



Determining Value in Healthcare



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for Medicine

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Faculty Disclosures

- Consultant: Bristol-Myers Squibb, Pfizer, Portola Pharmaceuticals

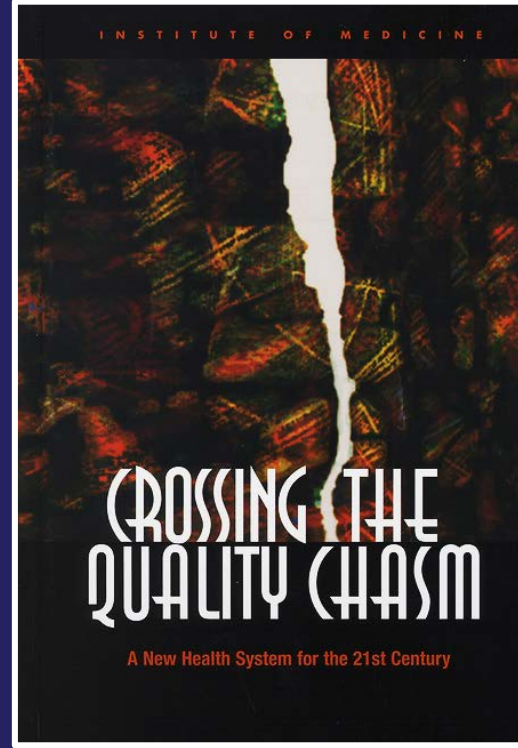
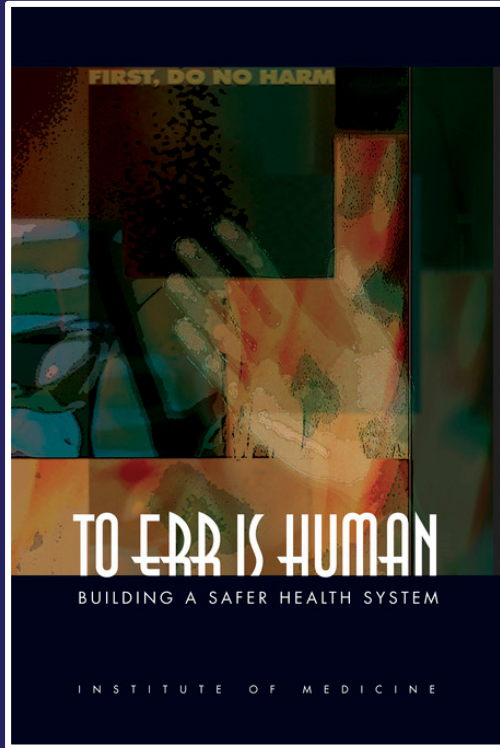
Learning Objectives

- Define value in healthcare and describe an approach for its assessment in the hospital setting
- Employ innovative in-hospital opportunities to achieve greater value in healthcare
- Discuss the central components of an effective value-based payment model

Introduction

Value-based Healthcare

The Pursuit of Better Healthcare



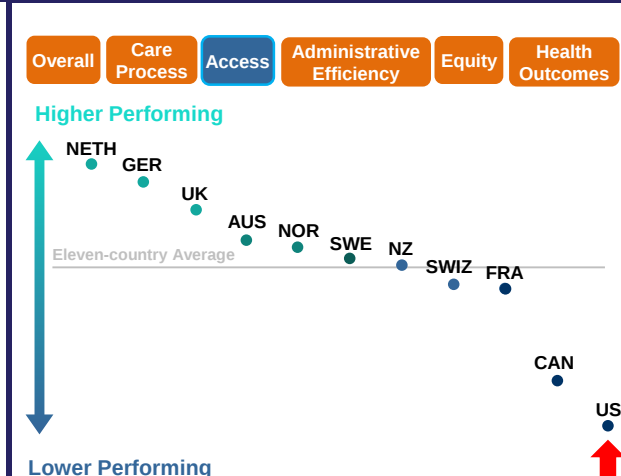
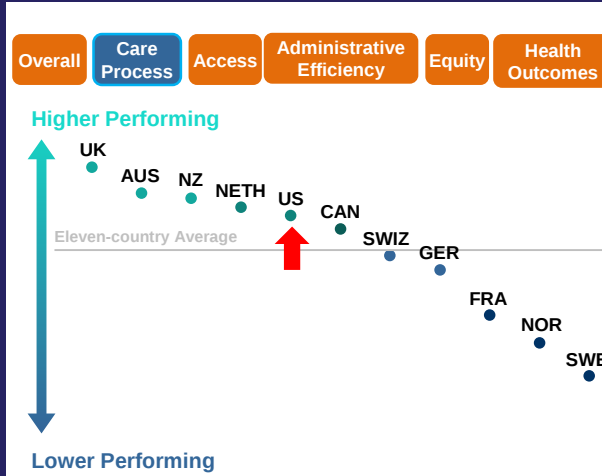
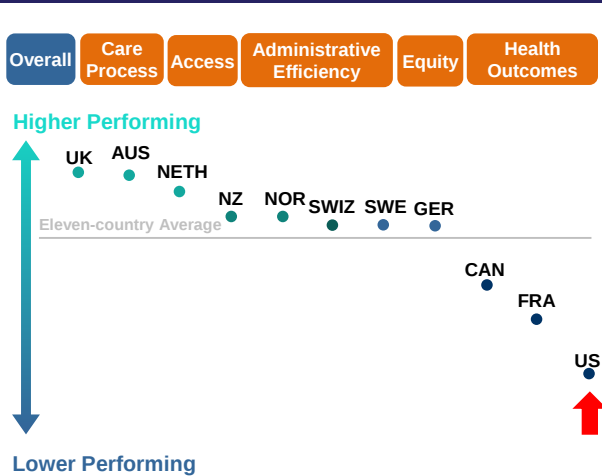
Benefits of Value-based Healthcare

- **Patients** spend less to achieve better health
- **Providers** achieve efficiencies and greater patient satisfaction
- **Payers** control costs and reduce risk
- **Suppliers** align prices with patient outcomes
- **Society** becomes healthier while reducing overall healthcare spending

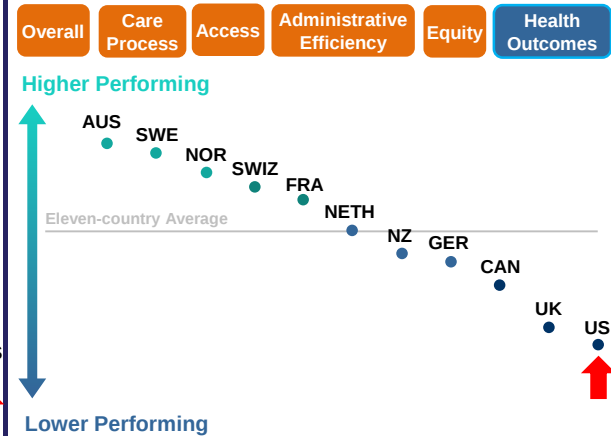
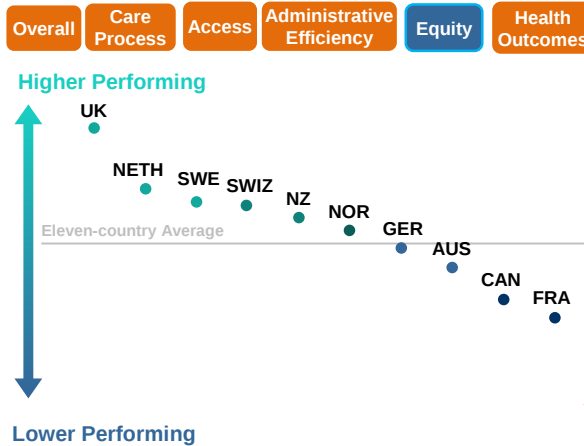
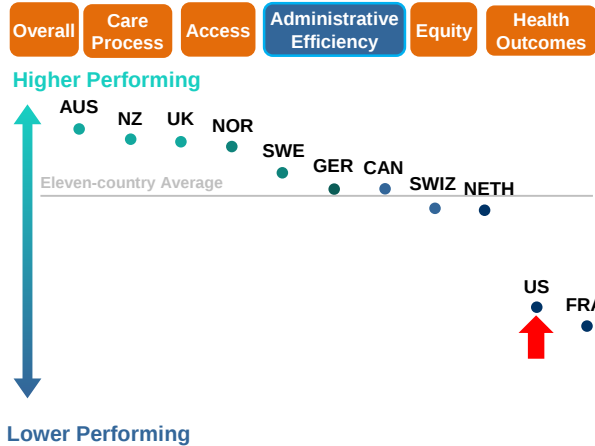
Where Do We Currently Stand?

Value in Healthcare

US Health System Performance

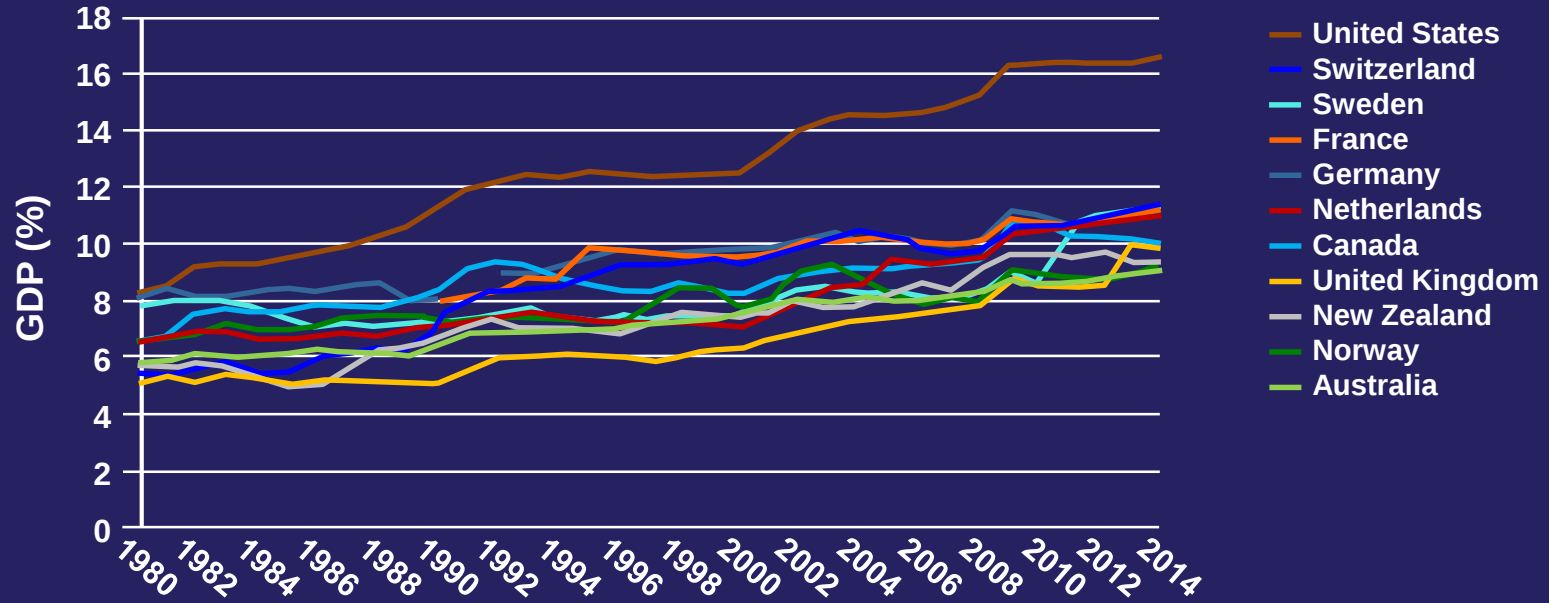


US Health System Performance (cont'd)



US Healthcare Spending

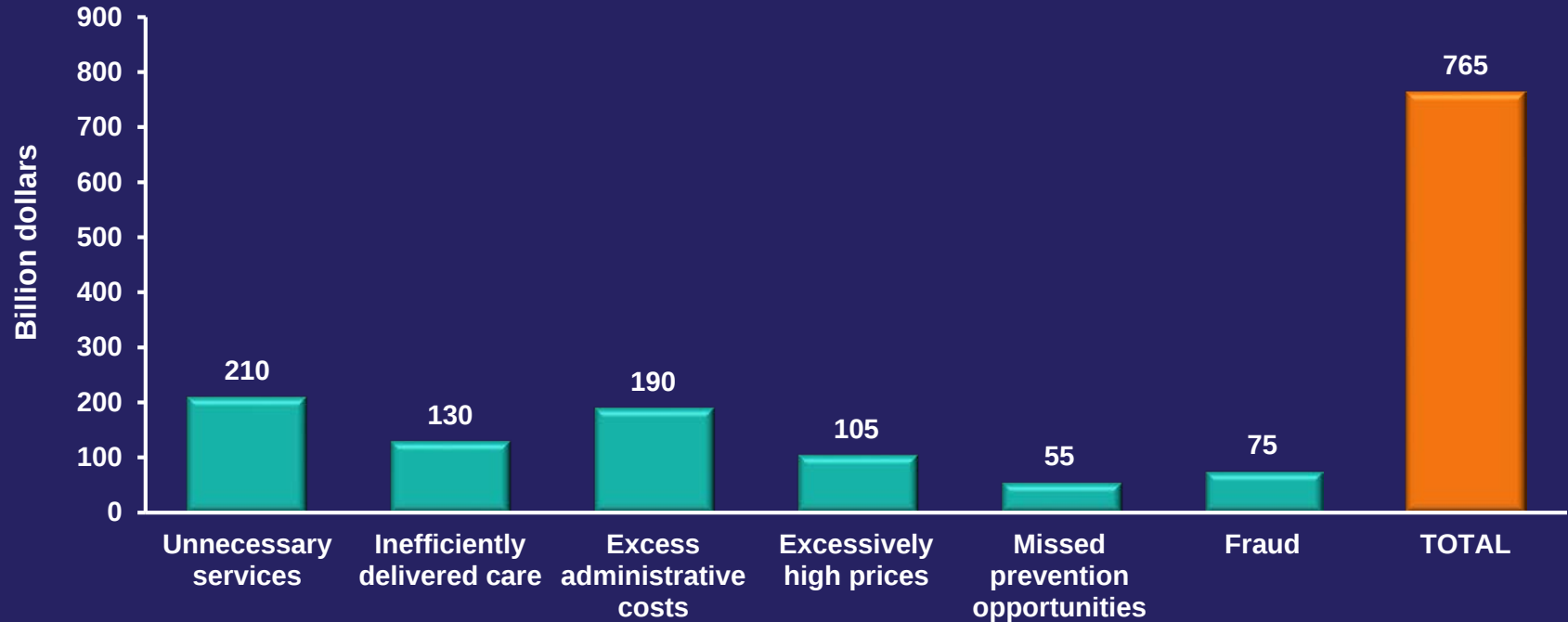
Healthcare spending, 1980-2014



GDP, gross domestic product.

Available at: <http://www.commonwealthfund.org/interactives/2017/july/mirror-mirror/>

Sources of Excess Cost in US Healthcare



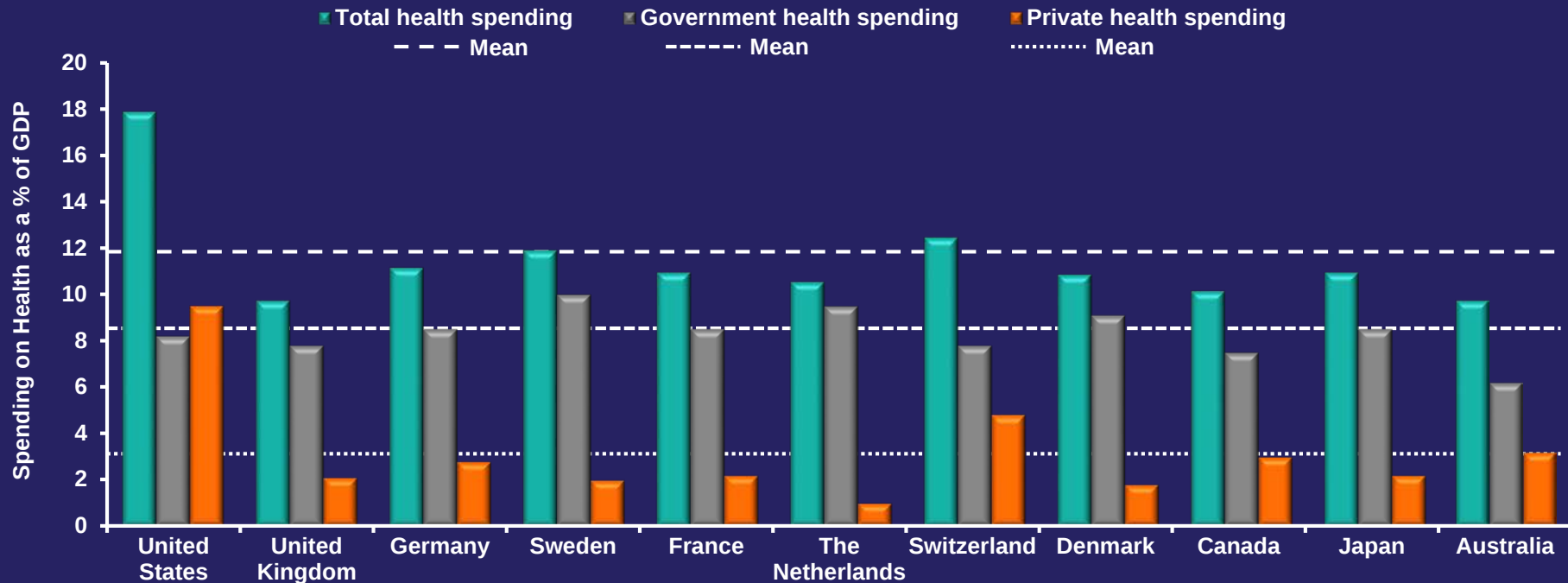
Healthcare Spending by Country

Rank (highest to lowest)	1	2	3	4	5	6	7	8	9	10	11	Mean
General												
Overall population (in millions)	US 323	Japan 127	Germany 83	UK 66	France 64	Canada 36	Australia 24	NLD 17	Sweden 10	CHE 8	Denmark 6	69
Population ≥65 y, %	Japan 25.1	Germany 21.4	Sweden 19.9	France 18.2	Denmark 18.1	CHE 17.5	UK 17.3	NLD 17.3	Canada 15.7	Australia 14.7	US 14.5	18.2
GDP per capita, US \$ (in thousands)	CHE 54.00	Denmark 54.30	US 52.10	Sweden 51.60	NLD 46.30	Australia 45.10	Germany 42.90	Canada 42.40	France 41.00	UK 38.50	Japan 37.50	45.90
Land area (× 1000 sq km)	Canada 9985	US 9834	Australia 7741	France 549	Sweden 450	Japan 378	Germany 357	UK 244	Denmark 43	NLD 42	CHE 42	2697
Poverty rate, % below poverty line of 60%	US 24	Japan 22	Canada 21	Australia 20	UK 18	Sweden 17	CHE 17	Germany 16	France 15	NLD 15	Denmark 12	18
Health spending												
Total spending on health, % of total national GDP	US 17.8	CHE 12.4	Sweden 11.9	Germany 11.3	France 11	Japan 10.9	Denmark 10.8	NLD 10.5	Canada 10.3	UK 9.7	Australia 9.6	11.5
Public spending on health, % of total national GDP	Sweden 10	NLD 9.5	Denmark 9.2	Germany 8.7	France 8.7	Japan 8.6	US 8.3	CHE 7.7	UK 7.6	Canada 7.4	Australia 6.3	8.4
Mean spending on health per capita, US \$	US 9403	Sweden 6808	CHE 6787	Denmark 6463	NLD 5202	Germany 5182	Canada 4641	Australia 4357	Japan 3727	France 3661	UK 3377	5419
Health expenditure by function of care as a % of total national health expenditure												
Inpatient care	NLD 32	Australia 31	France 30	CHE 28	Denmark 28	Germany 27	Japan 27	UK 24	Sweden 21	US 19	Canada 17	26
Outpatient care	US 42	Australia 39	Canada 36	Denmark 34	CHE 33	Sweden 31	UK 30	Japan 27	Germany 23	France 23	NLD 22	31
Long-term care	Sweden 26	NLD 26	Denmark 24	CHE 19	Japan 19	UK 18	Germany 16	Canada 14	France 11	US 5	Australia 2	16
Medical goods	Germany 20	France 20	Canada 20	Japan 20	Australia 17	UK 15	US 14	CHE 13	Sweden 12	NLD 12	Denmark 10	16
Governance and administration	US 8	Germany 5	NLD 4	CHE 4	Canada 3	Australia 3	UK 2	Sweden 2	Denmark 2	France 1	Japan 1	3
Home-based care	France 4	US 3	UK 3	Japan 3	Germany 1	Sweden 0	NLD 0	Canada 0	Australia 0	CHE NA	Denmark NA	2
Preventive care	Canada 6	UK 5	NLD 4	US 3	Germany 3	Sweden 3	Denmark 3	Japan 3	France 2	CHE 2	Australia 2	3
Other	France 9	US 6	Australia 6	Germany 5	Sweden 5	Canada 4	UK 3	CHE 1	Japan 1	NLD 0	Denmark 0	4
Population with health care coverage, %	UK 100	Sweden 100	CHE 100	Denmark 100	Canada 100	Japan 100	Australia 100	France 99.9	NLD 99.9	Germany 99.8	US 90	99

NA, not applicable. CHE indicates Switzerland; NLD, the Netherlands.

Papanicolas I, et al. JAMA. 2018; 319(10):1024-1039.

Health Spending as a Percentage of Gross Domestic Product



Population Health by Country

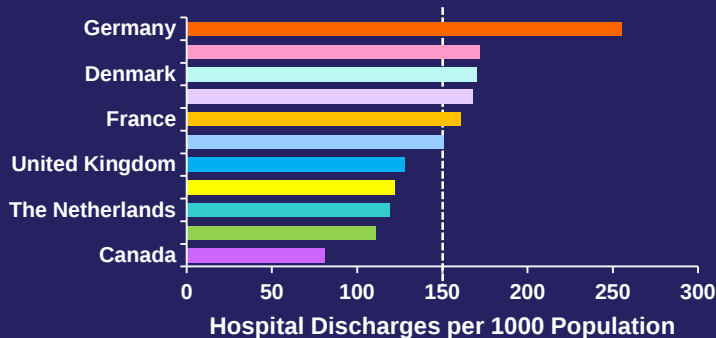
Rank (highest to lowest)	1	2	3	4	5	6	7	8	9	10	11	Mean
Determination of health												
Smoking, % of population aged ≥15 years who smoke daily	France 22.4	Germany 20.9	CHE 20.4	NLD 19	Japan 18.2	Denmark 17	UK 16.1	Canada 14	Australia 12.4	US 11.4	Sweden 11.2	16.1
Alcohol consumption, L per capita in population aged ≥15 years	France 11.9	Germany 11	Australia 9.7	UK 9.5	CHE 9.5	Denmark 9.4	US 8.8	Canada 8.1	NLD 8	Sweden 7.2	Japan 7.2	9.1
Obese or overweight, % of population aged ≥15 years	US 70.1	Australia 63.4	UK 62.9	Canada 60.3	Germany 60	France 49	Sweden 48.3 ^a	NLD 47.4 ^a	Denmark 47.4 ^a	CHE 41 ^a	Japan 23.8	55.6
Life expectancy												
Life expectancy in total population at birth, mean, years	Japan 83.9	CHE 83	Australia 82.5	France 82.4	Sweden 82.3	Canada 81.7	NLD 81.6	UK 81	Denmark 80.8	Germany 80.7	US 78.8	81.7
Health-adjusted life expectancy, mean, years	Japan 74.9	CHE 73.1	France 72.6	Canada 72.3	NLD 72.2	Sweden 72	Australia 71.9	UK 71.4	Germany 71.3	Denmark 71.2	US 69.1	72
Life expectancy for women aged ≥40 y, mean, years	Japan 47.7	France 46.4	CHE 45.8	Australia 45.4	Sweden 44.8	Canada 44.8	Germany 43.9	NLD 43.9	UK 43.7	Denmark 43.4	US 42.6	44.8
Life expectancy for men aged ≥40 y, mean, years	CHE 42	Japan 41.8	Australia 41.7	Sweden 41.5	Canada 41.1	NLD 40.8	France 40.6	UK 40.5	Denmark 39.8	Germany 39.4	US 38.7	40.7
Maternal and infant health												
Maternal mortality, deaths per 100,000 live births	US 26.4	UK 9.2	Germany 9	France 7.8	Canada 7.3	NLD 6.7	Japan 6.4	CHE 5.8	Australia 5.5	Sweden 4.4	Denmark 4.2	8.4
Infant mortality, deaths per 1,000 live births	US 5.8	Canada 5.1	UK 3.9	CHE 3.9	France 3.8	Denmark 3.7	Germany 3.3	Australia 3.2	Sweden 2.5	NLD 2.5	Japan 2.1	3.6
Neonatal mortality, deaths per 1,000 live births	US 4	Canada 3.2	CHE 3.1	Denmark 3	UK 2.7	France 2.6	NLD 2.5	Germany 2.3	Australia 2.3	Sweden 1.7	Japan 0.9	2.6
Neonatal mortality, deaths per 1,000 live births excluding <1000 g	Denmark 2.09	NLD 1.96	UK 1.77	Canada 1.63	US 1.61	Sweden 1.56	Germany 1.49	France NA	CHE NA	Japan NA	Australia NA	1.7
Low birth weight, % of total live births	Japan 9.5	US 8.1	UK 6.9	Germany 6.6	NLD 6.5	Australia 6.4	Canada 6.3	France 6.2	Denmark 5	Sweden 4.4	CHE NA	6.6

NA ^aPatient self-reported data.

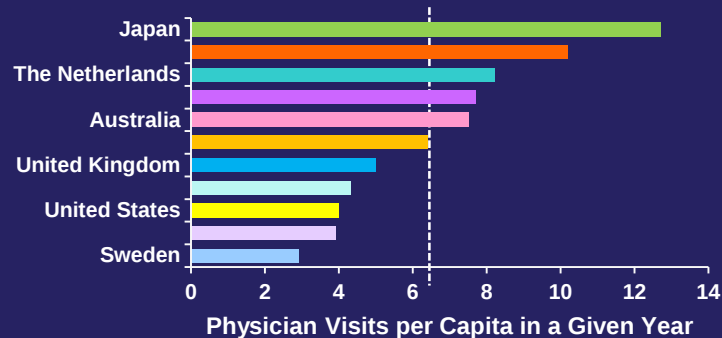
Papanicolas I, et al. *JAMA*. 2018; 319(10):1024-1039.

Performance on Key Measures of Utilization

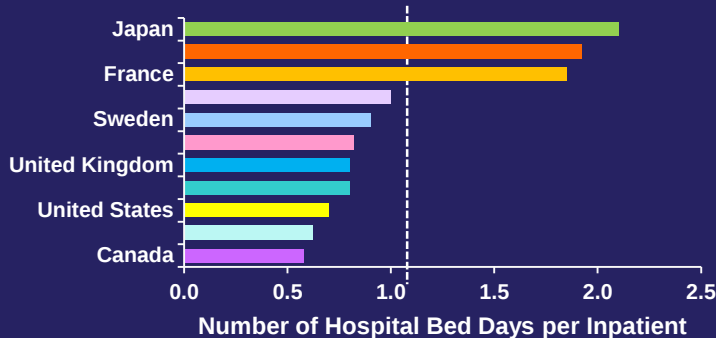
Hospital Discharges



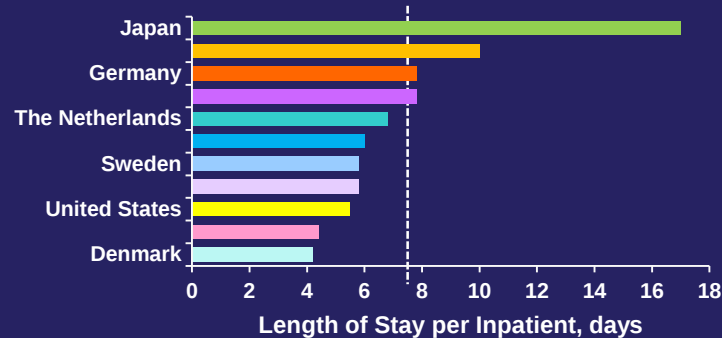
Consultations



Hospital Bed Days



All-Cause Length of Stay



The vertical dashed lines indicate mean values.

Papanicolas I, et al. *JAMA*. 2018; 319(10):1024-1039.

How Do We Assess Value in Healthcare?

Defining Value in Healthcare

$$V = \frac{Q \times S}{C}$$

V = Value Q = Quality S = Service C = Cost

Future Impact of Value on Reimbursement: CMS Hospital VBP Domains

Fiscal Year 2018 and Subsequent Years

Domain	Weight
Safety	25%
Clinical Care	25%
Efficiency and Cost Reduction	25%
Patient and Caregiver-Centered Experience of Care/Care Coordination*	25%

*Beginning with RY 2019, CMS will rename the “Patient and Caregiver-Centered Experience of Care/Care Coordination” domain to “Person and Community Engagement.”

VBP, value-based purchasing.

Available at: https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network_MLN/MLNProducts/downloads/Hospital_VBPurchasing_Fact_Sheet_ICN907664.pdf

Evaluating Service

$$V = \frac{Q \times S}{C}$$

V = Value Q = Quality S = Service C = Cost

Press-Ganey Survey Questions

CARE PROVIDER – PLEASE ANSWER THESE QUESTIONS WITH THE DOCTOR, PHYSICIAN ASSISTANT (PA), NURSE PRACTITIONER (ARNP), THERAPIST OR OTHER SPECIALIST NAMED ON THE FRONT OF THE SURVEY IN MIND.

	Very Poor	Poor	Fair	Good	Very Good
1. Friendliness/courtesy of the care provider.....	☐	☐	☐	☐	☐
2. Explanations the care provider gave you about your problem or condition.....	☐	☐	☐	☐	☐
3. Concern the care provider showed for your questions or worries.....	☐	☐	☐	☐	☐
4. Care provider's efforts to include you in decisions about your treatment.....	☐	☐	☐	☐	☐
5. Information the care provider gave you about medications (if any).....	☐	☐	☐	☐	☐
6. Instructions the care provider gave you about follow-up care (if any).....	☐	☐	☐	☐	☐
7. Degree to which care provider talked with you using words you could understand.....	☐	☐	☐	☐	☐
8. Amount of time the care provider spent with you.....	☐	☐	☐	☐	☐
9. Your confidence in this care provider.....	☐	☐	☐	☐	☐
10. Likelihood of your recommending this care provider to others.....	☐	☐	☐	☐	☐

Comments (describe good or bad experience): _____

The HCAHPS Survey

- 18 core questions

- Communication with nurses and doctors
- Responsiveness of hospital staff
- Cleanliness and quietness of the hospital environment
- Pain management
- Communication about medicines
- Discharge information
- Overall hospital rating
- Whether they would recommend the hospital

- 4 items to direct patients to relevant questions
- 3 items to adjust for the mix of patients across hospitals
- 2 items that support congressionally mandated reports

HCAHPS, Hospital Consumer Assessment of Healthcare Providers and Systems.

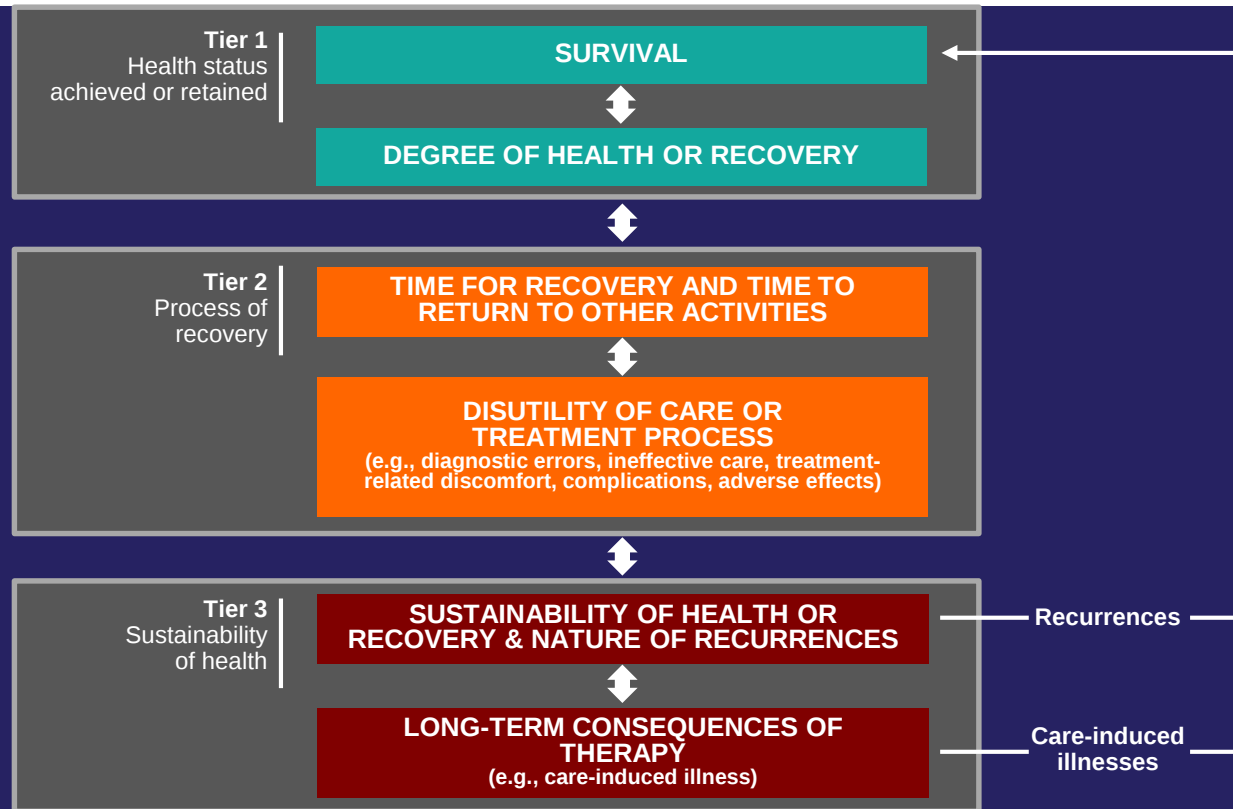
Available at: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalHCAHPS.html>

Determining Quality

$$V = \frac{Q \times S}{C}$$

V = Value Q = Quality S = Service C = Cost

Outcome Measurement



Agency for Healthcare Research and Quality Indicators™ (AHRQ)

**Prevention
QIs**

**Inpatient
QIs**

**Patient
Safety
QIs**

**Pediatric
QIs**

QIs, quality indicators.

Available at: http://www.qualityindicators.ahrq.gov/Modules/pqi_resources.aspx

Assessing Cost

$$V = \frac{Q \times S}{C}$$

V = Value Q = Quality S = Service C = Cost

Measuring the Cost of Care

- Measurement of **actual expenses** (not charges billed or collected)
- Measurement **around the patient**
- Aggregation over the **full cycle of care** for the patient's medical condition; not for departments, services, or line items
- Consideration of **actual use of resources** involved in a patient's care (personnel, facilities, supplies):
 - Time devoted to each patient by resources
 - Capacity cost of each resource
 - Support costs required for each patient-facing resource

In-hospital Opportunities to Increase Value

The AHRQ QI Toolkit

- Supports hospitals with differing quality infrastructures, knowledge, and skills in making quality and patient safety improvements
- Addresses all stages of improvement, from self-assessment to ongoing monitoring
- Includes tools that are practical, easy to use, and for a wide variety of audiences
- Serves as a "resource inventory" from which hospitals can select tools to meet their needs
- Stand-alone *Pediatric Toolkit* also available

AHRQ QI Toolkit: Best Practices

- Pressure ulcer rate
- Retained surgical item or unretrieved device fragment count
- Iatrogenic pneumothorax rate
- Central venous catheter-related blood stream infection rate
- Postoperative hip fracture rate
- Perioperative hemorrhage or hematoma rate
- Postoperative physiologic and metabolic derangement rate

AHRQ QI Toolkit: Best Practices (cont'd)

- Postoperative respiratory failure rate
- Perioperative PE or DVT rate
- Postoperative sepsis rate
- Postoperative wound dehiscence rate
- Accidental puncture or laceration rate
- Obstetric trauma rate (vaginal delivery with or without instrument)
- Mortality review for selected procedures and conditions

PE, pulmonary embolism; DVT, deep vein thrombosis.

Available at: https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/systems/hospital/qitoolkit/combined/d4_combo_bestpracticescover.pdf

Society for Hospital Medicine: Five Things Physicians and Patients Should Question

1

Don't place, or leave in place, urinary catheters for incontinence or convenience or monitoring of output for non-critically ill patients (acceptable indications: critical illness, obstruction, hospice, preoperatively for <2 days for urologic procedures; use weights instead to monitor diuresis).

2

Don't prescribe medications for stress ulcer prophylaxis to medical inpatients unless at high risk for GI complications.

3

Avoid transfusions of red blood cells for arbitrary hemoglobin or hematocrit thresholds and in the absence of symptoms of active coronary disease, heart failure or stroke.

4

Don't order continuous telemetry monitoring outside of the ICU without using a protocol that governs continuation.

5

Don't perform repetitive CBC and chemistry testing in the face of clinical and lab stability.

American Academy of Family Physicians: Five Things Physicians and Patients Should Question

- 1 Don't do imaging for low back pain within the first six weeks, unless red flags are present.
- 2 Don't routinely prescribe antibiotics for acute mild-to-moderate sinusitis unless symptoms last for seven or more days, or symptoms worsen after initial clinical improvement.
- 3 Don't use dual-energy x-ray absorptiometry (DEXA) screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors.
- 4 Don't order annual electrocardiograms (EKGs) or any other cardiac screening for low-risk patients without symptoms.
- 5 Don't perform Pap smears on women younger than 21 or who have had a hysterectomy for non-cancer disease.

Society of General Internal Medicine: Five Things Physicians and Patients Should Question

1 Don't recommend daily home finger glucose testing in patients with type 2 diabetes mellitus not using insulin.

2 For asymptomatic adults without a chronic medical condition, mental health problem, or other health concern, don't routinely perform annual general health checks that include a comprehensive physical examination and lab testing. Adults should talk with a trusted doctor about how often they should be seen to maintain an effective doctor-patient relationship, attend to preventive care, and facilitate timely recognition of new problems.

3 Don't perform routine pre-operative testing before low-risk surgical procedures.

4 Don't recommend cancer screening in adults with life expectancy of less than 10 years.

5 Don't place, or leave in place, peripherally inserted central catheters for patient or provider convenience.

American Academy of Pediatrics: Five Things Physicians and Patients Should Question

1

Don't order chest radiographs in children with uncomplicated asthma.

2

Don't routinely use bronchodilators in children with bronchiolitis.

3

Don't use systemic corticosteroids in children under 2 years of age with an uncomplicated lower respiratory tract infection.

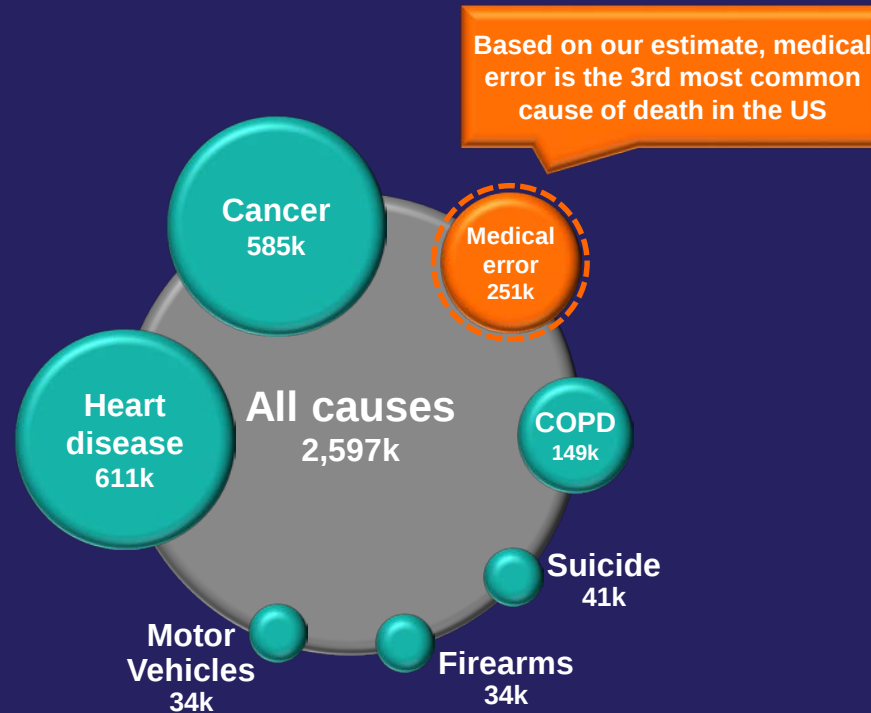
4

Don't treat gastroesophageal reflux in infants routinely with acid suppression therapy.

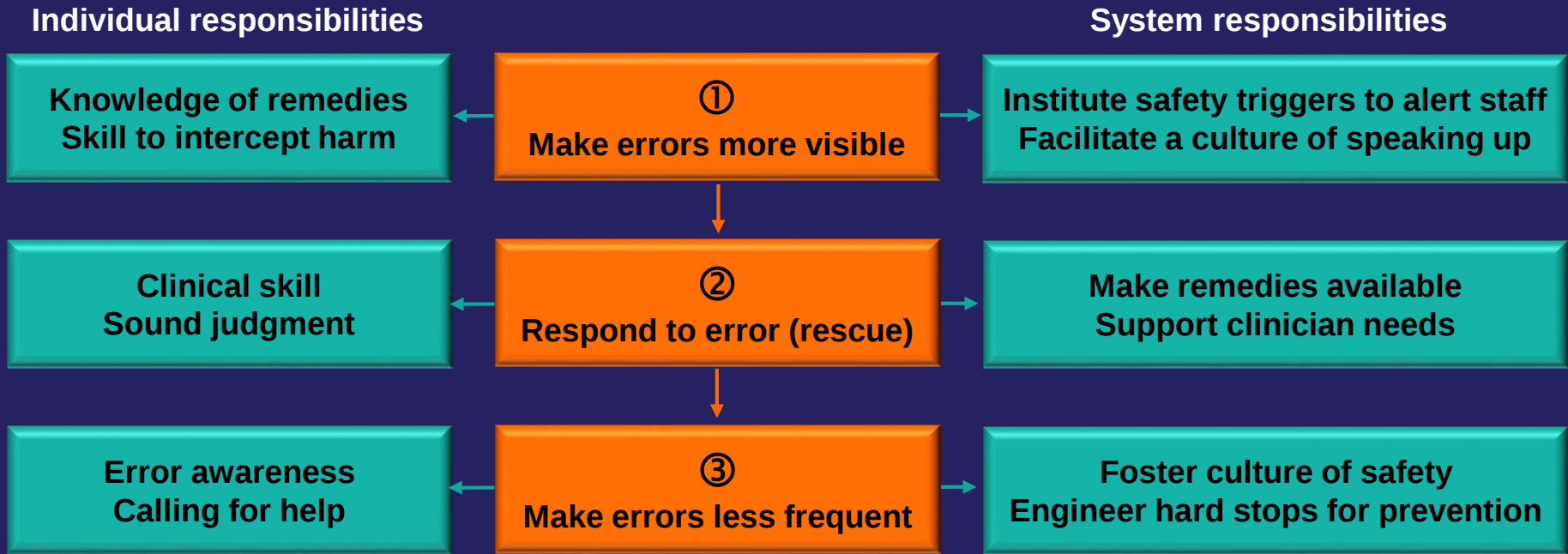
5

Don't use continuous pulse oximetry routinely in children with acute respiratory illness unless they are on supplemental oxygen.

Medication Errors: Third Leading Cause of Death in the US (2013)

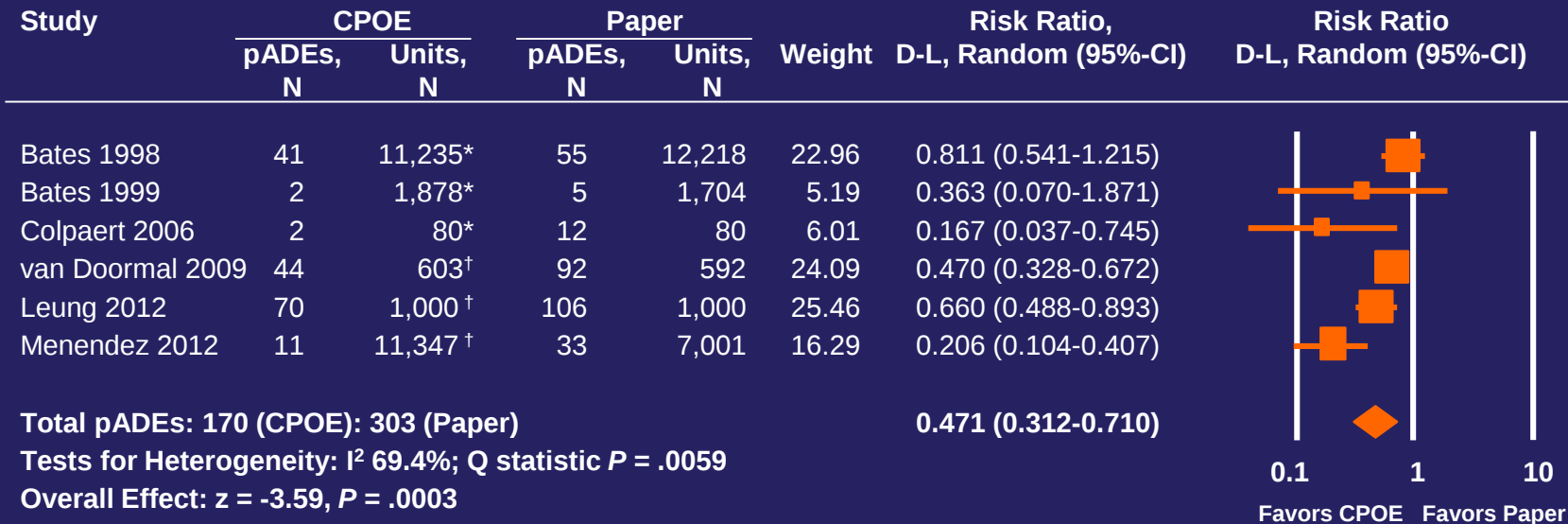


Reducing Medication Errors



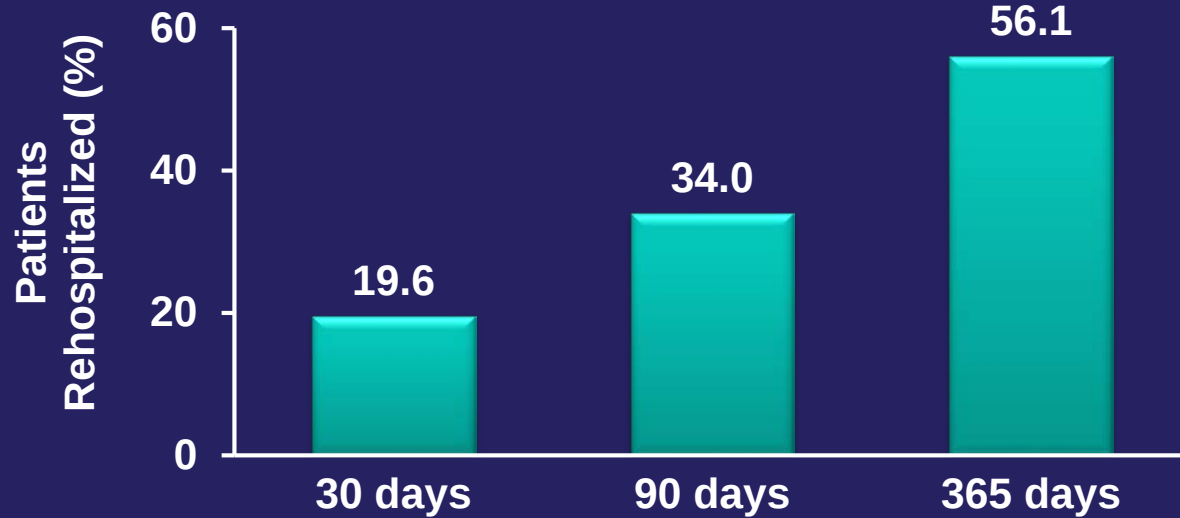
Model for reducing patient harm from individual and system errors in healthcare

Reducing Preventable Adverse Drug Events and Medication Errors



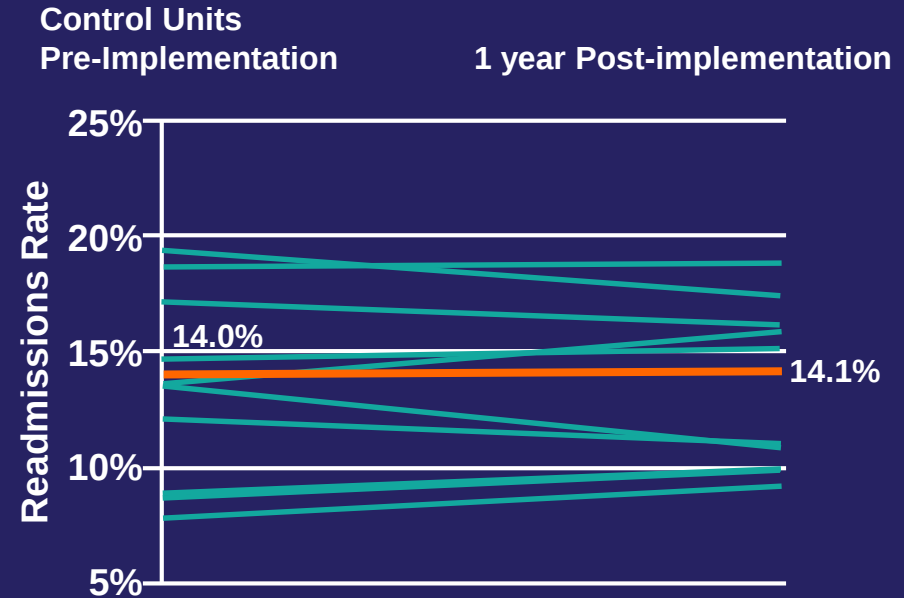
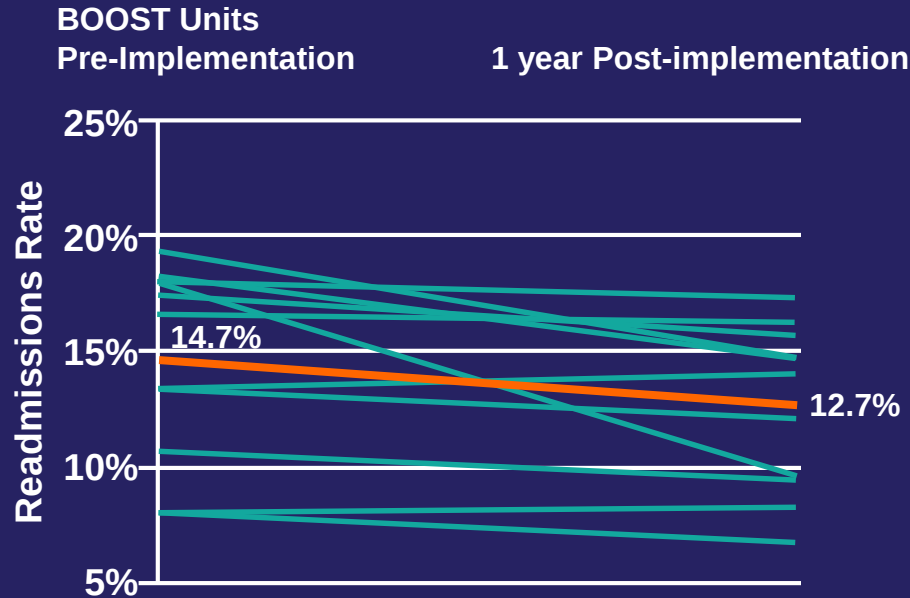
In hospital-related settings, computerized provider order entry (CPOE) was associated with >50% decline in preventable adverse drug events (pADEs).

Rehospitalizations are Prevalent and Costly



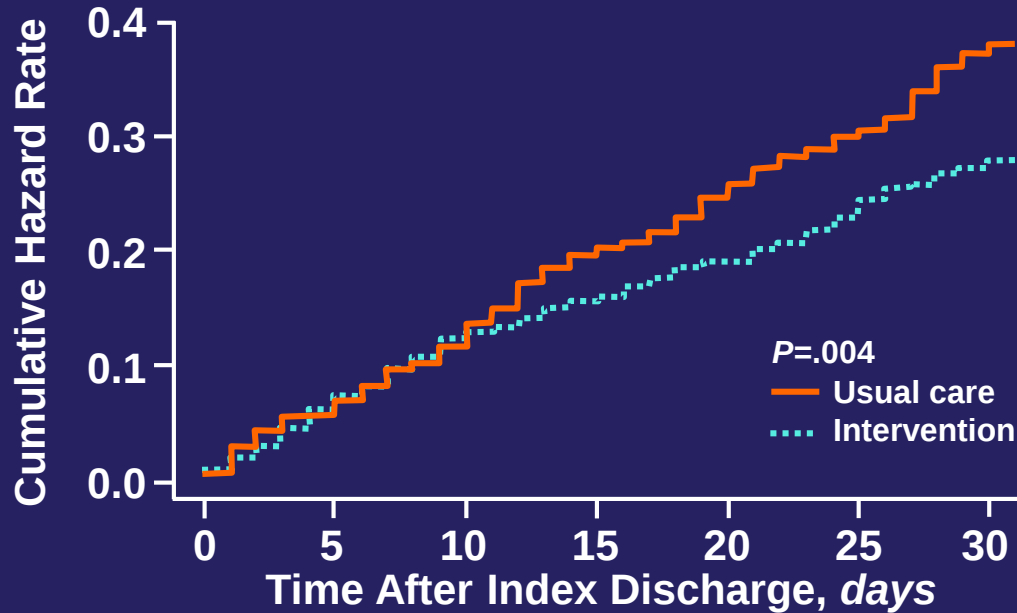
In 2004, medicare payments for unplanned rehospitalizations accounted for ~\$17.4 billion dollars.

Impact of Project BOOST Participation on Hospital Readmission Rates



Orange lines represent average for all units depicted.

Impact of RED on 30-day Post-discharge Hospital Utilization



Targeting Ineffective Transitions of Care

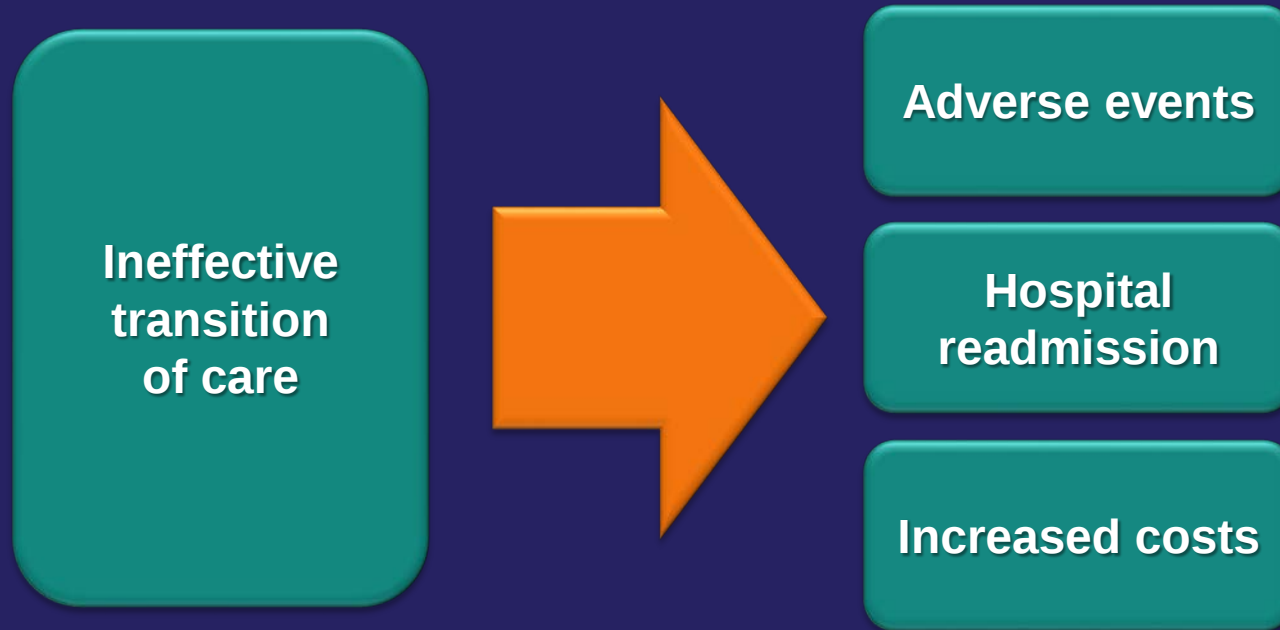
The Joint Commission has defined **3 main areas of breakdown** leading to ineffective transitions of care:

Accountability

Communication

**Patient
Education**

Consequences of Ineffective Transition of Care



Value-based Programs

CMS Initiatives to Increase Value

CMS Value-based Programs

	2008	2010	2012	2014	2015	2018	2019
Legislation Passed	MIPPA	ACA		PAMA	MACRA		
Program Implemented			ESRD-QIP HVBP HRRP	HAC	VM	SNF-VBP	APMs MIPS

Legislation

ACA: Affordable Care Act

MACRA: the Medicare Access & CHIP Reauthorization Act of 2015

MIPPA: Medicare Improvements for Patients & Providers Act

PAMA: Protecting Access to Medicare Act

Program

APMs: Alternative Payment Models

ESRD-QID: End-Stage Renal Disease Quality Incentive Program

HACRP: Hospital-Acquired Condition Reduction Program

HRRP: Hospital Readmissions Reduction Program

HVBP: Hospital Value-Based Purchasing Program

MIPS: Merit-Based Incentive Payment System

VM: Value Modifier or Physician Value-Based Modifier (PVBM)

SNFVBP: Skilled Nursing Facility Value-Based Purchasing Program

CMS, Centers for Medicare and Medicaid Services.

Available at: https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/Hospital_VBPurchasing_Fact_Sheet_ICN907664.pdf

How Will Value-based Performance Be Assessed by CMS?

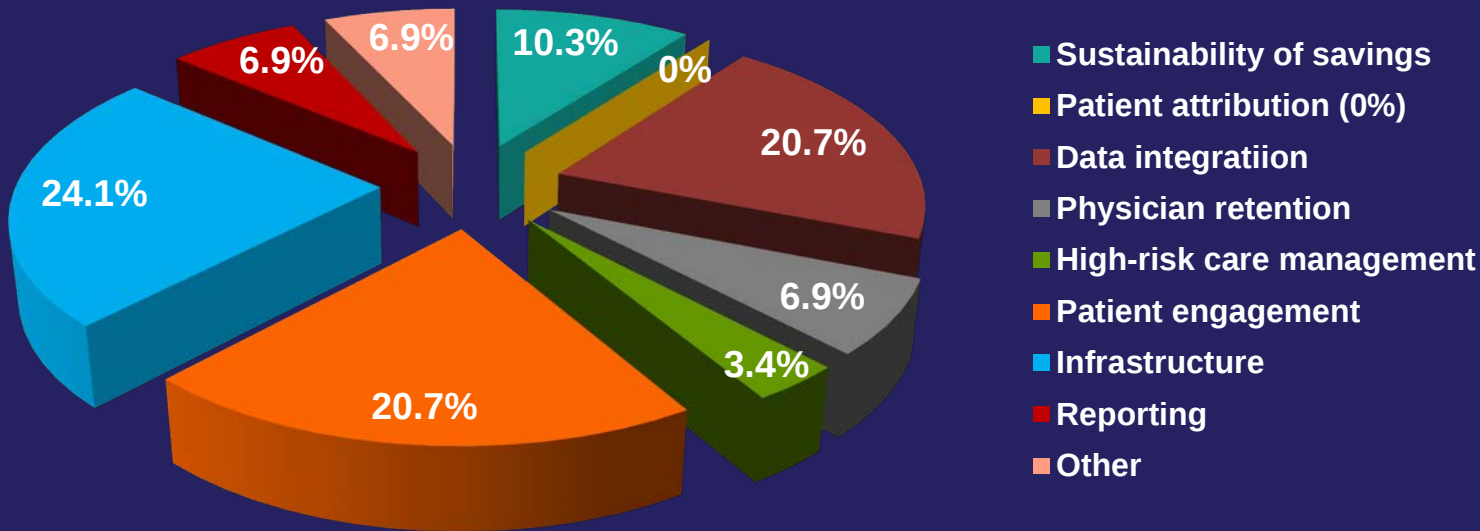
- Value-based program measures have been identified
- Each will be given two scores:
 - Achievement
 - Improvement
- A threshold and benchmark will determine each score
- The greater score will be used

FY 2018 Hospital Value-based Program Measures

Measure ID	Measure Description	Domain
CAUTI	Catheter-Associated Urinary Tract Infection	Safety
CLABSI	Central Line-Associated Blood Stream Infection	Safety
CDI	<i>Clostridium difficile</i> Infection (<i>C. difficile</i>)	Safety
MRSA	Methicillin-Resistant <i>Staphylococcus aureus</i> Bacteremia	Safety
PSI-90	Patient Safety for Selected Indicators (composite)	Safety
PC-01	Elective Delivery Prior to 39 Completed Weeks Gestation	Safety
SSI	Surgical Site Infection: - Colon - Abdominal Hysterectomy	Safety
MORT-30-AMI	Acute Myocardial Infarction (AMI) 30-Day Mortality Rate	Clinical Care
MORT-30-HF	Heart Failure (HF) 30-Day Mortality Rate	Clinical Care
MORT-30-PN	Pneumonia (PN) 30-Day Mortality Rate	Clinical Care
MSPB-1	Medicare Spending per Beneficiary (MSPB)	Efficiency and Cost Reduction
Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey	- Communication with Nurses - Communication with Doctors - Responsiveness of Hospital Staff - Communication about Medicines - Hospital Cleanliness and Quietness - Discharge Information 3-Item Care Transition* - Overall Rating of Hospital	Patient and Caregiver-Centered Experience of Care/Care Coordination

Transitioning to Value-based Payment

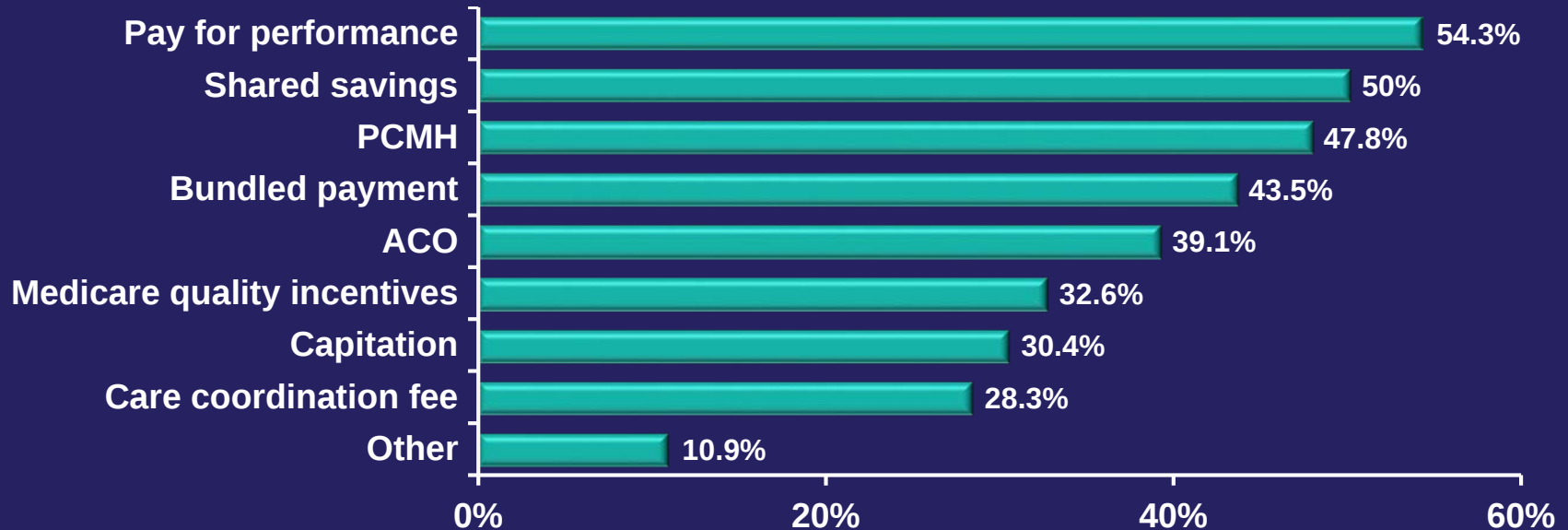
Challenges to Implementing Value-based Reimbursement



Source: 2015 Healthcare Benchmarks: Value-Based Reimbursement. December 2015.

Available at: http://www.hin.com/chartoftheweek/value_based_reimbursement_challenges_printable.html

Top Value-based Reimbursement Models



Source: 2015 Healthcare Benchmarks: Value-Based Reimbursement. December 2015.

PCMH, patient-centered medical home; ACO, accountable care organizations.

Available at: http://www.hin.com/chartoftheweek/top_value-based_reimbursement_models_printable.html

CMS Shift to Value-based Payment: MACRA

- MACRA Quality Payment Program:
 - Repeals the **Sustainable Growth Rate (SGR)** formula
 - Streamlines quality programs under a new **Merit-based Incentive Payments System (MIPS)**
 - Gives bonus payments for participation in eligible **alternative payment models (APM)**

Sustainable Growth Rate

- Was a complex formula used for reimbursing clinicians for services provided under Medicare
- Needed to be renewed annually
- Repealed in 2015

Merit-based Incentive Payments Systems

- Medicare payment system that gives healthcare providers an incentive payment for high quality care, or a financial penalty for poor quality care
- Four performance categories
 - Quality
 - Resource Use
 - Clinical Practice Improvement
 - Meaningful Use of EHRs

EHRs, electronic health records.

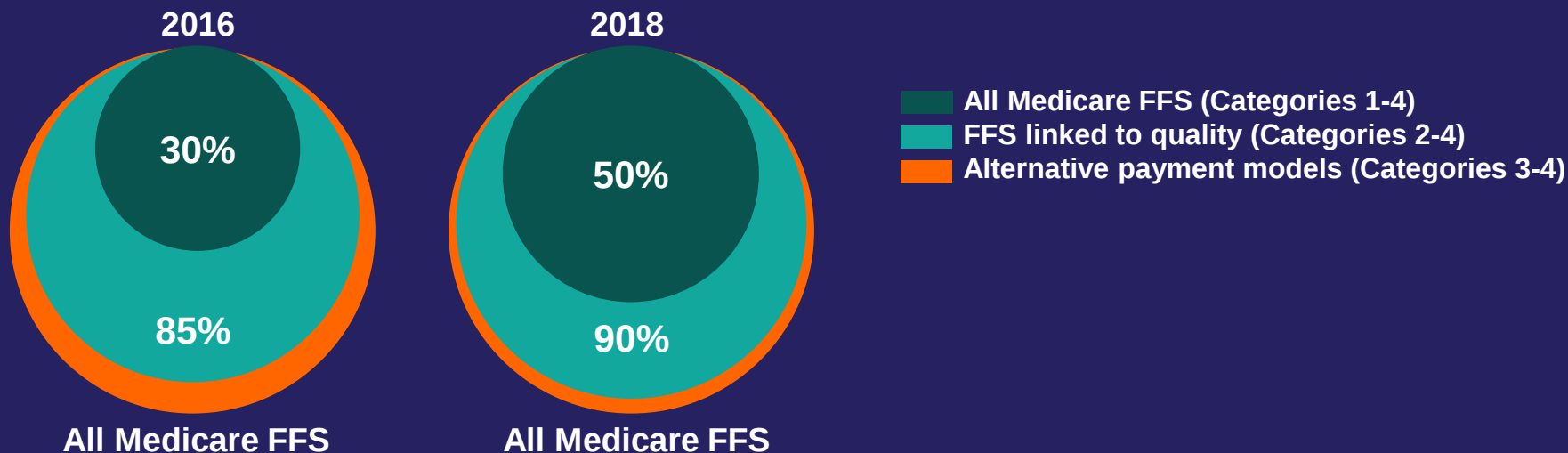
Available at: http://www.qualityforum.org/Membership/Policy_Basics/6__What_are_the_MACRA,_SGR,_MIPS,_and_APM_.aspx

Alternative Payment Models

- Payment option that requires an increasing percentage of a provider's practice to be at financial risk
- Incentivizes quality, not quantity, of care
- Requires proof of high-quality healthcare for full Medicare payment
- Will be phased in through 2026

Linking Medicare FFS to Quality and Alternative Payment Models

Target Percentage of Medicare Payments Linked to Quality and Alternative Payment Models in 2016 and 2018



FFS, fee-for-service.

Available at: <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2015-Fact-sheets-items/2015-01-26-3.html>

Summary

- Achieving high value for patients has come into focus as the overarching goal of healthcare, with a shift from traditional fee-for-service payments to value-based reimbursement
- Optimal value is obtained by employing strategies that maximize quality and service, and at the same time, minimize costs
- Establishing a mean of assessing the value of care is central to reforming the reimbursement system so that value is rewarded
- The most effective value-based payment models will include payment incentives for high quality (not quantity) of care and/or financial penalty for poor quality of care

Thank You!