

Hospital Transformation Performance Program (HTPP) Evaluation Report

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Executive Summary

Program Overview

Oregon's Hospital Transformation Performance Program (HTPP) allows diagnostic-related group (DRG) hospitals to earn incentive payments for reporting and improving their performance on 11 quality measures in two time periods:

Baseline Year (October 2013 – September 2014): Hospitals earn payment for submitting quality measure data from the Baseline Year. The Oregon Health Authority (OHA) must approve the data for a hospital to receive payment.

Performance Year (October 2014 – September 2015): Hospitals earn payment for achieving benchmarks or improvement targets in the Performance Year.

Not all measures were applicable to all hospitals given their wards or patient populations.

Oregon established HTPP as part of a broader effort to transform its health care system. The program mirrors Oregon's performance incentive program for Medicaid coordinated care organizations (CCOs) and extends OHA's overall quality strategy to hospitals. HTPP quality measures include two measures adapted from the CCO incentive program and an additional measure that reflects coordination of care between hospitals and CCOs. These measures are intended to increase collaboration between hospitals and CCOs and focus hospitals and CCOs on achieving the same goals.

Program Evaluation

As a condition of including HTPP in Oregon's Medicaid waiver, the Center for Medicare and Medicaid Services (CMS) required Oregon to conduct a rigorous evaluation of HTPP. OHA contracted with Oregon Health & Science University's Center for Health Systems Effectiveness (CHSE) to conduct the evaluation. CHSE partnered with the Providence Center for Outcomes Research and Education (CORE) to develop and administer hospital surveys and stakeholder interviews for the evaluation.

The evaluation represents a preliminary assessment of HTPP. Data used for the evaluation reflect the first two years of the program, and only one year in which hospitals were paid for performance on quality measures. Evaluation of HTPP should continue beyond the first two years of the program in order to accurately assess the program's effect on hospital practices and performance.

Overview of Evaluation Findings

Incentive payments in the second year of the program were associated with statistically significant improvements on 2 of 11 HTPP quality measures. Information collected from hospitals and CCO representatives indicates that HTPP increased collaboration between hospitals and CCOs, sparking conversations about sharing emergency department visit information and substance use screening in the emergency department. OHA plans to

add more measures reflecting collaboration between hospitals and CCOs to the HTPP measure set after the third year of the program.

The evaluation must answer seven questions about HTPP:

Q1 How have DRG hospitals performed on all HTPP measures compared to the baseline?

Incentives for meeting benchmarks or improvement targets in the Performance Year were associated with statistically significant improvement on 2 of 11 HTPP quality measures. Specifically, they were associated with a 15.7 percentage point increase in the Rate of Outreach Notifications to Primary Care for Emergency Department (ED) Use and an 11.3 percentage point increase in Screening Rate for Alcohol Misuse, Brief Intervention, and Referral to Treatment in the Emergency Department (SBIRT in the ED).

Q2 How have DRG hospitals performed on HTPP measures that are also CCO measures compared to non-DRG hospitals?

Compared to non-DRG hospitals, DRG hospitals did not demonstrate statistically significant reductions in all-cause readmissions from the Baseline Year to the Performance Year. Due to limitations of data available for DRG and non-DRG hospitals, the evaluation team was unable to compare performance of DRG and non-DRG hospitals on other measures.

Q3 What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?

Hospitals made a broad effort to improve performance on HTPP quality measures and devoted more effort to these measures than before the program began. The share of hospitals that worked on specific measures ranged from 64 percent for Follow-Up after Hospitalization for Mental Illness to 100 percent for SBIRT in the ED. On average, nearly two-thirds of hospitals said they devoted more effort to improve performance on HTPP measures than in the year prior to the Baseline Year.

Hospitals engaged in a wide variety of activities to improve their performance on targeted measures. The most commonly used activities involved changing processes or redirecting existing staff to work on HTPP quality measures. Over one-third of hospitals said they increased collaboration with local CCOs to improve performance on targeted measures.

Specific activities were associated with statistically significant improvement in HTPP quality measures:

- On average, hospitals that increased collaboration with CCOs experienced a 14.0 percentage point greater increase in Screening Rate for SBIRT in the ED and a 0.2 percentage point greater reduction in Adverse Drug Events Due to

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Opioids than hospitals that did not engage in this activity.

- On average, hospitals that changed workflows or protocols to improve targeted outcomes experienced a 30.5 percentage point greater increase in the Rate of Outreach Notifications to Primary Care for ED Use than hospitals that did not engage in this activity.
- On average, hospitals that invested in new data tools or software experienced a 0.1 percentage point greater reduction in Adverse Drug Events Due to Opioids than hospitals that did not engage in this activity.

Q4 What kinds of barriers prevented any hospitals from meeting HTPP measurement goals?

Three quarters of DRG hospitals indicated that HTPP's statewide benchmarks were very difficult to achieve. However, the majority of hospitals indicated that the difficulty of achieving improvement targets for specific hospitals was about right.

Additional challenges stemmed from timelines for designing and implementing HTPP, finalizing HTPP quality measures, and meeting measurement goals:

- The short timeline for designing and implementing HTPP afforded Oregon relatively little time to consider complex or non-standard measures, such as measures to reflect collaboration between hospitals and CCOs.
- The timeline for negotiating and approving HTPP quality measures appears to have contributed to finalization of measures shortly before the Performance Year, as well as changes to measure specifications, benchmarks, and improvement targets after the Performance Year began. Hospitals frequently identified changing benchmarks or improvement targets as the most significant challenge they faced in trying to meet HTPP goals.
- Relatively short performance periods afforded hospitals relatively little time to improve performance. Hospitals frequently identified insufficient time to implement changes and see results as a significant challenge.

Q5 What kinds of changes in practice have hospitals made as a result of HTPP?

Hospitals reported important effects on their quality improvement practices as a result of HTPP:

- 93% said HTPP has helped their quality improvement efforts and programs.
- 39% said HTPP was "very important" for improving quality.
- Half said they would "probably not" or "definitely not" be performing as well

as they are today on HTPP quality measures if HTPP never existed.

Three-fourths of hospitals maintained staffing allocated to HTPP after the Performance Year ended. This is consistent with OHA's request that hospitals continue to work on HTPP measures pending CMS approval for a third year of the program.

All CCO representatives interviewed for the evaluation reported that HTPP increased collaboration between hospitals and CCOs. The program sparked discussions between hospitals and CCOs about information sharing through the Emergency Department Information Exchange (EDIE) and substance use screening in the ED. All CCOs representatives expressed support for continued collaboration with hospitals.

Q6 What kinds of quality improvements or investments have hospitals made as a result of receiving HTPP incentive payments?

Nearly half of hospitals said they invested a portion of payments for reporting into HTPP and related activities, and allocated a portion to other areas. Only 11 percent said they reinvested most of the payments into HTPP and related activities. Overall, hospitals plan to use payments for performance the same way they used payments for reporting.

The majority of hospitals reported that new non-financial resources, such as equipment or staffing, were not made available to staff working on HTPP activities after they received payments for reporting. This may have resulted from the need to initiate improvement efforts quickly, uncertainty about continuation of HTPP, or the perception by hospitals that they could improve performance on HTPP quality measures with little or no new investment.

Q7 What kinds of changes to quality incentive programs are CCOs and the State of Oregon considering as a result of lessons learned from HTPP?

CCOs do not plan to change their incentive programs that pay hospitals for achieving quality improvement goals in response to HTPP. However, they support continued collaboration with hospitals and closer alignment of HTPP measures with CCO incentive measures.

OHA plans to add more measures reflecting collaboration between hospitals and CCOs to the HTPP measure set after Year 3. OHA emphasized that collaborative measures are challenging and time-intensive for hospitals to achieve, and stressed the need to introduce such measures gradually.

OHA emphasized the value of HTPP as the primary mechanism for including hospitals in Oregon's health system transformation. Without HTPP, the state lacks a mechanism for including hospitals in transformation.

Background

Program Overview

Oregon’s Hospital Transformation Performance Program (HTPP) allows diagnostic-related group (DRG) hospitals to earn incentive payments for reporting and improving their performance on 11 quality measures in two time periods, illustrated in Figure 1:

Baseline Year (October 2013 – September 2014): Hospitals earn payment for submitting quality measure data from the Baseline Year. The Oregon Health Authority (OHA) must approve the data for a hospital to receive payment.

Performance Year (October 2014 – September 2015): Hospitals earn payment for achieving benchmarks or improvement targets in the Performance Year.

Not all quality measures were applicable to all hospitals given their wards or patient populations.

HTPP issues incentive payments from a Hospital Quality Pool funded by Oregon’s preexisting provider tax on DRG hospitals. Funding allocated to the Quality Pool is equivalent to one percent of federal matching funds generated from the provider assessment and capped at \$150 million per year.

What is a DRG Hospital?

DRG hospitals are large, urban hospitals that receive reimbursement based on Medicare’s DRG payment methodology. They differ from smaller, more rural hospitals and critical access hospitals that receive full reimbursement for costs of providing services to Medicaid patients. There are 28 DRG hospitals and 32 non-DRG hospitals in Oregon. All DRG hospitals participate in HTPP.

Relationship to Health System Transformation

HTPP was intended to improve patient safety by rewarding hospitals for improving their delivery systems. In addition, the program was intended to improve coordination between hospitals and coordinated care organizations (CCOs), which provide care and coverage

for over four-fifths of Oregon’s Medicaid members.

Oregon established HTPP as part of a broader effort to transform its health care system. Through its Medicaid waiver from CMS, Oregon committed to using multiple “levers” to transform health care, improve health care quality, and lower costs. These include improving coordination among primary care providers, hospitals, and other health care providers, and paying providers on the basis of performance. In 2012, Oregon established CCOs to transform the Medicaid delivery system. CCOs are locally governed networks of health care providers that are responsible for coordinating members’ care and improving members’ health. They receive a global budget to provide physical health care, behavioral health care, and dental care, and earn incentive payments from a quality pool for their performance on quality measures.

HTPP mirrors the CCO incentive program and extends OHA’s overall quality strategy to hospitals. It includes two quality measures adapted from CCO incentive measures and an additional measure that reflects coordination of care between hospitals and CCOs. HTPP’s structure and the overlap between HTPP and CCO incentive measures was intended to encourage collaboration between hospitals and CCOs.

Program History

Action at the state level to establish HTPP preceded federal approval of the program. In 2013, the Oregon Legislature established the Hospital Performance Metrics Advisory Committee to recommend quality measures and performance benchmarks for HTPP. In addition, the Legislature directed OHA to apply for permission from CMS to use federal funds for HTPP incentive payments. OHA requested approval from CMS to include HTPP in its Medicaid waiver in June 2013.

HTPP launched in the middle of the Baseline Year, the period in which hospitals were expected to track quality measures to provide baseline data for the program. From February to July 2014, the Hospital Performance Metrics Advisory Committee convened to recommend metrics and benchmarks for the program. CMS approved Oregon’s request to add HTPP to its Medicaid waiver in June 2014. CMS approved HTPP measures and benchmarks by the end of summer 2014, and OHA began providing guidance to hospitals on measure definitions and data submissions in fall 2014. OHA recognized that some hospitals might not have been tracking all HTPP measures for the entire Baseline Year or

FIGURE 1: HTPP TIMELINE

2012			2013					2014					2015					2016																	
Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Pre-HTPP Year													Year 1: Baseline Year Hospitals are paid in the following year for reporting HTPP measures in this year.					Year 2: Performance Year Hospitals are paid in the following year for performance on HTPP measures in this year.					Year 3 Pending CMS approval, OHA requested that hospitals to continue HTPP efforts in this year.												

Background

tracking the measures using HTPP specifications. Consequently, OHA allowed hospitals to submit partial-year data from the Baseline Year or Performance Year to serve as a baseline for certain measures if they were unable to submit data from the entire Baseline Year. Hospitals reported baseline data in February 2015, and OHA issued payments for reporting baseline data in April 2015. Hospitals reported Performance Year data in March 2016, and OHA issued payments for performance in June 2016.

In the 2015 legislative session, the Oregon Legislature extended HTPP for four years. In September 2015, OHA requested an amendment from CMS to extend HTPP for a third year. Pending CMS approval, OHA requested that hospitals continue working on improving their performance on HTPP measures in Year 3 (October 2015 – September 2016). In addition to Year 3, OHA requested approval to continue the program under its next Medicaid waiver, which will cover the period from July 2017 through June 2022.

Program Evaluation

As a condition of including HTPP in Oregon's Medicaid waiver, CMS required Oregon to conduct a rigorous evaluation of HTPP. The evaluation must answer the following questions:

- Q1 How have DRG hospitals performed on all HTPP measures compared to the baseline?**
- Q2 How have DRG hospitals performed on HTPP measures that are also CCO measures compared to non-DRG hospitals?**
- Q3 What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?**
- Q4 What kinds of barriers prevented any hospitals from meeting HTPP measurement goals?**
- Q5 What kinds of changes in practice have hospitals made as a result of HTPP?**
- Q6 What kinds of quality improvements or investments have hospitals made as a result of receiving HTPP incentive payments?**
- Q7 What kinds of changes to quality incentive programs are CCOs and the State of Oregon considering as a result of lessons learned from HTPP?**

OHA contracted with Oregon Health & Science University's Center for Health Systems Effectiveness (CHSE) to conduct the evaluation. CHSE partnered with the Providence Center for Outcomes Research and Education (CORE) to develop and administer hospital surveys and stakeholder interviews needed to answer the evaluation questions.

The evaluation carried out by CHSE and CORE represents a preliminary assessment of HTPP. Only two years of program data were available at the time the evaluation was conducted. Data from the Baseline Year reflect a period of rapid program start-up, when

quality measure specifications and hospitals' ability to collect quality measure data were evolving. As a result, Baseline Year data submitted by some hospitals were incomplete or unavailable for some measures. Data available for the evaluation reflect only one year in which hospitals were paid for performance on quality measures. In addition, the ability to compare performance of hospitals participating in HTPP with hospitals not participating in the program was limited because DRG and non-DRG hospitals differ substantially on important characteristics, and because data needed to calculate many HTPP quality measures were available only for DRG hospitals. Evaluation of HTPP should continue beyond the first two years of the program in order to accurately assess the program's effect on hospital practices and performance.

HTPP Reporting and Program Evaluation

OHA produces reports presenting hospitals' performance on HTPP quality measures and payments issued by the program. OHA published Baseline Year and Performance Year reports in April 2014 and June 2016, respectively. While complementary, the purpose and methodology of OHA's reporting and the evaluation conducted by CHSE and CORE differ.

- **OHA's reporting is intended to support transparency and accountability by presenting performance data for which hospitals received incentive payments.** The evaluation is intended to quantify changes in performance that can be attributed to the program, and to identify specific factors associated with changes in performance, such as hospitals' efforts to improve performance on specific measures or practice changes at hospitals.
- **OHA's reporting focuses on whether specific hospitals achieved benchmarks or improvement targets.** The evaluation focuses on identifying the average change in performance associated with participating in the program, holding other factors constant. The evaluation uses a statistical technique called regression analysis to control for hospital characteristics likely to affect performance on HTPP quality measures.
- **OHA and the evaluation team used different data and specifications to calculate rates for some HTPP quality measures.** As a result, rates reported by OHA may differ from rates used in the evaluation for some measures (see HTPP Data on page 8 and Appendix B: Methodology for details).
- **The evaluation investigates factors that contributed to hospitals meeting HTPP performance goals, barriers to success, and the impact of HTPP on hospital practices.** The evaluation team used surveys of hospital staff and interviews with CCO representatives to investigate these areas.

HTPP Quality Measures

HTPP quality measures for the Baseline Year and Performance Year were recommended by the Hospital Metrics Advisory Committee and approved by OHA and CMS. They include 11 measures in two overarching focus areas, each with multiple domains:

- **Hospital-CCO Collaboration Measures:** Measures intended to increase collaboration between hospitals and CCOs and focus hospitals and CCOs on achieving the same goals. Measures in the Sharing Emergency Department (ED) Visit Information domain are intended to increase collaboration by creating an incentive for hospitals to share information with primary care providers within CCO networks through the Emergency Department Information Exchange (EDIE). Measures in the Behavioral Health domain are adapted from CCO incentive measures, and are intended to focus hospitals and CCOs on integrating physical and behavioral health care.
- **Hospital-Focused Measures:** Measures specific to hospitals, where hospitals can improve performance primarily through changes in practice within the hospital.

Each HTPP quality measure consists of one or more rates. Hospitals Share ED Visit Information and SBIRT in the ED consist of two rates. For the Performance Year, hospitals earned incentive payments for these measures if they reported both rates and achieved benchmarks or improvement targets for one of the rates.

Not all measures were applicable to all hospitals given their wards and patient populations. Three measures were inapplicable to Shriners Hospital because it does not have an emergency room. In addition, rates could not be reported for some hospitals given the patients they served in the Baseline Year or Performance Year. For example, rate of Follow-Up after Hospitalization for Mental Illness could not be reported for seven hospitals in the Baseline Year and the Performance Year because they had no admissions for mental illness in either year. See Appendix A: HTPP Quality Measure Rates by Hospital for details.

Tables 1 and 2 summarize measures in each focus area.

TABLE 1: HOSPITAL-CCO COLLABORATION MEASURES

Domain	Measure	Denominator	Numerator	Year 2 Benchmark
Sharing ED Visit Information	1. Hospitals Share Emergency Department (ED) Visit Information with Primary Care Providers and Other Hospitals to Reduce Unnecessary ED Visits (two rates*)	Rate of Outreach Notifications to Primary Care for ED Use: Number of ED visits by patients with five or more ED visits in the last year	Rate of Outreach Notifications to Primary Care for ED Use: Number of notifications sent to primary care providers through EDIE alerting providers that their patients visited the ED	78.6%
		Care Guidelines Completion Rate: Number of patients with five or more ED visits in the last year and without a care guideline (a note communicating information about a patient's medical history to ED providers) in EDIE	Care Guidelines Completion Rate: Number of care guidelines created by the hospital in EDIE for patients with five or more ED visits in the last year and without a care guideline	NA (reporting only)
Behavioral Health	2. Follow-Up after Hospitalization for Mental Illness	Number of discharges for CCO members who were hospitalized for select mental health disorders	Number of discharges with a follow-up visit within seven days of discharge	70.0%
		Screening Rate: Number of ED patients age 12 and over	Screening Rate: Number of patients who screened for alcohol and other substance use	67.8% (brief screen) 12.0% (full screen)
Behavioral Health	3. Screening for Alcohol and Drug Misuse, Brief Intervention, and Referral to Treatment (SBIRT) in the ED (two rates*)	Brief Intervention Rate: Number of ED patients age 12 and over who screened positive for unhealthy drug and alcohol use	Brief Intervention Rate: Number of patients who received a brief intervention to educate the patient and increase his or her motivation to reduce risky behavior	NA (reporting only)

* To earn incentive payments for the Baseline Year, hospitals were required to report both rates. To earn incentive payments for the Performance Year, hospitals were required to report both rates and achieve benchmarks or improvement targets for one of the rates (Rate of Outreach Notifications to Primary Care for Sharing ED Visit Information, and Screening Rate for SBIRT in the ED). For SBIRT in the ED, hospitals were allowed to choose the brief screen rate or the full screen rate as the Screening Rate on which they would be evaluated.

HTPP Quality Measures

TABLE 2: HOSPITAL-FOCUSED MEASURES

Domain	Measure	Denominator	Numerator	Year 2 Benchmark
Readmissions	4. Hospital-Wide All-Cause Readmissions (lower is better)	Number of discharges from the hospital	Number of readmissions to the hospital within 30 days of discharge for any reason	8.0% or below
	5. Hypoglycemia in Inpatients Receiving Insulin (lower is better)	Number of patients receiving insulin	Number of patients with low blood glucose (hypoglycemia)	7.0% or below
Medication Safety	6. Excessive Anticoagulation with Warfarin (lower is better)	Number of patients receiving Warfarin to reduce blood clotting (anticoagulation therapy)	Number of patients with excessively slow blood clotting (excessive anticoagulation)	5.0% or below
	7. Adverse Drug Events Due to Opioids (lower is better)	Number of patients who received opioids	Number of patients who received naloxone, an antidote for opiate overdose	5.0% or below
Patient Experience	8. Staff Always Explained Medicines*	Number of patients who responded to consumer survey questions about hospital staff explaining new medications	Number of patients who said hospital staff always explained the purpose and possible side effects of new medications	72.0%
	9. Staff Gave Patient Discharge Information†	Number of patients who responded to consumer survey questions about discharge from the hospital	Number of patients who said they talked with hospital staff about help they would need after leaving the hospital and received written information about symptoms to look out for after leaving the hospital	90.0%
Health Care Associated Infections	10. Central Line Associated Bloodstream Infection (CLABSI) in All Tracked Units (lower is better)	Number of days patients had a central line inserted into a large vein to provide medical treatment	Number of bloodstream infections associated with having a central line inserted	0.18 per 1,000 days
	11. Catheter Associated Urinary Tract Infection (CAUTI) in All Tracked Units (lower is better)	Number of days patients who had a catheter inserted	Number of urinary tract infections associated with having a catheter inserted	1.13 per 1,000 days

* Calculated as the average of rates from two medication safety questions from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey: percentage of patients who said hospital staff always explained the purpose of new medication, and percentage of patients who said hospital staff always described possible side effects of new medication in a way they could understand.

† Calculated as the average of rates from two discharge instructions questions from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey: percentage of patients who said hospital staff talked with them about whether they would have the help they needed when they left the hospital, and percentage of patients who said they received information in writing about symptoms or problems to look out for after they left the hospital.

Issuing HTPP Incentive Payments

HTPP issued incentive payments in April 2015 for reporting data from the Baseline Year. The program issued incentive payments in June 2016 to hospitals that achieved performance benchmarks or improvement targets in the Performance Year. The following table summarizes HTPP's methodology for allocating payments from the quality pool to pay for reporting and performance.

Hospitals received credit for reporting data from the Baseline Year and achieving benchmarks or improvement targets in the Performance Year.

Baseline Year: Reporting Data

Hospitals could earn credit for a measure by reporting data from the Baseline Year. The data must have received approval from OHA for a hospital to receive payment.

Performance Year: Achieving Benchmarks or Improvement Targets

Hospitals could earn credit for a measure by achieving benchmarks or improvement targets for the measure in the Performance Year.

- **Benchmarks:** OHA compared the hospital's rate for each measure to the statewide benchmark recommended by the Hospital Metrics Advisory Committee and approved by OHA and CMS. If the rate was above the benchmark (for measures where a higher rate is better) or below the benchmark (for measures where a lower rate is better), OHA credited the hospital with achieving the benchmark.
- **Improvement Targets:** If a hospital did not achieve the statewide benchmark for a measure, OHA assessed whether it achieved an improvement target calculated specifically for the hospital. The improvement target was calculated as the hospital's score in the Baseline Year plus 10 percent of the difference between the statewide benchmark and the hospital's score in the Baseline Year. That is, the hospital must have reduced the gap between its score in the Baseline Year and the benchmark by 10 percent in order to receive credit for the measure. To ensure hospitals made meaningful improvements, HTPP required a hospital to achieve a minimum percentage-point improvement, or floor, if the improvement target calculation resulted in a small improvement target.

OHA issued Quality Pool payments based on measures for which hospitals received credit in the Baseline Year and Performance Year.

Allocating Floor Payments

A hospital received a \$500,000 floor payment if it received credit for at least 75 percent of the measures applicable to the hospital. All 11 measures were applicable to 27 of the 28 participating hospitals, meaning these hospitals had to earn credit for nine measures in order to receive a floor payment. Three measures were not applicable for Shriners Hospital, meaning it had to report data for six of eight measures to receive a floor payment.

Allocating Remaining Funds

After allocating floor payments, OHA allocated remaining Quality Pool funds to each hospital based on a weighting factor for each measure for which the hospital earned credit and the hospital's share of Medicaid discharges and Medicaid patient days across participating hospitals. A hospital could have earned payment for individual measures without earning a floor payment.

HTPP Data

Data Collection, Validation, and Reporting

DRG hospitals, the Oregon Association of Hospitals and Health Systems (OAHHS), and OHA play key roles in collecting and validating data for HTPP.

- **DRG hospitals:** Report the numerator and denominator for 9 of 11 measures to OAHHS according to HTPP measure specifications. For measures outside the Sharing ED Visit Information domain, hospitals provide data based on patient medical records. Hospitals obtain data for measures in the Sharing ED Visit Information domain from Collective Medical Technologies (CMT), which operates Oregon's Emergency Department Information Exchange (EDIE). CMT extracts data for these measures from EDIE according to HTPP measure specifications.
- **OAHHS:** Maintains a web platform into which hospitals enter data, assesses data for completeness, and sends data from the platform to OHA. OAHHS also calculates rates for Hospital-Wide All-Cause Readmissions on behalf of DRG hospitals.
- **OHA:** Validates data from OAHHS and calculates Baseline Year and Performance Year rates. OHA can require hospitals to provide medical records or other data needed to verify numerators and denominators, and can audit hospitals based on these data. OHA also calculates rates for Follow-Up after Hospitalization for Mental Illness based on health care claims and encounters data for Medicaid CCO members and validates the measure with hospitals on a quarterly basis.

Baseline Year Data

HTPP launched in the middle of the Baseline Year, and some hospitals were unable to report data for the entire Baseline Year. OHA allowed these hospitals to report partial-year data in place of full-year data for the Baseline Year for the seven HTPP measures where specifications allow for calculation based on partial-year data:

- If a hospital was able to submit data for at least 30 consecutive days in the Baseline Year, it was allowed to report those data for the Baseline Year.
- If a hospital was unable to submit data for at least 30 consecutive days in the Baseline Year, it was allowed to report data from October 1, 2014 – January 15, 2015, the first part of the Performance Year, in place of data for the Baseline Year.

Hospitals reported data from the first part of the Performance Year in place of Baseline Year data for SBIRT in the ED (13 hospitals) and measures in the Sharing ED Visit Information domain (six hospitals). In addition, all hospitals reported data from the first part of the Performance Year for CAUTI in All Tracked Units due to a measure specification change. Hospitals may have ramped up quality improvement activities in the first part of the Performance Year in order to earn incentive payments for achieving benchmarks or improvement targets. As a result, use of Performance Year data as a baseline may underestimate the improvement from the Baseline Year to the Performance Year.

Data Sources for the Evaluation

Data Reported by Hospitals to OAHHS: Numerator and denominator for each measure in each month of the Baseline and Performance Years. Available for DRG hospitals only.

- Q1** OAHHS data were used in regression analyses to estimate change in performance for all measures except Follow-Up after Hospitalization for Mental Illness.
- Q3** OAHHS data were used in regression analyses to assess the relationship between hospitals' work on specific measures, activities, and performance.

Medicaid Claims and Encounters: Data on health care services received by Oregon Medicaid members.

- Q1** Medicaid claims and encounters data were used in regression analyses to estimate change in performance for Follow-Up after Hospitalization for Mental Illness.
- Q3** Medicaid claims and encounters data were used in regression analyses to assess the relationship between hospitals' work on Follow-Up after Hospitalization for Mental Illness, activities, and performance.

Emergency Department Information Exchange (EDIE): Data extracted from EDIE and used to calculate 30-day all-cause readmissions as a substitute for Sharing ED Visit Information measures.

- Q2** Data from EDIE were used in regression analyses to compare performance of DRG and non-DRG hospitals on 30-day all-cause readmissions.

DRG Hospital Survey: Online survey conducted by Providence CORE. All DRG hospitals completed the survey.

- Q3** Survey responses to questions about hospitals' work on specific measures and activities were coded and used in regression analyses.
- Q4-Q6** Survey responses were used to answer questions about barriers to success, changes in hospital practice, and use of HTPP incentive payments.

Stakeholder Interviews: Interviews conducted by Providence CORE with representatives of four CCOs and an OHA representative.

- Q7** Interviews were used to collect information about changes to quality incentive programs being considered as a result of lessons learned from HTPP.
- Q4-Q6** Interviews were used to collect information about collaboration between CCOs and hospitals, and to provide context for results from the DRG Hospital Survey.

Q1

How have DRG hospitals performed on all HTPP measures compared to the baseline?

HTPP performance incentives were associated with statistically significant improvement on two of 11 HTPP quality measures.

DRG hospitals earned payment for reporting Baseline Year data and achieving benchmarks or improvement targets in the Performance Year. Holding other factors equal, it is expected that hospitals' performance on HTPP quality measures would improve from the Baseline Year to the Performance Year, as the possibility of payment for performance motivated hospitals to improve their delivery systems. Factors other than payment for performance, including characteristics of individual hospitals and the patients they serve, may also affect hospitals' performance on quality measures.

This section presents estimated changes in performance for the average hospital associated with HTPP performance incentives, holding other factors constant. The evaluation team used regression analysis to control for hospital characteristics likely to affect performance, including total admissions and discharges, ratio of commercially insured to total patients, financial conditions and ownership structure, and geographic location.

Results can be interpreted as the average change in performance associated with the introduction of HTPP performance incentives across DRG hospitals. Results were evaluated for statistical significance at the five percent level ($P < 0.05$). Statistically significant results are identified in the discussion below and Table 3 on page 10.

The following information should be considered when interpreting the results:

- The results can be interpreted as change *associated* with performance incentives; however, they cannot be interpreted as change *caused* by these incentives. Trends in quality improvement or patient satisfaction that occurred contemporaneously with performance incentives could be responsible for associations between performance incentives and improvements in outcomes.
- Regression-adjusted change reported in the table below is not equivalent to the difference in average performance between the Baseline Year and Performance Year, also shown in the table. Regression-adjusted change accounts for hospital characteristics likely to affect performance, as described above. By contrast, average rates in the Baseline Year and Performance Year are not adjusted for hospital characteristics.
- Results for some measures exclude data for some hospitals. See Table 3 for details.
- Because Performance Year data were used as a baseline for some measures, results may understate change associated with performance incentives. As noted above, OHA allowed hospitals to submit data from the first part of the Performance Year data in place of Baseline Year data for some measures. Hospitals submitted Performance Year as a baseline for CAUTI in All Tracked Units, SBIRT in the ED, and measures in the Sharing ED Visit Information domain. Results for these measures may understate change resulting from HTPP performance incentives if hospitals began ramping up quality improvement activities in the first part of the

Performance Year. See Appendix B: Methodology for details.

- In addition to performance incentives, hospital characteristics included in the regression analyses help explain performance on quality measures. For example, ratio of commercial to total patients, geography, and total discharges help explain the large difference in average performance on Screening Rate for SBIRT in the ED between the Baseline Year and Performance Year. These characteristics did not necessarily *cause* differences in performance between the Baseline Year and Performance Year; they may be associated with unobservable characteristics that affect performance or simply associated with performance by chance.

Table 3 shows results for all measures.

Hospital-CCO Collaboration Measures

- **HTPP performance incentives were associated with relatively large and statistically significant improvements on two of three rates for which hospitals could receive incentive payments. Specifically, they were associated with a 15.7 percentage point increase in Rate of Outreach Notifications to Primary Care for ED Use and an 11.3 percentage point increase in Screening Rate for SBIRT in the ED.**
- **HTPP performance incentives were associated with a 19.1 percentage point decrease in the Brief Intervention Rate for SBIRT in the ED. Hospitals were paid for reporting both SBIRT rates, but paid for performance only on the Screening Rate, the other part of SBIRT in the ED. Hospitals tripled the number of patients who received a brief intervention (the numerator for the measure). However, the number of screenings (the denominator for the measure) increased sevenfold in the same time period, leading to a decline in the Brief Intervention Rate.**
- **Changes in other Hospital-CCO Collaboration Measures were not statistically significant. Hospitals were required to report Care Guidelines Completion Rate but were not paid for performance on that rate. In addition, OHA indicated that hospitals experienced challenges reporting this measure from EDIE.**

Hospital-Focused Measures

- **HTPP performance incentives were associated with a relatively small and statistically significant increase in the rate of hospital readmissions for any cause within 30 days of discharge (a lower rate is better for this measure). The increase may reflect hospitals' focus on other HTPP measures or longer-term trends in readmissions rates unrelated to HTPP.**
- **Changes in other Hospital-Focused Measures were not statistically significant.**

Q1

How have DRG hospitals performed on all HTPP measures compared to the baseline?

TABLE 3: REGRESSION-ADJUSTED CHANGE ASSOCIATED WITH HTPP PERFORMANCE INCENTIVES

Focus Areas	Domain	Measure*	Average performance, Baseline Year	Average performance, Performance Year	Regression-adjusted change†	
Hospital-CCO Collaboration	Hospitals Share ED Visit Information	Hospitals Share ED Visit Information with Primary Care Providers and Other Hospitals to Reduce Unnecessary ED Visits (two rates)	Rate of Outreach Notifications to Primary Care for ED Use	54.8%	65.6%	15.7%
		Care Guidelines Completion Rate	0.4%	1.1%	0.6%	
	Behavioral Health	Follow-Up after Hospitalization for Mental Illness (seven days)		64.8%	64.4%	-0.4%
		SBIRT in the ED	Screening Rate	14.9%	44.7%	11.3%
			Brief Intervention Rate	50.0%	24.4%	-19.1%
Hospital	Readmissions	Hospital-Wide All-Cause Readmissions (lower is better)		10.9%	11.3%	0.5%
	Medication Safety	Hypoglycemia in Inpatients Receiving Insulin (lower is better)		3.9%	3.8%	-0.3%
		Excessive Anticoagulation with Warfarin (lower is better)		1.5%	1.3%	-0.2%
		Adverse Drug Events Due to Opioids (lower is better)		0.5%	0.5%	0.0%
	Patient Experience	Staff Always Explained Medicines		63.8%	64.0%	0.4%
		Staff Gave Patient Discharge Information		88.9%	89.4%	0.8%
	Health Care Associated Infections	CLABSI in All Tracked Units (lower is better)		0.83 infections per 1,000 patient days	0.89 infections per 1,000 patient days	0.23 infections per 1,000 patient days
		CAUTI in All Tracked Units (lower is better)		0.83 infections per 1,000 patient days	0.99 infections per 1,000 patient days	0.04 infections per 1,000 patient days

* Results for some measures exclude data for some hospitals. See Appendix B: Methodology for details.

† Statistical significance at P < 0.05 indicated by **bold** type.

Q2

How have DRG hospitals performed on HTPP measures that are also CCO measures compared to non-DRG hospitals?

The evaluation team compared performance of DRG and non-DRG hospitals on all-cause readmission rates. Compared to non-DRG hospitals, DRG hospitals did not demonstrate statistically significant reductions in all-cause readmissions from the Baseline Year to the Performance Year.

The 11 HTPP quality measures include three Hospital-CCO Collaboration Measures intended to increase collaboration between hospitals and CCOs and focus hospitals and CCOs on achieving the same goals. Due to limitations of data available for DRG and non-DRG hospitals, the evaluation team was unable to compare the performance of DRG and non-DRG hospitals on these measures (for details, see Appendix B: Methodology).

The evaluation team used 30-day all-cause readmission rates to compare performance of DRG and non-DRG hospitals. Readmissions may reflect information sharing between hospitals and providers, as information about patients' ED visits may help providers give preventive care that reduces readmissions. Readmissions data could be extracted from EDIE for DRG and non-DRG hospitals within the timeframe for the evaluation. Notably, this measure is not directly comparable to Hospital-Wide All-Cause Readmissions, an HTPP quality measure, because data sources and specifications for the two measures differ.

The evaluation team used regression analysis to compare the rate of readmissions within 30 days for any cause between DRG and non-DRG hospitals in the Baseline Year and the Performance Year, holding other factors constant. As with analysis in previous section, the analysis controlled for hospital characteristics likely to affect performance.

The result can be interpreted as the average change in performance associated with the introduction of HTPP performance incentives for DRG hospitals *minus* the change in average performance for non-DRG hospitals over the same time period. Since non-DRG hospitals did not participate in HTPP and could not receive performance incentives, the analysis can be viewed as controlling for longer-term trends that may have affected DRG hospitals' performance even if they had not participated in HTPP. Results were evaluated for statistical significance at the five percent level ($P < 0.05$).

Comparison of DRG and non-DRG hospitals should be made with caution: As described above, DRG and non-DRG hospitals differ greatly in size, geographic location, and other characteristics. As a result, DRG and non-DRG hospitals may respond to longer-term trends in different ways.

30-Day All-Cause Readmissions

The rate of hospital readmissions within 30 days for any cause was 2.6 percentage points higher for DRG hospitals than for non-DRG hospitals in the Performance Year, when DRG hospitals were eligible to earn HTPP incentive payments. However, the difference was not statistically significant.

As described in the previous section, Rate of Outreach Notifications to Primary Care for

ED Use increased significantly among DRG hospitals in the Performance Year. While increased information sharing by hospitals may reduce readmissions, a time lag may exist between increased information sharing and reduced readmissions rates as primary care providers incorporate new information from hospitals into their care practices in order to reduce admissions. This may explain the discrepancy between increased information sharing by DRG hospitals and lack of a significant difference in readmissions between DRG and non-DRG hospitals.

Q3

What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?

Hospitals made a broad effort to improve performance on HTPP quality measures and devoted more effort to these measures than before the program began. Hospitals that increased collaboration with local CCOs and changed workflows or protocols to improve outcomes experienced greater improvements in performance on two Hospital-CCO Collaboration Measures than hospitals that did not engage in these activities. In addition, hospitals that increased collaboration with local CCOs and invested in new data tools or software experienced greater reductions in Adverse Drug Events Due to Opioids than hospitals that did not engage in these activities.

Effort to Improve Performance on Quality Measures

Table 4 shows the percentage of hospitals that said they worked to improve performance on each measure from the Baseline Year to mid-2016. The share of hospitals that worked on specific measures ranged from 64 percent for Follow-Up after Hospitalization for Mental Illness to 100 percent for SBIRT in the ED.

TABLE 4: PERCENTAGE OF DRG HOSPITALS THAT WORKED TO IMPROVE PERFORMANCE ON EACH HTPP QUALITY MEASURE

HTPP quality measure	Percentage of DRG hospitals*
SBIRT in the ED	100%
Staff Gave Patient Discharge Information	93%
Staff Always Explained Medicines	92%
Hospital-Wide All-Cause Readmissions	86%
Hospitals Share ED Visit Information	81%
Adverse Drug Events Due to Opioids	79%
CLABSI in All Tracked Units	78%
CAUTI in All Tracked Units	78%
Hypoglycemia in Inpatients Receiving Insulin	75%
Excessive Anticoagulation with Warfarin	75%
Follow-Up after Hospitalization for Mental Illness	64%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items. Responses for SBIRT in the ED, Staff Always Explained Medicines, and Hospitals Share ED Visit Information exclude one hospital to which the measures were not applicable because it does not have an emergency room.

At least three-fourths of all hospitals worked to improve performance on 10 of 11 measures. Relatively few hospitals may have chosen to work on Follow-Up after Hospitalization for

Mental Illness because patients hospitalized for mental illness represent a small share of most hospitals' patients. Nine hospitals had no hospitalizations for mental health in the Baseline Year or Performance Year. In comments on the DRG Hospital Survey, one hospital reported that patients hospitalized for mental illness represent a small volume of its total patients, and that it attempts to provide Follow-Up after hospitalization for every patient hospitalized for mental illness. Given limited resources to work on measures, some hospitals may have chosen to focus on measures that pertain to a larger share of their patients.

Table 5 shows the percentage of hospitals that said they devoted more effort, about the same amount of effort, and less effort to HTPP measures they worked on compared to the year before the Baseline Year. On average, nearly two-thirds (66 percent) of hospitals said they devoted more effort to improve performance on HTPP measures in the Performance Year than in the year before the Baseline Year.

TABLE 5: PERCENTAGE OF DRG HOSPITALS THAT WORKED ON EACH HTPP QUALITY MEASURE BY LEVEL OF EFFORT

HTPP quality measure	Level of effort*			
	More than previous year	About the same as previous year	Less than previous year	Don't know
SBIRT in the ED	88%	12%	0%	0%
Staff Always Explained Medicines	83%	17%	0%	0%
Staff Gave Patient Discharge Information	80%	16%	0%	4%
Hospitals Share ED Visit Information	73%	27%	0%	0%
Hypoglycemia in Inpatients Receiving Insulin	67%	33%	0%	0%
CAUTI in All Tracked Units	62%	38%	0%	0%
Hospital-All Cause Readmissions	58%	42%	0%	0%
Excessive Anticoagulation with Warfarin	57%	43%	0%	0%
Follow-Up after Hospitalization for Mental Illness	53%	47%	0%	0%
CLABSI in All Tracked Units	48%	52%	0%	0%
Adverse Drug Events Due to Opioids	45%	55%	0%	0%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Q3

What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?

Table 6 shows the most commonly reported reasons that hospitals did not work on specific measures once HTPP started. Hospitals reported "already being on track to meet HTPP benchmarks without additional effort" as the most frequent reason they did not work on 4 of 11 measures. By contrast, changing or uncertain measure specifications was the most commonly reported reason for not working on only one measure, Hospital-Wide All-Cause Readmissions.

TABLE 6: MOST COMMONLY REPORTED REASONS DRG HOSPITALS DID NOT WORK ON EACH QUALITY MEASURE

HTPP Quality Measure	Most commonly reported reason hospitals did not work on measure*
Hospital-Wide All-Cause Readmissions	Measure specifications were uncertain or changing too much (50%)
Hypoglycemia in Inpatients Receiving Insulin	Already on track to meet HTPP benchmark without additional effort (71%)
Excessive Anticoagulation with Warfarin	Already on track to meet HTPP benchmark without additional effort (100%)
Adverse Drug Events Due to Opioids	Already on track to meet HTPP benchmark without additional effort (100%)
Staff Always Explained Medicines	Too far from the HTPP benchmark or improvement target (67%)
Staff Gave Patient Discharge Information	Too far from the HTPP benchmark or improvement target (100%)
CLABSI in All Tracked Units	Already on track to meet HTPP benchmark without additional effort (50%) Not enough time to carry out activities needed to improve performance (50%)
CAUTI in All Tracked Units	Already on track to meet HTPP benchmark without additional effort (50%)
Hospitals Share ED Visit Information	Something else (100%)
Follow-Up after Hospitalization for Mental Illness	Something else (56%)
SBIRT in the ED	Something else (100%)

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

In open-ended comments, two hospitals reported that they did not work on Follow-Up after Hospitalization for Mental Illness because the measure pertained to a small share of their total patients. Two other hospitals reported that they did not work on behavioral

health measures because these measures were not applicable to them. In addition, one hospital reported that it did not work on Sharing ED Visit Information because it was already sending ED visit information to primary care providers.

Regression analysis was used to estimate the improvement in performance between the Baseline Year and the Performance Year associated with a hospital's decision to work on a specific measure, as reported in the DRG Hospital Survey. The results can be interpreted as the average change in the rate for each measure (the rate in the Performance Year minus the rate in the Baseline Year) associated with the decision to work on the measure. Due to the limited number of observations available for the analysis, only one control variable for hospital characteristics (total discharges in 2013) was included in the models. Results were evaluated for statistical significance at the five percent level ($P < 0.05$). Statistically significant results are identified in the discussion below and Table 7 on page 10.

As with results from analyses above, the following limitations should be considered when interpreting results:

- The results cannot be interpreted as a change in performance caused by the decision to work on a specific measure because longer-term trends in quality improvement or patient satisfaction could be responsible for the association between working on a measure and improvement in performance.
- Results for some measures exclude data from some hospitals. See Table 3 for details.
- The results may understate change resulting from the decision to work on specific measures because hospitals used partial-year data from the Performance Year as a baseline for some measures.
- Because all hospitals reported that they worked to improve performance on SBIRT in the ED, there was insufficient variation in this variable to identify differences in performance between hospitals that did and did not work on the measure. Consequently, SBIRT in the ED was omitted from the analyses.

Table 7 on page 14 shows results for all measures.

Hospital-CCO Collaboration Measures

- **On average, hospitals that worked on sharing ED visit information experienced an improvement in Rate of Outreach Notifications to Primary Care for ED Use that was 22.0 percentage points greater than that experienced by hospitals that did not work on the measure.**
- **Associations between working on other Hospital-CCO Collaboration Measures and improvement in performance were not statistically significant.**

Q3

What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?

Hospital-Focused Measures

- On average, hospitals that worked on CAUTI in All Tracked Units experienced a reduction in infections that was one infection per 1,000 days greater than that experienced by hospitals that did not work on the measure.
- Associations between working on other Hospital-Focused Measures and improvement in performance were not statistically significant.

TABLE 7: PERFORMANCE IMPROVEMENT ASSOCIATED WITH WORKING ON SPECIFIC HTPP QUALITY MEASURES

HTPP quality measure*	Improvement associated with working on measure†
Hospitals Share ED Visit Information: Rate of Outreach Notifications to Primary Care for ED Use	22.0%
Hospitals Share ED Visit Information: Care Guidelines Completion Rate	0.3%
Follow-Up after Hospitalization for Mental Illness	-1.4%
SBIRT in the ED: Screening Rate	Omitted
SBIRT in the ED: Brief Intervention Rate	Omitted
Hospital-Wide All-Cause Readmissions	-0.2%
Hypoglycemia in Inpatients Receiving Insulin	0.8%
Excessive Anticoagulation with Warfarin	-0.6%
Adverse Drug Events Due to Opioids	0.1%
Staff Always Explained Medicines	0.5%
Staff Gave Patient Discharge Information	-0.5%
CLABSI in All Tracked Units	0.35
CAUTI in All Tracked Units	-1.00

* Results for some measures exclude data for some hospitals. See Appendix B: Methodology for details.

† Statistical significance at $p < 0.05$ indicated by bold type.

Activities to Improve Performance

Hospitals engaged in a wide variety of activities to improve their performance on targeted measures. Table 8 shows the percentage of hospitals that said they used specific activities to improve performance on targeted measures after HTPP started. Overall, hospitals engaged in activities that involved changing processes or redirecting existing staff more frequently than they engaged in activities that involved hiring new staff or investing in new resources. This may have resulted from the need to initiate improvement efforts quickly once measures and benchmarks were finalized, uncertainty about continuation of HTPP beyond the Performance Year, or a combination of these factors. Consistent with the goal of improving collaboration between hospitals and CCOs, over one third (39 percent) of hospitals said they increased collaboration with local CCOs to improve performance on targeted measures. As described below, CCO representatives interviewed for the evaluation reported that HTPP increased collaboration between hospitals and CCOs.

TABLE 8: PERCENTAGE OF HOSPITALS THAT USED SPECIFIC ACTIVITIES TO IMPROVE PERFORMANCE ON TARGETED HTPP QUALITY MEASURES

Activity to improve performance on HTPP quality measures	Percentage of DRG hospitals that used this activity*
Trained staff to improve targeted outcomes	100%
Redirected existing staff to work on targeted measures	93%
Assembled teams or committees dedicated to targeted measures	93%
Tracked performance to provide rapid feedback and reporting	93%
Increased internal collaboration within hospital(s)	89%
Changed workflows or protocols to improve targeted outcomes	78%
Provided new materials, supplies, or other resources to staff or patients	70%
Increased collaborations with non-CCO community partners	59%
Invested in new data tools or software to support efforts	48%
Hired new staff devoted to working on targeted measures	39%
Increased collaborations with local CCO(s)	39%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Q3

What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?

The evaluation team used regression analysis to estimate improvement in performance associated with four activities: hiring new staff, changing workflows or protocols, investing in new data tools or software, and increasing collaboration with local CCOs. The evaluation team selected these activities due to their relevance for the evaluation and the need to select a limited number of explanatory variables for this set of analyses.

The results can be interpreted as the average change in the rate for each measure (the rate in the Performance Year minus the rate in the Baseline Year) associated with engaging in a specific activity, as reported in the DRG Hospital Survey. Due to the limited number of observations available for the analysis, only one control variable for hospital characteristics (total discharges in 2013) was included in the models. Results were evaluated for statistical significance at the five percent level ($p \leq 0.05$). Statistically significant results are identified in the discussion and table below.

The following limitations should be considered when interpreting results:

- The results cannot be interpreted as a change in performance caused by engaging in a specific activity because longer-term trends in quality improvement or patient satisfaction could be responsible for the association between engaging in the activity and improvement in performance.
- Results for some measures exclude data from some hospitals. See Table 3 for details.
- The results may understate change resulting from engaging in a specific activity because hospitals used partial-year data from the Performance Year as a baseline for some measures.

Table 9 on page 16 shows results for all measures.

Hospital-CCO Collaboration Measures

- On average, hospitals that increased collaboration with local CCOs experienced a 14.0 percentage point greater increase in Screening Rate for SBIRT in the ED than hospitals that did not engage in this activity.
- On average, hospitals that changed workflows or protocols to improve targeted outcomes experienced a 30.5 percentage point greater increase in the Rate of Outreach Notifications to Primary Care for ED Use than hospitals that did not engage in this activity.
- Use of other activities was not associated with statistically significant changes in performance on Hospital-CCO Collaboration Measures.

Hospital-Focused Measures

- On average, hospitals that increased collaboration with CCOs experienced a 0.2 percentage point greater reduction in Adverse Drug Events Due to Opioids than hospitals that did not engage in this activity.
- On average, hospitals that invested in new data tools or software experienced a 0.2 percentage point greater reduction in Adverse Drug Events Due to Opioids than hospitals that did not engage in this activity.
- On average, hospitals that invested in new data tools or software experienced a 3.7 percentage point lower increase in staff explaining new medications than hospitals that did not engage in this activity.
- Use of other activities was not associated with statistically significant changes in performance on Hospital-Focused Measures.

Q3

What kinds of factors contributed to hospitals successfully meeting HTPP measurement goals?

TABLE 9: PERFORMANCE IMPROVEMENT ASSOCIATED WITH USING SPECIFIC ACTIVITIES TO IMPROVE PERFORMANCE ON HTPP QUALITY MEASURES

HTPP quality measure*	Improvement associated with activity†			
	Changed workflows or protocols to improve targeted outcomes	Invested in new data tools or software to support efforts	Hired new staff devoted to working on targeted measures	Increased collaborations with local CCO(s)
Hospitals Share ED Visit Information: Rate of Outreach Notifications to Primary Care for ED Use	30.5%	-7.7%	-15.1%	10.3%
Hospitals Share ED Visit Information: Care Guidelines Completion Rate	-2.0%	1.6%	1.3%	1.2%
Follow-Up after Hospitalization for Mental Illness (seven days)	8.1%	1.4%	-13.9%	-11.8%
SBIRT in the ED: Screening Rate	15.6%	-12.8%	-1.5%	14.0%
SBIRT in the ED: Brief Intervention Rate	-45.1%	18.2%	18.9%	22.8%
Hospital-Wide All-Cause Readmissions	-0.1%	0.5%	0.5%	0.3%
Hypoglycemia in Inpatients Receiving Insulin	1.1%	0.4%	-0.9%	0.2%
Excessive Anticoagulation with Warfarin	0.3%	-0.2%	0.2%	0.2%
Adverse Drug Events Due to Opioids	0.1%	-0.2%	0.1%	-0.2%
Staff Always Explained Medicines	3.3%	-3.7%	0.9%	-1.0%
Staff Gave Patient Discharge Information	0.0%	-1.4%	1.8%	1.0%
CLABSI in All Tracked Units	-0.52 infections per 1,000 days	0.16 infections per 1,000 days	0.13 infections per 1,000 days	0.17 infections per 1,000 days
CAUTI in All Tracked Units	0.20 infections per 1,000 days	-0.30 infections per 1,000 days	-0.16 infections per 1,000 days	0.35 infections per 1,000 days

* Results for some measures exclude data for some hospitals. See Appendix B: Methodology for details.

† Statistically significance at P < 0.05 indicated by **bold** type.

Q4

What kinds of barriers prevented any hospitals from meeting HTPP measurement goals?

Three quarters of DRG hospitals indicated that HTPP's statewide benchmarks were "very difficult" to achieve; however, the majority of hospitals indicated that the difficulty of achieving improvement targets calculated for specific hospitals was "about right." Challenges meeting HTPP performance goals stemmed from short timelines for designing and implementing HTPP, finalizing HTPP quality measures, and meeting measurement goals.

Difficulty of Benchmarks and Improvement Targets

HTPP enabled DRG hospitals to earn incentive payments by achieving statewide benchmarks for quality measures or by reducing the gap between their Baseline Year performance and improvement targets calculated specifically for each hospital. Table 11 shows the level of difficulty hospitals reported with achieving benchmarks and improvement targets. Approximately three-quarters (74 percent) of hospitals said HTPP benchmarks were "very difficult" to achieve. By contrast, the majority of hospitals (63 percent) said the difficulty of achieving improvement targets was "about right."

TABLE 11: PERCENTAGE OF DRG HOSPITALS BY DIFFICULTY OF ACHIEVING HTPP MEASUREMENT GOALS

HTPP measurement goal	Difficulty of achieving measurement goal ¹				
	Very difficult	About right	Too easy	Don't know	Not applicable
Benchmarks	74%	26%	0%	0%	0%
Improvement targets	37%	63%	0%	0%	0%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Timeline for Designing and Implementing HTPP

Oregon designed and implemented HTPP on a relatively short timeline. The Oregon Legislature approved HTPP in mid-2013, four months before the Baseline Year began. OHA convened the Hospital Performance Metrics Advisory Committee in early 2014 to recommend HTPP quality measures. This timeline afforded OHA and the Committee relatively little time to consider complex or non-standard measures outside those used by existing hospital incentive programs, such as measures to reflect collaboration between hospitals and CCOs. All HTPP stakeholders wanted more time to design and implement the program.

Barriers to Success: Observations from Hospitals

The program needs to be defined and communicated early - well before the program year starts. Measures need to be known and preferably benchmarks and improvement targets should also be shared early. The measures, including definitions, need to be current and vetted properly. Targets need to be achievable. If new measures are introduced, there needs to be time to collect data, understand it and improve. HTPP results won't be sustainable if things are rushed. All want to invest in this great work and see the results last.

The performance period started before the measures were even finalized, so it was challenging to start work on improvement efforts when the measure specifications kept changing.

The program is a great way to transform healthcare. When executed with precision, it has the potential to be a quality game changer. Achieving and sustaining momentum and engagement at the frontline is really hard when the program specs are a moving target. When staff are discouraged, creativity is stifled and improvement capability suffers. There were a lot of great things about the program and support at the state was really helpful. The program will be even better when it is more stable.

Timeline for Finalizing HTPP Quality Measures

The timeline for negotiating and approving HTPP quality measures appears to have contributed to finalization of measures shortly before the Performance Year, as well as changes to measure specifications, benchmarks, and improvement targets after the Performance Year began. In comments on the DRG Hospital Survey, hospitals reported that HTPP measure specifications were not finalized sufficiently in advance of performance years, and that measures, benchmarks, and improvement targets were changed after the performance years began.

Resubmission of Baseline Year data by some hospitals may also have resulted in changes to improvement targets. OHA allowed hospitals that identified errors with their initial Baseline Year data submissions to resubmit data. Differences between the initial submission and the resubmitted data, in turn, may have resulted in changes to hospitals' individual improvement targets.

Hospitals frequently identified changing benchmarks or improvement targets as the most significant challenge they faced in trying to meet HTPP goals. Table 12 shows challenges that hospitals ranked as most significant in trying to meet benchmarks and improvement targets. Half of hospitals identified changing benchmarks as the most significant challenge they faced with meeting HTPP benchmarks, and nearly two-thirds (60 percent) identified changing improvement targets as the most significant challenge they faced with meeting HTPP improvement targets.

Q4

What kinds of barriers prevented any hospitals from meeting HTPP measurement goals?

TABLE 12: PERCENTAGE OF DRG HOSPITALS BY MOST SIGNIFICANT CHALLENGE ACHIEVING HTPP MEASUREMENT GOALS

Challenge with achieving measurement goals	Type of measurement goal ^a	
	Benchmarks	Improvement targets
The goals have been changed, making it hard to know where we are	50%	60%
There isn't enough time to implement something and see results	25%	0%
Some goals are too difficult to meet	10%	20%
Some measures are unfair to hospitals of certain types, sizes, or locations	10%	20%
Something else	5%	0%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Barriers to Success: Observations from Hospitals

Some of the measures are complex, multi-faceted and incredibly difficult to move in short periods of time.

Timeline for Improving Performance

Hospitals reported that performance periods afforded them relatively little time to improve performance. Because performance was measured over one-year periods, OHA and OAHHS advocated for balancing the HTPP measure set by including a significant number of measures on which hospitals could “move the needle” from the Baseline Year to the Performance Year. Hospitals stated that they would prefer longer performance periods for demonstrating improvements.

In addition to changing benchmarks or improvement targets, hospitals frequently identified insufficient time to implement changes and see results as the most significant challenge they faced in trying to meet HTPP measurement goals. As shown in Table 12, one quarter of hospitals identified insufficient time as the most significant challenge they faced with meeting benchmarks. By contrast, no hospitals identified insufficient time as the most significant challenge to meeting improvement targets.

Other Barriers

As shown in Table 12, 20 percent of hospitals indicated that difficulty of meeting improvement targets was the most significant challenge to achieving improvement targets. Another 20 percent of hospitals indicated that unfairness of measures to hospitals of certain types, sizes, or locations was the most significant challenges to achieving improvement targets.

Q5

What kinds of changes in practice have hospitals made as a result of HTPP?

DRG hospitals reported the following effects on their quality improvement practices as a result of HTPP:

- 93% of hospitals said HTPP has helped their quality improvement efforts and programs.
- 39% of hospitals said HTPP was "very important" for improving quality.
- 39% of hospitals said they would "probably not" or "definitely not" be performing as well as they are today on quality measures HTPP incentivizes if HTPP never existed.

Hospitals engaged in a wide variety of activities to improve performance on targeted measures. One-third increased staffing from the Baseline Year to the Performance Year, and three-fourths maintained staffing from the Performance Year to Year 3. CCO representatives interviewed for the evaluation reported that HTPP catalyzed greater collaboration between hospitals and CCOs.

Overall Effect on Quality Improvement

Table 13 shows the overall effect of HTPP on hospitals' quality improvement efforts and programs as reported by hospitals on the DRG Hospital Survey. Ninety-three percent of hospitals reported that HTPP helped their quality improvement efforts and programs.

TABLE 13: REPORTED EFFECT OF HTPP ON HOSPITAL QUALITY IMPROVEMENT EFFORTS AND PROGRAMS

Effect of HTPP on hospital quality improvement efforts and programs	Percentage of hospitals*
It has helped them	93%
It hasn't helped them	0%
It hasn't had a strong effect either way	7%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Table 14 shows the overall importance of HTPP for improving quality at hospitals as reported by hospitals on the DRG Hospital Survey. Thirty-nine percent of hospitals reported that HTPP was "very important" for improving quality. Only seven percent reported that HTPP was "not very important" for improving quality.

Two hospitals reported that HTPP "hasn't had a strong effect either way" on their quality improvement efforts and programs and was "not very important" for improving quality. One of these hospitals reported that four of the 11 quality measures were not applicable to the hospital given its wards and patient population.

Changes in Practice: Observations from Hospitals

The initial work to organize teams and begin implementing new process and practices along with the education and roll-out, took a lot of time. Though we did not meet some of the measures in [the Performance Year], we can see the improvement today. At this date, those measures would have been met. It just took more time. However, we now have the structure, the awareness, and the cultural shift to make rapid improvements when data supports the need.

[HTPP] helps us focus on strategic planning for all quality measures.

[HTPP] has been a very positive catalyst for making patients safer. Well meaning clinicians think they are performing better than the outcomes demonstrate. When the real data is presented and acknowledged, people are willing to do the necessary work to make improvements.

TABLE 14: REPORTED IMPORTANCE OF HTPP FOR IMPROVING QUALITY

Importance of HTPP for improving quality	Percentage of hospitals*
Very important	39%
Somewhat important	54%
Not very important	7%
Don't know	0%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Table 15 shows how well hospital staff think their hospitals would be performing on HTPP quality measures if HTPP never existed. Half of hospitals reported they would "probably not" or "definitely not" be performing as well on HTPP measures if HTPP had never existed.

Q5

What kinds of changes in practice have hospitals made as a result of HTPP?

TABLE 15: REPORTED IMPROVEMENT ON HTPP QUALITY MEASURES IF HTPP NEVER EXISTED

Would hospital be performing as well as it is today if HTPP never existed?	Percentage of hospitals*
Definitely not	11%
Probably not	39%
Probably yes	50%
Definitely yes	0%
Don't know	0%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Activities to Improve Performance

As described above, hospitals engaged in a wide variety of activities to improve performance on targeted measures. These included training staff to improve targeted outcomes (all hospitals), redirecting existing staff to work on targeted measures (93 percent of hospitals), assembling teams or committees dedicated to improving targeted measures (93 percent of hospitals), and tracking performance to provide rapid feedback and reporting (93 percent of all hospitals).

Staff Allocation and Engagement

Table 16 shows the percentage of hospitals that changed full-time equivalent (FTE) staffing allocated to work directly on HTPP efforts from the Baseline Year to the Performance Year, and from the Performance Year to Year 3. One-third (35 percent) of hospitals increased FTE allocated to HTPP efforts from the Baseline Year to the Performance Year, while the remaining hospitals left staffing allocated to HTPP unchanged. Three-fourths (77 percent) of hospitals made no changes to FTE allocated to HTPP efforts from the Performance Year to Year 3. This is consistent with OHA's request that hospitals continue to work on HTPP measures pending CMS approval for Year 3. The remaining third of hospitals may have reduced staffing allocated to HTPP efforts due to uncertainty regarding approval for Year 3.

TABLE 16: PERCENTAGE OF DRG HOSPITALS THAT CHANGED FTE STAFFING ALLOCATED TO HTPP EFFORTS BETWEEN PROGRAM YEARS

HTPP years	Change in FTE staffing allocated to HTPP efforts*		
	Increased	No change	Decreased
Baseline Year to Performance Year	35%	65%	0%
Performance Year to Year 3	0%	77%	23%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Table 17 shows the percentage of hospitals that said staff were very engaged in working on HTPP. Over half of hospitals reported that quality improvement staff, care management teams and staff, data and analytic teams and staff, and financial leadership were very engaged. By contrast, less than half of hospitals said that clinical teams and front line staff were very engaged in working on HTPP.

TABLE 17: PERCENTAGE OF DRG HOSPITALS THAT SAID STAFF WERE VERY ENGAGED IN WORKING ON HTPP

Type of staff	Percentage of hospitals that said staff were very engaged*
Quality improvement staff	78%
Care management teams and staff	67%
Data and analytic teams and staff	63%
Financial leadership	59%
Executive level leadership	48%
Clinical teams	41%
Health information technology staff/vendor	37%
Front line staff	33%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items. Other response options were "somewhat engaged" and "not very engaged."

The roles of different hospital staff in improving performance on quality measures and the challenges of onboarding new staff may help explain differences in level of engagement between managerial staff, on the one hand, and clinical and front line staff, on the other. All types of staff may have understood the positive financial impact of improving performance on HTPP measures for their hospital; however, clinical and front line staff

Q5

What kinds of changes in practice have hospitals made as a result of HTPP?

may have experienced challenges involved in improving performance, such as changing work flows, more directly than other types of staff. For example, some hospital staff indicated that emergency room doctors felt challenged with processes to implement SBIRT in the ED. In addition, onboarding of new staff, such as care navigators, may have created initial barriers to improving performance on HTPP quality measures for some hospitals.

Collaboration Between Hospitals and CCOs

HTPP catalyzed moderately greater collaboration between hospitals and CCOs than existed before the program began. All CCOs interviewed by the evaluation team indicated that collaboration between hospitals and CCOs preceded HTPP; however, they reported that HTPP sparked discussions between hospitals and CCOs about information sharing through EDIE and substance use screening in the ED. CCO representatives described these discussions as important and encouraging. The assertion by CCO representatives that HTPP increased collaboration between hospitals and CCOs is consistent with results from the DRG Hospital Survey showing that two-thirds of DRG hospitals increased collaboration with local CCOs in order to improve performance on targeted measures.

One CCO representative likened the beginning of HTPP to the early stages of CCO implementation. The early stages of CCO implementation required extensive conversations and relationship building, which were needed before improvement on measures requiring cross-organizational collaboration could occur. The CCO representative observed that increased communication represents a necessary first step toward improving performance on collaborative measures.

CCO representatives interviewed for the evaluation described aligning HTPP quality measures with measures used to evaluate CCOs as an important next step. They described lack of alignment as a barrier to greater collaboration between hospitals and CCOs, especially with regard to substance use screening. One CCO representative stated that lack of alignment between CCO and hospital measures presented a challenge to collaboration with a hospital; however, results from the DRG Hospital Survey show that this challenge did not prevent the hospital from achieving the measurement goal. All CCOs representatives expressed support for continued collaboration with hospitals.

Q6

What kinds of quality improvements or investments have hospitals made as a result of receiving HTPP incentive payments?

Nearly half of hospitals said they invested a portion of payments for reporting into HTPP and related activities, and allocated a portion to other areas. Only 11 percent of hospitals said they reinvested most of the payments into HTPP and related activities. Overall, hospitals plan to allocate payments for performance the same way.

OHA issued \$150 million in incentive payments for reporting data from the Baseline Year in April 2015 and \$150 million in incentive payments for achieving benchmarks or improvement targets in the Performance Year in June 2016. HTPP imposes no restrictions on the use of incentive payments: hospitals can use these payments to fund continued efforts to improve performance on HTPP measures, fund efforts to improve performance on other quality measures, or to offset costs in other areas.

Table 18 shows how hospitals used payments for reporting received in April 2015, and how they plan to use payments for performance issued in June 2016. Nearly half (46 percent) of hospitals said they invested a portion of payments for reporting into HTPP and related activities, and allocated a portion to other areas. Only 11 percent said they reinvested most of the payments into HTPP and related activities.

Overall, hospitals plan to use payments for performance issued by OHA in June 2016 the same way they used payments for reporting.

TABLE 18: PERCENTAGE OF DRG HOSPITALS BY USE OF HTPP PAYMENTS FOR REPORTING AND PERFORMANCE

Use of incentive HTPP payments	Payments for reporting that were issued in April 2015*	Payment for performance that were issued in June 2016*
Reinvest a portion into the HTPP program and allocate a portion to the hospital budget for other things	46%	46%
Allocate most to the hospital budget for other uses, like offsetting costs or investments unrelated to HTPP	29%	29%
I don't know	14%	14%
Reinvest most into the HTPP program and related activities	11%	11%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Table 19 shows the percentage of hospitals that said new non-financial resources, such as equipment or staffing, were made available to staff working on HTPP activities after they received payments for reporting. The majority (59 percent) said new non-financial resources were not made available. This is consistent with the finding that hospitals

tended to engage in activities that involved changing processes or redirecting staff rather than activities that involved hiring new staff or investing in new resources. This may have resulted from the need to initiate improvement efforts quickly, uncertainty about continuation of HTPP, or the perception by hospitals that they could improve performance on HTPP quality measures with little or no new investment.

TABLE 19: REPORTED AVAILABILITY OF NON-FINANCIAL RESOURCES AFTER PAYMENTS FOR REPORTING WERE RECEIVED

Were new non-financial resources made available?	Percentage of hospitals*
Yes	37%
No	59%
I don't know	4%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Q7

What kinds of changes to quality incentive programs are CCOs and the State of Oregon considering as a result of lessons learned from HTPP?

Some CCOs operate incentive programs that pay hospitals and other providers for achieving quality improvement goals. CCO representatives interviewed for the evaluation reported that they do not plan to change their hospital incentive programs in response to HTPP; however, they support continued collaboration with hospitals and closer alignment of HTPP measures with CCO incentive measures. OHA plans to add more measures reflecting collaboration between hospitals and CCOs to the HTPP measure set. OHA views HTPP as the primary mechanism for including hospitals in Oregon's health system transformation.

Changes Being Considered by CCOs

Oregon's CCOs earn incentive payments from a quality pool for their performance on quality measures. They are contractually required to distribute these payments across their provider networks. To meet this requirement, some CCOs operate incentive programs that pay hospitals and other providers for performance, although methodologies and quality measures vary across CCOs.

Table 20 compares the percentage of DRG hospitals that participated in hospital incentive programs operated by CCOs with the percentage that participated in hospital incentive programs operated by the federal government and commercial insurers from the Baseline Year to mid-2016. Less than half (41 percent) of hospitals participated in CCO hospital incentive programs. By contrast, nearly all hospitals (96 percent) participated in federal incentive programs, such as the Partnership for Patients and Medicare Value-Based Purchasing.

Table 20 shows alignment between HTPP and other incentive programs from the perspective of DRG hospitals that participated. Overall, hospitals reported that HTPP quality measures and activities were more closely aligned with federal and commercial incentive programs than with CCO incentive programs. This may reflect state legislation directing the Hospital Performance Metrics Advisory Committee to recommend quality measures that are consistent with other state and national quality standards, and the need to balance the HTPP measure set by including measures hospitals were working on as part of other programs.

CCOs interviewed for the evaluation reported that they do not plan to change their incentive programs in response to HTPP. However, they expressed support for continued collaboration with hospitals. As described above, CCOs expressed interest in closer alignment between HTPP quality measures and CCO incentive measures.

Changes Being Considered by the State

As negotiated with CMS, the HTPP measure set will remain unchanged from the Performance Year to Year 3; however, OHA plans to add more measures reflecting collaboration between hospitals and CCOs to the HTPP measure set after Year 3. OHA emphasized that collaborative measures are challenging and time-intensive for hospitals

to achieve, and stressed the need to introduce such measures gradually. Unlike states with publicly owned hospitals, Oregon lacks direct leverage to impose a new set of challenging measures on hospitals. OHA emphasized the value of HTPP as the primary mechanism for including hospitals in Oregon's health system transformation; without HTPP, the state lacks a mechanism for including hospitals in transformation.

TABLE 20: PERCENTAGE OF DRG HOSPITALS THAT PARTICIPATED IN FEDERAL, COMMERCIAL, AND CCO INCENTIVE PROGRAMS FOR HOSPITALS

Type of hospital incentive program	Percentage of hospitals that participated*	Percentage of participating hospitals that said incentive program measures and activities were aligned with HTPP [†]			
		Very aligned	Somewhat aligned	Not very aligned	I don't know
Federal	96%	19%	58%	23%	0%
Commercial insurer	50%	15%	69%	8%	8%
CCO	41%	18%	45%	27%	9%

* Percentage of DRG hospitals that responded to this survey item. Not all hospitals responded to all items.

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A1: SHARING ED VISIT INFORMATION, RATE OF OUTREACH NOTIFICATION TO PRIMARY CARE, BY DRG HOSPITAL*

Hospital	Baseline Year	Performance Year
Adventist Medical Center	13.3%	36.6%
Asante Rogue Regional Medical Center	71.1%	94.9%
Asante Three Rivers Medical Center	63.5%	92.6%
Bay Area Hospital	15.9%	26.6%
Good Samaritan Regional Medical Center	11.5%	68.2%
Kaiser Sunnyside Medical Center	76.2%	91.7%
Kaiser Westside Medical Center	77.8%	91.8%
Legacy Emanuel Medical Center	53.0%	57.0%
Legacy Good Samaritan Medical Center	47.4%	54.3%
Legacy Meridian Park Medical Center	56.0%	63.7%
Legacy Mount Hood Medical Center	53.9%	60.6%
McKenzie-Willamette Medical Center†	-	-
Mercy Medical Center	29.7%	73.8%
OHSU Hospital	59.7%	69.2%
PeaceHealth Sacred Heart Medical Center RiverBend	0.0%	2.9%
PeaceHealth Sacred Heart Medical Center University District	0.0%	3.7%
Providence Medford Medical Center	84.4%	87.8%
Providence Milwaukie Hospital	90.0%	90.2%
Providence Portland Medical Center	84.9%	82.3%
Providence St. Vincent Medical Center	82.7%	84.4%
Providence Willamette Falls Medical Center	84.3%	83.7%
Salem Hospital	42.0%	66.6%
Samaritan Albany General Hospital	34.4%	68.6%
Shriners Hospital for Children‡	-	-
Sky Lakes Medical Center	82.4%	82.0%
St. Charles Bend	0.0%	65.5%
Tuality Healthcare	6.6%	59.7%
Willamette Valley Medical Center	4.0%	57.6%

* Performance Year rates in this table may differ from rates reported by OHA. See Methodology for details.

† This hospital did not submit Baseline Year data for the measure and had no data in evaluation dataset for the Performance Year.

‡ The measure was not applicable to this hospital because it does not have an emergency room.

TABLE A2: SHARING ED VISIT INFORMATION, CARE GUIDELINES COMPLETION RATE, BY DRG HOSPITAL*

Hospital	Baseline Year	Performance Year
Adventist Medical Center	0.1%	0.7%
Asante Rogue Regional Medical Center	0.0%	0.4%
Asante Three Rivers Medical Center	0.0%	0.0%
Bay Area Hospital	0.0%	0.0%
Good Samaritan Regional Medical Center	0.0%	0.0%
Kaiser Sunnyside Medical Center	0.0%	0.5%
Kaiser Westside Medical Center	0.0%	0.4%
Legacy Emanuel Medical Center	0.0%	0.0%
Legacy Good Samaritan Medical Center	0.0%	0.0%
Legacy Meridian Park Medical Center	0.0%	0.0%
Legacy Mount Hood Medical Center	0.0%	0.0%
McKenzie-Willamette Medical Center†	-	-
Mercy Medical Center	4.9%	0.0%
OHSU Hospital	0.0%	6.1%
PeaceHealth Sacred Heart Medical Center RiverBend	1.7%	5.2%
PeaceHealth Sacred Heart Medical Center University District	0.0%	3.9%
Providence Medford Medical Center	0.0%	0.0%
Providence Milwaukie Hospital	0.0%	0.5%
Providence Portland Medical Center	0.1%	0.2%
Providence St. Vincent Medical Center	0.2%	0.2%
Providence Willamette Falls Medical Center	0.0%	0.1%
Salem Hospital	0.4%	0.0%
Samaritan Albany General Hospital	0.0%	0.0%
Shriners Hospital for Children‡	-	-
Sky Lakes Medical Center	0.0%	0.0%
St. Charles Bend	20.9%	14.7%
Tuality Healthcare	3.4%	5.2%
Willamette Valley Medical Center	1.9%	1.1%

* Performance Year rates in this table may differ from rates reported by OHA. See Methodology for details.

† This hospital did not submit Baseline Year data for the measure and had no data in evaluation dataset for the Performance Year.

‡ The measure was not applicable to this hospital because it does not have an emergency room.

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A3: FOLLOW-UP AFTER HOSPITALIZATION FOR MENTAL ILLNESS BY DRG HOSPITAL*

Hospital	Baseline Year	Performance Year
Adventist Medical Center	64.9%	65.0%
Asante Rogue Regional Medical Center	65.4%	50.0%
Asante Three Rivers Medical Center	62.5%	86.2%
Bay Area Hospital	71.2%	74.1%
Good Samaritan Regional Medical Center	72.1%	63.6%
Kaiser Sunnyside Medical Center†	-	-
Kaiser Westside Medical Center†	-	-
Legacy Emanuel Medical Center	68.9%	69.2%
Legacy Good Samaritan Medical Center	65.5%	58.0%
Legacy Meridian Park Medical Center†	100.0%	-
Legacy Mount Hood Medical Center	100.0%	100.0%
McKenzie-Willamette Medical Center	50.0%	100.0%
Mercy Medical Center†	-	-
OHSU Hospital	60.4%	42.4%
PeaceHealth Sacred Heart Medical Center RiverBend†	100.0%	-
PeaceHealth Sacred Heart Medical Center University District	80.0%	60.0%
Providence Medford Medical Center†	-	-
Providence Milwaukie Hospital†	-	-
Providence Portland Medical Center	67.0%	65.1%
Providence St. Vincent Medical Center	64.7%	71.5%
Providence Willamette Falls Medical Center	58.4%	62.3%
Salem Hospital	60.4%	52.9%
Samaritan Albany General Hospital†	50.0%	-
Shriners Hospital for Children†	-	-
Sky Lakes Medical Center†	-	100.0%
St. Charles Bend	56.1%	75.0%
Tuality Healthcare	25.0%	0.0%
Willamette Valley Medical Center†	-	-

* Rates in this table may differ from rates reported by OHA. See Methodology for details.

† This hospital had no qualifying events in the denominator for the Baseline Year or the Performance Year.

TABLE A4: SCREENING FOR ALCOHOL AND DRUG MISUSE, BRIEF INTERVENTIONAL, AND REFERRAL TO TREATMENT (SBIRT) IN THE ED, SCREENING RATE, BY DRG HOSPITAL*

Hospital	Baseline Year	Performance Year
Adventist Medical Center	59.8%	71.1%
Asante Rogue Regional Medical Center	29.7%	42.0%
Asante Three Rivers Medical Center	53.3%	76.8%
Bay Area Hospital‡	-	12.2%
Good Samaritan Regional Medical Center†	-	80.8%
Kaiser Sunnyside Medical Center	0.0%	0.0%
Kaiser Westside Medical Center	0.0%	0.0%
Legacy Emanuel Medical Center†	-	76.8%
Legacy Good Samaritan Medical Center†	-	80.9%
Legacy Meridian Park Medical Center†	-	87.0%
Legacy Mount Hood Medical Center†	-	89.3%
McKenzie-Willamette Medical Center	5.5%	14.9%
Mercy Medical Center	21.2%	29.7%
OHSU Hospital	71.9%	73.7%
PeaceHealth Sacred Heart Medical Center RiverBend	8.2%	41.3%
PeaceHealth Sacred Heart Medical Center University District	20.8%	40.4%
Providence Medford Medical Center	62.8%	58.9%
Providence Milwaukie Hospital	40.4%	43.6%
Providence Portland Medical Center	51.1%	42.1%
Providence St. Vincent Medical Center	21.3%	36.8%
Providence Willamette Falls Medical Center	50.0%	38.0%
Salem Hospital†	-	70.3%
Samaritan Albany General Hospital†	-	73.2%
Shriners Hospital for Children‡	-	-
Sky Lakes Medical Center†	-	73.0%
St. Charles Bend†	-	69.0%
Tuality Healthcare	99.2%	99.9%
Willamette Valley Medical Center	22.5%	53.2%

* Performance Year rates in this table may differ from rates reported by OHA. See Methodology for details.

† This hospital did not submit Baseline Year data for the measure.

‡ The measure was not applicable to this hospital because it does not have an emergency room.

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A5: SCREENING FOR ALCOHOL AND DRUG MISUSE, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT (SBIRT) IN THE ED, BRIEF INTERVENTION RATE, BY DRG HOSPITAL*

Hospital	Baseline Year	Performance Year
Adventist Medical Center	80.0%	36.3%
Asante Rogue Regional Medical Center	71.0%	75.5%
Asante Three Rivers Medical Center	45.9%	45.5%
Bay Area Hospital ^{††}	-	-
Good Samaritan Regional Medical Center [†]	-	21.1%
Kaiser Sunnyside Medical Center ^{‡§}	-	-
Kaiser Westside Medical Center ^{‡§}	-	-
Legacy Emanuel Medical Center [†]	-	22.1%
Legacy Good Samaritan Medical Center [†]	-	17.8%
Legacy Meridian Park Medical Center [†]	-	30.6%
Legacy Mount Hood Medical Center [†]	-	24.3%
McKenzie-Willamette Medical Center	100.0%	37.7%
Mercy Medical Center	36.7%	28.5%
OHSU Hospital	0.0%	3.1%
PeaceHealth Sacred Heart Medical Center RiverBend	39.5%	21.3%
PeaceHealth Sacred Heart Medical Center University District	54.6%	38.5%
Providence Medford Medical Center	30.0%	4.8%
Providence Milwaukie Hospital	0.0%	6.3%
Providence Portland Medical Center	10.0%	2.5%
Providence St. Vincent Medical Center	0.0%	6.4%
Providence Willamette Falls Medical Center	22.2%	10.7%
Salem Hospital [†]	-	18.3%
Samaritan Albany General Hospital [†]	-	47.8%
Shriners Hospital for Children	-	-
Sky Lakes Medical Center [¶]	-	-
St. Charles Bend [†]	-	14.9%
Tuality Healthcare	25.6%	39.9%
Willamette Valley Medical Center [§]	-	0.0%

* Performance Year rates in this table may differ from rates reported by OHA. See Methodology for details.

† This hospital did not submit Baseline Year data for the measure.

‡ This hospital had no qualifying events in the denominator for the Performance Year.

§ This hospital had no data in the evaluation dataset for Baseline Year.

|| The measure was not applicable to this hospital because it does not have an emergency room.

¶ This hospital had no data in evaluation dataset for the Performance Year.

TABLE A6: HOSPITAL-WIDE ALL-CAUSE READMISSIONS BY DRG HOSPITAL (LOWER IS BETTER)

Hospital	Baseline Year	Performance Year
Adventist Medical Center	13.2%	12.5%
Asante Rogue Regional Medical Center	11.0%	11.6%
Asante Three Rivers Medical Center	9.2%	11.1%
Bay Area Hospital	11.6%	12.7%
Good Samaritan Regional Medical Center	10.1%	9.7%
Kaiser Sunnyside Medical Center	11.2%	12.0%
Kaiser Westside Medical Center	6.2%	8.0%
Legacy Emanuel Medical Center	11.5%	12.0%
Legacy Good Samaritan Medical Center	12.1%	11.8%
Legacy Meridian Park Medical Center	9.6%	9.5%
Legacy Mount Hood Medical Center	8.9%	11.4%
McKenzie-Willamette Medical Center	10.4%	11.2%
Mercy Medical Center	10.9%	11.8%
OHSU Hospital	17.5%	16.7%
PeaceHealth Sacred Heart Medical Center RiverBend	10.3%	10.8%
PeaceHealth Sacred Heart Medical Center University District	11.9%	14.9%
Providence Medford Medical Center	11.9%	12.0%
Providence Milwaukie Hospital	13.2%	12.8%
Providence Portland Medical Center	11.0%	11.6%
Providence St. Vincent Medical Center	10.2%	10.5%
Providence Willamette Falls Medical Center	8.1%	8.0%
Salem Hospital	10.5%	10.9%
Samaritan Albany General Hospital	8.7%	9.2%
Shriners Hospital for Children	4.9%	4.7%
Sky Lakes Medical Center	9.7%	9.0%
St. Charles Bend	8.7%	8.7%
Tuality Healthcare	7.9%	8.5%
Willamette Valley Medical Center	10.0%	10.7%

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A7: HYPOGLYCEMIA IN INPATIENTS RECEIVING INSULIN BY DRG HOSPITAL (LOWER IS BETTER)

Hospital	Baseline Year	Performance Year
Adventist Medical Center	0.4%	1.8%
Asante Rogue Regional Medical Center	4.7%	4.4%
Asante Three Rivers Medical Center	5.1%	4.9%
Bay Area Hospital	4.8%	4.5%
Good Samaritan Regional Medical Center	7.1%	6.2%
Kaiser Sunnyside Medical Center	6.4%	6.1%
Kaiser Westside Medical Center	5.6%	4.2%
Legacy Emanuel Medical Center	6.1%	5.8%
Legacy Good Samaritan Medical Center	3.5%	4.3%
Legacy Meridian Park Medical Center	4.8%	4.1%
Legacy Mount Hood Medical Center	4.7%	4.2%
McKenzie-Willamette Medical Center	7.5%	8.2%
Mercy Medical Center	2.1%	1.7%
OHSU Hospital	1.9%	1.0%
PeaceHealth Sacred Heart Medical Center RiverBend	4.2%	4.5%
PeaceHealth Sacred Heart Medical Center University District	10.5%	6.4%
Providence Medford Medical Center	5.0%	3.8%
Providence Milwaukie Hospital	4.2%	1.7%
Providence Portland Medical Center	4.5%	3.5%
Providence St. Vincent Medical Center	4.2%	3.7%
Providence Willamette Falls Medical Center	4.2%	4.4%
Salem Hospital	2.4%	2.2%
Samaritan Albany General Hospital	3.7%	7.5%
Shriners Hospital for Children*	-	0.0%
Sky Lakes Medical Center	2.6%	3.2%
St. Charles Bend	1.2%	2.6%
Tuality Healthcare	5.0%	4.8%
Willamette Valley Medical Center	7.0%	6.5%

* This hospital had no qualifying events in the denominator for the Baseline Year.

TABLE A8: EXCESSIVE ANTICOAGULATION WITH WARFARIN BY DRG HOSPITAL (LOWER IS BETTER)

Hospital	Baseline Year	Performance Year
Adventist Medical Center	1.3%	1.1%
Asante Rogue Regional Medical Center	0.6%	0.8%
Asante Three Rivers Medical Center	0.9%	1.0%
Bay Area Hospital	0.4%	1.3%
Good Samaritan Regional Medical Center	0.7%	0.4%
Kaiser Sunnyside Medical Center	0.7%	0.5%
Kaiser Westside Medical Center	0.4%	0.9%
Legacy Emanuel Medical Center	1.0%	1.4%
Legacy Good Samaritan Medical Center	1.9%	2.2%
Legacy Meridian Park Medical Center	1.6%	1.3%
Legacy Mount Hood Medical Center	3.1%	1.6%
McKenzie-Willamette Medical Center	4.1%	4.0%
Mercy Medical Center	5.9%	4.3%
OHSU Hospital	0.4%	0.8%
PeaceHealth Sacred Heart Medical Center RiverBend	1.3%	1.2%
PeaceHealth Sacred Heart Medical Center University District	0.3%	3.3%
Providence Medford Medical Center	0.5%	1.1%
Providence Milwaukie Hospital	1.6%	0.4%
Providence Portland Medical Center	0.9%	0.5%
Providence St. Vincent Medical Center	0.8%	0.6%
Providence Willamette Falls Medical Center	1.2%	0.7%
Salem Hospital	3.7%	3.0%
Samaritan Albany General Hospital	2.2%	1.0%
Shriners Hospital for Children*	-	-
Sky Lakes Medical Center	1.2%	1.7%
St. Charles Bend	0.3%	0.7%
Tuality Healthcare	1.0%	0.3%
Willamette Valley Medical Center	2.1%	1.5%

* This hospital had no qualifying events in the denominator for the Baseline Year or the Performance Year.

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A9: ADVERSE DRUG EVENTS DUE TO OPIOIDS BY DRG HOSPITAL (LOWER IS BETTER)

Hospital	Baseline Year	Performance Year
Adventist Medical Center	0.1%	0.6%
Asante Rogue Regional Medical Center	0.4%	0.4%
Asante Three Rivers Medical Center	0.4%	0.2%
Bay Area Hospital	0.3%	0.2%
Good Samaritan Regional Medical Center	0.5%	0.4%
Kaiser Sunnyside Medical Center	0.3%	0.2%
Kaiser Westside Medical Center	0.2%	0.1%
Legacy Emanuel Medical Center	0.4%	0.5%
Legacy Good Samaritan Medical Center	0.4%	0.4%
Legacy Meridian Park Medical Center	0.2%	0.3%
Legacy Mount Hood Medical Center	0.3%	0.3%
McKenzie-Willamette Medical Center	0.2%	0.2%
Mercy Medical Center	0.8%	1.2%
OHSU Hospital	0.4%	0.5%
PeaceHealth Sacred Heart Medical Center RiverBend	0.6%	0.7%
PeaceHealth Sacred Heart Medical Center University District	0.4%	0.1%
Providence Medford Medical Center	0.6%	0.5%
Providence Milwaukie Hospital	0.5%	0.5%
Providence Portland Medical Center	0.5%	0.4%
Providence St. Vincent Medical Center	0.7%	0.5%
Providence Willamette Falls Medical Center	0.3%	0.5%
Salem Hospital	1.1%	0.8%
Samaritan Albany General Hospital	0.7%	0.5%
Shriners Hospital for Children	0.2%	0.3%
Sky Lakes Medical Center	0.3%	0.4%
St. Charles Bend	0.4%	0.4%
Tuality Healthcare	0.6%	0.5%
Willamette Valley Medical Center	0.8%	0.6%

TABLE A10: STAFF ALWAYS EXPLAINED MEDICINES BY DRG HOSPITAL

Hospital	Baseline Year	Performance Year
Adventist Medical Center	60.4%	65.4%
Asante Rogue Regional Medical Center	62.0%	61.3%
Asante Three Rivers Medical Center	61.9%	61.7%
Bay Area Hospital	63.1%	61.7%
Good Samaritan Regional Medical Center	57.6%	60.8%
Kaiser Sunnyside Medical Center	64.5%	62.6%
Kaiser Westside Medical Center	68.4%	68.6%
Legacy Emanuel Medical Center	65.8%	67.5%
Legacy Good Samaritan Medical Center	67.0%	68.9%
Legacy Meridian Park Medical Center	69.6%	70.0%
Legacy Mount Hood Medical Center	72.8%	70.0%
McKenzie-Willamette Medical Center	67.3%	69.5%
Mercy Medical Center	65.5%	64.0%
OHSU Hospital	63.7%	64.9%
PeaceHealth Sacred Heart Medical Center RiverBend	60.0%	61.1%
PeaceHealth Sacred Heart Medical Center University District	44.7%	51.3%
Providence Medford Medical Center	63.0%	60.1%
Providence Milwaukie Hospital	66.2%	63.0%
Providence Portland Medical Center	63.1%	65.8%
Providence St. Vincent Medical Center	61.2%	62.5%
Providence Willamette Falls Medical Center	66.8%	66.1%
Salem Hospital	62.6%	61.6%
Samaritan Albany General Hospital	67.3%	61.0%
Shriners Hospital for Children*	-	-
Sky Lakes Medical Center	61.9%	66.4%
St. Charles Bend	61.1%	61.7%
Tuality Healthcare	68.2%	65.2%
Willamette Valley Medical Center	69.2%	69.7%

* This hospital uses the Press Ganey Inpatient Survey rather than the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). There is no analogous question to the HCAHPS questions used to calculate Staff Always Explained Medicines on the Press Ganey Survey. Consequently, data were not available to calculate Staff Always Explained Medicines for this hospital.

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A11: STAFF GAVE PATIENT DISCHARGE INFORMATION BY DRG HOSPITAL

Hospital	Baseline Year	Performance Year
Adventist Medical Center	87.6%	91.3%
Asante Rogue Regional Medical Center	85.5%	87.0%
Asante Three Rivers Medical Center	88.0%	88.5%
Bay Area Hospital	89.1%	87.9%
Good Samaritan Regional Medical Center	87.5%	87.1%
Kaiser Sunnyside Medical Center	90.3%	89.3%
Kaiser Westside Medical Center	93.2%	92.7%
Legacy Emanuel Medical Center	89.3%	90.6%
Legacy Good Samaritan Medical Center	92.1%	92.9%
Legacy Meridian Park Medical Center	91.7%	89.8%
Legacy Mount Hood Medical Center	90.2%	89.0%
McKenzie-Willamette Medical Center	92.0%	91.4%
Mercy Medical Center	85.5%	85.6%
OHSU Hospital	90.0%	91.3%
PeaceHealth Sacred Heart Medical Center RiverBend	90.0%	89.4%
PeaceHealth Sacred Heart Medical Center University District	73.1%	82.2%
Providence Medford Medical Center	88.2%	88.6%
Providence Milwaukie Hospital	89.4%	87.4%
Providence Portland Medical Center	89.3%	89.5%
Providence St. Vincent Medical Center	87.9%	89.0%
Providence Willamette Falls Medical Center	90.4%	91.2%
Salem Hospital	89.4%	90.0%
Samaritan Albany General Hospital	88.6%	87.9%
Shriners Hospital for Children*	-	-
Sky Lakes Medical Center	83.0%	84.6%
St. Charles Bend	86.8%	87.4%
Tuality Healthcare	91.5%	93.1%
Willamette Valley Medical Center	90.2%	89.9%

* This hospital uses the Press Ganey Inpatient Survey rather than the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). For HTPP, the hospital's performance is based on an analogous question to the HCAHPS questions about discharge instructions on the Press Ganey Survey. However, data from the Press Ganey Survey were not available for the evaluation.

TABLE A12: CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS (CLABSI) IN ALL TRACKED UNITS BY DRG HOSPITAL (LOWER IS BETTER)

Hospital	Baseline Year	Performance Year
Adventist Medical Center	0.36	0.48
Asante Rogue Regional Medical Center	0.45	1.12
Asante Three Rivers Medical Center	0.00	0.00
Bay Area Hospital	0.00	0.86
Good Samaritan Regional Medical Center	0.00	0.64
Kaiser Sunnyside Medical Center	0.42	0.79
Kaiser Westside Medical Center	0.00	0.56
Legacy Emanuel Medical Center	0.95	1.08
Legacy Good Samaritan Medical Center	0.40	0.43
Legacy Meridian Park Medical Center	0.74	0.29
Legacy Mount Hood Medical Center	1.16	1.53
McKenzie-Willamette Medical Center	2.07	0.00
Mercy Medical Center	0.00	1.30
OHSU Hospital	1.50	1.48
PeaceHealth Sacred Heart Medical Center RiverBend	0.42	0.21
PeaceHealth Sacred Heart Medical Center University District	0.00	0.00
Providence Medford Medical Center	0.00	0.20
Providence Milwaukie Hospital	0.00	0.93
Providence Portland Medical Center	0.49	0.55
Providence St. Vincent Medical Center	0.65	0.92
Providence Willamette Falls Medical Center	0.00	1.10
Salem Hospital	0.53	0.76
Samaritan Albany General Hospital	0.00	0.00
Shriners Hospital for Children	0.00	0.00
Sky Lakes Medical Center	0.00	0.74
St. Charles Bend	0.67	0.31
Tuality Healthcare	0.00	1.95
Willamette Valley Medical Center	1.39	0.00

Appendix A: HTPP Quality Measure Rates by Hospital

TABLE A13: CATHETER ASSOCIATED URINARY TRACT INFECTIONS (CAUTI) IN ALL TRACKED UNITS BY DRG HOSPITAL (LOWER IS BETTER)

Hospital	Baseline Year	Performance Year
Adventist Medical Center	0.00	0.56
Asante Rogue Regional Medical Center	0.00	1.71
Asante Three Rivers Medical Center	0.75	0.00
Bay Area Hospital	0.95	0.52
Good Samaritan Regional Medical Center	2.26	1.32
Kaiser Sunnyside Medical Center	0.59	1.71
Kaiser Westside Medical Center	0.00	0.00
Legacy Emanuel Medical Center	0.97	1.66
Legacy Good Samaritan Medical Center	1.02	0.27
Legacy Meridian Park Medical Center	1.40	0.51
Legacy Mount Hood Medical Center	3.79	0.61
McKenzie-Willamette Medical Center	0.00	0.85
Mercy Medical Center	0.00	0.78
OHSU Hospital	2.30	1.76
PeaceHealth Sacred Heart Medical Center RiverBend	0.00	0.26
PeaceHealth Sacred Heart Medical Center University District	0.00	2.03
Providence Medford Medical Center	0.00	0.00
Providence Milwaukie Hospital	2.11	1.10
Providence Portland Medical Center	0.39	0.97
Providence St. Vincent Medical Center	0.74	0.97
Providence Willamette Falls Medical Center	0.00	0.00
Salem Hospital	0.85	0.45
Samaritan Albany General Hospital	0.00	0.00
Shriners Hospital for Children	0.00	0.00
Sky Lakes Medical Center	1.05	1.06
St. Charles Bend	1.73	1.70
Tuality Healthcare	0.00	0.69
Willamette Valley Medical Center	0.00	0.00

Appendix B: Methodology

Data Sources

Data Provided by OAHHS

OAHHS provided data for all HTPP measures except Follow-Up after Hospitalization for Mental Illness. OAHHS collects numerators and denominators for nine HTPP measures and calculates numerators and denominators for Hospital-Wide All-Cause Readmissions using inpatient discharges reported by hospitals. Data provided by OAHHS for the evaluation consisted of a numerator and denominator for each hospital in each month of the Baseline Year and Performance Year.

OHA allowed hospitals to report partial-year data from the Baseline Year or Performance Year as baseline data for seven measures if they were unable to report full-year data from the Baseline Year. Table B1 shows the number of hospitals that reported full-year data from the Baseline Year, partial-year data from the Baseline Year, and partial-year data from the Performance Year as baseline data. All hospitals reported data from the first part of the Performance Year for CAUTI in All Tracked Units due to a measure specification change initiated by the federal Centers for Disease Control and Prevention, which specifies how hospitals must report the measure.

TABLE B1: NUMBER OF DRG HOSPITALS BY TYPE OF BASELINE DATA SUBMITTED FOR FOUR HTPP QUALITY MEASURES

HTPP quality measure	Type of baseline data submitted			Total hospitals that submitted baseline data
	Full-year data for Baseline Year	Partial-Year data for Baseline Year	Partial-year data for Performance Year	
CAUTI in All Tracked Units	0	0	28	28
SBIRT in the ED (both rates)*	2	2	13	17
Hospitals Share ED Visit Information (both rates)*	8	12	6	26

* SBIRT in the ED and Sharing ED Visit Information were not applicable for one hospital.

Medicaid Claims and Encounters

Medicaid claims and encounters data were obtained from OHA and used to calculate numerators and denominators for Follow-Up after Hospitalization for Mental Illness used in all regression analyses. Specifications used to calculate Follow-Up after Hospitalization for Mental Illness were aligned with specifications used for the CCO incentive program.

The measure could not be calculated for 7 of 28 DRG hospitals and 4 of 32 non-DRG hospitals, as the Medicaid data for these hospitals did not contain mental health hospitalization claims for years 2013 - 2015 (OHA uses an attribution methodology to assign Follow-Up after Hospitalization for Mental Illness rates to these hospitals).

Emergency Department Information Exchange (EDIE)

Numerator and denominator for 30-day all-cause readmissions was obtained from Collective Medical Technologies (CMT), the EDIE contractor, and used in regression analysis to answer Question 2. Rates for this measure are not directly comparable to rates for Hospital-Wide All-Cause Readmissions, one of the HTPP quality measures, because the HTPP measure is based on patient health records, and because specifications used by CMT may differ from HTPP measure specifications.

DRG Hospital Survey

To collect information about hospitals' engagement in HTPP, the evaluation team developed and administered an online survey to each DRG hospital or hospital system. The survey included questions about quality measures hospitals worked on and activities they used to improve performance on the measures; staff engagement in HTPP and allocation of staff to HTPP activities; engagement in other quality incentive programs and the overall effect of HTPP on quality improvement efforts and programs; use of HTPP incentive payments; and challenges with meeting benchmarks and improvement targets. Survey responses regarding the measures hospitals targeted and the activities they used to improve performance were coded and used in regression analyses to answer Question 3. In addition, responses from all sections of the survey were used to describe hospitals' response to HTPP and answer Questions 4 through 6.

Providence Center for Outcomes Research and Education (CORE) led development and administration of the survey. To develop survey items and response options, CORE carried out six preliminary interviews with executives from hospitals participating in HTPP. CORE selected interviewees to achieve a balance between individual hospitals and hospital systems, and between urban and rural hospitals. The preliminary interviews included open-ended questions about changes in hospital practice associated with HTPP and HTPP quality measures on which hospitals decided to focus. Responses were analyzed to develop questions and response options for the DRG Hospital Survey.

CORE administered the DRG Hospital Survey from April 4 to April 29, 2016. All DRG hospitals responded to the survey. However, not all hospitals responded to all survey items. Tables in this report present hospitals' responses to survey items as a percentage of all hospitals that responded to each item. For readability, the number of hospitals that responded to each item were excluded from the tables. Response rates for each item are available from CHSE upon request.

Respondents employed by health systems with more than one hospital responded for all hospitals in the system. Table B2 shows health systems that responded for more than one hospital.

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TABLE B2: HEALTH SYSTEMS THAT RESPONDED TO THE DRG HOSPITAL SURVEY FOR MULTIPLE HOSPITALS

Health system	Number of hospitals for which health system responded
Asante	2
Kaiser Permanente	2
Legacy	4
PeaceHealth	2
Providence	5

Stakeholder Interviews

To collect information about changes to hospital and CCO incentives that CCOs and OHA are considering as a result of HTPP, CORE conducted interviews with representatives from four of Oregon's 16 CCOs and one representative of OHA. The CCO interviews focused on collaboration between CCOs and hospitals, and on providing context for results from regression analyses and the DRG Hospital Survey. The OHA interview focused on HTPP implementation, and on changes the State of Oregon is considering as a result of lessons learned from the program.

Rates Used for HTPP Reporting and Evaluation

As described above, OHA allowed hospitals to report partial-year data from the Baseline Year or Performance Year as baseline data for some measures. When calculating rates for its HTPP reports, OHA uses partial-year data from the Performance Year to calculate both Baseline Year rates and Performance Year rates for these hospitals. By contrast, the evaluation team used partial-year data from the Performance Year to calculate Baseline Year rates only, and excluded these data from calculation of Performance Year rates. This means rates used for the evaluation may differ from rates reported by OHA for some hospitals.

Measures Used for Question 2

The 11 HTPP quality measures include three Hospital-CCO Collaboration Measures. Two of these measures (Follow-Up after Hospitalization for Mental Illness and SBIRT in the ED) can be calculated using health care claims and encounters data. Medicaid claims and encounters data are available for DRG and non-DRG hospitals, meaning performance of DRG and non-DRG hospitals on these measures can be compared based on hospitals' Medicaid patients.

The evaluation team used Medicaid data to calculate Follow-Up after Hospitalization for

Mental Illness and SBIRT in the ED for DRG and non-DRG hospitals. However, the data were insufficient to reliably compare DRG and non-DRG hospitals on these measures:

- There was an insufficient number of non-DRG hospitals with admissions for mental illness to compare DRG and non-DRG hospitals on Follow-Up after Hospitalization for Mental Illness: Only four non-DRG hospitals had an admission for mental illness in the Baseline Year or Performance Year, with one admission per year on average.
- Procedure codes needed to calculate SBIRT in the ED were not used frequently enough to calculate the measure reliably.

Due to these issues, comparison of DRG and non-DRG hospitals on Follow-Up after Hospitalization for Mental Illness and SBIRT in the ED was excluded from this report.

The third Hospital-CCO Collaboration Measure, Hospitals Share ED Visit Information, can be extracted for DRG and non-DRG hospitals from the Emergency Department Information Exchange (EDIE); however, there was insufficient time to extract data for both types of hospitals for the evaluation. The evaluation team consulted with OHA and selected 30-day all-cause readmissions as a substitute that could be extracted from EDIE within the timeframe for the evaluation.

Regression Analyses

Analyses for Questions 1 and 2

The following model was used to estimate average change in performance on each measure associated with the introduction of HTPP performance incentives.

$$Y_{it} = f(b_0 + b_1 * Postimplementation_{it} + a * X_{it} + e_{it})$$

where Y_{it} is the rate of an HTPP quality measure at hospital i in month t , f is a general function, $Postimplementation_{it}$ is an indicator variable that equals 0 if the observation is in the Baseline Year and 1 if the observation is in the Performance Year, X_{it} represents characteristics of hospital i in month t , and e_{it} represents an error term. Coefficient b_1 represents average change in performance associated with the introduction of HTPP performance incentives and is presented in this report.

The following model was used to compare performance of DRG and non-DRG hospitals on 30-day all-cause readmissions.

$$Y_{it} = f(b_0 + b_1 * Postimplementation_{it} + b_2 * DRG_{it} + b_3 * Postimplementation_{it} * DRG_{it} + a * X_{it} + e_{it})$$

where DRG_{it} is an indicator variable that equals 0 if the observation is for a non-DRG hospital and 1 if the observation is for a DRG hospital. Coefficient b_3 represents the average difference in performance between DRG and non-DRG hospitals in the Performance Year and is presented in this report.

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The following hospital characteristics were included in both models:

- Total discharges in a given month
- Total patient days in a given month
- Number of inpatient surgeries in a given month
- Percentage of total charges attributable to commercial payers in 2013
- Average operating margin in 2013
- Average beds available in 2013
- County
- Ownership (Non-Profit Private, Non-Profit Church, Government-Hospital District or Authority, Government-Local, Non-Profit Other, and Proprietary)

Fractional logit models were used for all measures except CLABSI in All Tracked Units and CAUTI in All Tracked Units, for which Tobit models were used. Both models accounted for clustered (i.e., hospital-level) standard errors. Linear regressions with and without time trends and using the same outcome and control variables were also estimated. Results from these models were not substantially different from results in this report.

In analyses for Question 1, a hospital was excluded from analysis for a measure if data were unavailable for both the Baseline Year and the Performance Year. Table B3 shows number of hospitals excluded from analysis for Question 1 for specific measures.

TABLE B3: NUMBER OF HOSPITALS EXCLUDED FROM REGRESSION ANALYSES FOR QUESTION 1

Measure	Number of hospitals excluded from analysis
Hospitals Share ED Visit Information, Rate of Outreach Notifications to Primary Care for ED Use	2
Hospitals Share ED Visit Information, Care Guidelines Completion Rate	2
Follow-Up after Hospitalization for Mental Illness	7
SBIRT in the ED, Screening Rate	1
SBIRT in the ED, Intervention Rate	5
Excessive Anticoagulation with Warfarin	1
Staff Always Explained Medicines	1
Staff Gave Patient Discharge Information	1

Analyses for Question 3

Association between working on specific measures and performance improvement: The DRG Hospital survey asked whether hospitals worked to improve performance on each measure from the Baseline Year to mid-2016. Responses were coded as a dummy variable and included in regressions. Because almost all hospitals reported that they worked to improve performance on SBIRT in the ED, there was insufficient variation in this variable to identify differences in performance between hospitals that did and did not work on the measure. Consequently, results for SBIRT in the ED were omitted from the analyses.

The evaluation team used the following model to estimate improvement in performance on each measure associated with a hospital's decision to work on a specific measure.

$$Y_i = f(b_0 + b_1 * Work_i + a * X_i + e_i)$$

where Y_i is the difference in the rate of an HTPP quality measure between the Baseline Year and the Performance Year at hospital i , f is a general function, $Work_i$ is an indicator variable that equals 0 if hospital i did not work to improve performance on the measure and 1 if hospital i worked to improve performance on the measure, X_i represents total discharges from the hospital in 2013, and e_i represents an error term. Coefficient b_1 represents improvement in performance associated with a hospital's decision to work on a specific measure and is presented in this report.

Association between specific activities and performance improvement: The DRG Hospital Survey asked whether hospitals worked on 11 specific activities to improve performance on HTPP measures after HTPP started. Four measures were coded and included as dummy variables in regressions based on relevance to the evaluation and methodology issues.

- Responses for these four activities were included: hired new staff devoted to working on targeted measures; changed workflows or protocols to improve targeted outcomes; invested in new data tools or software to support efforts; and increased collaboration with the local CCO(s). These activities were identified by the evaluation team as substantial changes to hospital practice most likely to affect performance and of highest relevance to the evaluation.
- Responses for five activities were omitted because there was insufficient variation in responses to identify differences in performance between hospitals that did and did not use the activities: redirected existing staff to work on targeted measures; trained staff to improve targeted outcomes; tracked performance to provide rapid feedback and reporting; increased collaboration within hospital(s); and assembled teams and committees dedicated to targeted measures.
- Responses for two activities were omitted to preserve degrees of freedom: provided new materials, supplies, or other resources to staff or patients; and increased collaboration with other outside/community partners. These activities were identified by the evaluation team as less substantial changes to hospital practice

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than the four variables that were included, and of less relevance to the evaluation.

The evaluation team used the following model to estimate improvement in performance on each measure associated with the four activities.

$$Y_i = f(b_0 + b_1 * Collaboration_i + b_2 * Hire_i + b_3 * Workflow_i + b_4 * Tools_i + a * X_i + e_i)$$

where *Collaboration_i* is an indicator variable that equals 0 if the hospital did not increase collaboration with local CCOs after HTPP started and 1 if the hospital increased collaboration with local CCOs, *Hire_i* is an indicator variable that equals 0 if the hospital did not hire new staff devoted to working on targeted measures and 1 if the hospital hired such staff, *Workflow_i* is an indicator variable that equals 0 if the hospital did not change workflows or protocols to improve targeted outcomes and 1 if the hospital changed workflows or protocols, and *Tools_i* is an indicator variable that equals 0 if the hospital did not invest in new data tools or software to support quality improvement efforts and 1 if the hospital invested in new data tools or software. Coefficients *b₁*, *b₂*, *b₃*, and *b₄* represent improvement in performance associated with specific activities and are presented in this report.

Linear regression models were used for all measures. Numerators and denominators from each month of the Baseline and Performance Years were pooled to calculate the outcome variable, meaning only one observation for each hospital was available to estimate the models. Due to the relatively small number of observations that resulted from pooling monthly data and the consequent need to preserve degrees of freedom, only one control variable for hospital characteristics (total discharges from the hospital in 2013) was included in the models. As in regressions used to answer Questions 1 and 2, all models accounted for clustered standard errors.

In analyses for Question 3, a hospital was excluded from analysis for a measure if data were unavailable for either the Baseline Year or the Performance Year (because the outcome variable is the difference in the rate between the Baseline Year and the Performance Year, rates for both years were needed to include a hospital in the analysis). Table B4 shows number of hospitals excluded from analysis for Question 3 for specific measures.

TABLE B4: NUMBER OF HOSPITALS EXCLUDED FROM REGRESSION ANALYSES FOR QUESTION 3

Measure	Number of hospitals excluded from analysis
Hospitals Share ED Visit Information, Rate of Outreach Notifications to Primary Care for ED Use	2
Hospitals Share ED Visit Information, Care Guidelines Completion Rate	2
Follow-Up after Hospitalization for Mental Illness	11
SBIRT in the ED, Screening Rate	11
SBIRT in the ED, Intervention Rate	14
Hypoglycemia in Inpatients Receiving Insulin	1
Excessive Anticoagulation with Warfarin	1
Staff Always Explained Medicines	1
Staff Gave Patient Discharge Information	1