



# acdis<sup>®</sup> 2024 DISCOVER

New Horizons for CDI

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## Quality 101: Get Your CDI Team Involved

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## Presented By



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## Presented By



- **Dawn M. Vitalone, RN, CCDS, CIC**, is a senior inpatient consultant with Solventum (formally known as 3M HIS). She has been an RN for over 30 years with a background in medical-surgical, orthopedics, neurology, home health care, hospice, utilization review, and case management. She has also held positions as a CDI manager and played a key part in developing a comprehensive CDI program for the medical facility for which she worked. Vitalone has also held roles as an MS-DRG, APR-DRG, and clinical validation auditor for two well-known auditing companies. She earned her certification in clinical documentation in 2012 from ACDIS and inpatient coding (CIC) from AAPC in 2015.

# Learning Outcomes

- At the completion of this educational activity, the learner will be able to:
  - Discuss the importance of Comorbidity Indices
  - Discuss the following concepts:
    - Elixhauser Comorbidity Index
    - CMS 30-Day Mortality Measure
    - Readmission cohorts
    - Patient Safety Indicators
  - List the basics of CMS Five-Star Quality Rating System
  - Outline how CDI can impact quality measures



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## Comorbidity Indices

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# Comorbidity Indices

Used to measure likelihood of adverse events such as:

- Readmission within 30 days of hospitalization
  - CMS Hospital Readmissions Reduction Program (HRRP)
  - CMS Hospital-Wide Readmissions (HWR)
  - Elixhauser
- Mortality within 30 days of hospitalization
  - CMS 30-day mortality measure
  - Elixhauser
- One-year or ten-year survivability estimate
  - Charlson
  - Elixhauser
- Proprietary methodologies
  - Vizient, Premier, Healthgrades, Truven, Leapfrog, etc.

Utilize different criteria and comorbid conditions but common denominator is use of patient demographics and claims data

## Present on Admission

Accurate assignment of present on admission (POA) is essential for risk adjustment methodologies

Each index/methodology has different criteria of how/when they apply POA

Example:

- CKD does not “need” a POA to be used in calculating risk, as it is chronic by nature
- CHF does need POA assigned appropriately to use (or exclude) in the calculations

CDI and coding workflow should be reviewed/refined to assess:

- Assignment of POA at time of code acceptance
- Mismatch review process for POA status



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## Elixhauser

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# Elixhauser Comorbidity Index

Developed as part of the Healthcare Cost and Utilization Project (HCUP), and sponsored by the Agency for Healthcare Research and Quality

Initially developed in 1998 by Anne Elixhauser, a former AHRQ employee, and 3 other data scientists

Originally based on ICD-9-CM  
Current version ICD-10-CM released December 2022 (version 2023)

Elixhauser is a method of categorizing comorbidities

Predict resource allocation  
Assess the quality of care, such as in-hospital mortality

Risk adjust patient models (such as expected rates of PSIs)

Utilized by U.S. News and World Reports Best Hospitals

- Outcomes (worth 37.5% of score)
- Also includes discharge to home versus other in

## Elixhauser Comorbidity Index

The Elixhauser Comorbidity Software Refined for ICD-10-CM... “creates comorbidity measures that identify pre-existing medical conditions that are not directly related to the main reason for the hospital encounter and that, if present on admission, would be associated with a substantial impact on certain outcomes, such as an increase in length of stay, charges, or in-hospital mortality.”

# Understanding AHRQ Weights

“The negative values represent a **protective relationship with the outcome in the context of the other comorbidities in the model**, noting that the index does not include adjustment for age or other factors as it is intended to be used in risk models in which age and other factors are already adjusted. Negative values are not intended to be used individually.”

The negative numbers are reflective of lack of in-house mortality...these may increase likelihood of adverse events but not of mortality

This diagnosis as a solo diagnosis was not associated with in-house mortality or readmissions

# Elixhauser Comorbidity Domains

Abbreviation	Comorbidity Measure	AHRQ Mort Weight	AHRQ Readm Weight	Abbreviation	Comorbidity Measure	AHRQ Mort Weight	AHRQ Readm Weight
AIDS	Acquired immunodeficiency syndrome	-4	5	CANCER_METS	Metastatic cancer	23	11
ALCOHOL	Alcohol abuse	-1	3	CANCER_NSITU	Solid tumor without metastasis, in situ	0	0
ANEMDF	Anemias due to other nutritional deficiencies	-3	5	CANCER_SOLID	Solid tumor without metastasis, malignant	10	7
AUTOIMMUNE	Autoimmune conditions	-1	2	CBVD	Cerebrovascular disease	5	0
BLDLOSS	Chronic blood loss (iron deficiency)	-4	2	CHF	Congestive heart failure	15	7
CANCER-LEUK	Leukemia	9	10	COAG	Coagulopathy	15	3
CANCER_LYMPH	Lymphoma	6	7				

Elixhauser Comorbidity Software Refined for ICD-10-CM User Guide, v2023.1

# Elixhauser Comorbidity Domains

Abbreviation	Comorbidity Measure	AHRQ Mort weight	AHRQ Readm Weight	Abbreviation	Comorbidity Measure	AHRQ Mort Weight	AHRQ Readm Weight
DEMENTIA	Dementia	5	1	LIVER_MLD	Liver disease, mild	2	3
DEPRESS	Depression	-9	2	LIVER_SEV	Liver disease and failure, moderate to severe	17	10
DIAB_CX	Diabetes with chronic complications	-2	4	LUNG_CHRONIC	Chronic pulmonary disease	2	4
DIAB_UNCX	Diabetes without chronic complications	0	0	NEURO_MOVT	Neurological disorders affecting movement	-1	1
DRUG_ABUSE	Drug abuse	-7	6	NEURO_OTH	Other neurologic disorders	23	2
HTN_CX	Hypertension, complicated	1	0	NEURO_SEIZ	Seizures and epilepsy	2	5
HTN_UNCX	Hypertension, complicated	0	0	OBESE	Obesity	-7	-2

# Elixhauser Comorbidity Domains

Abbreviation	Comorbidity measure	AHRQ Mort weight	AHRQ Readm weight	Abbreviation	Comorbidity measure	AHRQ Mort weight	AHRQ Readm weight
PARALYSIS	Paralysis	4	3	THYROID_OTH	Other thyroid disorders	-8	0
PERIVASC	Peripheral vascular disease	3	1	ULCER_PEPTIC	Peptic ulcer with bleeding	0	2
PSYCHOSES	Psychoses	-9	6	VALVE	Valvular disease	0	0
PULMCIRC	Pulmonary circulation disease	4	3	WGHTLOSS	Weight loss	14	6
RENFL_MOD	Renal (kidney) failure and disease, moderate	3	4				
RENFL_SEV	Renal (kidney) failure and disease, severe	8	8				
THYROID_HYPO	Hypothyroidism	-3	0				

# Elixhauser Comorbidities That Require Use of POA Indicator for Assignment

Comorbidity description	Uses present on admission (POA) indicators for assignment?
Deficiency anemias	Yes
Chronic blood loss (iron deficiency)	Yes
Cerebrovascular disease	Yes
Coagulopathy	Yes
Heart failure	Yes
Liver disease, mild	Yes
Liver disease and failure, moderate to severe	Yes
Neurological disorders affecting movement	Yes
Other neurological disorders	Yes
Seizures and epilepsy	Yes
Paralysis	Yes
Psychoses	Yes
Pulmonary circulation disease	Yes
Renal (kidney) failure and disease, moderate	Yes
Renal (kidney) failure and disease, severe	Yes
Peptic ulcer with bleeding	Yes
Valvular disease	Yes
Weight loss	Yes

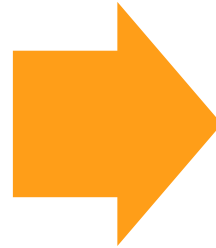
# Elixhauser Comorbidities That Do Not Require Use of POA Indicator for Assignment

Comorbidity description	Uses present on admission (POA) indicators for assignment?
Acquired immune deficiency syndrome	No
Alcohol abuse	No
Autoimmune conditions	No
Leukemia	No
Lymphoma	No
Metastatic cancer	No
Solid tumor without metastasis, in situ	No
Solid tumor without metastasis, malignant	No
Dementia	No
Depression	No
Diabetes with chronic complications	No
Diabetes without chronic complications	No
Drug abuse	No
Hypertension, complicated	No
Hypertension, uncomplicated	No
Chronic pulmonary disease	No
Obesity	No
Peripheral vascular disease	No
Hypothyroidism	No
Other thyroid disorders	No



# Principal Versus Secondary Diagnosis Effect on Elixhauser Assignment

If the ICD-10-CM diagnosis code is reported as a *principal or first-listed diagnosis*, the software will not utilize the comorbidity because the software only considers secondary diagnoses



If the ICD-10-CM diagnosis code is reported as *secondary diagnosis*, the identification will depend on **POA indicator**. The ICD-10-CM coding guidelines specify that the POA indicator should be assigned as not present on admission if any of the clinical concepts included in the code was not present on admission. For example:

If a secondary diagnosis code of K25.4 is not present on admission because the hemorrhaging occurred after the patient was in the hospital, the diagnosis will not trigger the comorbidity measure for peptic ulcer with bleeding (ULCER\_PEPTIC). The software requires the condition be present on admission.

# Examples of Specific Elixhauser Comorbidities: Neuro

## Neuro: Seizures

- Seizures, simple, partial
- Generalized idiopathic epilepsy
- Posttraumatic seizures
- Unspecified convulsions
- Other epilepsy with and without status epilepticus
- Other seizures

## Neuro: Movement

- Parkinson's disease
- Dystonias
- Other drug-induced movement disorders
- Restless legs syndrome

## Neuro: Other

- Cerebral edema
- Brain death
- Encephalopathy, metabolic, hepatic, unspecified, other
- Miscellaneous disorders unrelated to dementia, movement, and seizures such as MS, hydrocephalus, Tay-Sachs disease, and narcolepsy

# Elixhauser Impact

Before	Reason for potential change:	After
Elixhauser Comorbidity Index Score: 15		Elixhauser Comorbidity Index Score: 37
<p><b>PDx:</b> Malignant neoplasm of descending colon</p> <p><b>SDx:</b>            Idiopathic normal-pressure hydrocephalus            Obesity            HTN            OSA            BMI 31</p>	<p>Pt presented for planned colectomy.            H&amp;P: Pathology report: "invasive colonic adenocarcinoma...tumor extent: invades through muscularis propria into the pericolonic or perirectal tissue...pT3"            ***Recommend query for pathology results including neoplasm invasion.</p>	<p><b>PDx:</b> Malignant neoplasm of descending colon</p> <p><b>SDx:</b>            Idiopathic normal-pressure hydrocephalus            Obesity            HTN            OSA            BMI 31            Secondary malignant neoplasm of other specified sites</p>

## 4 Medicare Quality Programs

CMS Program	Program Goals
Hospital Readmissions Reduction Program (HRRP)	The Hospital Readmissions Reduction Program focuses on care coordination measures, which address the quality priority of promoting effective communication and care coordination
Hospital Value-Based Purchasing (VBP) Program	Hospital VBP Program focuses on measures related to clinical outcomes, patient and caregiver experience, and healthcare costs
Hospital-Acquired Conditions (HAC) Reduction Program	The HAC Reduction Program focuses on patient safety measures: Domain 1–Recalibrated Patient Safety Indicator (PSI) 90 (CMS PSI 90) Domain 2–National Healthcare Safety Network (NHSN) healthcare-associated infections (HAI) measures
Hospital Inpatient Quality Reporting (IQR) Program	The Hospital IQR Program focuses on driving quality improvement through measurement and transparency by publicly displaying data to help consumers make more informed decisions about their healthcare

Source: IPPS Final Ruling

## **CMS 30-Day Mortality Measure Cohorts**

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# Centers for Medicare and Medicaid (CMS) 30-Day Mortality Measure

Acute myocardial infarction

Pneumonia

Chronic obstructive pulmonary disease  
(COPD)

Stroke

Heart failure (HF)

CABG

Patients enrolled in hospice in the prior 12 months are excluded as well as patients leaving AMA and select transfer patients.

<https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1163010398556>

# AMI

- Mortality variables

Acceptable percentage of deaths is determined by also adjusting for certain co-morbidities such as:

- AMI (anterior and non-anterior)
- Amputation status
- Atherosclerosis of the extremities with ulceration or gangrene
- CAD, angina and acute and chronic ischemic heart disease
- Cerebral aneurysm
- Cerebrovascular disease (TIA, stenosis, aneurysm)
- CHF and shock
- COPD
- Dementia or other specified brain disorders
- Diabetes with or without complications
- Hemiplegia, paraplegia, paralysis func., disability
- History of CABG or PTCA (PCS codes)
- History of COVID-19 (Z86.16)
- Hypertension
- Late effects of cerebrovascular disease except paralysis
- Liver disease (chronic)
- Major psychiatric disorders
- Malnutrition
- Metastatic cancer, acute leukemia and other severe cancers
- Precerebral arterial occlusion
- Pneumonia and associated conditions such as empyema, abscess and pleurisy
- Renal failure (all stages and acute)
- STEMI
- Stroke (ischemic and hemorrhage)
- Trauma and other injuries (head, hip vertebrae, internal injuries, traumatic amputations)
- Valvular heart disease
- Unstable angina and other acute ischemic heart disease
- Vascular disease with or without complications

# Acute Ischemic Stroke

- Mortality variables

Acceptable percentage of 30-day deaths is determined by also adjusting for certain co-morbidities such as:

- Age minus 65
- CAD, acute coronary syndrome, unstable angina and AMI
- Cerebral atherosclerosis and aneurysm
- CHF
- Congenital cardiac/circulatory defects
- Dementia
- Hemiplegia, paraplegia, paralysis, quadriplegia, cerebral palsy, multiple sclerosis
- History of COVID-19 (Z86.16)
- Iron deficiency and other/unspecified anemias
- Male gender
- Malnutrition
- Metastatic cancer, major cancers and acute leukemia
- Morbid obesity, disorders of fluid/electrolyte balance
- NIH stroke scale score
- Pleural effusion and pneumothorax
- Pneumonia
- PVD and vascular disease
- Renal failure (acute, all stages of CKD, ESRD/dialysis)
- Seizure disorders and convulsions
- Specified arrhythmias
- Spinal vertebral disease, osteoarthritis hip or knee



# COPD

- Mortality variables

Acceptable percentage of deaths is determined by also adjusting for certain co-morbidities such as:

- Age minus 65
- Asthma
- CAD and angina
- Cerebrovascular disease, stroke and deficits such as hemiplegia and other late effects of CVA
- Certain cancers such as lung, digestive tract, lymphatic, head and neck and brain, metastatic cancer and acute leukemia and other severe cancers
- CHF, cardio-respiratory failure and shock
- Decubitus or chronic skin ulcer
- Dementia or other specified brain disorders
- Diabetes and diabetic complications
- Drug/alcohol abuse
- Hemiplegia, paraplegia, paralysis and func. disability
- History of COVID-19 (Z86.16)
- Hypertension and hypertensive disease
- Iron deficiency and other/unspecified anemias
- Major complications of medical care
- Malnutrition
- Mechanical ventilation history (PCS codes)
- Morbid obesity, hyperlipidemia, disorders of fluid and electrolyte disturbances
- Osteoarthritis of hip or knee
- Other musculoskeletal and connective tissue disorders
- Other psychiatric disorders
- Pleural effusion or pneumothorax
- Pneumonia
- Polyneuropathy, mononeuropathy and other neurologic conditions/injuries
- Pulmonary fibrosis and other chronic lung disorders
- Renal failure (acute, all chronic, dialysis dependence)
- Respiratory failure and ventilator dependence
- Specified arrhythmias and other heart rhythm disorders
- Substance use disorder, mild except alcohol and cannabis
- Trauma (significant injuries)
- Vascular or circulatory disease
- Vertebral fractures

# CABG

- Mortality variables

Acceptable percentage of deaths is determined by also adjusting for certain co-morbidities such as:

- Age minus 65
- AMI, CAD, unstable angina and other acute ischemic heart disease
- Metastatic cancer, acute leukemia and other severe cancers
- Cardiogenic shock
- CHF
- COPD
- Diabetes with or without complications
- Decubitus or chronic skin ulcer
- Dementia or other specified brain disorders
- Disorders of thyroid, cholesterol and lipids
- Hemiplegia, paraplegia, paralysis, functional disability
- History of COVID-19 (Z86.16)
- History of prior CABG or valve surgery (PCS codes)
- HTN
- Liver and biliary disease (acute and chronic)
- Major psychiatric disorders
- Male
- Malnutrition
- Morbid obesity, disorders of lipid metabolism
- Old MI
- Pneumonia
- Renal failure and dialysis status
- Stroke (ischemic, hemorrhagic and unspecified)
- Trauma; other injuries
- Valvular and rheumatic heart disease
- Vascular disease and complications

# Heart Failure

- Mortality variables

Acceptable percentage of deaths is determined by also adjusting for certain co-morbidities such as:

- Age minus 65
- ALS and cerebral palsy
- AMI and anterior MI
- Amputation status and amputation stump complications
- Atherosclerosis of extremities with ulceration or gangrene
- CAD, angina and other ischemic heart disease (acute and chronic)
- CHF, cardio-respiratory failure and shock
- Chronic liver disease
- COPD
- Decubitus or chronic skin ulcer
- Depression and other major psychiatric disorders
- Dementia
- Diabetes and diabetic complications except proliferative retinopathy
- Hemiplegia, paralysis, paraplegia, and quadriplegia
- History of CABG and PTCA (PCS codes)
- History of COVID-19 (Z86.16)
- HTN
- Late effects of CVA
- Major psychiatric disorders (such as schizophrenia and bipolar)
- Male gender
- Malnutrition
- Metastatic cancer, acute leukemia and other severe cancers
- Pneumonia (viral, bacterial, unspecified, empyema, abscess, pleurisy)
- Renal failure (all stages and acute) and ESRD/dialysis status
- Stroke (ischemic and hemorrhagic)
- Trauma
- Valvular heart disease
- Vascular disease

# Pneumonia

- Mortality variables

Acceptable percentage of deaths is determined by also adjusting for certain co-morbidities such as:

- AMI, CAD and angina
- Atherosclerosis of the extremities with ulceration or gangrene
- Chronic liver disease
- CHF, cardiorespiratory failure and shock
- Cerebrovascular disease, stroke, hemiplegia/hemiparesis, monoplegia, other paralytic syndrome
- COPD, asthma and fibrosis or lung and other chronic lung disorders
- Dementia and Parkinson's disease
- Diabetes and diabetic complications
- Disorders of fluid and electrolyte balance
- Depression and other major psychiatric disorders
- Encephalopathy and delirium
- History of CABG (PCS codes)
- History of COVID-19 (Z86.16)
- HTN
- Iron deficiency and other/unspecified anemias
- Liver disease (chronic)
- Male
- Malnutrition
- Many severe cancers including lung, brain, head and neck, digestive, breast, prostate, metastatic cancer and acute leukemia
- Pleural effusion/pneumothorax
- Renal failure and ESRD/dialysis status
- Pneumonia (aspiration, bacterial, viral and unspecified)
- Pressure ulcers
- Sepsis, SIRS, septic shock
- Severe hematologic disorders
- Seizure disorders
- Vascular disease with and without complications
- Vent dependence/trach status
- Vertebral fractures

## Readmission Reduction Programs

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# Readmissions

- Two readmission classifications

All-cause readmissions regardless of reason for index admission (HWR)

- Centers for Medicare & Medicaid Services (CMS) is tracking all-cause readmission rates regardless of the index visit but not currently assessing a penalty except penalty for failure to report
- Data on all-cause readmission rates is publicly available
- Reported as part of Inpatient Quality Reporting Program (IQR) and as part of CMS star ratings methodology

All-cause readmissions following index admissions in 7 categories

(HRRP)

- Acute myocardial infarction (AMI)
- Congestive heart failure (CHF)
- Pneumonia
- Chronic obstructive pulmonary disease (COPD)
- Total hip arthroplasty (THA)
- Total knee arthroplasty (TKA)
- Coronary artery bypass graft (CABG)

# Readmission Cohorts

- Acute myocardial infarction
- Heart failure
- Pneumonia
- Chronic obstructive pulmonary disease
- Total hip arthroplasty
- Total knee arthroplasty
- CABG



# Readmission Variables



- Each cohort has a list of readmission variables
- The variables are used in calculating the expected rates of readmission
- In other words, the presence of these conditions increases the likelihood of the patient being readmitted
- Hence it is essential that these conditions be documented and captured to set realistic expected rates of readmissions based on the patient population



Note the following global risk-adjustment factors

- Age < 65 years (Medicare-qualified patient under the age of 65 has increased likelihood of readmission due to overall chronic health state)
- Male



If a risk-adjusted diagnosis is an acute event on the index admission, the condition will not be included in risk adjustment for the subsequent 30 days but is part of the baseline

- Example: Patient admitted with sepsis and pneumonia. These conditions are not part of risk adjustment prediction for the current index visit but will be included in the 12-month risk-adjusted variable list for other admissions.

Also note that conditions not present on admission are not utilized in risk-adjustment (comorbid conditions vs complications)



# AMI

- Readmission variables

Acceptable percentage of readmissions is determined by also adjusting for certain co-morbidities such as:

- Age 65+
- Anterior MI and non-anterior MI
- ACS, CAD and angina
- Asthma
- Cancer, metastatic cancer and acute leukemia
- Cerebrovascular disease, stroke and deficits such as hemiplegia
- CHF
- Chronic liver disease
- COPD and asthma
- Decubitus or chronic skin ulcer
- Dementia
- Diabetes and diabetic complications
- History of CABG or PTCA
- History of COVID-19 (Z86.16)
- Iron deficiency or other/unspecified anemias
- Male gender
- Malnutrition
- Other significant endocrine and metabolic disorders; disorders of fluid/electrolyte/acid-base balance
- Pneumonia
- Renal failure: acute, chronic, and ESRD/dialysis status
- Schizophrenia, major depressive disorders, bipolar disorders and psychosis
- Selected severe infections such as HIV/AIDS, CNS infections and opportunistic infections
- Specified arrhythmias and other heart rhythm disorders
- Valvular heart disease
- Vascular or circulatory disease

# COPD

- Readmission variables

Acceptable percentage of readmissions is determined by also adjusting for certain co-morbidities such as:

- Age 65+
- Asthma
- CAD, angina, and acute coronary syndrome
- Cellulitis
- Cerebrovascular disease, stroke and deficits such as hemiplegia
- Certain cancers such as lung, digestive tract, lymphatic, head and neck and brain, metastatic cancer and acute leukemia
- CHF, cardio-respiratory failure, shock, and hypoxia
- Decubitus or chronic skin ulcer
- Dementia
- Depression and anxiety
- Diabetes and diabetic complications
- Drug/alcohol abuse/dependence/psychosis and other psychiatric disorders
- History of COVID-19 (Z86.16)
- Hypertension
- Iron deficiency and other/unspecified anemias
- Malnutrition
- Mechanical ventilation history (PCS codes)
- Morbid obesity, hyperlipidemia, and other endocrine/metabolic disorders
- Pancreatitis, chronic
- Peptic ulcer, hemorrhage and other specified GI disorders
- Pneumonia
- Polyneuropathy and other neuropathies
- Pulmonary fibrosis
- Renal failure
- Respiratory failure and ventilator dependence
- Severe hematologic disorders
- Selected severe infections such as HIV/AIDS, CNS infections and opportunistic infections
- Sleep apnea
- Specified arrhythmias
- Vascular or circulatory disease
- Vertebral fractures

# Heart Failure

- Readmission variables

Acceptable percentage of readmissions is determined by also adjusting for certain co-morbidities such as:

- Age 65+
- Arrhythmias (selected)
- AMI/ history of MI
- Amputation status
- Atherosclerosis of extremities with ulceration or gangrene
- CAD and acute coronary syndrome
- Cerebrovascular disease, stroke and deficits such as hemiplegia
- CHF, cardio-respiratory failure and shock
- COPD and/or asthma
- Decubitus or chronic skin ulcer
- Depression
- Dementia
- Diabetes and diabetic complications
- Drug/alcohol abuse/dependence/psychosis and other psychiatric disorders
- History of CABG and PTCA
- History of COVID-19 (Z86.16)
- HTN
- Iron deficiency and other anemias
- Liver or biliary disease (acute or chronic)
- Male
- Malnutrition
- Metastatic cancer and acute leukemia and other severe cancers such as lung, colorectal, bladder, breast, prostate
- Nephritis and other urinary tract disorders
- Other significant endocrine and metabolic disorders
- Peptic ulcer, hemorrhage and other specified GI disorders
- Pneumonia
- Pulmonary fibrosis and other chronic lung disorders
- Renal failure and ESRD/dialysis status
- Severe hematological disorders
- Valvular heart disease
- Vascular or circulatory disease

# Pneumonia

- Readmission variables

Acceptable percentage of readmissions is determined by also adjusting for certain co-morbidities such as:

- 65+
- Arrhythmias (selected)
- Aspiration pneumonia and certain specified bacterial pneumonias
- CAD, AMI, angina and ischemic heart disease (acute and chronic)
- Cerebrovascular disease, stroke and deficits such as hemiplegia
- CHF, cardio-respiratory failure and shock
- COPD and/or asthma
- Decubitus and chronic skin ulcers (selected)
- Dementia
- Diabetes and diabetic complications
- Drug/alcohol abuse/dependence/psychosis and other psychiatric disorders
- History of CABG (PCS codes)
- History of COVID-19 (Z86.16)
- HIV/AIDS and other severe infections
- Iron deficiency and other/unspecified anemias
- Malnutrition
- Male
- Many severe cancers including lung, brain, head and neck, digestive, breast, prostate, metastatic cancer and acute leukemia
- Neurologic conditions such as ALS, cerebral palsy and spinal cord disorders and injuries
- Other significant endocrine and metabolic disorders
- Pleural effusion/pneumothorax
- Pulmonary fibrosis and other chronic lung disorders
- Renal failure and ESRD/dialysis status
- Sepsis, SIRS, severe sepsis and septic shock
- Severe hematologic disorders
- Severe infection; other infectious diseases
- UTI and other urinary tract disorders
- Valvular heart disease
- Vascular or circulatory disease
- Vent dependence/trach status
- Vertebral fractures

# THA/TKA

- Readmission variables

Acceptable percentage of readmissions is determined by also adjusting for certain co-morbidities such as:

- 65+
- Arrhythmias (selected)
- CAD or angina
- Cancer (selected)
- Cellulitis and local skin infection
- CHF
- COPD
- Decubitus or other chronic skin ulcer
- Dementia and major psychiatric disorders
- Diabetes or diabetic complications
- Hemiplegia, paraplegia, paralysis, functional disability
- History of COVID-19 (Z86.16)
- History of infection
- Hypertension
- Male
- Malnutrition
- Metastatic cancer, selected cancers and leukemia
- Morbid obesity
- Other congenital deformity of hip
- Other significant endocrine and metabolic disorders
- Pneumonia
- Polyneuropathy and other neuropathies (such as myasthenia gravis, Guillain-Barre Syndrome)
- Posttraumatic osteoarthritis
- Renal failure and dialysis status
- Rheumatoid arthritis and inflammatory connective tissue disease
- Severe hematologic disorders
- Severe infections
- Stroke
- Vascular or circulatory disease

# CABG

- Readmission variables

Acceptable percentage of readmissions is determined by also adjusting for certain co-morbidities such as:

- 65+
- Arrhythmias (selected)
- Cancer
- Cardiogenic shock
- Cerebrovascular disease
- CHF
- COPD
- Decubitus or chronic skin ulcer
- Dementia and major psychiatric disorders
- Diabetes or diabetic complications
- Hemiplegia, paraplegia, paralysis, functional disability
- History of COVID-19 (Z86.16)
- History of prior CABG or valve surgery (PCS codes)
- Male
- Malnutrition
- Morbid obesity
- Other endocrine/metabolic/nutritional disorders
- Pneumonia
- Polyneuropathy and other neuropathies)
- Pulmonary fibrosis and other chronic lung disorders
- Renal failure (all types and stages) and dialysis status
- Severe hematologic disorders
- Vascular or circulatory disease

# How can my organization improve our readmissions rate?

Review for clinically appropriate alternate principal diagnoses to reduce the number of index admissions

Capture all reportable secondary diagnoses

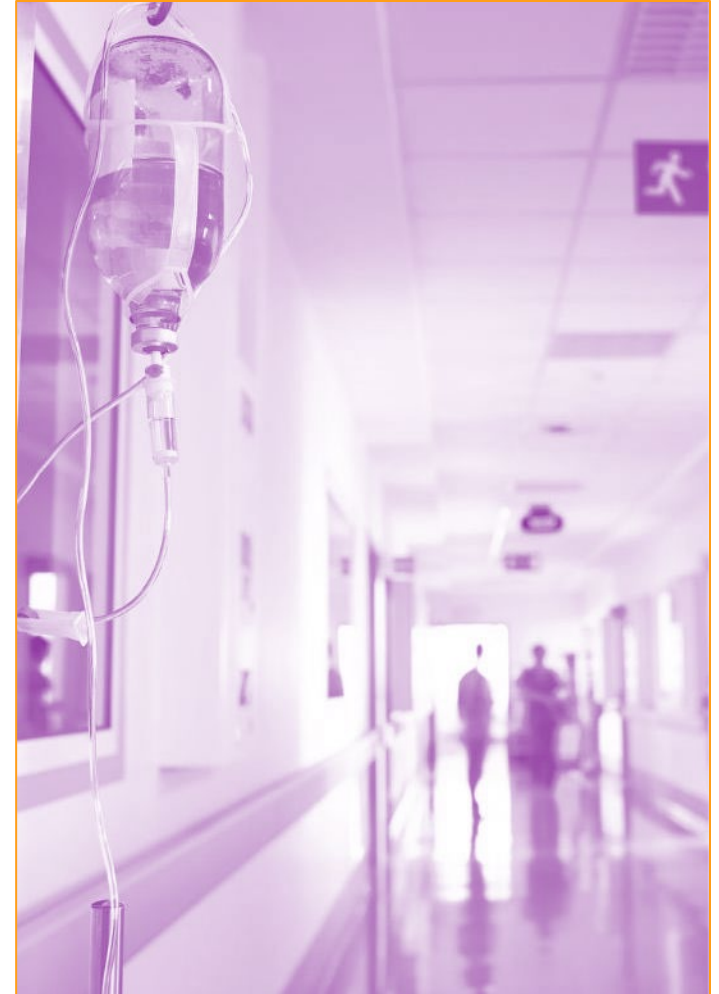
Capture social determinants of health (SES)(SDoH)

Additionally, educate providers to document these to ensure capture

Educate providers on documentation of all pertinent secondary diagnoses, especially those that are included in the risk-adjustment variable lists

Collaborate with providers and case management for proper patient placement on both index and subsequent visits

Focus on 1-2 day stay cases



## AHRQ Quality Indicators

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# AHRQ QI (Quality Indicator) Modules

## Prevention (PQIs)

- Potentially preventable hospital admissions rates for ambulatory care conditions
- Area-level indicators
- Risk-adjusted

## Inpatient (IQIs)

- Quality of care inside the hospital—hospital level indicators
- Mortality rates for adult conditions / surgical procedures
- Risk-adjusted

## Patient Safety (PSIs)

- Potentially avoidable complications and adverse event rates following adult surgeries / procedures performed in the hospital
- Hospital-level indicators
- Risk-adjusted

## Pediatric (PDIs)

- Mortality rates for pediatric surgical procedures
- Potentially avoidable complications and adverse event rates in the hospital
- Potentially preventable hospitalization rates
- Hospital-level and area-level indicators
- Risk-adjusted

# AHRQ Baseline Periods and Risk-Adjustment

- AHRQ v2023 utilizes a three-year database reference population (HCUP State Inpatient Databases) (2019-2021) instead of the normal one-year population
  - Purpose is to handle COVID-19 risk adjustment. COVID-19 cases are now included.
  - Using for both reference population and risk adjustment (Elixhauser comorbidity model)
- 2019-2021 database notes (does not affect reporting, it affects AHRQs ability to set expected rates)
  - Colorado and Hawaii excluded from reference population for certain indicators requiring age in days (NQI)
  - New Hampshire, Oklahoma and Wisconsin excluded from reference population for indicators requiring procedure date (e.g., PSI 4, 10, 11, 12,15)
  - Delaware and Connecticut did not report POA in 2019-2021 and Wyoming did not report POA in 2019
  - Only 28 states were available for the 2021 reference population at the time of development of v2023
- Numerators, denominators and observed rates only
- Default set to exclude records with missing MDC
- Excludes records with missing procedure dates from PSI 15 denominator

# Patient Safety Indicators (PSI)

- The Patient Safety Indicators (PSI) are a set of measures that screen for complications or adverse events that patients experience as a result of exposure to the health care system. These events are likely amenable to prevention by changes at the system or provider level.
- PSIs are defined at the provider level (per 1000 discharges) (except PSI 5)
  - ✓ Detects potentially preventable complications that occur during the same hospital stay with the patient's initial care
- Developed by the **Agency for Healthcare Research and Quality (AHRQ)**
- Originally released in March 2003, last updated August 2023 (v2023)

# Patient Safety Indicators (PSI)

- **Current PSIs**

- Death Rate in Low-Mortality Diagnosis Related Groups (DRGs) (PSI 02)
- Pressure Ulcer Rate (PSI 03)
- Death Rate Among Surgical Inpatients with Serious Treatable Conditions (PSI 04)
- Retained Surgical Item or Unretrieved Device Fragment Count (PSI 05)
- Iatrogenic Pneumothorax Rate (PSI 06)
- Central Venous Catheter-Related Blood Stream Infection Rate (PSI 07)
- In-Hospital **Fall-Associated with Hip** Fracture Rate (PSI 08)
- Postoperative Hemorrhage or Hematoma Rate (PSI 09)
- Postoperative Acute Kidney Injury Requiring Dialysis (PSI 10)
- Postoperative Respiratory Failure Rate (PSI 11)

# Patient Safety Indicators (PSI)

- **Current PSIs (con't.)**
  - Postoperative Pulmonary Embolism or Deep Vein Thrombosis Rate (PSI 12)
  - Postoperative Sepsis Rate (PSI 13)
  - Postoperative Wound Dehiscence Rate (PSI 14)
  - Unrecognized Abdominopelvic Accidental Puncture or Laceration Rate (PSI 15)
  - ~~Transfusion Reaction Count (PSI 16) (retired effective version 2019)~~
  - Birth Trauma Rate—Injury to Neonate (PSI 17)
  - Obstetric Trauma Rate-Vaginal Delivery With Instrument (PSI 18)
  - Obstetric Trauma Rate-Vaginal Delivery Without Instrument (PSI 19)

## **AHRQ PSI-90 Patient Safety and Adverse Events Composite**

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## PSI 90

- Includes the following PSIs in a weighted score:
  - PSI 03 Pressure Ulcer Rate
  - PSI 06 Iatrogenic Pneumothorax Rate
  - PSI 08 In-Hospital Fall With Hip Fracture Rate
  - PSI 09 Perioperative Hemorrhage or Hematoma Rate
  - PSI 10 Postoperative Acute Kidney Injury Requiring Dialysis
  - PSI 11 Postoperative Respiratory Failure Rate
  - PSI 12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate
  - PSI 13 Postoperative Sepsis Rate
  - PSI 14 Postoperative Wound Dehiscence Rate
  - PSI 15 Abdominopelvic Accidental Puncture or Laceration Rate
- The weighted average of the observed to expected ratios for the following component indicators

# PSI 90

**Table 2. Composite Weights for PSI 90, v2023**

INDICATOR	HARM WEIGHT	VOLUME WEIGHT	COMPONENT WEIGHT
PSI 03 Pressure Ulcer Rate	0.3080	0.1155	0.1809
PSI 06 Iatrogenic Pneumothorax Rate	0.1381	0.0464	0.0326
PSI 08 In-Hospital Fall-Associated Fracture Rate	0.1440	0.0669	0.0490
PSI 09 Postoperative Hemorrhage or Hematoma Rate	0.0570	0.1347	0.0390
PSI 10 Postoperative Acute Kidney Injury Requiring Dialysis Rate	0.3584	0.0281	0.0512
PSI 11 Postoperative Respiratory Failure Rate	0.2219	0.2097	0.2366
PSI 12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	0.1557	0.2195	0.1738
PSI 13 Postoperative Sepsis Rate	0.3102	0.1244	0.1963
PSI 14 Postoperative Wound Dehiscence Rate	0.1441	0.0227	0.0166
PSI 15 Abdominopelvic Accidental Puncture or Laceration Rate	0.1474	0.0322	0.0241

Source: 2019, 2020 and 2021 State Inpatient Databases (SID), Healthcare Cost and Utilization Program, Agency for Healthcare Research and Quality. 2012-2013 Medicare Fee-for-Service claims data.



## How is PSI 90 Utilized?

- As an individual measure reported on AHRQ Website
- As a measure publically reported on the Medicare.gov (Hospital Compare website) AKA-CMS 5-star rating
- CMS utilizes a recalibrated PSI-90 composite to measure domain 1
- Comprises Domain 1 of the HAC Reduction Program (1/6 of total HACRP score) – **Suspended for FY2023 but reinstated for FY2024**
  - See HACRP module for details on calculations and expected rates
- Note that CMS recalibrated PSI 90 is permanently removed from Value-Based Purchasing (HVBP) (was part of the Safety domain)

## CMS PSI 90

- How can quality, coding, and CDI impact these measures?

- ① Ensure accurate reporting of complications
- ① Review/clarify POA status
- ① Review/clarify significance of documented “complications”
- ① Review/clarify use of “postoperative” when describing conditions in the post-operative period
- ① Perform clinical validity for conditions such as postoperative respiratory failure



## PSIs: What Is the Bottom Line?

- Documentation, documentation, documentation
- Query, query, query
- Appropriate assignment of POA status and clarification when clinically appropriate
- Stay current on NQF, AHRQ, official coding guidelines and *AHA Coding Clinic* advice
- Capture of/clarification of exclusion diagnoses
- When “possible” complications are documented, ensure careful review of documentation and clinical indicators prior to assigning code
  - If clinically appropriate, clarify if complication was ruled in or out

## **CMS Five-Star Rating System**

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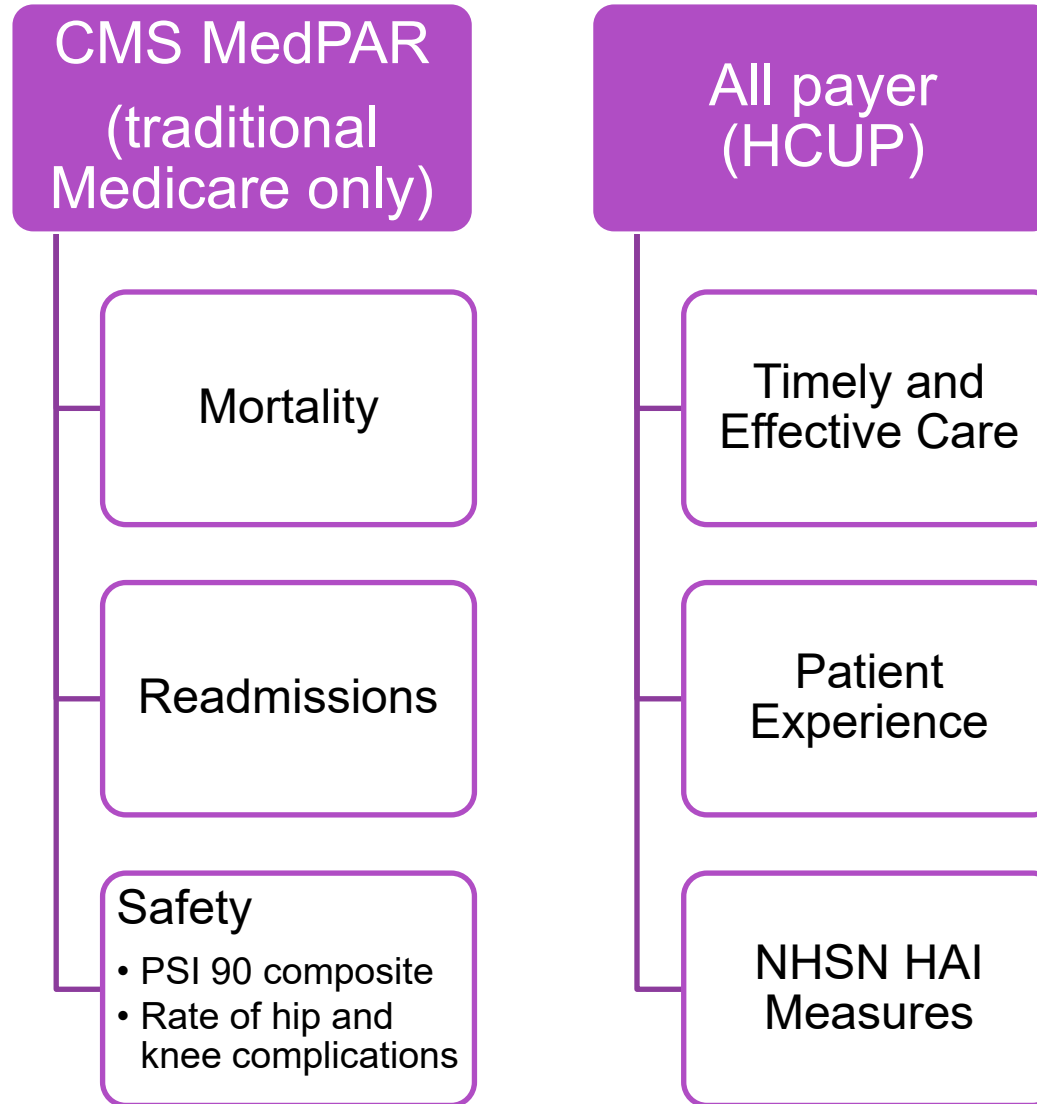
# Measure Weights

Measure Group	Weight Used in Calculation
Mortality	22%
Safety	22%
Readmission	22%
Patient Experience	22%
Timely & Effective Care	12%

# Overall Methodology

- Overall Star rating is not an inpatient nor outpatient methodology . . . it is an overall facility measure comprising both inpatient and outpatient measures
- The measures included are determined via several steps
  - Measures are selected for inclusion in the methodology
  - Measures are assigned to one of the five measures groups
  - Measures are reviewed to ensure:
    - Sufficient quantity of hospitals report on a measure (minimum of 100 hospitals)
    - Measures are then further reviewed:
      - Lack of duplicity
      - Required reporting on Care Compare
      - Measures are non-structural or non-linear

# Data Sources



# **Mortality Methodology**



# Mortality

Measure group	Measures	Data Collection Period	
		From	Through
Mortality (7)	Death rate for coronary artery bypass graft (CABG) surgery patients	7/1/2018	6/30/2021*
	Death rate for chronic obstructive pulmonary disease (COPD) patients	7/1/2018	6/30/2021*
	Death rate for heart failure patients	7/1/2018	6/30/2021*
	Death rate for pneumonia patients	7/1/2018	6/30/2021*
	Death rate for stroke patients	7/1/2018	6/30/2021*
	Death rate for heart attack patients	7/1/2018	6/30/2021*
	Deaths among patients with serious treatable complications after surgery**	7/1/2018	6/30/2021*

*An asterisk indicates measure reporting periods that would have normally included 1Q and 2Q 2020.*

**\*\*PSI 4**

# What CDI/Coding Can Influence in Mortality

## Risk adjustment

- YNHH CORE\* created risk-adjustment for expected rates for each mortality cohort
- Query for and capture of risk-adjusted diagnoses influences expected rates
- Note: diagnoses must be POA to be included in risk-adjustment

## PSI 4

- Death among patients with serious complications after surgery
- Partially amenable to CDI efforts
  - Ensure patient reported in the correct stratum in PSI or meets reporting at all

# **Safety Methodology**

# Safety of Care

Measure group	Measures	Data Collection Period	
		From	Through
Safety of care (8)	Central line-associated bloodstream infections (CLABSI)	4/1/2021	3/31/2022
	Catheter-associated urinary tract infections (CAUTI)	4/1/2021	3/31/2022
	Surgical site infections from colon surgery (SSI: Colon)	4/1/2021	3/31/2022
	Surgical site infections from abdominal hysterectomy (SSI: Hysterectomy)	4/1/2021	3/31/2022
	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) Blood Laboratory-identified Events (Bloodstream infections)	4/1/2021	3/31/2022
	<i>Clostridium difficile</i> ( <i>C. diff</i> ) Laboratory-identified Events (Intestinal infections)	4/1/2021	3/31/2022
	Rate of complications for hip/knee replacement patients	4/1/2018	3/31/2021*
**PSI 90 Composite	Serious complications**	7/1/2019	6/30/2021*

An asterisk indicates measure reporting periods that would have normally included 1Q and 2Q 2020.

# Rate of Hip and Knee Complications

The hip/knee replacement complication rate is an estimate of complications within the applicable time periods. The rate is calculated for patients electively admitted for primary total hip and/or knee replacement (same methodology for THA/TKA readmissions and mortality). Medicare measures the likelihood that at least 1 of 8 complications occurs within a specified time period:

>

Acute MI, pneumonia, or sepsis/septicemia/shock during the index admission or within 7 days of admission

>

Surgical site bleeding, pulmonary embolism, or death during the index admission or within 30 days of admission

>

Mechanical complications or periprosthetic joint infection/wound infection during the index admission or within 90 days of admission


## What CDI Can Influence in Safety

**The first 6** are chart abstracted measures and reported via National Health Safety Network (NHSN) by each hospital and not able to be influenced by CDI

### **Rate of hip and knee complications**

- Ensure appropriate cause and effect established (site and device infections)
- Perform clinical validity of AMI, sepsis and pneumonia

### **PSI 90 Composite**

- Careful review of any PSI 90 condition
  - Heavy emphasis on PSI 3, 11, 12 and 13 (highest contribution to overall PSI-90 score)
- 

# **Readmissions Methodology**

# Readmissions

Measure group	Measures	Data Collection Period	
		From	Through
Readmission (11)	Rate of readmission for coronary artery bypass graft (CABG) surgery patients	7/1/2018	6/30/2021*
	Rate of readmission for chronic obstructive pulmonary disease (COPD) patients	7/1/2018	6/30/2021*
	Hospital return days for heart failure patients	7/1/2018	6/30/2021*
	Rate of readmission after hip/knee surgery	7/1/2018	6/30/2021*
	Hospital return days for pneumonia patients	7/1/2018	6/30/2021*
	Rate of readmission after discharge from hospital (hospital-wide)	7/1/2020	6/30/2021*

*An asterisk indicates measure reporting periods that would have normally included 1Q and 2Q 2020.*



## Readmissions (continued)

Measure group	Measures	Data Collection Period	
		From	Through
Readmission (11)	Hospital return days for heart attack patients	7/1/2018	6/30/2021*
	Rate of unplanned hospital visits for patients receiving outpatient chemotherapy	1/1/2021	12/31/2021
	Rate of emergency department visits for patients receiving outpatient chemotherapy	1/1/2021	12/31/2021
	Ratio of unplanned hospital visits after hospital outpatient surgery	1/1/2021	12/31/2021
	Rate of unplanned hospital visits after an outpatient colonoscopy	1/1/2019	12/31/2021*

*An asterisk indicates measure reporting periods that would have normally included 1Q and 2Q 2020.*

## What CDI Can Influence in Readmissions

30-day readmissions (from discharge date) following AMI, COPD, CABG and hip/knee surgery as well as hospital-wide readmissions are able to be influenced by CDI:



- Clarification and capture of risk-adjusted diagnoses
- Selection of principal diagnosis for medical admissions

Rate of unplanned admission and readmissions



- Partially under coding control via scrutiny of admission type
- More influenced by proper patient placement by UR/CM

# **Patient Experience**

# Patient Experience

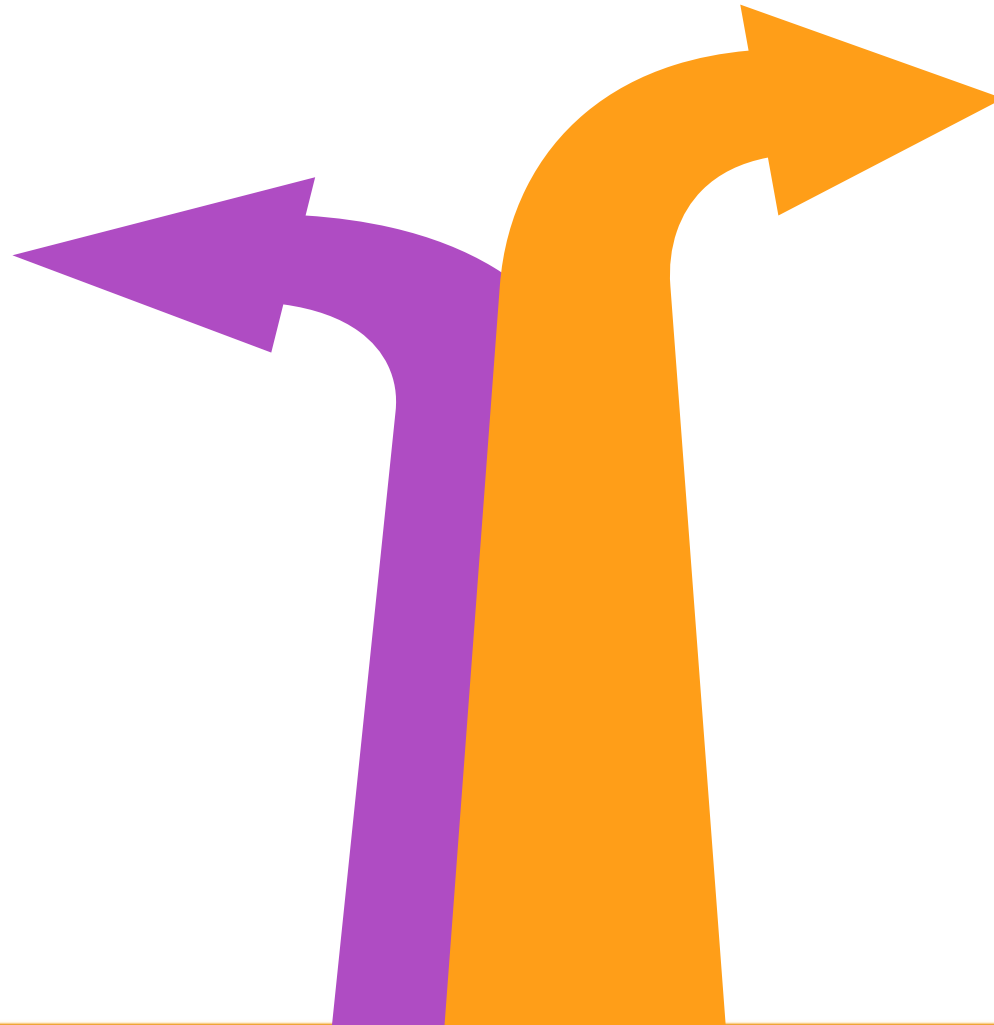
Eight measures from HCAHPS are used in CMS Star Ratings:

- 1 Communication with nurses
- 2 Communication with doctors
- 3 Staff responsiveness
- 4 Communication about medicines
- 5 Care transition
- 6 Discharge information
- 7 Cleanliness and quietness of hospital environment
- 8 Hospital rating, formerly known as overall rating of hospital

4/1/2021 – 3/31/2022

## What CDI Can Influence in Patient Experience

Least amenable  
to CDI efforts



Does the chart tell  
a complete and  
accurate story?

Studies have shown  
there is a direct  
correlation between  
transparency and  
patient satisfaction

# **Timely and Effective Care**

# Timely and Effective Care

Measure group	Measures	Data Collection Period	
		From	Through
Timely and effective care (13)	Percentage of healthcare workers given influenza vaccination	10/1/2021	3/31/2022
	COVID-19 vaccination coverage among health care providers**	1/1/2022	3/31/2022
	Percentage of patients who left the emergency department before being seen	1/1/2021	12/31/2021
	Percentage of patients who came to the emergency department with stroke symptoms who received brain scan results within 45 minutes of arrival	4/1/2021	3/31/2022
	Percentage of patients receiving appropriate recommendation for follow-up screening colonoscopy	1/1/2021	12/31/2021

\*\* Added with July 2023 Star ratings.

## Timely and Effective Care (continued)

Measure group	Measures	Data Collection Period	
		From	Through
Timely and effective care (13)	Percentage of mothers whose deliveries were scheduled too early (1-2 weeks early), when a scheduled delivery was not medically necessary	4/1/2021	3/31/2022
	Percentage of patients who received appropriate care for severe sepsis and septic shock	4/1/2021	3/31/2022
	Percentage of outpatients with chest pain or possible heart attack who got drugs to break up blood clots within 30 minutes of arrival	4/1/2021	3/31/2022
	<del>Percentage of patients receiving appropriate radiation therapy for cancer that has spread to the bone*</del>	<del>1/1/2019</del>	<del>12/31/2019</del>
	Average (median) number of minutes before outpatients with chest pain or possible heart attack who needed specialized care were transferred to another hospital	4/1/2021	3/31/2022

\*\* Retired with July 2023 Star ratings.



## Timely and Effective Care (continued)

Measure group	Measures	Data Collection Period	
		From	Through
Timely and effective care (13)	Average (median) time patients spent in the emergency department before leaving from the visit	4/1/2021	3/31/2022
	Percentage of outpatients with low-back pain who had an MRI without trying recommended treatments first, such as physical therapy	7/1/2020	6/30/2021
	Percentage of outpatient CT scans of the abdomen that were “combination” (double) scans	7/1/2020	6/30/2021
	Percentage of outpatients who got cardiac imaging stress tests before low-risk outpatient surgery	7/1/2020	6/30/2021

## What CDI Can Influence in Timely and Effective Care

**Most measures are not amenable to CDI efforts**

**C-section or vaginal delivery prior to 39 complete weeks of gestation**

Review of circumstances of admission

**Sepsis**

Clinical validation of sepsis following organizational definition

# Star Ratings Results

Overall rating	2021	2022	2023
	Number of Hospitals/ Percentage	Number of Hospitals/ Percentage	Number of Hospitals/ Percentage
1 star	204 (6.08%)	198 (6.34%)	250 (8.13%)
2 stars	690 (20.57%)	702 (22.49%)	668 (21.72%)
3 stars	1018 (30.34%)	895 (28.68%)	872 (28.35%)
4 stars	988 (29.44%)	895 (28.68%)	803 (26.11%)
5 stars	455 (13.56%)	431 (13.81%)	483 (15.70%)



# Star Rating Example

Hospital

LOCATION

PHONE NUMBER

## Medical Center

Overall star rating:  Patient survey rating: 

[Save to Favorites](#)


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**Ratings** Quality Details Affiliated Doctors & Clinicians Location

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RATINGS

### Overall star rating



The overall star rating is based on how well a hospital performs across different areas of quality, such as treating heart attacks and pneumonia, readmission rates, and safety of care.

[Learn how Medicare calculates this rating](#)

[View Rating Details](#)

<https://www.medicare.gov/carecompare/?providerType=Hospital>

# Overall Star Rating Details

## Overall star rating details

This shows how individual hospitals perform compared to all hospitals across the country for the 5 groups or categories of quality measures that make up for the overall star rating.

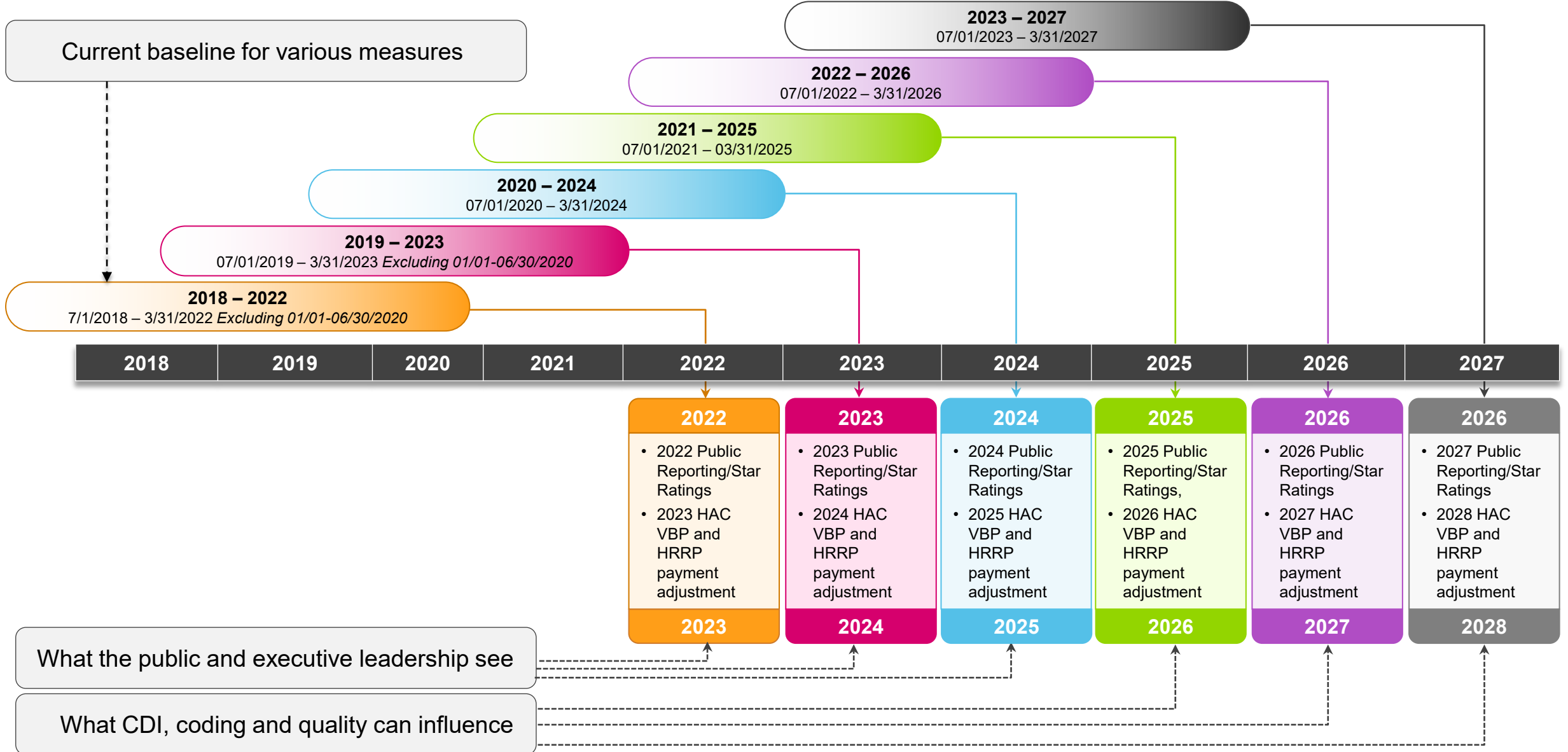
### Overall star rating




The overall star rating is based on how well a hospital performs across different areas of quality, such as treating heart attacks and pneumonia, readmission rates, and safety of care.

Mortality	<b>7 of 7</b> measures reported within the group	▼
Safety of Care	<b>8 of 8</b> measures reported within the group	▼
Readmission	<b>9 of 11</b> measures reported within the group	▼
Patient Experience	<b>8 of 8</b> measures reported within the group	▼
Timely and Effective Care	<b>9 of 12</b> measures reported within the group	▼

# CMS Reporting and Payment Adjustment



# Challenges on the Journey

- 
- Lack of knowledge of Overall Star Rating methodology
  - Lack of knowledge of specific components such as 30-day mortality and readmissions and total hip and knee complications measures
  - Only some categories can be influenced by CDI, coding, and quality collaboration
    - Mortality
    - Readmissions (HWR and 30-day readmissions following selected cohorts)
    - Timely and effective care (sepsis and early delivery)
  - Lack of coordinated effort/collaboration between teams
  - Unrealistic expectations for success
  - Unrealistic expectations for timeliness of success
    - As the data collection for mortality and readmissions are quite “old,” current efforts will not be reflected in the data until at least 2025



# acdis® 2024 **DISCOVER**

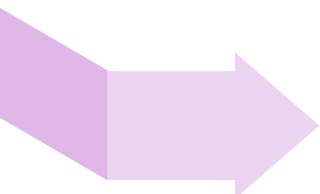
New Horizons for CDI

## Wrap Up

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## Summary



CDI programs must evolve to fully risk-adjust their population  
CDI and coding professionals need to review beyond “basic impact” to assess for:

- Risk-adjusted conditions evident but not documented or captured
- Accurate assignment/clarification of POA status of all conditions (not just those noted as complications of care)



Workflow should be reviewed to determine:

- Assignment of POA at time of code acceptance
- Full capture of reportable conditions by CDI as well as coding



Educate providers on impact of documentation of all conditions meeting UHDDS reporting requirements for risk-adjustment

## Thank you. Questions?

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In order to receive your continuing education certificate(s) for this program, you must complete the online evaluation. The link can be found in the continuing education section of the program guide.

## References

- <https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/readmissions-reduction-program.html>
- <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology>
- Quality Indicator User Guide: Patient Safety Indicators (PSI) Composite Measures Version 2023 [AHRQ QI: PSI Technical Specifications Updates](#)
- <https://www.qualitynet.org/inpatient/hrrp>
- <https://www.qualitynet.org/inpatient/asures/mortality/methodology>
- [Elixhauser Comorbidity Software Refined for ICD-10-CM \(ahrq.gov\)](#)
- Quality Indicator User Guide: Patient Safety Indicators (PSI) Composite Measures Version 2022 [https://qualityindicators.ahrq.gov/asures/PSI\\_TechSpec](https://qualityindicators.ahrq.gov/asures/PSI_TechSpec)