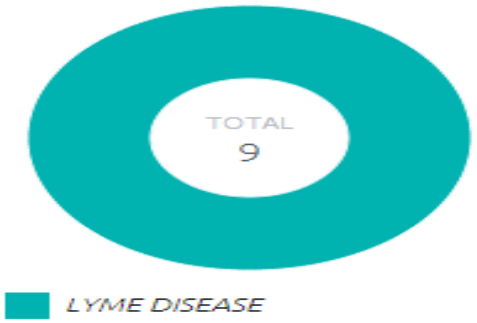


*1,750 physicians

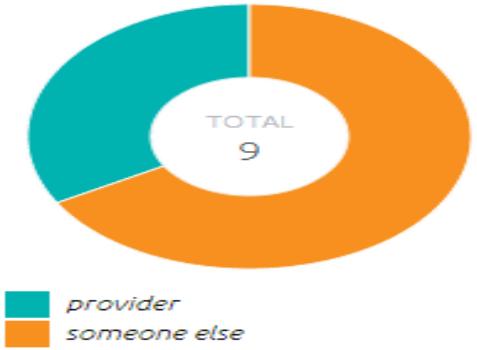
(10) compliance

(0) performance

alerts



seen by



alert c

alert name	alert date
Lyme Disease [104946814]	Jan 23, 2014 4:00 PM
Lyme Disease [104947652]	Jan 23, 2014 4:00 PM
Lyme Disease [104947728]	Jan 23, 2014 4:00 PM
Lyme Disease [104737152]	Jan 22, 2014 4:00 PM
Lyme Disease [104605027]	Jan 21, 2014 4:00 PM
Lyme Disease [104605777]	Jan 21, 2014 4:00 PM

American Society for Clinical Pathology

View all recommendations from this society

Released February 21, 2013

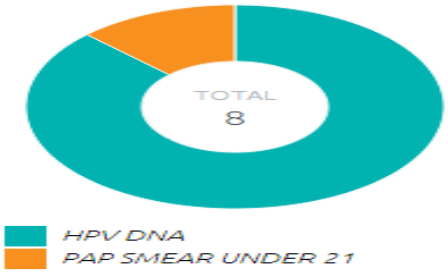
Don't perform low-risk HPV testing.

National guidelines provide for HPV testing in patients with certain abnormal Pap smears and in other select clinical indications. The presence of high risk HPV leads tc more frequent examination or more aggressive investigation (e.g., colposcopy and biopsy). There is no medical indication for low risk HPV testing (HPV types that cause genital warts or very minor cell changes on the cervix) because the infection is not associated with disease progression and there is no treatment or therapy change indicated when low risk HPV is identified.

★★☆☆☆ (36) compliance

★★☆☆☆ (39) performance

alerts



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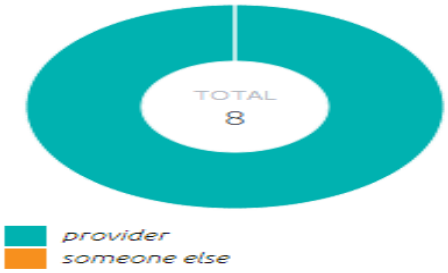


alert details

alert name	alert date
Hpv Dna [105046705]	Jan 23, 2014 4:00 PM
Hpv Dna [105013944]	Jan 23, 2014 4:00 PM
Pap Smear Under 21 [105013943]	Jan 23, 2014 4:00 PM
Hpv Dna [104591313]	Jan 21, 2014 4:00 PM
Hpv Dna [104554970]	Jan 21, 2014 4:00 PM
Hpv Dna [104530855]	Jan 21, 2014 4:00 PM
Hpv Dna [104319075]	Jan 20, 2014 4:00 PM
Hpv Dna [104300512]	Jan 20, 2014 4:00 PM

PAP Smears

American College of Obstetricians and Gynecologists

View all recommendations from this society

Released February 21, 2013

Don't perform routine annual cervical cytology screening (Pap tests) in women 30 – 65 years of age.

In average risk women, annual cervical cytology screening has been shown to offer no advantage over screening performed at 3-year intervals. However, a well-woman visit should occur annually for patients with their health care practitioner to discuss concerns and problems, and have appropriate screening with consideration of a pelvic examination.

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

Patient Materials

- Search patient-friendly resources by Consumer Reports.

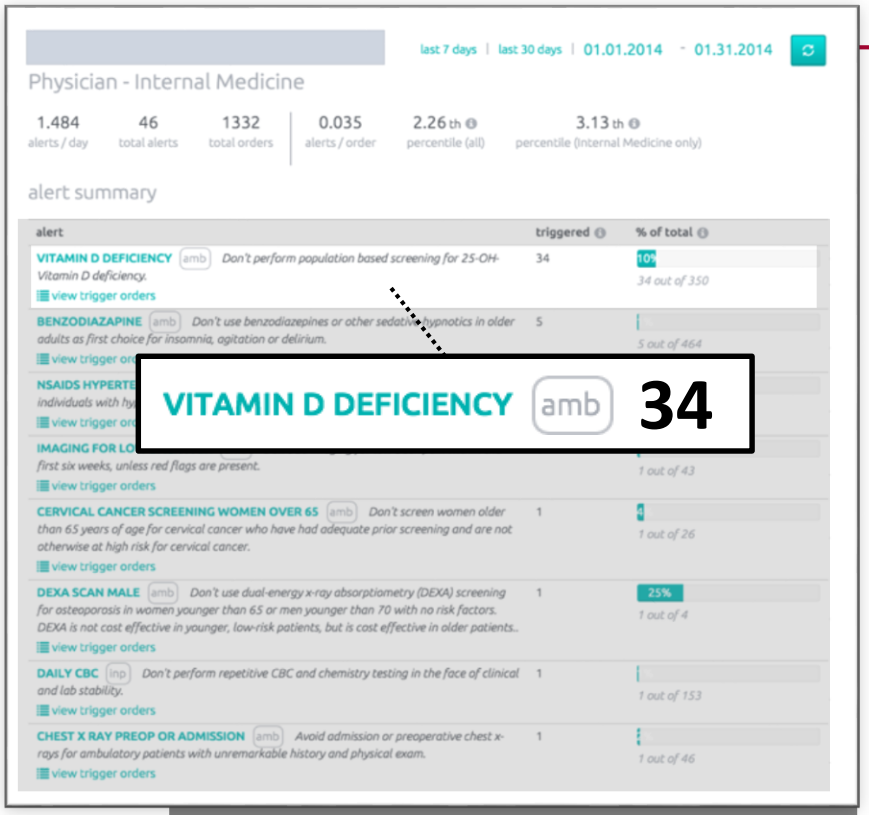
Affiliation	% of potentially low-value care (n=47)
Physician 1	62%
Physician 2	5%

Physician Choosing Wisely performance

- Average 0.74% ignored Choosing Wisely alerts/1,000 orders
- Range 0% to 8.77% ignored/1,000 orders

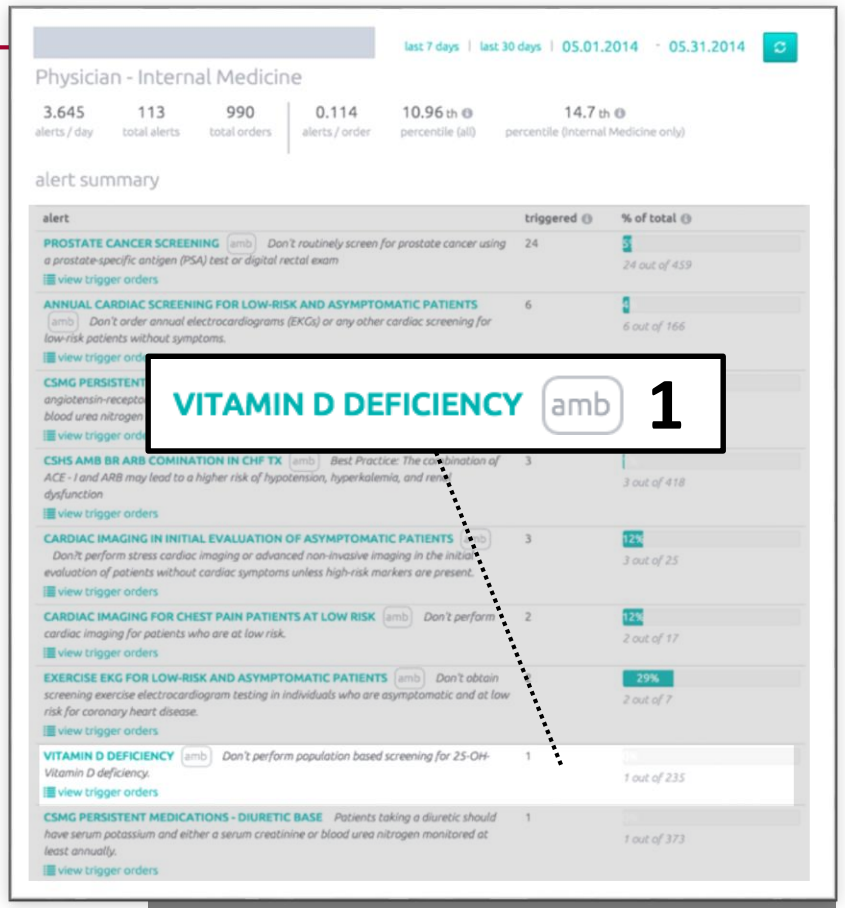
Example:0.53%

Choosing Wisely Performance Rate



inappropriate vitamin-d screenings - **before**

January 2014



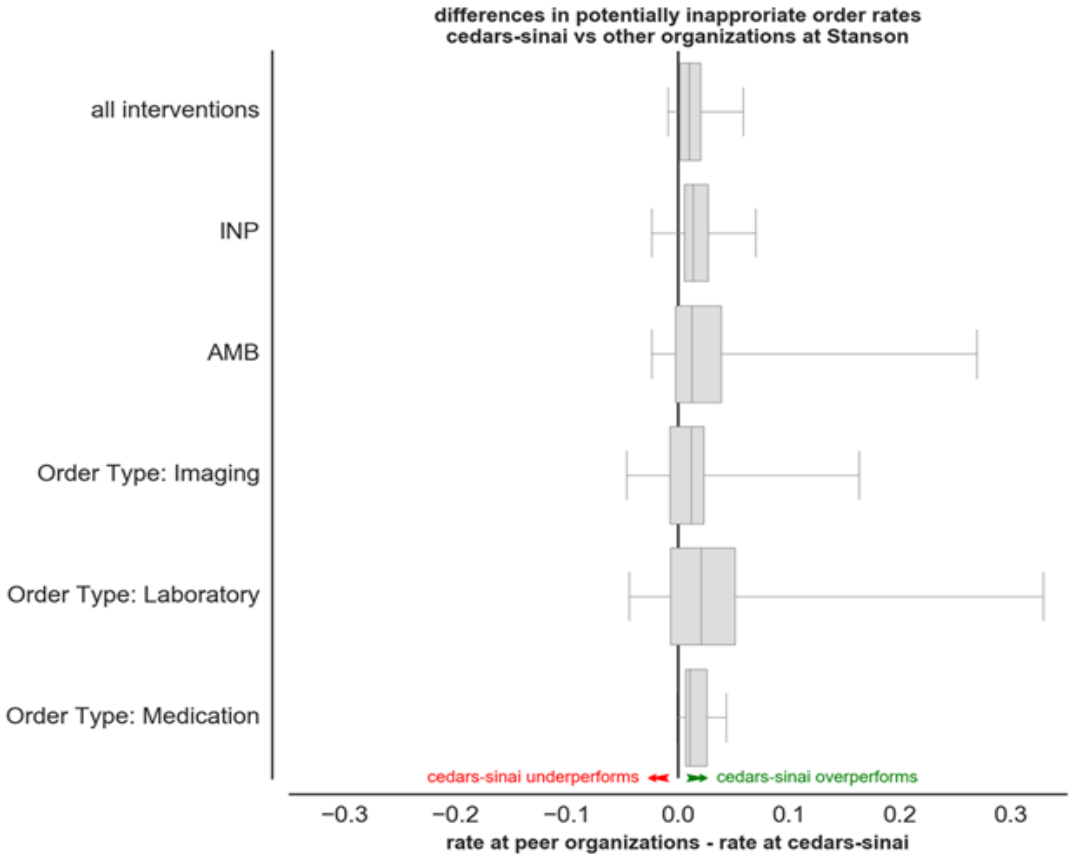
inappropriate vitamin-d screenings - **after**

May 2014

Impact of CDS

	Order Volume	Alert Firings
Cardiac imaging for screening low-risk asymptomatic patients AND Annual stress testing after coronary revascularization	0.8% ↓	12.0% ↓
Creatine Kinase	21.0% ↓	39.9% ↓
Lipoprotein (a)	54.5% ↓	49.0% ↓
Apolipoprotein B	57.2% ↓	58.9% ↓
Homocysteine	1.3% ↑	14.5% ↑
Lab Bundle:	25.4% ↓	42.0% ↓

Inappropriate Care
Cedars-Sinai – Best 20th Percentile (n=25 organizations)



- **Anthem ACO**
- **Performance Year 3 - 2015**
  - 12,989 patients.
  - Severity score 2.16 (average 1.28).
  - Total saved $10,656,000.
  - 21% reduction in inpatient utilization.
  - 15% reduction in medications/1,000.
  - 6% reduction in imaging/1,000.
  - # 1 Anthem ACO for savings
- **Performance Year 4 - 2016 (Preliminary 10/1/15-9/30/16)**
  - Total saved $2,200,000

Additional Results

- Aetna ACO
  - Savings
- IHA 2015 Commercial HMO Results
  - 8.4% reduction in costs for CSMG.
  - 5.8% reduction in costs for CSHA.
  - 6th best out of 200 California physician groups in cost reduction.
  - 15th best out of 200 California physician groups in cost reduction.

Watson Health™
100 TOP HOSPITALS®

The annual Watson Health 100 Top Hospitals study, formerly the Truven Health Analytics study, incorporates independent public data, risk-adjusted and peer-reviewed methodologies, and key performance metrics to arrive at an objective analysis of the best hospitals in the nation. Hospitals do not apply for consideration, and winners do not pay to market this honor.

We have produced this study and its list of winners for more than two decades, and it has become one of the important ways the industry can measure hospital performance in the US.

h Analytics is...

Vascular Surgeon Response

- Physician did not agree with a guideline
- Contacted subspecialty society
- Guideline changed

Society for Vascular Surgery

View all recommendations from this society

Released January 29, 2015; updated July 1, 2016

Avoid use of ultrasound for routine surveillance of carotid arteries in the asymptomatic healthy population.

The presence of a bruit alone does not warrant serial duplex ultrasounds in low-risk, asymptomatic patients, unless significant stenosis is found on the initial duplex ultrasound.

The presence of asymptomatic severe carotid artery disease in the general population yields a risk of neurologic events which is <2%. Even in patients who have a bruit, if no other risk factors exist, the incidence is only 2%. Age (over 65), coronary artery disease, need for coronary bypass, symptomatic lower extremity arterial occlusive disease, history of tobacco use and high cholesterol would be appropriate risk factors to prompt ultrasound in patients with a bruit. Otherwise, these ultrasounds may prompt unnecessary and more expensive and invasive tests, or even unnecessary surgery. In general population-based studies, the prevalence of severe carotid stenosis is not high enough to make bruit alone an indication for carotid screening. With these facts in mind, screening should be pursued only if a bruit is associated with other risk factors for stenosis and stroke, or if the primary care physician determines you are at increased risk for carotid artery occlusive disease.

The Next 100 Years of Medicine

"Complex but empirically validated algorithms will be embedded in EHR systems as decision support tools to assist in everyday patient care. Those management algorithms will evolve and be modified continuously in accordance with inputs from ongoing clinical observations and from new research. Clinical decision support algorithms will be derived entirely from data, not expert opinion, market incentives, or committee consensus."

- New England Journal of Medicine December 27, 2012

CDS of the Future

CDS of the Future

- Mrs. Smith is 64 years old and has hypertension and diabetes.
- Based upon Mrs. Smith's genetic profile, microbiome information, symptoms, vital signs, laboratory values, personal preferences, social determinants…

CDS of the Future

After review of…

What is the optimal treatment and monitoring of this patient's hypertension and diabetes?

Opportunity

- During the hour that we are spending together today
  - There may be be approximately 28 deaths in the United States because of medical errors
  - There may be $22 million spent on medical over-treatment

Delivering Value

- "*Those who say it can't be done* are usually interrupted by others doing it."
  - James Baldwin

Delivering Value

"Of course it's hard. It's supposed to be hard. If it were easy, everybody would do it. Hard is what makes it great."