

# **2017 California Medical Price and Quality Transparency Initiative**

How We Rate Hospitals & Doctor Groups  
Payment Estimates

Consumer Reports  
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# Table of Contents

	<u>Page</u>
1. Overview.....	4
2. Quality Ratings.....	7
a. Hospitals.....	7
i. Childbirth	
ii. Hip & Knee Replacement	
iii. COPD	
b. Doctor Groups.....	14
i. Diabetes	
ii. Back Pain	
iii. Cancer Screening	
iv. Pediatric Care	
3. Patient Experience.....	16
4. Hospital Deficiencies.....	17
5. Payment Estimates.....	18

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# 1. Overview

The Ratings for 2017 California Medical Price and Quality Transparency Initiative for publication on <http://www.CAHealthcareCompare.org> include measures of Patient Outcomes (such as avoiding infections, readmissions, and complications in surgical patients), Patient Experience (including communication about hospital discharge, communication about drug information and other measures), and Hospital and Doctor Group Practices (appropriate use of imaging for back pain, overutilization of cesareans & episiotomies, etc.). Several of these measures are then combined to create our overall scores for the conditions: Maternity Care, Hip & Knee Replacements, and Diabetes care. This document describes how these individual and overall Ratings were created.

The source data comes from the Centers for Medicare and Medicaid Services (CMS), California Maternal Quality Care Collaborative (CMQCC) through the California Hospitals Assessment and Reporting Taskforce, the California Department of Public Health (CDPH), and the Integrated Healthcare Association (IHA). Our research entails an in-depth evaluation of the quality and objectivity of each of these sources. If the data meet our quality standards, we then turn it into usable information that is accessible and meaningful to consumers. Details about each measure are shown in the table on the following page. We used the data most recently available at the time of this publication and will periodically update the data as they become publically available.

With each set of measures, partner organizations — the California Department of Insurance (CDI), Consumer Reports (CR), University of California, San Francisco (UCSF), University of California, Davis (UCD), and HonestHealth, as well as external expert and stakeholder reviewers, gave feedback on measure and Ratings methods. That feedback is incorporated in the methods described herein.

Our Ratings use a 1-to-5 scale for hospital Ratings and 1-to-4 scale for doctor group Ratings, where higher numbers are better. For the components of the individual and overall Ratings, our method varied to remain consistent with existing efforts and availability of industry targets like Healthy People 2020. The technical details for each Rating are described in the sections of this report that follow.

These were paired with price data at the level of the California health insurance geographic Rating Regions to give users information on both price and quality when choosing healthcare providers. The cost information displayed on this site reflects the patient payments, insurance payments, and overall payments made to providers and facilities based on individual services or a bundle of services provided from Truven Health MarketScan® Research Databases (Truven Health Analytics Inc, Ann Arbor, Michigan) claims data. The method used to generate the payment estimates varied by the claim type and grouping of claims and will be described in detail later in this document.

## Summary of Hospital & Doctor Group Ratings Domains

Provider Type	Topic	Measures	Source	Dates	
Hospitals	Childbirth	Overall Childbirth Rating			
		Cesarean rates (NTSV)	CMQCC	July 2015 - June 2016	
		Episiotomy	CMQCC	July 2015 - June 2016	
		Breastfeeding	CDPH	January 2016 - December 2016	
		Vaginal Birth after Cesarean (VBAC)	CMQCC		
		Cesarean surgical site infection	CDPH	January 2015 - December 2015	
	Hip/Knee Replacements	Overall Hip/Knee Rating			
		Hip/Knee readmissions	CMS	July 2013 - June 2016	
		Hip/Knee complications	CMS	April 2015 - March 2016	
		Hip surgical site infections	CDPH	January 2015 - December 2015	
		Knee surgical site infections	CDPH	January 2015 - December 2015	
	Chronic Obstructive Pulmonary Disease (COPD)	Overall COPD Rating			
		COPD mortality	CMS	July 2013 - June 2016	
		COPD readmissions	CMS	July 2013 - June 2016	
	Hospital Deficiencies	Deficiencies	CMS	September 2013 - September 2016	
	Patient Experience	HCAHPS Star Rating Performance	CMS	October 2015 – September 2016	
	Doctor Groups	Low Back Pain	Avoiding overuse of imaging	IHA	January 2015 - December 2015
		Cancer Screening	Overall Cancer Screening	IHA	January 2015 - December 2015
			Colon cancer screening	IHA	January 2015 - December 2015
Cervical cancer screening			IHA	January 2015 - December 2015	
Breast cancer screening			IHA	January 2015 - December 2015	
Diabetes		Overall Diabetes Rating	IHA	January 2015 - December 2015	
		Kidney functioning	IHA	January 2015 - December 2015	
		Blood pressure controlled	IHA	January 2015 - December 2015	
		Blood sugar screening	IHA	January 2015 - December 2015	

		Blood sugar kept under control	IHA	January 2015 - December 2015
	Pediatric Care	Overall Pediatric Care	IHA	January 2015 - December 2015
		Treating Children with Upper Respiratory Infections	IHA	January 2015 - December 2015
		Treating Children with Throat Infections	IHA	January 2015 - December 2015
		Immunizations for Children	IHA	January 2015 - December 2015
		Immunizations for Early Teens	IHA	January 2015 - December 2015
		HPV Vaccine for Male Adolescents	IHA	January 2015 - December 2015
		HPV Vaccine for Female Adolescents	IHA	January 2015 - December 2015

## 02. Quality Ratings

### 2.1 Hospitals

#### General Approach to Hospital Ratings

Our Ratings use a 1-to-5 scale for hospitals where higher Ratings are better. A target rate of performance was identified (such as Healthy People 2020) to be used as a benchmark. In the event that a target could not be identified, hospital performance was placed into quintiles (for example: top 10<sup>th</sup> percentile assigned a 5 rating, 90<sup>th</sup>-70<sup>th</sup> percentile assigned a 4 rating, 70<sup>th</sup>-40<sup>th</sup> percentile assigned a 3 rating, 40<sup>th</sup>-10<sup>th</sup> percentile assigned a 2 rating, and the bottom 10<sup>th</sup> percentile assigned a 1 rating). Some of these Ratings for individual measures were then combined into composite Ratings. For certain measures, if too many hospitals did not have enough data then that measure was excluded from the composite.

To create the composite Ratings, we first put the individual measures on a common scale. This “converted score” scale ranges from 0.5 to 5.5. Converting our Ratings to this scale enables us to combine and compare different quality components on a common scale. The technical details for expressing each measure on a converted score (CS) scale and for creating the composite are described in the applicable sections below.

#### 2.1.1 Childbirth

Our Ratings for Childbirth include data from CMQCC based on California Office of Statewide Health Planning and Development (OSPHD) Patient Discharge and Vital Records data and California Department of Public Health (CDPH) data from the Maternal, Child and Adolescent Health and Newborn Screening Program.

Descriptions of these Ratings are included in the table below:






Measure	Description	Source	Dates
<b>Overall Childbirth Rating</b>	This is a combination of Cesarean rates, episiotomy rates, and breastfeeding rates.	N/A	Varied, see below
<b>Cesarean rates (NTSV)</b>	The percentage of first-time moms who had a C-section at this hospital. It does not include women who had a prior C-section or who had multiple babies in that delivery, delivered pre-term, had a delivery where the baby was in an abnormal position (for example, feet first or face up), or a delivery where the baby died.	<a href="#">California Maternal Quality Care Collaborative (CMQCC)**</a>	July 2015 - June 2016
<b>Episiotomy rates</b>	The percentage of women who had an episiotomy (excluding shoulder dystocia) - a surgical cut used to enlarge the vaginal opening.	<a href="#">California Maternal Quality Care Collaborative (CMQCC)**</a>	July 2015 - June 2016

<b>Breastfeeding rates</b>	The percent of newborns exclusively fed breast milk during the newborn's entire hospitalization minus exclusions	<a href="#">California Department of Public Health (CDPH)</a>	January 2016 - December 2016
<b>*Vaginal Birth after Cesarean (VBAC)</b>	The percentage women who had a previous C-section and delivered vaginally in a subsequent delivery.	<a href="#">California Maternal Quality Care Collaborative (CMQCC)**</a>	Not Rated at this time
<b>*Cesarean surgical site infection</b>	This measure compares the incidence of infections contracted by patients following a C-section at the hospital with national benchmarks published by the CDC.	<a href="#">California Department of Public Health (CDPH)</a>	January 2015 - December 2015

\*Not included in calculation of Overall Childbirth Rating

\*\*Based on Statewide OSHPD Patient Discharge and Vital Records data

Ratings for individual measures are created as described in the following table:

Measure	Performance Better <<<----->>> Worse				
					
<b>Cesarean rates (NTSV)</b>	≤ 18.4%	Target 2: ≤ 23.9%	≤27.0%	≤33.3%	>33.3%
<b>Episiotomy rates</b>	Target: ≤ 5%	1 <sup>st</sup> Quartile Below Target	2 <sup>nd</sup> Quartile Below Target	3 <sup>rd</sup> Quartile Below Target	4 <sup>th</sup> Quartile Below Target
<b>Breastfeeding rates</b>	Target: > 85.8%	1 <sup>st</sup> Quartile Below Target	2 <sup>nd</sup> Quartile Below Target	3 <sup>rd</sup> Quartile Below Target	4 <sup>th</sup> Quartile Below Target
<b>Vaginal Birth after Cesarean (VBAC)</b>	See description below				
<b>Cesarean surgical site infection (see description below)</b>	SIR = 0	0 < SIR ≤ 0.5	0.5 < SIR ≤ 1.0	1.0 < SIR ≤ 2.0	2.0 ≤ SIR



## Cesarean Surgical Site Infection







For Cesarean Surgical site infections (as well as hip and knee surgical site infections) we use the Standardized Infection Ratio (SIR), a measure developed by the CDC and modeled after the standardized mortality ratio (or standardized incidence ratio), a common measure in epidemiology. The basis of the SIR is the number of observed infections at any one hospital, divided by the number of infections that would be predicted (sometimes called 'expected') for that hospital (based on aggregate data from CDC). A Standardized Infection Ratio of 1.0 means that the hospital reported the same number of infections as would be predicted from national baseline data. A SIR of more than 1.0 reflects more infections than predicted, and SIR less than 1.0 implies fewer infections than predicted.

## Vaginal Birth after Cesarean (VBAC)

Instead of using the 5 point scale for VBACs, we use 3 categories of performance: (1) Beat Target (>18.2%), Periodically Performed (5%-18.2%), Rarely/did not perform (<5%).

## Overall Childbirth Rating

The Overall Childbirth Rating combines C-section rates, episiotomy rates, and breastfeeding rates together into a single Rating. In order to calculate this, the 3 individual measures are first put on the same scale using Converted Scores (CSs) on a scale of 0.5 to 5.5 using piecewise linear transformation. The new Converted Scores are then averaged. This score is used for the overall rating as described in the table below.

	Overall Childbirth Rating	Converted Score Range
<b>Better</b>  <b>Worse</b>		$5.5 \geq CS \geq 4.5$
		$4.5 > CS \geq 3.5$
		$3.5 > CS \geq 2.5$
		$2.5 > CS \geq 1.5$
		$1.5 > CS \geq 0.5$






## 2.1.2 Hip/Knee Replacements

Measures used for calculating Hip/Knee Replacements Ratings:

Measure	Description	Source	Dates
<b>Overall Hip/Knee Replacement</b>	This Rating is a combination of hip/knee replacement readmissions and complications.	N/A	N/A
<b>Hip/Knee readmissions</b>	30-day unplanned readmissions for hip/knee replacement (Medicare patients 65 and older). These data are risk adjusted for patient characteristics such as age and comorbidities.	<a href="#">Centers for Medicare &amp; Medicaid Services (CMS)</a>	July 2013 - June 2016
<b>Hip/Knee complications</b>	Likelihood that at least one of eight complications occurs in a Total Hip or Total knee replacement (Medicare patients 65 and older).	<a href="#">Centers for Medicare &amp; Medicaid Services (CMS)</a>	April 2015 - March 2016
<b>*Hip surgical site infections (SSI)</b>	This measure compares the incidence of infections contracted by patients following a total hip replacement at the hospital with national benchmarks published by the Centers for Disease Control & Prevention (CDC).	<a href="#">California Department of Public Health (CDPH)</a>	January 2015 - December 2015
<b>*Knee surgical site infections (SSI)</b>	This measure compares the incidence of infections contracted by patients following a total knee replacement at the hospital with national benchmarks published by the CDC.	<a href="#">California Department of Public Health (CDPH)</a>	January 2015 - December 2015







\*Not included in calculation of Overall Hip/Knee Replacement Rating

Cut-offs used for calculating Hip/Knee Replacements Ratings:

Measure	Performance Better <<<----->>> Worse				
					
<b>Hip/Knee Readmission</b>	Min-10 <sup>th</sup> percentile	>10 <sup>th</sup> to 30 <sup>th</sup> percentile	>30 <sup>th</sup> to 70 <sup>th</sup> percentile	>70 <sup>th</sup> to 90 <sup>th</sup> percentile	>90 <sup>th</sup> percentile
<b>Hip/Knee Complication</b>	Min-10 <sup>th</sup> percentile	>10 <sup>th</sup> to 30 <sup>th</sup> percentile	>30 <sup>th</sup> to 70 <sup>th</sup> percentile	>70 <sup>th</sup> to 90 <sup>th</sup> percentile	>90 <sup>th</sup> percentile
<b>Hip SSI</b>	SIR = 0	0 < SIR ≤ 0.5	0.5 < SIR ≤ 1.0	1.0 < SIR ≤ 2.0	2.0 ≤ SIR
<b>Knee SSI</b>	SIR = 0	0 < SIR ≤ 0.5	0.5 < SIR ≤ 1.0	1.0 < SIR ≤ 2.0	2.0 ≤ SIR

### Hip/Knee Readmission and Complication Ratings







The reported readmission and complication rates were re-scaled on a Converted Score scale, as described in the chart below. Cut points for the Ratings are based on a combination of the data distribution and on input and review by experts in quality measurement and clinical medicine.

	Rating	Converted Score Range	Readmission/Complication Rate*
<b>Better</b>  <b>Worse</b>		$5.5 \geq CS \geq 4.5$	Min-10 <sup>th</sup> percentile
		$4.5 > CS \geq 3.5$	>10 <sup>th</sup> to 30 <sup>th</sup> percentile
		$3.5 > CS \geq 2.5$	>30 <sup>th</sup> to 70 <sup>th</sup> percentile
		$2.5 > CS \geq 1.5$	>70 <sup>th</sup> to 90 <sup>th</sup> percentile
		$1.5 > CS \geq 0.5$	>90 <sup>th</sup> percentile

\*Percentiles are based on national rates

### Overall Hip/Knee Replacement Rating

The Overall Hip/Knee Rating combines Hip/Knee Replacement Readmission Rating and Complication Rating together into a single composite. In order to calculate this, the 2 individual measures are put on the same scale using Converted Scores (CS), as described above, which are then averaged. This score is used to determine the overall Rating as described in the table below.






	Overall Hip/Knee Replacement Rating	Converted Score Range
<b>Better</b>  <b>Worse</b>		$5.5 \geq CS \geq 4.5$
		$4.5 > CS \geq 3.5$
		$3.5 > CS \geq 2.5$
		$2.5 > CS \geq 1.5$
		$1.5 > CS \geq 0.5$

## 2.1.3 Chronic Obstructive Pulmonary Disease (COPD)

Measures used for calculating Chronic Obstructive Pulmonary Disease (COPD):







Measure	Description	Source	Dates
Overall COPD	This Rating is a combination of COPD readmissions and mortality.	N/A	N/A
COPD Readmission	30-day unplanned readmissions for COPD (Medicare patients 65 and older). These data are risk adjusted for patient characteristics such as age and comorbidities.	<a href="#">Centers for Medicare &amp; Medicaid Services (CMS)</a>	July 2013 - June 2016
COPD Mortality	Mortality rate for COPD (Medicare patients 65 and older). These data are risk adjusted for patient characteristics such as age and comorbidities.	<a href="#">Centers for Medicare &amp; Medicaid Services (CMS)</a>	July 2013 - June 2016

Cut-offs used for calculating COPD Ratings:

Measure	Performance Better <<<----->>> Worse				
					
COPD Readmission	Min-10 <sup>th</sup> percentile	>10 <sup>th</sup> to 30 <sup>th</sup> percentile	>30 <sup>th</sup> to 70 <sup>th</sup> percentile	>70 <sup>th</sup> to 90 <sup>th</sup> percentile	>90 <sup>th</sup> percentile
COPD Mortality	Min-10 <sup>th</sup> percentile	>10 <sup>th</sup> to 30 <sup>th</sup> percentile	>30 <sup>th</sup> to 70 <sup>th</sup> percentile	>70 <sup>th</sup> to 90 <sup>th</sup> percentile	>90 <sup>th</sup> percentile

### COPD Readmission and Mortality Ratings







The reported readmission and mortality rates were re-scaled on a Converted Score scale, as described in the chart below. Cut points for the Ratings are based on a combination of the data distribution and on input and review by experts in quality measurement and clinical medicine.

	Rating	Converted Score Range	Readmission/Mortality Rate*
<b>Better</b>  <b>Worse</b>		$5.5 \geq CS \geq 4.5$	Min-10 <sup>th</sup> percentile
		$4.5 > CS \geq 3.5$	>10 <sup>th</sup> to 30 <sup>th</sup> percentile
		$3.5 > CS \geq 2.5$	>30 <sup>th</sup> to 70 <sup>th</sup> percentile
		$2.5 > CS \geq 1.5$	>70 <sup>th</sup> to 90 <sup>th</sup> percentile
		$1.5 > CS \geq 0.5$	>90 <sup>th</sup> percentile

\*Percentiles are based on national rates

**Overall COPD Replacement Rating**

The Overall COPD Rating combines the COPD Readmission Rating and Mortality Rating together into a single composite. In order to calculate this, the 2 individual measures are put on the same scale using Converted Scores (CS), as described above, which are then geometrically averaged. This score is used to determine the overall Rating as described in the table below.





	Overall COPD Rating	Converted Score Range
<b>Better</b>  <b>Worse</b>		$5.5 \geq CS \geq 4.5$
		$4.5 > CS \geq 3.5$
		$3.5 > CS \geq 2.5$
		$2.5 > CS \geq 1.5$
		$1.5 > CS \geq 0.5$

## 2.2 Doctor Groups

### General Approach to Doctor Group Ratings

Our Ratings use 1-to-4 scale for doctor groups using a pre-existing ratings method from the Office of the Patient Advocate (OPA) and Integrated Healthcare Association (IHA). These methodologies were used to maintain consistency across tools available to Californians. Below are the cut-offs used for each health topic presented for Doctor Groups (Diabetes, Cancer Screening, and Back Pain). For more detailed information, please visit <http://reportcard.opa.ca.gov/rc/medicalgroupabout.aspx>.

Each of the measures use the following cut-offs:

Performance Better <<<----->>> Worse			
			
Top 10 Percent	50 <sup>th</sup> -89 <sup>th</sup>	25 <sup>th</sup> -49 <sup>th</sup>	Bottom 24%

### 2.2.1 Diabetes

Measures used for calculating Diabetes Ratings:

Measure	Description	Source	Dates
<b>Overall Diabetes Rating</b>	An overall composite Rating for provider performance on Diabetes care.	IHA	January 2015 - December 2015
<b>Kidney functioning</b>	The percentage of patients who received testing for nephropathy (kidney function)	IHA	January 2015 - December 2015
<b>Blood pressure controlled</b>	The percentage of patients whose blood pressure was <140/90.	IHA	January 2015 - December 2015
<b>Blood sugar screening</b>	The percentage of patients who had two HA1c blood sugar tests.	IHA	January 2015 - December 2015
<b>Blood sugar kept under control</b>	The percentage of patients whose most recent HbA1c was <8.0%.	IHA	January 2015 - December 2015

### 2.2.2 Colorectal Cancer Screening

Measure used for calculating Colorectal Cancer Screening Rating:

Measure	Description	Source	Dates
<b>Overall Cancer Screening</b>	This Rating is the combination of how well the doctor group was at screening for cancers of the breast, cervix, and colon.	IHA	January 2015 - December 2015
<b>Colon Cancer Screening</b>	This Rating is the percentage of adults 50–75 years of age who had appropriate screening for colorectal cancer.	IHA	January 2015 - December 2015
<b>Breast Cancer Screening</b>	This Rating is the percentage of female patients ages 50 to 75 who had a screening mammogram in the past 2 years.	IHA	January 2015 - December 2015

Measure	Description	Source	Dates
<b>Cervical Cancer Screening</b>	This Rating is the percentage of female patients 18 and older who received appropriate cervical cancer screening.	IHA	January 2015 - December 2015

### 02.2.3 Back Pain

Measure used for calculating Back Pain Ratings:

Measure	Description	Source	Dates
<b>Avoiding Overuse of Imaging</b>	The percentage of members with a primary diagnosis of low back pain who did not have an imaging study (X-ray, MRI, CT scan) within 28 days of the diagnosis.	IHA	January 2015 - December 2015

### 2.2.4 Pediatric Care

Measures used for calculating Pediatric Care Ratings:

Measure	Description	Source	Dates
<b>Overall Pediatric Care</b>	This Rating is a combination of the medical group's appropriate treatment of children for upper respiratory and throat infections, immunizations for children and adolescents, and HPV vaccines in male and female adolescents.	IHA	January 2015 - December 2015
<b>Treating Children with Upper Respiratory Infections</b>	This Rating is based on the percentage of children 3 months to 18 years old who were diagnosed with an upper respiratory infection (URI) and were not improperly prescribed an antibiotic.	IHA	January 2015 - December 2015
<b>Treating Children with Throat Infections</b>	This Rating is based on the percentage of children 2 to 18 years old with sore throats who were prescribed antibiotics and received an A streptococcus (strep) test.	IHA	January 2015 - December 2015
<b>Immunizations for Children</b>	This Rating is based on the percentage of children who received the following vaccines by their second birthday: four diphtheria, tetanus, acellular pertussis (DtaP) vaccinations; three polio (IPV) vaccinations; one measles, mumps, rubella (MMR) vaccination; three flu (HiB) vaccinations; three hepatitis B (HepB) vaccinations; one chicken pox (VZV) vaccination; and four pneumococcal conjugate (PCV) vaccinations.	IHA	January 2015 - December 2015
<b>Immunizations for Early Teens</b>	This Rating is based on the percentage of 13-year-olds who had one dose of the diphtheria and pertussis vaccine (DtaP) by their 13th birthday.	IHA	January 2015 - December 2015
<b>HPV Vaccine for Male Adolescents</b>	This Rating is based on the percentage of male 13-year-olds who had three doses of the human Papillomavirus (HPV) vaccine by their 13th birthday.	IHA	January 2015 - December 2015
<b>HPV Vaccine for Female Adolescents</b>	This Rating is based on the percentage of female 13-year-olds who had three doses of the human Papillomavirus (HPV) vaccine by their 13th birthday.	IHA	January 2015 - December 2015

### 3. Patient Experience

Our Patient Experience Ratings are based on survey data collected by the U.S Department of Health & Human Services, Centers for Medicare & Medicaid Services (CMS). The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey evaluates dimensions of patient care that are important to consumers (e.g. how often the room and bathroom were kept clean; how often pain was well-controlled) and that are related to safety concerns (e.g. communication about new medications, communication about discharge).

The HCAHPS survey data are collected using a standardized survey instrument by CMS-approved and trained vendors contracted by individual hospitals (in rare occasions, the hospital serves as the approved vendor itself). Data are delivered to a centralized data bank, where they are analyzed and prepared for public reporting on CMS's Hospital Compare website ([www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov)).

The survey asks a sample of former inpatients from each hospital about various dimensions of their experiences. CMS reports HCAHPS survey results for nine categories, some of which are composites of more than one survey question and two global items about their care.

CMS recently released Star Ratings based on HCAHPS performance. We base our patient experience Ratings on these star ratings. For more information on the method, please visit <http://www.hcahponline.org/StarRatings.aspx>.



## 4. Hospital Deficiencies

This is the number of deficiencies cited in inspection reports from the Centers for Medicare and Medicaid Services (CMS) (Form CMS 2567). Currently we show all of the deficiencies reported for that hospital for all reasons for September 2013 - September 2016. For more details about these reports see <http://www.hospitalinspections.org/qa-with-cms/> or <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandCompliance/Hospitals.html>.

Hospitals with 1-2 deficiencies get a yellow triangle symbol, while hospitals with 3 or more get an orange symbol. Hospitals without deficiencies receive no triangle.

# 5. Payment Estimates

## Introduction

This document describes the method used to define and calculate payment estimates for medical episodes and procedures that are reported on CAHealthcareCompare.org as part of the California Medical Price and Quality Transparency (COMPAQT) Initiative. The cost information displayed on this site reflects the patient payments, insurance payments and overall payments made to providers and facilities based on individual services or a bundle of services provided from claims data. The method used to generate the payment estimates varied by the claim type and grouping of claims.

## Data Sources

The COMPAQT Initiative cost estimates are based on Truven Health MarketScan® Research Databases (Truven Health Analytics Inc., Ann Arbor, Michigan), which contain de-identified, individual-level health care commercial claims from employers, health plans, states, and hospitals.

Data were extracted for claims that were billed in California between January 2010 and December 2014.

## Method

The COMPAQT Initiative reported payments based on claims data, which can broadly be classified into two categories: Medical Episode Group (MEG) and Procedures. The Truven Health MarketScan® Medical Episode Grouper groups inpatient, outpatient, and pharmaceutical claims into single episodes of medical care for specific illnesses or health conditions. This grouping method was used to capture the health conditions and illnesses comprising the top 75% of healthcare costs for California, and some additional conditions with matched quality scores. This corresponded to 99 MEGs, with pediatric subgroups also reported for 2 of these MEGs by subsetting the grouping to ages 2-18.

Typically, a MEG is comprised of all encounters and services (including pre and post-service) that are associated with its grouping and thus are broader than a single procedure or event. In addition, the Medical Episode Grouper takes into account whether a condition or illness is acute or chronic in the definition. This affected the way payments were calculated and reported. For acute MEGs, payments were calculated using the total payments for each of the 65 acute episodes as defined by the grouper. For chronic MEGs, annualized payments were calculated since a chronic episode could extend for several months or several years from their beginning date. As a result of this annualization, individuals were required to be continuously enrolled for 365 days from the beginning of a chronic episode ensuring that every individual had the opportunity to accrue claims for at least one 365-day period.

For medical encounters that are specific to a medical procedure (e.g. hip replacement surgery), individual claims data were extracted using CPT and ICD-9 codes (see Appendix below). Payments were calculated for seven procedures, four inpatient and three outpatient. Payment for inpatient procedures are calculated as all costs incurred within a single-continuous inpatient stay, whereas, outpatient procedure payments are calculated for a particular medical service performed.

## **Reporting Guidelines**

The Truven Health MarketScan® Research Databases (Truven Health Analytics Inc, Ann Arbor, Michigan) data used for the COMPAQT Initiative are based on claims that were submitted prior to the new guidelines introduced under the Affordable Care Act (ACA). Under the new guidelines of the Public Health Service (PHS) Act section 2707(b), group health plans must now ensure that any annual cost sharing imposed under a plan does not exceed the limitations provided under section 1302(c)(1) of the ACA, which limits annual out-of-pocket maximums. In addition, the PHS Act Section 2713 requires non-grandfathered health plans to offer coverage of preventative services which have a rating of "A" or "B" in the current recommendations of the United States Preventative Services Task Force (USPSTF). This affected the way that price estimates were calculated in two ways. First, in order to reflect the 2015 limits for annual out-of- pocket maximums, if the individual's payment estimate for a MEG or procedure was greater than 13,200 dollars (the maximum annual out-of-pocket allowed for families for a health plan) and the insurance payment estimate was less than that of the individual's payment it was excluded from payment calculations. Second, procedures that were rated either "A" or "B" by the USPSTF and therefore would commonly have no out-of- pocket responsibility associated with them, except when additional services were performed, were reported with an explanation of how claims can change from preventative categories to billed categories.

Capitation payments were excluded from our analyses. As these payments are made to treating physicians and providers on a regular basis (usually monthly) based on patient status, and not as direct compensation for services rendered, their inclusion in the data creates difficulties in producing precise estimates of payments for certain services.

The COMPAQT Initiative reports median, 10th and 90th percentile cost information for overall payment amounts, payments made by insurers, and payments made by patients. Payment information was calculated and reported for 18 of the 19 Covered California rating regions, as well as statewide.

For MEGs and procedures where payment and quality ratings were paired, rating regions were classified as "Less costly than statewide average" or "More costly than statewide average" if the median payment estimate for a region was 20% below or above the statewide median. A rating region was classified as "Similar to Statewide Average" if the median payment estimate for a region was 20% above or below the

statewide median cost estimate. For example, if the statewide median cost estimate was \$100, regions with cost estimates below \$80 would be labeled "Below State Average" and regions with median payment estimate above \$120 would be labeled "Above State Average". A region with a median payment estimate between \$80 and \$120 would be labeled "At State Average". All payment estimates have been adjusted for inflation using the Medical Care component of the Consumers Price Index and are reported in 2014 dollars.

## **Outliers and Sample Size**

MEGs or procedures with total payment amounts of zero dollars, or total payments that were less than payments made by insurers or patients, were excluded. In addition to removing payments of zero value, the top and bottom 1% of total payment values were excluded from payment calculations as they represented payments that are not typical of each MEG or procedure.

A minimum sample size for each MEG or procedure within a California geographic Rating Region was determined using confidence intervals for median total payments. If the lower and upper bounds of a confidence interval were more than twice the value of the median payment estimates in absolute value, then that region's prices were not reported. The payment data source required that for each region reported publicly that there be at least three payers in the rating region and that no one payer represented 60% or more of the claims in that region.

## APPENDIX - ICD9 and CPT Codes

### Hip Replacement & Repair:

0070, 0071, 0072, 0073, 0074, 0075, 0076, 0077, 0085, 0086, 0087, 8151, 8152, 8153

### Knee Replacement & Repair:

0080, 0081, 0082, 0083, 0084, 8142, 8143, 8144, 8145, 8146, 8147, 8154, 8155

### Hysterectomy:

51925, 56308, 58150, 58152, 58180, 58200, 58210, 58240, 58260, 58262, 58263, 58267, 58270, 58275, 58280, 58285, 58290, 58291, 58292, 58293, 58294, 58548, 58550, 58552, 58553, 58554, 58570, 58571, 58572, 58573, 58951, 58953, 58954, 58956, 59135

### Colorectal Cancer Screening

- Colonoscopy 44388, 44389, 44392, 44393, 44394, 45378, 45380, 45381, 45383, 45384, 45385, G0105, G0121
- Sigmoidoscopy: 45330, 45331, 45333, 45335, G0104
- Blood Fecal Occult Test: 82270, 82272, 82274, G0328

- Anesthesia for Lower Endoscopy: 00810
- Pathology for Lower Endoscopy: 88302, 88304, 88305, 88307, 88309

### Breast Cancer Screening

- Mammography: 76090, 76091, 76092, 77057, 77055, 77056; V7610, V7611, V7612; G0202, G0203, G204, G205, G026, G207
- Biopsy: 19000, 19001, 19100, 19101, 19102, 19103, 19110, 19112, 9120, 19125, 19126, 19160, 19301; 8511, 8512, 8519, 852x, 8520, 8521, 8522, 8525, 8591; 19290, 19291, 19295, 76095, 76096, 76360, 76393, 76942, 77021, 77031, 77032; 10021, 10022, 38500-38525, C1879; 174.\*, 196.3, 217\*, 233.0, 239.3, 610.\*, 6111, 6112, 6115, 6116, 6117, 6118, 6119, 7938, V103, V163, V761
- Pathology: 88104, 88105, 88106, 88107, 88108, 88109, 88110, 88111, 88112, 88160, 88161, 88162, 88172, 88173, 88271, 88300, 88311, 88321, 88322, 88323, 88324, 88325, 88326, 88327, 88328, 88329, 88330, 88331, 88332, 88333, 88334, 88346, 83950

### Cervical Cancer Screening

- PAP smear: 88141, 88142, 88143, 88147, 88148, 88150, 88152, 88153, 88154, 88155, 88164, 88165, 88166, 88167, 88174, 88175, G0123, G0124, G0141, G0143, G0144, G0145, G0147, G0148, P3000, P3001, Q0091; V700, V709, V7231, V7232, V762
- Colposcopy: 57420, 57452, 57421, 57455, 57500, 57505, 57454, 57456, 57450, 57460, 57461, 57520, 57522
- Pathology: 88305, 88307