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INTRODUCTION

In December of 2014, the Hospital Quality Institute (HQI) and the Institute for Population Health Improvement (IPHI) established an agreement to produce actionable intelligence for California hospitals in the areas of patient safety and quality improvement. The agreement yielded a variety of analytic products for HQI’s use. This report highlights the major accomplishments for each deliverable in the agreement.

ACCOMPLISHMENTS

Deliverable 1: Provide an estimate of sepsis occurrence and deaths involving sepsis in California hospitals utilizing existing data for the purpose of informing hospitals of opportunities to reduce mortality.

Several high-profile initiatives have characterized sepsis as a major public health problem in the United States. Despite increased national awareness of the need to improve sepsis care, it remains difficult to precisely gauge the burden of sepsis in individual states, since most studies draw upon nationally representative datasets. When HQI set out to develop a sepsis care improvement plan for California, they endeavored to find answers to basic questions about sepsis in California, including how many patients are hospitalized with sepsis each year and what proportion of patients succumb to the disease.

To assist in their work, IPHI designed and implemented an analysis of severe sepsis in California hospitals between 2010 and 2013. IPHI’s Health Research Analyst, Mallory Johnson, MPA, reviewed academic literature on sepsis epidemiology, researched existing data sources, and composed three reports for use by HQI and its board.

Please reference Appendixes A - C for additional information on Deliverable 1.
Deliverable 2: Develop a set of quarterly key performance indicator reports that inform the HQI board and member hospitals of performance with meaningful, timely, and relevant measures in areas of strategic importance, including health care acquired conditions, health care acquired infections, maternity measures, mortality, patient experience, readmissions, sepsis, and surgical safety measures.

HQI's key performance indicator (KPI) report serves to improve communication and accountability between HQI staff and its board by describing the organization’s progress towards chief goals. The KPI reports are one part program tracking and part state-level quality surveillance. They provide a high-level view of HQI's effectiveness in impacting quality and patient safety in the State of California.

Under the direction of HQI's President and CEO, Julie Morath, RN, MS, Mallory Johnson revised the format and content of HQI's key performance indicator (KPI) report, which HQI distributes to their board of directors quarterly. As part of this process, Ms. Johnson developed and delivered training for HQI staff on performance measurement, logic models, and best practices in data visualization.

Please reference Appendix D for additional information on Deliverable 2.

Deliverable 3: Evaluate patient experience satisfaction data, using HCAHPS, to identify drivers of performance and areas of focus for improvement in aggregate and for individual hospitals on a semi-annual basis. IPHI will create a web-based data visualization for individual hospitals to query their information.

HQI recognizes that patient experience is a key component of every high-quality health care system. Therefore, they have placed patient experience programming at the center of their strategic plan. Over the past year, IPHI has supported HQI's patient experience goals by developing multiple analytic tools that make patient experience data more accessible, interactive, and actionable.

First, Ms. Johnson prepared an analysis of HCAHPS performance in the State of California. She presented the findings during HQI's senior leadership meeting, July’s board of directors meeting, and an HQI-sponsored webinar on noise reduction in inpatient settings. Second, IPHI developed an interactive, web-based data visualization illustrating CMS’s recently released HCAHPS star ratings. The visualization is featured on HQI’s website and allows users to query their information and find top-performers in their region. Please access the visualization at: http://www.hqinstitute.org/post/hcahps-star-ratings-data-visualization-tool-california. Third, Ms. Johnson developed a prototype of an HCAHPS data dashboard. This interactive web app presents Hospital Compare data in a user-friendly format. HQI’s board positively reviewed the data dashboard during their July meeting. However, the tool requires more extensive usability testing with hospitals before a final version is marketed. Lastly, IPHI prepared a manuscript summarizing changes in patient experience in California and the United States since the initiation of public reporting of HCAHPS data.

Please reference Appendixes E - H for additional information on Deliverable 3.
**Deliverable 4:** Analyze California Hospital Patient Safety Organization (CHPSO) data to identify patterns, trends, and leverage points to reduce risk and create safer systems in care delivery and prepare reports on a quarterly basis.

**Maternal Care Patient Safety Analysis Plan**
CHPSO, a federally-listed Patient Safety Organization (PSO) and HQI affiliate, maintains a database of reports filed by health care personnel describing adverse events and near misses in health care delivery. Among these reports are over 16,000 events related to perinatal patient safety and quality. IPHI collaborated with HQI to design a study to identify common patient safety issues in perinatal settings in order to help hospitals detect potential hazards and prevent patient harm. The analysis plan combined traditional content analysis with text mining techniques in order to approach the research questions from two differing, yet complementary, perspectives. Delays in IRB approval prevented IPHI analysts from executing the proposed analysis.

**CHPSO Member Reports Data Dashboard**
CHPSO distributes reports to their member hospitals biannually to provide them with updates on the number and types of reports they have submitted to the CHPSO database. IPHI assisted CHPSO in creating a visually appealing data dashboard that populates with information specific to each member hospital.

*Please reference Appendix I for additional information on Deliverable 4.*

**Deliverable 5:** Contribute grant writing expertise and assistance for two competitive grant proposals for funding based on HQI’s strategic plan in the areas of sepsis, maternity care, data infrastructure and use in hospitals, survival safety or patient experience.

IPHI supported HQI’s funding goals through a variety of development activities. Mallory Johnson researched and prepared a report on foundations aligned with HQI’s strategic priorities. Ms. Johnson also continuously monitored RFP announcements and assessed potential opportunities for fit (including reviewing program descriptions, analyzing foundations’ funding histories, and assessing I-990 reports).

HQI elected to pursue two funding opportunities with IPHI’s assistance. The first application was to the Health Research & Educational Trust (HRET) to fund a second iteration of the California Hospital Engagement Network (CalHEN). Ms. Johnson collaborated with HQI staff to draft and submit the proposal narrative, which was funded in October of 2015.

The second application was to the California Health Care Foundation (CHCF) to fund a quality improvement program focused on reducing C-sections for low-risk births in California hospitals. The program, *Promoting Optimal NTSV Delivery Rates* (PONDR), is currently under review.

*Please reference Appendixes J - L for additional information on Deliverable 5.*
Deliverable 6: Prepare at least one manuscript for submission to a peer-reviewed journal.

IPHI staff prepared two manuscripts for submission to a peer-reviewed journal. The first describes changes in HCAHPS performance between 2008 and 2013. The second describes the results of the severe sepsis analysis detailed in Deliverable 1.

*Please reference Appendixes C and F for additional information on Deliverable 6.*

Deliverable 7: Conduct monthly coordinated meetings and engage in ongoing consultation.

As part of the organizations' ongoing collaboration, Ms. Johnson coordinated monthly meetings to provide HQI with status updates on the defined deliverables. Ms. Johnson also participated in HQI team huddles, senior staff meetings, and leadership retreats.

*Agendas and notes from monthly meetings are available upon request.*

Added Deliverables

In addition to the deliverables described in the scope of work, IPHI worked to support HQI’s internal data analysis goals through the following activities.

- **Data Analyst Recruitment:** At HQI’s request, Ms. Johnson assisted with the recruitment of two data analysts to complement HQI’s existing analytic capabilities. This included assistance with the development of position announcements, review of resumes, interviews, and assessment of applicants. Both positions were filled.

- **Hospital Quality Information Initiative (HQI²) Project Specification:** Ms. Johnson contributed to a workgroup dedicated to planning HQI's quality improvement database and analytics web application. The planned investments in data infrastructure will form the basis of HQI's data and analytics work, known as the Hospital Quality Information Initiative (HQI²).
APPENDIXES

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Incidence of Severe Sepsis in California Hospitals

May 2015
Mallory Johnson, MPA
In California:

- The number of hospitalizations with severe sepsis indicated increased by 33,990 between 2010 and 2013, even as the overall number of hospitalizations decreased by 170,963 statewide.
- The number of cases with severe sepsis indicated varies by hospital. Twenty hospitals reported no cases in 2013. Large to mid-sized hospitals had the greatest crude number of cases, while small and critical access hospitals had the least.
- Long Term Acute Care Hospitals (LTACHs) had the greatest number of cases per 1,000 hospitalizations. In some cases, severe sepsis cases comprised approximately half of their admissions in 2013.
- For more than eighty percent of cases, diagnoses for septicemia, organ dysfunction, or both were present upon admission.
- In 2013, seventy six percent of cases (n = 111,249) were admitted to the treating hospital from home.
- Severe sepsis cases most commonly involved organ dysfunction in the renal and respiratory systems.
Methodology

- **Objectives:** We sought to describe the incidence of severe sepsis in California hospitals.

- **Data Source:** We utilized data from California Office of Statewide Health Planning and Development (OSHPD) Patient Discharge Data Public Use File (PDD-PUF), the dataset derived from the Medical Information Reporting for California (MIRCal). The MIRCal collects data from each inpatient discharge record for every patient treated in a licensed general acute care hospital in California.

- **Case Definition:** We employed the Dombrovskiy method for estimating cases of severe sepsis from ICD-9-CM codes. The Dombrovskiy method defines a case of severe sepsis as an admission coded for septicemia and acute organ dysfunction concomitantly.

- **Limitations:** Administrative data sources generally contain imprecise diagnostic information, which varies based on hospital coding practice. Further, study of severe sepsis is hampered by a lack of a reliable case definition. Several methods of estimating cases using ICD-9-CM codes exist, each producing differing estimates. We have utilized the most conservative method in light of this issue. Last, the PDD-PUF is limited by missing data points. OSHPD applies blinding rules to protect patient privacy. Missing ICD-9-CM codes may contribute to an undercount of severe sepsis incidence.
Severe Sepsis Incidence
California Acute Care Settings by Year

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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Rates are per 100,000 and adjusted to the number of acute care hospitalizations contained in the OSHPD-PDD-PUF

Trends Over Time

The number of hospitalizations with severe sepsis indicated increased by 33,990 between 2010 and 2013, even as the number of overall hospitalizations decreased by 170,963 statewide. It is not possible to ascertain if these increases are due to a rise in number of cases or changes in coding practice. A recent national study comparing sepsis incidence derived from administrative claims and sepsis incidence derived from object clinical data suggested that sepsis coding is rising while objective clinical markers for sepsis remain stable or decreased (Rhee et al., 2015).
Variation Among Hospitals, 2013
Hospitals with No Cases Indicating Severe Sepsis

<table>
<thead>
<tr>
<th>OSHPD ID</th>
<th>OSHPD Name</th>
<th>Number of Severe Sepsis Cases</th>
<th>Number of Admissions</th>
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Variation Among Hospitals, 2013
Top 20 Hospitals: Crude Number of Cases

<table>
<thead>
<tr>
<th>OSHPD ID</th>
<th>OSHPD Name</th>
<th>Number of Severe Sepsis Cases</th>
<th>Number of Admissions</th>
<th>Cases per 1,000 Admissions</th>
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<td>32,333</td>
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</table>

Among the twenty hospitals with the most hospitalizations with severe sepsis, eight were teaching hospitals.

Half of the top-twenty did not have trauma services, while seven had Level I services, two had Level II, and one had Level III.

Hospitals ranged in size from 133 beds (Oroville Hospital) to 886 beds (Cedars Sinai Medical Center). Most hospitals (n=6) were between 300 and 400 beds.
Variation Among Hospitals, 2013
Bottom 20 Hospitals: Crude Number of Cases

Small hospitals had low numbers of hospitalizations with severe sepsis indicated. Among the bottom 20, hospitals ranged in size from 11 beds (Santa Ynez Valley Cottage Hospital) to 250 beds (Motion Picture and Television Hospital). Among hospitals with a low number of cases, twelve are critical access hospitals, and thirteen are designated rural. Three facilities had level IV trauma services; the remaining had no trauma services.

<table>
<thead>
<tr>
<th>OSHPD ID</th>
<th>OSHPD Name</th>
<th>Number of Severe Sepsis Cases</th>
<th>Number of Admissions</th>
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<td>SENECA HEALTHCARE DISTRICT</td>
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</table>
## Variation Among Hospitals, 2013
Cases per 1,000 Hospitalizations

### Long Term Acute Care (LTACH) facilities have the greatest number of severe sepsis cases per 1,000 hospitalizations.

These facilities tend to have a smaller number of overall admissions, in part because patients’ length of stay tends to be longer than most general acute care (GAC) facilities. Furthermore, patients in LTACHs are often complex cases with many risk factors for severe sepsis, including advanced age and weakened immune systems.

This “high numerator / low denominator” problem yields high rates. At Kindred hospital Los Angeles, nearly half of hospitalizations indicated severe sepsis.

Whittaker et al. provides some evidence that claims-based strategies for identifying severe sepsis cases, such as the one utilized here, may be biased towards severely ill patient populations (2013).

### Hospital Characteristics

<table>
<thead>
<tr>
<th>OSHPD ID</th>
<th>OSHPD Name</th>
<th>Number of Severe Sepsis Cases</th>
<th>Number of Admissions</th>
<th>Cases per 1,000 Admissions</th>
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<tr>
<td>106190305</td>
<td>KINDRED HOSPITAL - LOS ANGELES</td>
<td>403</td>
<td>815</td>
<td>494</td>
</tr>
<tr>
<td>106190049</td>
<td>KINDRED HOSPITAL BALDWIN PARK</td>
<td>444</td>
<td>963</td>
<td>461</td>
</tr>
<tr>
<td>106332172</td>
<td>KINDRED HOSPITAL RIVERSIDE</td>
<td>163</td>
<td>430</td>
<td>379</td>
</tr>
<tr>
<td>106361274</td>
<td>KINDRED HOSPITAL ONTARIO</td>
<td>321</td>
<td>892</td>
<td>360</td>
</tr>
<tr>
<td>106190468</td>
<td>PROMISE HOSPITAL OF EAST LOS ANGELES-EAST L.A. CAMPUS</td>
<td>567</td>
<td>1617</td>
<td>351</td>
</tr>
<tr>
<td>106364188</td>
<td>KINDRED HOSPITAL RANCHO</td>
<td>245</td>
<td>758</td>
<td>323</td>
</tr>
<tr>
<td>106190449</td>
<td>KINDRED HOSPITAL - LA MIRADA</td>
<td>691</td>
<td>2227</td>
<td>310</td>
</tr>
<tr>
<td>106301380</td>
<td>KINDRED HOSPITAL WESTMINSTER</td>
<td>302</td>
<td>981</td>
<td>308</td>
</tr>
<tr>
<td>106301127</td>
<td>KINDRED HOSPITAL BREA</td>
<td>132</td>
<td>455</td>
<td>290</td>
</tr>
<tr>
<td>106190196</td>
<td>KINDRED HOSPITAL SOUTH BAY</td>
<td>273</td>
<td>1013</td>
<td>269</td>
</tr>
<tr>
<td>106370787</td>
<td>PROMISE HOSPITAL OF SAN DIEGO</td>
<td>111</td>
<td>423</td>
<td>262</td>
</tr>
<tr>
<td>106190052</td>
<td>BARLOW RESPIRATORY HOSPITAL</td>
<td>141</td>
<td>745</td>
<td>189</td>
</tr>
<tr>
<td>106190541</td>
<td>MONROVIA MEMORIAL HOSPITAL</td>
<td>137</td>
<td>781</td>
<td>175</td>
</tr>
<tr>
<td>106301357</td>
<td>NEWPORT SPECIALTY HOSPITAL</td>
<td>20</td>
<td>117</td>
<td>171</td>
</tr>
<tr>
<td>106370721</td>
<td>KINDRED HOSPITAL - SAN DIEGO</td>
<td>104</td>
<td>613</td>
<td>170</td>
</tr>
<tr>
<td>106190280</td>
<td>ENCINO HOSPITAL MEDICAL CENTER</td>
<td>291</td>
<td>1752</td>
<td>166</td>
</tr>
<tr>
<td>106010887</td>
<td>KINDRED HOSPITAL - SAN FRANCISCO BAY AREA</td>
<td>84</td>
<td>515</td>
<td>163</td>
</tr>
<tr>
<td>106190708</td>
<td>SHERMAN OAKS HOSPITAL</td>
<td>584</td>
<td>3756</td>
<td>155</td>
</tr>
<tr>
<td>106190570</td>
<td>NORWALK COMMUNITY HOSPITAL</td>
<td>405</td>
<td>2833</td>
<td>143</td>
</tr>
<tr>
<td>106491076</td>
<td>SONOMA VALLEY HOSPITAL</td>
<td>193</td>
<td>1414</td>
<td>136</td>
</tr>
</tbody>
</table>
# Present on Admission, 2010 - 2013

POA status for septicemia and organ dysfunction codes

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Severe Sepsis Cases</td>
<td>112,089</td>
<td>124,384</td>
<td>130,907</td>
<td>146,079</td>
</tr>
<tr>
<td>Cases with Septicemia POA</td>
<td>94,963 (85%)</td>
<td>106,855 (86%)</td>
<td>114,207 (87%)</td>
<td>129,534 (89%)</td>
</tr>
<tr>
<td>Cases with Organ Dysfunction POA</td>
<td>100,251 (89%)</td>
<td>112,340 (90%)</td>
<td>119,681 (91%)</td>
<td>134,492 (92%)</td>
</tr>
<tr>
<td>Cases with Septicemia and Organ Dysfunction POA</td>
<td>91,477 (82%)</td>
<td>103,200 (83%)</td>
<td>110,609 (84%)</td>
<td>125,515 (86%)</td>
</tr>
</tbody>
</table>

**Time to Intervene**

The vast majority of severe sepsis cases present with septicemia, organ dysfunction, or both upon admission. At least 80 percent of severe sepsis cases were coded with diagnoses for both septicemia and organ dysfunction POA between 2010 and 2013, indicating that the condition may be advanced upon arrival at the hospital.
Presence on Admission, 2013
POA status for septicemia and organ dysfunction codes

- Neither Septicemia nor Organ Dysfunction POA (n = 7,568): 5.2%
- Septicemia POA (n = 4,019): 2.8%
- Both Septicemia and Organ Dysfunction POA (n = 125,515): 85.9%
- Organ Dysfunction POA (n = 8,977): 6.1%
Organ Dysfunction, 2013
Cases by Type of System Failure

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Diagnoses</th>
<th>ICD-9-CM Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>92,028</td>
<td>99592 (Severe sepsis or sepsis with acute organ dysfunction)</td>
</tr>
<tr>
<td>Renal</td>
<td>79,857</td>
<td>580, 5804, 5800, 58081, 58089, 5809, 5845, 5846, 5847, 5848, 5849, 584</td>
</tr>
<tr>
<td>Respiratory</td>
<td>62,328</td>
<td>5185, 51881, 51882, 51884, 51885, 78609, 7991, 0967, 09671, 09672</td>
</tr>
<tr>
<td>Metabolic</td>
<td>33,454</td>
<td>2762</td>
</tr>
<tr>
<td>Hematologic</td>
<td>26,926</td>
<td>2866, 2869, 2873, 2874, 2875</td>
</tr>
<tr>
<td>Neurologic</td>
<td>26,137</td>
<td>2930, 2931, 2939, 3481, 3483, 34831, 34839, 78001, 78009</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>15,600</td>
<td>4275, 4580, 4582, 4584, 4588, 4589, 78550, 75851, 75852, 75859, 7963</td>
</tr>
<tr>
<td>Hepatic</td>
<td>8,970</td>
<td>570, 5722, 5733</td>
</tr>
</tbody>
</table>

Renal and respiratory system dysfunction were the most common type of system failure in severe sepsis cases.
**Source of Admission, 2013**

Patients’ route to admission

<table>
<thead>
<tr>
<th>Site of Patient Origin</th>
<th>Admitting Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The admitting hospital’s ER</td>
</tr>
<tr>
<td>Home</td>
<td>103,764</td>
</tr>
<tr>
<td>Skilled Nursing</td>
<td>16,178</td>
</tr>
<tr>
<td>Acute Inpatient Hospital Care</td>
<td>453</td>
</tr>
<tr>
<td>Residential Care Facility</td>
<td>3,244</td>
</tr>
<tr>
<td>Other</td>
<td>655</td>
</tr>
<tr>
<td>Other Inpatient Hospital Care</td>
<td>359</td>
</tr>
<tr>
<td>Prison/Jail</td>
<td>230</td>
</tr>
<tr>
<td>Ambulatory Surgery</td>
<td>78</td>
</tr>
<tr>
<td>Newborn</td>
<td></td>
</tr>
<tr>
<td>Invalid/Blank</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>124,961</td>
</tr>
</tbody>
</table>

Seventy six percent of severe sepsis cases (n = 111,249) originated at home in 2013. Of these, ninety three percent (n = 103,764) were admitted through the treating hospital’s ER. Roughly seven percent (n = 7,485) were admitted either directly from home or through another facility’s ER.

Newborns born in the admitting hospital comprised less than a tenth of a percent (n = 133) of severe sepsis cases in California in 2013.
References


In California:

- 115,143 severe sepsis cases died in-hospital between 2010 and 2013. The number of all-cause, in-hospital deaths among severe sepsis cases increased each year from 27,536 deaths in 2010 to 29,976 in 2013.
- The case fatality rate for severe sepsis cases declined from 0.246 in 2010 to 0.205 in 2013.
- The majority of severe sepsis case fatalities occurred among the Medicare population (n=20,857) in 2013.
- In 2013, fifty six percent of case fatalities (n=16,831) were admitted with a primary diagnosis of unspecified septicemia. Respiratory illnesses were also common primary diagnoses among severe sepsis case fatalities.
- 77.3 percent of case fatalities (n=23,816) were diagnosed with septicemia and organ dysfunction present on admission (POA). Nearly nine percent (n=2,567) are presented without diagnoses for septicemia or organ dysfunction POA.
- Mortality rates for severe sepsis cases varies by organ system failure. Among cases with hepatic system dysfunction, over 45 percent (n=4,062) died in hospital compared with 24 percent (n=19,039) with renal system dysfunction.
Methodology

- **Objectives:** We seek to describe mortality among cases of severe sepsis in California hospitals.

- **Data Source:** We utilized data from California Office of Statewide Health Planning and Development (OSHPD) Patient Discharge Data Public Use File (PDD-PUF), the dataset derived from the Medical Information Reporting for California (MIRCal). The MIRCal collects data from each inpatient discharge record for every patient treated in a licensed general acute care hospital in California.

- **Case Definition:** We employed the Dombrovskiy method for estimating cases of severe sepsis from ICD-9-CM codes. The Dombrovskiy method defines a case of severe sepsis as case coded for septicemia accompanied by acute organ dysfunction.

- **Limitations:** Administrative data sources generally contain imprecise diagnostic information, which varies based on hospital coding practice. Further, study of severe sepsis is hampered by a lack of a reliable case definition. Several methods of estimating cases using ICD-9-CM codes exist, each producing differing estimates. We have utilized the most conservative method in light of this issue. Last, the PDD-PUF is limited by missing data points. OSHPD applies blinding rules to protect patient privacy. Missing ICD-9-CM codes contribute to an undercount of severe sepsis incidence.
Severe Sepsis Case Fatality
California Acute Care Settings by Year

All-cause, in-hospital deaths declined from 73,621 hospitalizations in 2010 to 72,165 in 2013. During the same time, in-hospital deaths for cases of severe sepsis increased, with nearly 30,000 deaths occurring in 2013. Severe sepsis cases comprise between 37 and 42 percent of in-hospital deaths, with the proportion increasing steadily each year. However, the mortality rate for severe sepsis cases is on the decline, with 20.5% of severe sepsis cases ending in in-hospital death in 2013, down from 24.6% 2010.

Table 1: All-Cause, In-Hospital Mortality

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Hospitalizations</td>
<td>73,621</td>
<td>74,129</td>
<td>72,769</td>
<td>72,165</td>
<td></td>
</tr>
<tr>
<td>Ending in In-hospital Death</td>
<td>0.020</td>
<td>0.020</td>
<td>0.020</td>
<td>0.020</td>
<td></td>
</tr>
<tr>
<td>Mortality Rate for All Cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Severe Sepsis Cases</td>
<td>27,536</td>
<td>28,860</td>
<td>28,771</td>
<td>29,976</td>
<td></td>
</tr>
<tr>
<td>Ending in In-hospital Death</td>
<td>0.246</td>
<td>0.230</td>
<td>0.220</td>
<td>0.205</td>
<td></td>
</tr>
<tr>
<td>Mortality Rate for Severe Cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A strong, positive correlation exists between the number of severe sepsis cases and the number of case fatalities within a hospital. However, it is worth noting that the fit of the trend line “loosens” as the number of cases increases. Further investigation into the relationship between case volume and mortality is necessary.
### Expected Payment Source, 2013

Case fatalities stratified by health insurance coverage

<table>
<thead>
<tr>
<th>Payer Category</th>
<th>Case Fatality Rate</th>
<th>Cases</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare</td>
<td>0.216</td>
<td>96,657</td>
<td>20,857</td>
</tr>
<tr>
<td>Medi-Cal</td>
<td>0.199</td>
<td>20,750</td>
<td>4,138</td>
</tr>
<tr>
<td>Private Coverage</td>
<td>0.178</td>
<td>20,399</td>
<td>3,623</td>
</tr>
<tr>
<td>Other Government (including VHA and TRICARE)</td>
<td>0.190</td>
<td>1,478</td>
<td>281</td>
</tr>
<tr>
<td>Self Pay</td>
<td>0.186</td>
<td>3,297</td>
<td>613</td>
</tr>
<tr>
<td>Invalid/Blank</td>
<td>0.571</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Other Payer (usually research and courtesy patients)</td>
<td>0.267</td>
<td>600</td>
<td>160</td>
</tr>
<tr>
<td>Other Indigent (Hill-Burton and hospital charity programs)</td>
<td>0.140</td>
<td>321</td>
<td>45</td>
</tr>
<tr>
<td>Workers' Compensation</td>
<td>0.116</td>
<td>207</td>
<td>24</td>
</tr>
<tr>
<td>County Indigent Program</td>
<td>0.096</td>
<td>2,356</td>
<td>227</td>
</tr>
</tbody>
</table>

The MIRCal tracks the type of entity expected to pay for the greatest share of the patient’s bill.

The majority of severe sepsis cases (n=96,657) and case fatalities (n=20,857) were among the Medicare population. This population also experiences a slightly higher case fatality rate than patients covered by Medicaid or private insurance.

The Medicaid and private insurance populations experienced a similar number of severe sepsis cases. However, case fatalities were slightly higher among the Medicaid population, a difference of 515 deaths statewide.
## Top Primary Diagnoses, 2013
### Main Condition Responsible for Admission Among Severe Sepsis Case Fatalities

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
<th>Present at Admission</th>
<th>Not Present at Admission</th>
<th>Clinically undetermined</th>
<th>Unknown</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>038.9</td>
<td>Unspecified septicemia</td>
<td>16,776</td>
<td>45</td>
<td>7</td>
<td>3</td>
<td>16,831</td>
</tr>
<tr>
<td>038.42</td>
<td>Septicemia due to escherichia coli</td>
<td>693</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>695</td>
</tr>
<tr>
<td>038.49</td>
<td>Other septicemia due to gram-negative organisms</td>
<td>638</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>639</td>
</tr>
<tr>
<td>518.81</td>
<td>Acute respiratory failure</td>
<td>573</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>577</td>
</tr>
<tr>
<td>038.12</td>
<td>Methicillin resistant Staphylococcus aureus septicemia</td>
<td>574</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>575</td>
</tr>
<tr>
<td>038.0</td>
<td>Septicemia</td>
<td>547</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>549</td>
</tr>
<tr>
<td>038.11</td>
<td>Methicillin susceptible Staphylococcus aureus septicemia</td>
<td>472</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>474</td>
</tr>
<tr>
<td>507.0</td>
<td>Pneumonitis due to inhalation of food or vomitus</td>
<td>374</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>376</td>
</tr>
<tr>
<td>518.84</td>
<td>Acute and chronic respiratory failure</td>
<td>363</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>365</td>
</tr>
<tr>
<td>486.0</td>
<td>Pneumonia, organism unspecified</td>
<td>327</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>327</td>
</tr>
<tr>
<td>038.8</td>
<td>Other specified septicemias</td>
<td>302</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>302</td>
</tr>
<tr>
<td>038.40</td>
<td>Septicemia due to gram-negative organism, unspecified</td>
<td>295</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>297</td>
</tr>
<tr>
<td>410.71</td>
<td>Subendocardial infarction, initial episode of care</td>
<td>225</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>225</td>
</tr>
<tr>
<td>038.43</td>
<td>Septicemia due to pseudomonas</td>
<td>188</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>190</td>
</tr>
<tr>
<td>038.2</td>
<td>Pneumococcal septicemia</td>
<td>182</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>182</td>
</tr>
<tr>
<td>038.19</td>
<td>Other staphylococcal septicemia</td>
<td>178</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>178</td>
</tr>
<tr>
<td>038.3</td>
<td>Septicemia due to anaerobes</td>
<td>173</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>175</td>
</tr>
<tr>
<td>042.0</td>
<td>Human immunodeficiency virus [HIV] disease</td>
<td>162</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>162</td>
</tr>
<tr>
<td>584.9</td>
<td>Acute kidney failure, unspecified</td>
<td>160</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>161</td>
</tr>
<tr>
<td>999.32</td>
<td>Bloodstream infection due to central venous catheter</td>
<td>151</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>151</td>
</tr>
<tr>
<td>434.91</td>
<td>Cerebral artery occlusion, unspecified with cerebral infarction</td>
<td>125</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>126</td>
</tr>
<tr>
<td>996.64</td>
<td>Infection and inflammatory reaction due to indwelling urinary catheter</td>
<td>104</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>104</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>23,582</strong></td>
<td><strong>68</strong></td>
<td><strong>7</strong></td>
<td><strong>4</strong></td>
<td><strong>23,661</strong></td>
<td><strong>(78.9%)</strong></td>
</tr>
</tbody>
</table>
Present on Admission (POA), 2013

POA status for septicemia and organ dysfunction codes among case fatalities

Neither Septicemia not Organ Dysfunction POA (n = 2,567) 8.6%

Both Septicemia and Organ Dysfunction POA (n = 23,186) 77.3%

Septicemia POA (n = 750) 2.5%

Organ Dysfunction POA (n = 3,473) 11.6%

Time to Intervene

The majority of severe sepsis cases presented with septicemia and organ dysfunction. A condition is considered POA if it is recorded in the history and physical examination, or if it is documented in records from the emergency room, initial progress report, initial nursing assessment, or clinic notes for the current admission.

Approximately 9 percent of cases developed septicemia and organ dysfunction following admission. A further 14 percent developed either septicemia or organ dysfunction after admission.
Palliative Cases, 2013
Severe sepsis cases coded for palliative case

Only 11 percent of severe sepsis cases were designated “comfort care only” with the ICD-9-CM code V667. However, palliative cases comprised 35 percent of case fatalities in 2013.

<table>
<thead>
<tr>
<th></th>
<th>Severe Sepsis Cases</th>
<th>Severe Sepsis Case Fatalities</th>
<th>Case Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cases</td>
<td>146,079</td>
<td>29,976</td>
<td>0.205</td>
</tr>
<tr>
<td>Palliative Cases</td>
<td>16,078</td>
<td>10,308</td>
<td>0.641</td>
</tr>
<tr>
<td>Non-Palliative Cases</td>
<td>130,001</td>
<td>19,668</td>
<td>0.151</td>
</tr>
</tbody>
</table>
**Type of Acute Organ Dysfunction, 2013**

Cases involving hepatic, cardiovascular, and respiratory system dysfunctions experience the highest mortality rates.

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Diagnoses</th>
<th>Number of Case Fatalities</th>
<th>Case Fatality Rate</th>
<th>ICD-9-CM Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatic</td>
<td>8,970</td>
<td>4,062</td>
<td>0.453</td>
<td>570, 5722, 5733, 4275, 4580, 4582, 4588, 4589, 78550, 75851, 75852, 75859, 7963</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>15,600</td>
<td>6,267</td>
<td>0.402</td>
<td>5185, 51881, 51882, 51884, 51885, 78609, 7991, 0967, 09671, 09672</td>
</tr>
<tr>
<td>Respiratory</td>
<td>62,328</td>
<td>21,868</td>
<td>0.351</td>
<td>2930, 2931, 2939, 3481, 3483, 34831, 34839, 78001, 78009</td>
</tr>
<tr>
<td>Metabolic</td>
<td>33,454</td>
<td>10,034</td>
<td>0.299</td>
<td>2762</td>
</tr>
<tr>
<td>Hematologic</td>
<td>26,926</td>
<td>7,625</td>
<td>0.283</td>
<td>2866, 2869, 2873, 2874, 2875</td>
</tr>
<tr>
<td>Neurologic</td>
<td>26,137</td>
<td>7,097</td>
<td>0.272</td>
<td>580, 5804, 5800, 58081, 58089, 5809, 5845, 5846, 5847, 5848, 5849, 584</td>
</tr>
<tr>
<td>Other</td>
<td>92,028</td>
<td>24,078</td>
<td>0.262</td>
<td>99592</td>
</tr>
<tr>
<td>Renal</td>
<td>79,857</td>
<td>19,039</td>
<td>0.238</td>
<td>580, 5804, 5800, 58081, 58089, 5809, 5845, 5846, 5847, 5848, 5849, 584</td>
</tr>
</tbody>
</table>
References


INTRODUCTION

Sepsis is a disease characterized by nonspecific clinical features. Its indeterminate nature is its tragic flaw, since timely identification is vital to the effective treatment of this potentially fatal disease. To address this shortcoming in sepsis management, the American College of Chest Physicians and Society for Critical Care Medicine developed the first standardized definition of sepsis in 1991 (Bone, et al., 1992). This and other sequential works describe sepsis as a host response to systemic infection that occurs along a continuum of disease: systemic inflammatory response syndrome (SIRS), sepsis, severe sepsis, and septic shock (Bone, 1991; Rangel-Frausto, Pittet, Costigan, Hwand, Davis, & Wenzel, 1995; Odeh, 1996).

In the decades that followed, sepsis and it sequelae were recognized as a considerable burden to the U.S. health care system. In 2009, the Agency for Healthcare Research and Quality (AHRQ) estimated that septicemia was the sixth most common principal diagnosis among inpatient admissions in the U.S. and the single most expensive (Elixhauser, Friedman, & Stranges, 2011).

Despite increased national awareness, it remains difficult to assess the burden of sepsis within individual states, since most existing studies draw upon the National Inpatient Sample (NIS) available through the Healthcare Cost and Utilization Project (HCUP). The nationally representative sample lacks the power to produce state-level estimates. This constitutes a critical shortcoming, since states require more tailored information to guide regional improvement efforts. The following analysis provides a state-specific estimate of severe sepsis
hospitalizations and case-fatality for California between 2010 and 2013. The analysis will also present information on the origin of severe sepsis cases treated in California hospitals.

**METHODS**

*Case Definition:* Despite the existing consensus definition, estimates of severe sepsis incidence and mortality vary (Gaieski, Edwards, Kallan, & Carr, 2013). Discrepancy arises from the method used to operationalize the case definition using administrative data sources and *ICD-9-CM* codes. Although sepsis-specific codes (038, 995.91, 995.92, and 785.52) are increasingly utilized, studies indicate that they remain insufficient for capturing all cases of severe sepsis (Gaieski, Edwards, Kallan, & Carr, 2013; Liu, et al., 2014). Therefore, epidemiologists rely on combinations of codes to define a case of severe sepsis.

Two leading methods for case identification have emerged from academic literature (Lagu, Rothberg, Chieh, Pekow, Steingrub, & Lindenauer, 2012). The Angus method defines a case of severe sepsis as an admission with an *ICD-9-CM* code for infection used in conjunction with a code for organ dysfunction (Angus, Zwirble, Lidicker, Clermont, Carcillo, & Pinsky, 2001; Angus & Wax, Epidemiology of sepsis: An update, 2001). The Angus method has been shown to provide a, “reasonable but imperfect approach to identifying patients with severe sepsis,” (Iwashyna, et al., 2014). Alternatively, the Dombrovskiy method defines a case of severe sepsis as an admission with an *ICD-9-CM* code for septicemia in conjunction with a code for organ dysfunction (Dombrovskiy V., Martin, Sunderram, & Paz, 2007). The codes for each method are presented in detail in Appendix A and B. The authors selected the Dombrovskiy method, because studies indicate that it may produce more conservative estimates of severe
sepsis cases that are more consistent with chart-based studies (Gaieski, Edwards, Kallan, & Carr, 2013; Lagu, Rothberg, Chieh, Pekow, Steingrub, & Lindenauer, 2012).

Data Sources: The authors utilized data from California Office of Statewide Health Planning and Development (OSHPD) Patient Discharge Data Public (PDD) for years 2010 through 2013. The PDD is derived from the Medical Information Reporting for California (MIRCal), which collects data from inpatient discharge records for every patient treated in a licensed general acute care hospital in California (California Office of Statewide Health Planning and Development, 2014). The PDD is California’s chief administrative discharge dataset and contains data on patient demographics, diagnosis and procedure codes, and the inpatient admission, such as length of stay, disposition, and source of admission (California Office of Statewide Health Planning and Development, 2010-2013). Analysts utilized the public version of the PDD, which removes select cases from the dataset in order to preserve patient privacy. Therefore, the figures presented may represent a slight undercount of severe sepsis cases.

RESULTS

Hospitalizations: Among the over 14 million hospitalizations in the state of California between 2010 and 2013, approximately 4 percent (n = 513,459) involved severe sepsis (Table 1). The number of hospitalizations with severe sepsis increased by 30 percent from 112,089 cases in 2010 to 146,079 cases in 2013. The number of overall hospitalizations decreased by 4.1% (n = 170,963) statewide during the same time period. The number of cases per 1,000 hospitalizations has consistently increased each year from 3,044 cases in 2010 to 4,160 in 2013.
Table 1. California hospitalizations and case fatalities for severe sepsis, 2010 to 2013

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>All hospitalizations</td>
<td>3,682,406</td>
<td>3,640,016</td>
<td>3,591,236</td>
<td>3,511,443</td>
</tr>
<tr>
<td>Severe sepsis cases</td>
<td>112,089</td>
<td>124,384</td>
<td>130,907</td>
<td>146,079</td>
</tr>
<tr>
<td>Cases per 1,000 hospitalizations</td>
<td>30</td>
<td>34</td>
<td>36</td>
<td>42</td>
</tr>
<tr>
<td>All hospitalizations ending in hospital death</td>
<td>73,621</td>
<td>74,129</td>
<td>72,769</td>
<td>72,165</td>
</tr>
<tr>
<td>Hospital death for severe sepsis cases</td>
<td>27,536</td>
<td>28,860</td>
<td>28,771</td>
<td>29,976</td>
</tr>
<tr>
<td>Severe sepsis case-fatality</td>
<td>0.246</td>
<td>0.230</td>
<td>0.220</td>
<td>0.205</td>
</tr>
</tbody>
</table>

Case Fatality: The number of all-cause, in-hospital deaths among severe sepsis cases increased to nearly 30,000 case fatalities in 2013. Severe sepsis cases comprised between 37 and 42 percent of in-hospital deaths, with the proportion increasing steadily each year. However, the case-fatality rate for severe sepsis admissions declined, with 20.5 percent of severe sepsis cases ending in in-hospital death in 2013, down from 24.6 percent in 2010.

Pathways to Admission: 76 percent of severe sepsis cases (n = 111,249) originated at home in 2013 (Table 2). Of these, 93 percent (n = 103,764) were admitted through the treating hospital’s emergency department. Roughly seven percent (n = 7,485) were admitted either directly from home or through another facility’s emergency department. Twelve percent of cases (n = 18,031) are admitted from skilled nursing facilities.

Table 2. Source of admission for severe sepsis cases, 2013

<table>
<thead>
<tr>
<th>Source of Admission</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>111,249   (76.16)</td>
</tr>
<tr>
<td>Skilled Nursing</td>
<td>18,031    (12.34)</td>
</tr>
<tr>
<td>Acute Inpatient Hospital Care</td>
<td>9,362     (6.41)</td>
</tr>
<tr>
<td>Residential Care Facility</td>
<td>3,394     (2.32)</td>
</tr>
<tr>
<td>Other</td>
<td>2,194     (1.50)</td>
</tr>
</tbody>
</table>
Presentation: The majority of severe sepsis cases and case-fatalities present at the hospital with septicemia, organ dysfunction, or both upon present on admission (POA)\(^1\). In 2013, 85.9 percent (n = 125,515) of severe sepsis cases were coded for both septicemia and organ dysfunction POA (Table 3). The same year, 77 percent (n = 23,186) of case-fatalities arrived at the hospital with both septicemia and organ dysfunction POA. Approximately 9 percent of cases developed septicemia and organ dysfunction following admission. A further 14 percent developed either septicemia or organ dysfunction after admission.

<table>
<thead>
<tr>
<th>Cases</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither septicemia nor organ dysfunction POA 7,568 (5.2)</td>
<td>2,567 (8.6)</td>
</tr>
<tr>
<td>Septicemia only POA 4,019 (2.8)</td>
<td>750 (2.5)</td>
</tr>
<tr>
<td>Organ dysfunction only POA 8,977 (6.1)</td>
<td>3,473 (11.6)</td>
</tr>
<tr>
<td>Both Septicemia and organ dysfunction POA 125,515 (85.9)</td>
<td>23,186 (77.3)</td>
</tr>
</tbody>
</table>

Eleven percent of severe sepsis cases were designated “comfort care only” with the ICD-9-CM code V667 (Table 4). Palliative cases comprised 35 percent of case fatalities (n =

\(^1\) A condition is considered POA if it is recorded in the history and initial physical examination, or if it is documented in records from the emergency room, initial progress report, initial nursing assessment, or clinic notes for the current admission.
As expected, the case fatality rate was much higher among palliative cases than curative cases, 0.641 versus 0.151 respectively.

Table 4. Severe sepsis cases designated comfort care only, 2013

<table>
<thead>
<tr>
<th></th>
<th>All Cases</th>
<th>Palliative Cases</th>
<th>Curative Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe sepsis cases</td>
<td>146,079</td>
<td>16,078</td>
<td>130,001</td>
</tr>
<tr>
<td>Severe sepsis case fatalities</td>
<td>29,976</td>
<td>10,308</td>
<td>19,668</td>
</tr>
<tr>
<td>Case fatality rate</td>
<td>0.205</td>
<td>0.641</td>
<td>0.151</td>
</tr>
</tbody>
</table>

DISCUSSION

The estimates presented here indicate that severe sepsis is a significant burden within the State of California. Our evaluations suggest that admissions with severe sepsis are on the rise, even as the overall number of hospitalizations declines. The case-fatality rate for severe sepsis cases has declined despite increases in the total number of in-hospital deaths for any cause. These state-wide trends mirror national patterns of increasing incidence and decreasing mortality for severe sepsis cases (Dombrovskiy V., Martin, Sunderram, & Paz, 2005; Martin, Mannino, Eaton, & Moss, 2003).

The analysis reveals that most severe sepsis cases treated in California hospitals are admitted from home through the emergency room. Further, we found that most cases present at the hospital with septicemia, organ dysfunction, or both already present. This highlights a particular challenge for health care providers treating sepsis. Timely intervention is paramount, since many cases will have progressed significantly before the patient enters the health care system.
Most sepsis care bundles start the clock at presentation. However, these figures indicate that the race for timely intervention may have begun long before in the community. This accentuates the need for patient and family engagement and community-based interventions to improve sepsis care. Public-facing awareness campaigns designed to educate the community about sepsis, its warning signs, and the need for timely treatment may quicken patients’ arrival at the appropriate level of care (Tsertsvadze, Royle, & McCarthy, 2015). In a disease where hours matter, patients and families could potentially be a vital, untapped resource to speed timely diagnosis and management.

LIMITATIONS

The limitations to our analysis are many. Generally speaking, administrative data sources contain imprecise diagnostic information, which varies based on hospital coding practice. Despite this limitation, some researchers proffer that studies based on administrative data sources retain their usefulness, especially when the study is exploratory in nature (Chang, Evans, & Parker, 2015).

Even so, it is difficult to tell if increases in severe sepsis hospitalizations are due to a true rise in number of cases, improved case identification, or changes in coding practice (Lagu, Rothberg, Shieh, Pekow, Steingrub, & Lindenauer, 2012; Rhee, Gohil, & Klompas, 2014). Stevenson et. al provides evidence that changes in sepsis hospitalizations are attributable to shifts in how cases are coded (Stevenson, Rubenstein, Radin, Wiener, & Walkey, 2014). Similarly, one recent study comparing sepsis incidence derived from administrative claims and sepsis incidence derived from objective clinical data suggests that sepsis coding is rising while objective clinical markers for sepsis remained stable or decreased (Rhee et al., 2015). However,
another study suggests that estimates derived from administrative data may actually underestimate the occurrence of sepsis, since cases may go unidentified or un-coded (Ollendorf, Fendrick, Massey, Williams, & Oster, 2002).

Case-fatality rates derived from administrative sources are likewise fallible. High acuity cases tend to have worse prospects than low acuity cases. They also trend to accumulate more ICD-9-CM codes, increasing the likelihood that they will be a coded for sepsis. Conversely, low acuity cases have better outcomes and are less likely to be coded for severe sepsis. These tendencies bias claims-based estimates towards more severely ill patients (Whittaker, Mikkelsen, Gaieski, Koshy, Kean, & Fuchs, 2013).

Our study is further hampered by a data integrity issue within the admission source variable of the PDD. The OSHPD has found that some hospitals have historically incorrectly coded admissions from skilled nursing facilities as originating at home. Despite extensive action to correct the reported data, OSHPD advises that errors may persist. Further research is vitally needed to confirm or repudiate admission sources for severe sepsis cases in California.

Sepsis has previously been classified as either community onset or hospital-acquired according to where the infection was acquired (Garner, Jarvis, Emori, Horan, & Hughes, 1988) (American Thoracic Society, Infectious Diseases Society of America, 2005). However, we were not able to determine the source of infection with the available data. Further investigation into the location of the infection’s acquisition could provide additional insight into where to focus interventions.
WORKS CITED


Appendix A. ICD-9-CM codes for septicemia

038 Septicemia
  • 038.0 Streptococcal septicemia
  • 038.1 Staphylococcal septicemia
  • 038.2 Pneumococcal septicemia [Streptococcus pneumonia septicemia]
  • 038.3 Septicemia due to anaerobes
    o Septicemia due to bacteroides
    o Excludes gas gangrene (040.0)
      ▪ That is due to anaerobic streptococci (038.0)
  • 038.4 Septicemia due to other gram-negative organisms
    o 038.40 Gram-negative organism, unspecified
      ▪ Gram-negative septicemia not otherwise specified (NOS)
    o 038.41 Hemophilus influenza
    o 038.42 Escherichia coli
    o 038.43 Pseudomonas
    o 038.44 Serratia
    o 038.49 Other
  • 038.8 Other specified septicemias
    o Excludes septicemia due to
      ▪ Anthrax (022.3)
      ▪ Gonococcal (098.89)
      ▪ Herpetic (054.5)
      ▪ Meningococcal (036.2)
      ▪ Septicemia plague (020.2)
  • 038.9 Unspecified septicemia
    o Septicemia NOS
    o Excludes bacteremia NOS (790.7)
  • 995.92 Severe sepsis
  • 995.91 Inflammatory response due to infection without organ dysfunction
    o 003.1 Salmonella septicemia
    o 020.2 Septicemia plague
    o 022.3 Anthrax septicemia
    o 036.2 Meningococcal septicemia
    o 036.3 Waterhouse-Friderichsen syndrome
    o 054.5 Herpetic septicemia
    o 098.89 Gonococcemia
    o 112.5 Systemic candidiasis
    o 785.52 Septic chock

Appendix B. ICD-9-CM codes for organ dysfunction
SEVERE SEPSIS IN CALIFORNIA HOSPITALS: 2010 TO 2013

Respiratory
- 518.5 Pulmonary insufficiency after trauma, shock, or surgery
- 518.81 Acute respiratory failure
- 518.82 ARDS
- 518.84 Acute and chronic respiratory failure
- 518.85 ARDS after trauma, shock, or surgery
- 786.09 Respiratory abnormality not otherwise specified
- 799.1 Respiratory arrest
- 96.7 Continuous mechanical ventilation unspecified duration
- 96.71 Continuous mechanical ventilation <96 h
- 96.72 Continuous mechanical ventilation 96+ h

Cardiovascular
- 427.5 Cardiac arrest
- 458.0 Hypotension (458.2, 458.8, and 458.9)
- 785.50 Shock not otherwise specified
- 785.51 Shock, cardiogenic
- 785.52 Septic shock
- 785.59 Shock without trauma
- 796.3 Low blood pressure, nonspecific

Renal
- 580 Acute glomerulonephritis (580.4, 580.0, 580.81, 580.89, and 580.9)
- 584 Acute renal failure (includes 584.5, 584.6, 584.7, 584.8, and 584.9)

Hepatic
- 570 Acute necrosis of liver
- 572.2 Hepatic coma
- 573.3 Hepatitis, unspecified, not due to virus, congestion, or infarction

Hematologic
- 286.6 Purpura fulminans
- 286.9 Coagulopathy
- 287.3 Primary thrombocytopenia
- 287.4 Secondary thrombocytopenia
- 287.5 Thrombocytopenia, unspecified

Metabolic
- 276.2 Acidosis, metabolic or lactic

Neurologic
- 293.0 Acute delirium
- 293.1 Subacute delirium
- 293.9 Transient organic mental disorder not otherwise specified
- 348.1 Anoxia brain injury
SEVERE SEPSIS IN CALIFORNIA HOSPITALS: 2010 TO 2013

- 348.3 Encephalopathy, unspecified
- 348.31 Septic encephalopathy
- 348.39 Other encephalopathy
- 780.01 Coma
- 780.09 Stupor

Other
- 995.92 Severe sepsis (sepsis with acute organ dysfunction)
Key Performance Indicator Report

FY 2015 Q1
( November 4 through Dec. 31)

Release Date: February 4, 2015
At-A-Glance
Performance Target Plot
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I. DEVELOPMENT

A. Partnerships

1. UC Davis Institute for Population Health Improvement

**DEFINITION:** Establish sustainable partnership for data management, advanced analytics and reporting.

**MEASUREMENT:** Developmental measures of phases of work.

**TARGET:** Sign contract and initiate partnership.

**STEWARD:** Morath, Zell

**COMMENTS:** Met. Goal is to improve data interrogation, analytics, and timely information to members. New scope of work includes an analysis of severe sepsis in California as well as the development of web-based data visualizations for HCAHPS.
II. PATIENT SAFETY

A. CHPSO Member Value (by Hours)

**DEFINITION:** Provide benefits to CHPSO members through advocacy, consulting, data analysis, education and member support.

**MEASUREMENT:** Approximate hours spent in each category of services summarized every six months. Non-calendar items and administrative activities excluded.

**TARGET:** To be determined by member feedback.

**STEWARD:** Jaffe

**COMMENTS:** Progressing. Member outreach promoted at Hospital Quality Institute inaugural conference in November 2014. Distributed annual CHPSO status reports to each primary CHPSO hospital contact and hospital CEO in December 2014. Hospital feedback largely positive.

---

B. Member Engagement

**DEFINITION:** Identify the number of members who have gone through the CHPSO life cycle: an introductory call, an orientation webinar, a data mapping call, or a formal check-in call (30-days after orientation).

**MEASUREMENT:** Number of calls made in each category for a hospital.

**TARGET:** All hospitals to complete the CHPSO life cycle by December 2016.

**STEWARD:** Manneh

**COMMENTS:** Progressing. Engaging new members and reviving relationships with established members. Members with paper-based systems may bypass data mapping. Entities already familiar with CHPSO-related activities may bypass orientation.
C. CHPSO Membership Growth

**CCHPSO Membership Growth Aug 2008 - Oct 2014**

**DEFINITION:** Create a protected environment for healthcare facilities to eliminate harm by transparency, event reporting, and peer-to-peer learning. Proxy for engagement.

**MEASUREMENT:** Cumulative CHPSO membership for engagement.

**TARGET:** 323 members by 2014 and 25% growth by 2016.

**STEWARD:** Jaffe

**COMMENTS:** *Exceeds Target.* Membership total 340. New Mexico hospitals will engage in further discussions with CHPSO in Q1 2015. Slight membership decline. One system established an internal PSO. Vibra Hospital of San Diego does not wish to engage in PSO-related activities at this time.

D. Event Reporting

**CHPSO Total reports Per Quarter Q2 2012- Q3 2014**

**DEFINITION:** Eliminate preventable harm through transparency and event reporting, using privileged and confidential data. Reporting is a proxy for culture of safety.

**MEASUREMENT:** Number of member reported events, near misses and vulnerabilities for purpose of learning, pattern detection and leverage for action.

**TARGET:** One million submitted reports by 2016.

**STEWARD:** Jaffe

**COMMENTS:** *Progressing.* Slowly progressing as members are successful with automated reporting. CHPSO continues to work aggressively to onboard other members and provide data mapping resources via webinars and checklists.
III. QUALITY IMPROVEMENT

A. Severe Sepsis in California Hospitals

**DEFINITION:** Develop data infrastructure to trend severe sepsis occurrence and outcomes for California hospitals.

**MEASUREMENT:** Number of hospitalizations, in-hospital fatality rate, total charges, and mean charge per patient.

**Target:** Semi-annual reporting

**STEWARD:** Zell, Johnson

**COMMENTS:** Progressing. Four initial measures defined (See Appendix A). IPHI obtained Patient Discharge Data Public Use File (PDD-PUF) from OSHPD.

B. Patient Safety First

**DEFINITION:**

**MEASUREMENT:**

**Target:**

**STEWARD:** Zell, Fischer, Slininger, Muñoz

**COMMENTS:** P
IV. PATIENT & FAMILY EXPERIENCE

A. Current Statewide HCAHPS Performance

**DEFINITION:** The patient experience of inpatient care measured by HCAHPS survey through Hospital Compare.

**MEASUREMENT:** HCAHPS Survey includes 10 measures in communication, hospital environment, pain control, timely help and patient’s discharge and medication education.

**Target:** Top National Quartile by 2017

**STEWARD:** Kalanj

**COMMENTS:** Progressing. The last 3 reporting periods show slight, steady improvement in CA HCAHPS scores, mirroring national trends. Some regional variation by county, but less across the regional hospital associations. There is no updated data available until Dec, 2014 due to Hospital Compare system upgrades.

B. Statewide Improvement Strategy

**DEFINITION:** Deploy a statewide improvement strategy (P4PEx) to improve Patient and Family hospital care experience

**MEASUREMENT:** Completion of programmatic milestones per plan.

**Target:** Implementation of “Patients on Board” in 2014

**STEWARD:** Kalanj

**COMMENTS:** On Target. Continue with study of statewide performance and “Patients on Board” collaborative. Exploring other partnerships and initiatives for 2015

(Higher is better)
V. REPUTATION/BRAND RECOGNITION

A. Visibility

HQI Aggregated Numbers of Presentations, Publications and Website Visits

<table>
<thead>
<tr>
<th></th>
<th>Presentation</th>
<th>Webinars</th>
<th>Website Visits (X1000)</th>
<th>Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>76</td>
<td>59</td>
<td>17.4</td>
<td>3</td>
</tr>
<tr>
<td>Target/Goal by Dec 2014</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>2</td>
</tr>
</tbody>
</table>

**DEFINITION:** Develop brand and reputation to accelerate quality results with members and CA healthcare community.

**MEASUREMENT:** Count of publications, presentations, webinars, and HQI website visits.

**Target:** State and national presentations: 10/year  
Peer-reviewed publications: 2/year  
Webinars: 12/year  
Web visits: 12,000/year

**STEWARD:** Morath & HQI Leaders

**COMMENTS:** *Exceeds Target.* Website development and improvement continues; multiple invitational state and national presentations by HQI leaders; 14 strategic webinars; three manuscripts published. HQI annual Conference held.

B. Key State Collaborations

**Associations**

- California Department of Public Health (CDPH)
- California Maternal Quality Care Collaborative (CMQCC)
- American Congress of Obstetricians & Gynecologists (ACOG) District 9
- California Joint Replacement Registry (CJRR)
- Center for Population Health UC Davis
- Covered California
- California Quality Collaborative (CQC) Steering Committees
- Collaborative Alliance for Nursing Outcomes (CANO & NDNQI)
- Health Services Advisory Group (H-SAG)
- Office of Statewide Planning & Development (OSHPD)
- California Healthcare Performance Information System (CHPS)/California Pacific Business Group on Health (CPBGH)

**State**

- Centers for Medicare and Medicaid Services (CMS)
- Agency for Healthcare Research and Quality (AHRQ)
- National Center for Disease Control (CDC/NHSN)
- The Joint Commission (TJC)
- National Alliance of Patient Safety Organizations (NAPSO)
- Association for Advancement of Medical Instrumentation (AAMI)
- National Quality Forum (NQF)
- Health Research & Educational Trust (HRET)/American Hospital Association (AHA)
- California Hospital Association (CHA)
- Institute for Healthcare Improvement (IHI)
- Quality Executives Forum Invitational
- National Coordinator for Health Information Technology (ONC)
- American Association of Medical Instrumentation

**National**

- California Hospital Association (CHA)
- California Department of Public Health (CDPH)
- California Maternal Quality Care Collaborative (CMQCC)
- American Congress of Obstetricians & Gynecologists (ACOG) District 9
- California Joint Replacement Registry (CJRR)
- Center for Population Health UC Davis
- Covered California
- California Quality Collaborative (CQC) Steering Committees
- Collaborative Alliance for Nursing Outcomes (CANO & NDNQI)
- Health Services Advisory Group (H-SAG)
- Office of Statewide Planning & Development (OSHPD)
- California Healthcare Performance Information System (CHPS)/California Pacific Business Group on Health (CPBGH)

**DEFINITION:** HQI represented in key areas of emerging importance to quality and patient safety measurement and reporting in California.

**MEASUREMENT:** Active and documented participation: Covered California, CMQCC, CJRR, Readmissions, CDPH, UCD IPHI, NSQIP/AACS, AAMI, PFCC, and Surgical Safety Steering Committee.

**Target:** Key 10 area of engagement

**STEWARD:** Morath and HQI Team

**COMMENTS:** *Progressing.* Active engagement in nine of ten listed. Strategic partnership with CMQCC is announced. NSQIP/AACS needs development.
Key Performance Indicator Report

FY 2015 Q1
(Jan. 1 through Mar. 31)

Release Date: April 15, 2015
At-A-Glance
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  - B. Sepsis .................................................................................................................................................................................. 5
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I. DEVELOPMENT

A. Partnership Relationships
   1. UC Davis Institute for Population Health Improvement

** DEFINITION:** Establish a sustainable partnership for data management, advanced analytics, and reporting.

**MEASUREMENT:** Developmental measures of phases of work.

**TARGET:** Signed contract and initiated partnership

**STEWARD:** Morath

**COMMENTS:** Met. Goal is to improve data interrogation, analytics, and timely reporting of information to members.

The first of three reports on severe sepsis in California hospitals is in draft form. The report examines the incidence of severe sepsis including, trends over time, variation between hospitals, and organ system failure in severe sepsis.

II. PATIENT SAFETY

A. CHPSO Member Value (by Hours)

** DEFINITION:** Provide benefits to CHPSO members through advocacy, consulting, data analysis, education and member support.

**MEASUREMENT:** Approximate hours spent in each category of services summarized bi-annually. Non-calendar items and administrative activities are excluded.

**TARGET:** Continuous improvement in program and approach based on ongoing member feedback.

**STEWARD:** Jaffe

**COMMENTS:** Slight decline. CHPSO eliminated one clinical member and operated on three FTEs for Q1 2015. CHPSO is looking to add resources through consulting agreements (IPHI or others).
B. **MEMBER ENGAGEMENT (CALENDAR YEAR 2015)**

**DEFINITION:** Identify the number of members who have gone through the CHPSO life cycle: an introductory call, an orientation webinar, a data mapping call or a formal check-in call (30-days after orientation).

**MEASUREMENT:** Number of calls made in each category for a hospital.

**TARGET:** 257 hospitals (75%) will complete the CHPSO life cycle by December 2015.

**STEWARD:** Manneh

**COMMENTS:** **Progressing.** Continuing to engage new members through various activities such as introductory calls, orientation webinars and assist with data mapping, as well as onboard members with CHPSO-related activities.

**DEFINITION:** Create a protected environment for healthcare facilities to eliminate harm by transparency, event reporting and peer-to-peer learning. Proxy for engagement.

**MEASUREMENT:** Cumulative CHPSO membership for engagement.

**TARGET:** 340 members by 2015 and 25% growth by 2016.
C. **CHPSO MEMBERSHIP GROWTH**

**CHPSO Membership Growth Aug 2008 - Feb 2015**

Goal FY 2015 = 340

(Higher is better)

---

D. **EVENT REPORTING**

**CHPSO Total reports Per Quarter Q2 2012- Q1 2015**

Goal FY 2016 = 1,000,000

DE
definition: Eliminate preventable harm through transparency and event reporting, using privileged and confidential data. Reporting is a proxy for culture of safety.

**Measurement:** Number of member reported events, near misses and vulnerabilities for purpose of learning, pattern detection and leverage for action.

**Target:** One million submitted reports by 2016.

**Steward:** Jaffe

**Comments:** **Accelerated Progress.** Member response to the individual 2014 Status Reports produced sharp growth. CHPSO continues to work with hospitals and vendors to improve the data transmission process.
III. Quality Improvement: Measurement Panel is in Transition to Statewide Performance Metrics for 2015

A. Hospital-Acquired Infections (HAIs)

**DEFINITION**: Reduce six areas of harm recognized by CDC

**MEASUREMENT**: Across the Board in 6 areas of focus: CAUTI, CLABSI, SSI, C-Diff and MRSA expressed as Standardized Infection ratio (SIR).

**Target**: Mean of top quartile for each measure expressed as CMS benchmark.

**STEWARD**: Morath & QPSVP’s

**COMMENTS**: Progressing. In 2013, more than 420 hospitals reported 18,780 incidences of infection to the CDPH. There has been an improvement in all CA HAI rates compare to the national average with an exception of C-Diff (5% increase). CA SIR C-Diff rate was 1.05 and it accounts for more than half of all HAIs reported for 2013. 45 hospitals (12%) reported no hospital-onset cases of C-Diff compared to 14% of hospitals in 2012.

Patient Safety First hospitals have achieved the Phase 2 goal of a 10% reduction from the 2012 rate. Currently, PSF hospitals experience 3.5 healthcare associated C. difficile events per every 10,000 patient days. This represents a 51% reduction in harm.
B. Sepsis

**DEFINITION:** Reduce sepsis mortality expressed as Sepsis Mortality Rate for California Hospitals.

**MEASUREMENT:** Mortality Rate per 100 admissions.

**Target:** 20% reduction in State Sepsis Mortality Rate

**STEWARD:** Morath, PSQVP's, Johnson

**COMMENTS:** Progressing.

Patient Safety First hospitals have achieved the PSF Phase Two goals of a 10% reduction in sepsis deaths. PSF hospitals reduced sepsis deaths from 18.4 deaths per 100 sepsis cases to 13.2 deaths per 100 sepsis cases between 2011 and 2014, which represents a 28% decrease.

IPHI has drafted the first of three reports on severe sepsis in California hospitals. The initial report examines severe sepsis incidence, including trends over time, variation between hospitals, and organ dysfunction in severe sepsis. The second report will focus on sepsis mortality. The third will estimate costs associated with hospitalizations with severe sepsis indicated.

**Number of Severe Sepsis Cases in California Hospitals**

*Data source: OSHPD Patient Discharge Data Public Use File 2010 - 2013*

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Number of Hospitalizations</td>
<td>3,682,406</td>
<td>3,640,016</td>
<td>3,591,236</td>
<td>3,511,443</td>
<td></td>
</tr>
<tr>
<td>Crude Number of Hospitalizations with Severe Sepsis Indicated</td>
<td>112,089</td>
<td>124,384</td>
<td>130,907</td>
<td>146,079</td>
<td></td>
</tr>
<tr>
<td>Number of Cases per 100,000 Hospitalizations</td>
<td>3,043.91</td>
<td>3,417.13</td>
<td>3,645.18</td>
<td>4,160.08</td>
<td></td>
</tr>
</tbody>
</table>
C. Maternity Measurement Panel in Development

1. Early Elective Delivery (Patient Safety First)

**DEFINITION:** Reduction in early elective deliveries under 39-weeks gestation.

**MEASUREMENT:** Reduction from established baseline, expressed as percent.

**Target:** Less than 3% of all deliveries prior to 39 weeks are elective

**STEWARD:** Morath, Fischer, Slininger, Muñoz

**COMMENTS:** Exceeds Target. EED reduction has been successful with the collaboration of CalHEN, PSF, ACOG, and CMQCC.

CA EED rate dropped to 3.4% in 2014, nearing HQI’s target rate of 3%. PSF year to date rate is 1.2 with 138% improvement compared to baseline.

CA EED rate has decreased consistently for last 5 years; showing 80% reduction from 2010 and 64% from last year.
IV. Patient & Family Experience

A. Current Statewide HCAHPS Performance

<table>
<thead>
<tr>
<th>Measure</th>
<th>CA Median</th>
<th>National Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge information given</td>
<td>0.85</td>
<td>0.78</td>
</tr>
<tr>
<td>MD Communication_Well</td>
<td>0.82</td>
<td>0.74</td>
</tr>
<tr>
<td>RN Communication_Well</td>
<td>0.74</td>
<td>0.73</td>
</tr>
<tr>
<td>Room &amp; Bath clean_Always</td>
<td>0.73</td>
<td>0.71</td>
</tr>
<tr>
<td>Pt Definitely Recommend</td>
<td>0.71</td>
<td>0.68</td>
</tr>
<tr>
<td>Pain Control_Well</td>
<td>0.71</td>
<td>0.68</td>
</tr>
<tr>
<td>Pt Satisfaction (9 &amp; 10)</td>
<td>0.68</td>
<td>0.61</td>
</tr>
<tr>
<td>Timely Help_Always</td>
<td>0.68</td>
<td>0.64</td>
</tr>
<tr>
<td>Med Explanation by staff</td>
<td>0.64</td>
<td>0.61</td>
</tr>
<tr>
<td>Quietness at night_Always</td>
<td>0.61</td>
<td>0.51</td>
</tr>
</tbody>
</table>

(Higher is better)

DEFINITION: The patient experience of inpatient care measured by HCAHPS survey through CMS publicly reported Hospital Compare.

MEASUREMENT: HCAHPS Survey includes 10 measures in communication, hospital environment, pain control, timely help and patient’s discharge and medication education.

Target: Top National Quartile by 2017

STEWARD: Kalanj

COMMENTS: Progressing. CA HCAHPS performance continues to be at in national bottom-quartile. Trending analysis of the last 3 reporting periods revealed a slight steady improvement in CA HCAHPS scores, consistent with trends across the U.S.

B. Statewide Improvement Strategy

P4PEx Percentage of Statewide Improvement Strategy Completion

- Statewide Assessment: 100
- P4PEx Strategy Developed & Endorsed by HQI & Designated Boards: 100
- Phase-I: Study High Performing, Fast Improving & Diverse Hospitals: 50
- Phase I: Implement Collaborative Patients on Board: 100
- Implement Other P4PEx Tactics: 20

(Higher is better)

DEFINITION: Deploy a statewide improvement strategy (P4PEx) to improve Patient and Family hospital care experience.

MEASUREMENT: Completion of programmatic milestones per plan.

Target: Implementation of “Patients on Board”

STEWARD: Kalanj

COMMENTS: On Target. The Patients On Board collaborative offers quarterly community-of-practice webinars for hospitals. Webinars seek to spread the practice of PFA integration and sustain the gain already made by participating hospitals. New programs that align with HQI’s strategic plan are in development. The HEN 2.0 proposal also included support for new programming.
V. Reputation/Brand Recognition

A. Visibility

**DEFINITION:** Develop brand and reputation to accelerate quality results with members and CA healthcare community.

**MEASUREMENT:** Count of publications, presentations, webinars, and HQI website visits.

**Target:**
- State and national presentations: 10/year
- Peer-reviewed publications: 2/year
- Webinars: 12/year
- Web visits: 12,000/year

**STEWARD:** Morath & HQI Leaders

**COMMENTS:** Exceeds Target. Website development and improvement continues. The new page Public Reports helps hospitals understand the methodology behind their quality scores and facilitates comparison between divergent reports and ranking systems.

---

B. Key State Collaborations

**DEFINITION:** HQI represented and providing leadership in key areas of emerging importance to quality and patient safety measurement and reporting in California.

**MEASUREMENT:** Active and documented participation; including:
- Covered California, CMQCC, CJRR, Readmissions, CDPH, UCD IPHI, NSQIP/ACS, AAMI, PFCC, and Surgical Safety Steering Committee.

**Target:** Key 10 area of engagement

**STEWARD:** Morath and HQI Team

**COMMENTS:** Exceeds Target. Active engagement in listed organizations. Strategic partnership with CMQCC implemented.

NSQIP/ACS needs development.
Key Performance Indicator Report

Hospital Quality Institute
Leadership in quality and patient safety

JULY 2015
Release Date: July 8, 2015
DEVELOPMENT & PARTNER RELATIONS

University of California Davis, IPHI

Key Collaborations

DEFINITION: Establish a sustainable partnership for data management, advanced analytics, actionable intelligence, and reporting

MEASUREMENT: Developmental measures of phases of work

TARGET: Signed contract and initiated partnership

STEWARD: Morath

COMMENTS: Met. Goal is to improve data interrogation, analytics, and timely reporting of actionable intelligence to members.

DEFINITION: HQI is represented and provides advocacy and leadership in key areas of importance to quality and patient safety measurement and reporting in California.

MEASUREMENT: Active and documented participation; including: Covered California, CMQCC, CAPG, CDPH, CQC, PBGH, CHART, NSQIP/ACS, AAMI, and PFCC.

TARGET: Key 10 area of engagement

STEWARD: Morath and HQI Team

COMMENTS: Exceeds Target. Active engagement in listed organizations. Strategic partnership with CMQCC implemented.

DEFINITION: Develop brand and reputation to accelerate quality results with members and CA healthcare community.

MEASUREMENT: Count of HQI website visits

TARGET: 12,000/year

STEWARD: Morath & HQI Team

COMMENTS: Exceeds Target. Active engagement in listed organizations. Strategic partnership with CMQCC implemented.

VISIBILITY

Website Utilization

[Table showing website visits by month]

Webinars & Presentations

[Table showing number of completed webinars and presentations]

[1]
PATIENT SAFETY

CHPSO Member Engagement

**DEFINITION:** Create a protected environment for healthcare facilities to eliminate harm by transparency, event reporting and peer-to-peer learning. Proxy for engagement.

**MEASUREMENT:** Cumulative CHPSO membership for engagement (higher is better)

**TARGET:** 340 members by 2015 and 25% growth by 2016.

**STEWARD:** Jaffe

**COMMENTS:** Exceeds Target

CHPSO Reporting: Culture of Safety

**DEFINITION:** Eliminate preventable harm through transparency and event reporting, using privileged and confidential data. Reporting is a proxy for culture of safety

**MEASUREMENT:** Number of reported events, near misses and vulnerabilities for purpose of learning and pattern detection (higher is better)

**TARGET:** One million reports by 2016.

**STEWARD:** Jaffe

**COMMENTS:** Accelerated Progress. Member response to the individual 2014 Status Reports produced sharp growth. CHPSO continues to work with hospitals and vendors to improve the data transmission process.

CHPSO Reporting: Harm Index

**DEFINITION:** Reduce the severity of harm through transparency and event reporting, using privileged and confidential data

**MEASUREMENT:** Proportion of reported events scoring a G, H, or I on the NCC-MERP scale (lower is better)

**TARGET:** Zero Harm

**STEWARD:** Jaffe

**COMMENTS:** Accelerated Progress. The proportion of CHPSO reported events resulting in permanent harm or death dropped from a high of 2.25% in 2010 to under 0.5% in 2014. Increased identification and communication of potential harm, allows prediction and prevention of harm.
QUALITY IMPROVEMENT

Hospital Acquired Infections

**DEFINITION:** Potentially serious infections acquired during treatment in an inpatient setting

**MEASUREMENT:** 6 areas of focus: CAUTI, CLABSI, SSI, C-Diff and MRSA expressed as Standardized Infection ratio (SIR) (lower is better)

**TARGET:** Mean of top quartile for each measure expressed as CMS benchmark

**STEWARD:** Morath & HQI Team

**COMMENTS:** Progressing. In 2013, more than 420 hospitals reported 18,780 incidences of infection to the CDPH. There has been an improvement in all CA HAI rates compare to the national average with an exception of CDI (5% increase).

Maternal Mortality Rate

**DEFINITION:** Death of a pregnant woman from any cause

**MEASUREMENT:** Maternal deaths per 100,000 live births (lower is better)

**TARGET:** < 11.4 deaths per 100,000 live births

**STEWARD:** HQI Team

**COMMENTS:** Exceeds Target. California continues to maintain maternal mortality rates below the Healthy People 2020 goals. While the national maternal mortality rate is on the rise, California continues to improve.

Nulliparous Term Single Vertex Cesarean Section Rate

**DEFINITION:** Cesarean sections for low-risk births

**MEASUREMENT:** Proportion of NTSV delivered by cesarean section (lower is better)

**TARGET:** 23.9% NTSV births are delivered by cesarean section

**STEWARD:** HQI Team

**COMMENTS:** Exceeds Target. California’s NTSV CS rate dropped below the national target of 23.9% in May of 2014. Patient Safety First hospitals also report NTSV CS rates below the national target, with 22.9% of NTSV births delivered by CS.
Severe Sepsis

DEFINITION: Deaths associated with sepsis, a potentially life-threatening complication of an infection that triggers an inflammatory response and organ system dysfunction and failure

MEASUREMENT: Mortality rate per 100 admissions (lower is better)

TARGET: 20% reduction in State Sepsis Mortality

STEWARD: HQI Team

COMMENTS: Progressing. IPHI has drafted the first of three reports on severe sepsis in California hospitals. The initial report examines severe sepsis incidence, including trends over time, variation between hospitals, and organ dysfunction in severe sepsis. Through the Patient Safety First program, a 5.6 percentage point reduction in sepsis mortality was achieved between 2011 and 2014.

C. difficile

DEFINITION: A healthcare associated infection that may result in fatal inflammation of the colon

MEASUREMENT: number of lab-identified events per 10,000 patient days (lower is better)

TARGET: < 8 events per 10,000 patient days

STEWARD: HQI Team

COMMENTS: Progressing. The Patient Safety First program has achieved its target for the past three quarters. PSF hospitals currently average 7.7 CDI events per 100,000 patient days.

Severe Sepsis

DEFINITION: Deaths associated with sepsis, a potentially life-threatening complication of an infection that triggers an inflammatory response and organ system dysfunction and failure

MEASUREMENT: Mortality rate per 100 admissions (lower is better)

TARGET: 20% reduction in State Sepsis Mortality

STEWARD: HQI Team

COMMENTS: Progressing. The Patient Safety First program has achieved its target for the past three quarters. PSF hospitals currently average 7.7 CDI events per 100,000 patient days.

Early Elective Deliveries

DEFINITION: Inductions and cesarean sections after 37 weeks and before 39 weeks gestations without medical necessity

MEASUREMENT: Percent of all deliveries delivered early electively (lower is better)

TARGET: Less than 3% of all deliveries prior to 39 weeks are elective

STEWARD: HQI Team

COMMENTS: The Patient Safety First program has attained its goal of reducing early elective deliveries to 1.7% of all deliveries. Further, PSF hospitals have maintained rates below the CMS goal of 3 percent for four consecutive quarters.
Discharges between July 1, 2007 – June 30, 2008

**HCAHPS Scores**

**DEFINITION:** The patient experience of inpatient care measured by HCAHPS survey through CMS publically reported Hospital Compare

**MEASUREMENT:** HCAHPS Survey includes 10 measures in communication, hospital environment, pain control, timely help and patient’s discharge and medication education (higher is better)

**Target:** Top National Quartile by 2017

**STEWARD:** Kalanj

**COMMENTS:** Progressing. California HCAHPS performance continues to be in national bottom-quartile, despite an impressive 11.3 percent improvement between July 2007 and June 2014. Within the quartile, CA has moved the bottom to top of the division, achieving a greater rate of improvement than other states. Trending analysis of the last 3 reporting periods revealed steady improvement in CA HCAHPS scores, with an accelerated 7 percentage points improvement in CA HCAHPS scores, with an accelerated 7 percentage points improvement between baseline and 2013-2014.

**Key Drivers of HCAHPS Scores**

- **Room is Always Quiet at Night**
  - Q1: 76.7 – 70.8
  - Q2: 70.7 – 68.6
  - Q3: 68.5 – 66.4
  - Q4: 66.3 – 59.4

- **Medicines Always Explained**
  - Q1: 77.6 – 74.6
  - Q2: 74.5 – 72.8
  - Q3: 72.7 – 71.2
  - Q4: 71.1 – 63.5

- **Always Received Help Promptly**
**DEVELOPMENT & PARTNER RELATIONS**

**University of California Davis, IPHI**

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Percent Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Applications</td>
<td>100%</td>
</tr>
<tr>
<td>HCAHPS Analytics</td>
<td>100%</td>
</tr>
<tr>
<td>KPI Re-design</td>
<td>95%</td>
</tr>
<tr>
<td>Sepsis Epidemiology</td>
<td>60%</td>
</tr>
<tr>
<td>Publications</td>
<td>50%</td>
</tr>
<tr>
<td>CHPSO</td>
<td>25%</td>
</tr>
</tbody>
</table>

**DESCRIPTION:**
- Proposals to HRET and CHCF complete
- State-level analysis and star-rating visualization complete
- An advanced draft of the KPI is underway
- Second of three reports released
- Several manuscripts in process
- Analysis plan complete; IRB request in process

**Key Collaborations**

**VISIBILITY**

**Website Utilization**

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<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
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<td>5,502</td>
<td>7,626</td>
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<td>higher</td>
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</tbody>
</table>

**DEFINITION:** Establish a sustainable partnership for data management, advanced analytics, actionable intelligence, and reporting

**MEASUREMENT:** Developmental measures of phases of work

**TARGET:** Signed contract and initiated partnership

**STEWARD:** Morath

**COMMENTS:** Progressing. Goal is to improve data interrogation, analytics, and timely reporting of actionable intelligence to members.

**DEFINITION:**
HQI is represented and provides advocacy and leadership in key areas of importance to quality and patient safety measurement and reporting in California.

**MEASUREMENT:** Active and documented participation; including: Covered California, CMQCC, CAPG, CDPH, CQC, PBGH, CHART, NSQIP/ACS, AAMI, and PFCC.

**TARGET:** Key 10 area of engagement

**STEWARD:** Morath and HQI Team

**COMMENTS:** Exceeds Target. Active engagement in listed organizations. Strategic partnership with CMQCC implemented, including a coordinated proposal to CHCF to improve C-section rates for NTSV births and maternal care safety.

**DEFINITION:** Develop brand and reputation to accelerate quality results with members and CA healthcare community.

**MEASUREMENT:** Count of HQI website visits

**TARGET:** 12,000/year

**STEWARD:** Morath & HQI Team

**COMMENTS:** Exceeds Target. Website development and improvement continues. The new page HCAHPS Star Rating data visualization was viewed over 200 times in three weeks without promotion in CHA News or other outlets.

**DEFINITION:** Develop brand and reputation to accelerate quality results with members and CA healthcare community.

**MEASUREMENT:** Count of webinars and presentations (higher is better)

**TARGET:** Webinars: 12/year; State and national presentations: 10/year; Publications: 2 per year

**STEWARD:** Morath & HQI Team

**COMMENTS:** Exceeds Target.
**PATIENT SAFETY**

### CHPSO Member Engagement

**DEFINITION:** Create a protected environment for healthcare facilities to eliminate harm by transparency, event reporting and peer-to-peer learning. Proxy for engagement.

**MEASUREMENT:** Cumulative CHPSO membership for engagement (higher is better)

**TARGET:** 340 members by 2015 and 25% growth by 2016.

**STEWARD:** Jaffe

**COMMENTS:** *Exceeds Target.* 351 members, data through September 29, 2015

### CHPSO Reporting: Culture of Safety

**DEFINITION:** Eliminate preventable harm through transparency and event reporting, using privileged and confidential data. Reporting is a proxy for culture of safety

**MEASUREMENT:** Number of reported events, near misses and vulnerabilities for purpose of learning and pattern detection (higher is better)

**TARGET:** One million reports by 2016.

**STEWARD:** Jaffe

**COMMENTS:** *Accelerated Progress.* Members are currently registering with NextPlane Solutions for ease of data transmission and accelerated reporting. All members will transition to NextPlane Solutions by January 31, 2016. Reported events captured through September 29, 2015.

### CHPSO Reporting: Harm Index

**DEFINITION:** Reduce the severity of harm through transparency and event reporting, using privileged and confidential data

**MEASUREMENT:** Proportion of reported events with severe harm or death.

**TARGET:** Zero Harm

**STEWARD:** Jaffe

**COMMENTS:** *Accelerated Progress.* The proportion of CHPSO reported events resulting in permanent harm or death dropped from a high of 2.25% in 2010 to 1.14% by December 2014. As more hospitals report their historic data, the values may change as we develop a broader view of member reporting. The goal is to increase reports of risk and vulnerabilities for predictive power.
QUALITY IMPROVEMENT

Hospital Acquired Infections

**DEFINITION:** Potentially serious infections acquired during treatment in an inpatient setting

**MEASUREMENT:** 6 areas of focus: CAUTI, CLABSI, SSI, C-Diff and MRSA expressed as Standardized Infection ratio (SIR) (lower is better)

**TARGET:** Mean of top quartile for each measure expressed as CMS benchmark

**STEWARD:** Morath & HQI Team

**COMMENTS:** Progressing. SIR improved for CLABSI and SSI following hysterectomy. Increases for CAUTI and SSI following colon surgery are statistically significant and warrant additional emphasis.

C. Difficile

**DEFINITION:** A healthcare associated infection that may result in fatal inflammation of the colon

**MEASUREMENT:** number of lab-identified events per 10,000 patient days (lower is better)

**TARGET:** < 8 events per 10,000 patient days

**STEWARD:** Regional QPSVPs

**COMMENTS:** Progressing. The Patient Safety First program has achieved its target for the past three quarters. PSF hospitals currently average 7.7 CDI events per 100,000 patient days.

Severe Sepsis

**DEFINITION:** Deaths associated with sepsis, a potentially life-threatening complication of an infection that triggers an inflammatory response and organ system dysfunction and failure

**MEASUREMENT:** Mortality rate per 100 admissions (lower is better)

**TARGET:** 20% reduction in State Sepsis cases

**STEWARD:** HQI Team

**COMMENTS:** Progressing. IPHI has drafted the first of three reports on severe sepsis in California hospitals. The initial report examines severe sepsis incidence, including trends over time, variation between hospitals, and organ dysfunction in severe sepsis. Through the Patient Safety First program, a 5.6 percentage point reduction in sepsis mortality was achieved between 2011 and 2014.
Maternal Mortality Rate

**DEFINITION:** Death of a pregnant woman from any cause

**MEASUREMENT:** Maternal deaths per 100,000 live births (lower is better)

**TARGET:** < 11.4 deaths per 100,000 live births

**STEWARD:** HQI Team

**COMMENTS:** Exceeds Target. Slight increase in maternal mortality rates in 2013. However, California continues to maintain maternal mortality rates below the Healthy People 2020 goals. While the national maternal mortality rate is on the rise, California continues to improve.

Nulliparous Term Single Vertex Cesarean Section Rate (NTSV)

**DEFINITION:** Cesarean sections for low-risk births

**MEASUREMENT:** Proportion of NTSV delivered by cesarean section (lower is better)

**TARGET:** 23.9% NTSV births are delivered by cesarean section

**STEWARD:** Regional QPSVPs

**COMMENTS:** Progressing. Hospitals participating in Patient Safety First report NTSV C-section rates approaching the Healthy People 2020 Goal.

Early Elective Deliveries

**DEFINITION:** Inductions and cesarean sections after 37 weeks and before 39 weeks gestations without medical necessity

**MEASUREMENT:** Percent of all deliveries delivered early electively (lower is better)

**TARGET:** Less than 3% of all deliveries prior to 39 weeks are elective

**STEWARD:** HQI Team

**COMMENTS:** PSF hospitals have maintained EED rates below the CMS goal of 3 percent for five consecutive quarters. This measure will be retired from the KPI to monitor status.
**PATIENT EXPERIENCE**

Discharges between July 1, 2007 – June 30, 2008

HCAHPS Scores

**DEFINITION:** The patient experience of inpatient care measured by HCAHPS survey through CMS publically reported Hospital Compare

**MEASUREMENT:** HCAHPS Survey includes 10 measures in communication, hospital environment, pain control, timely help and patient’s discharge and medication education (higher is better)

**Target:** Top National Quartile by 2017

**STEWARD:** Kalanj

**COMMENTS:** Progressing. California HCAHPS performance continues to be in national bottom-quartile, despite an impressive 11.3 percent improvement. Within the quartile, CA has moved the bottom to top of the division, achieving a greater rate of improvement than other states. Trending analysis of the last 3 reporting periods revealed steady improvement in CA HCAHPS scores, with an accelerated 7 percentage points improvement between baseline and 2013-2014.

A recent pre/post analysis of HCAHPS scores from 2008 and 2013 demonstrates statistically significant progress in all HCAHPS domains in CA (p < 0.001). Statewide improvement exceeds national averages on all measures.

### Discharges between 1/1/2008 and 12/31/2008

<table>
<thead>
<tr>
<th>Measure</th>
<th>California</th>
<th>USA</th>
<th>California</th>
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### Discharges between 1/1/2013 and 12/31/2013

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### Difference between 2008 and 2013 scores

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<tr>
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**FY18 VBP threshold**

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<td>Communication about medicines</td>
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<td>4.5***</td>
<td>3.6***</td>
<td>70.0</td>
<td>70.0</td>
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</tbody>
</table>

*p < 0.05  **p < 0.01  ***p < 0.001  

*CA: n = 287 hospitals submitting data in both 2008 and 2013

*USA: n = 3,220 hospitals submitting data in both 2008 and 2013

*A Scores for Cleanliness and Quietness are combined for the FY18 VBP Threshold
### DEVELOPMENT & PARTNER RELATIONS

**University of California Davis, IPHI**

<table>
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<th>Description</th>
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<td>Proposals to HRET and CHCF complete</td>
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<tr>
<td>HCAHPS Analytics</td>
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<td>State-level analysis and star-rating visualization complete</td>
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<tr>
<td>KPI Re-design</td>
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<td>KPI reports complete for 2015</td>
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<td>Sepsis Epidemiology</td>
<td>80%</td>
<td>Final manuscript in draft form</td>
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<tr>
<td>Publications</td>
<td>80%</td>
<td>Several manuscripts submitted for approval</td>
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<tr>
<td>CHPSO</td>
<td>25%</td>
<td>Analysis plan complete; IRB request in process</td>
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**Key Collaborations**

**Associations**

- California Department of Public Health (CDPH)
- California Maternal Quality Care Collaborative (CMQCC)
- American Congress of Obstetricians & Gynecologists (ACOG) District 19
- California Joint Replacement Registry (CJRR)
- Center for Population Health & HC Davis
- Covered California
- California Quality Collaborative (CQC)
- Steering Committee
- Collaborative Alliance for Nursing Outcomes (CANA) & IONRN
- Health Services Advisory Group (HSAG)
- Office of Statewide Planning & Development (OSP)
- California Healthcare Performance Information Systems (CHPS) of the Public Health Research Group (PHRG)
- Centers for Medicare and Medicaid Services (CMS)
- Agency for Healthcare Research and Quality (AHRQ)
- National Quality Forum (NQF)
- Health Research & Educational Trust (HRET)/American Hospital Association (AHA)
- Institute for Healthcare Improvement (IHI)
- National Patient Safety Foundation (NPSF) & Lucile Packard Institute (LPI)

**State**

- Morath

**National**

- Morath and HQI Team

**DEFINITION:** Establish a sustainable partnership for data management, advanced analytics, actionable intelligence, and reporting

**MEASUREMENT:** Developmental measures of phases of work

**TARGET:** Signed contract and initiated partnership

**STEWARD:** Morath

**COMMENTS:** Progressing. Goal is to improve data interrogation, analytics, and timely reporting of actionable intelligence to members.

**VISIBILITY**

**Website Utilization**

<table>
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<th>Page Views</th>
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<tr>
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<tr>
<td>Oct</td>
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**DEFINITION:** Develop brand and reputation to accelerate quality results with members and CA healthcare community

**MEASUREMENT:** Count of HQI website visits

**TARGET:** 12,000/year

**STEWARD:** Morath & HQI Team

**COMMENTS:** Exceeds Target. Website development and improvement continues. In the weeks leading up to the HQI conference, website utilization reached an all-time high with nearly 2.5 unique users accessing approximately 9,000 pages.

**Webinars & Presentations**

<table>
<thead>
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<th>Completed</th>
<th>Number</th>
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<tr>
<td>Presentations</td>
<td>28</td>
</tr>
<tr>
<td>Publications</td>
<td>5</td>
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</tbody>
</table>

**DEFINITION:** Develop brand and reputation to accelerate quality results with members and CA healthcare community

**MEASUREMENT:** Count of webinars and presentations (higher is better)

**TARGET:** Webinars: 12/year; State and national presentations: 10/year; Publications: 2 per year

**STEWARD:** Morath & HQI Team

**COMMENTS:** Exceeds Target.
**PATIENT SAFETY**

**CHPSO Member Engagement**

**DEFINITION:** Create a protected environment for healthcare facilities to eliminate harm by transparency, event reporting and peer-to-peer learning. Proxy for engagement.

**MEASUREMENT:** Cumulative CHPSO membership for engagement (higher is better)

**TARGET:** 340 members by 2015 and 25% growth by 2016.

**STEWARD:** Jaffe

**COMMENTS:** *Exceeds Target.* 354 members, data through November 16, 2015

**CHPSO Reporting: Culture of Safety**

**DEFINITION:** Eliminate preventable harm through transparency and event reporting, using privileged and confidential data. Reporting is a proxy for culture of safety

**MEASUREMENT:** Number of reported events, near misses and vulnerabilities for purpose of learning and pattern detection (higher is better)

**TARGET:** One million reports by 2016.

**STEWARD:** Jaffe

**COMMENTS:** *Accelerated Progress.* Members are currently registering with NextPlane Solutions for ease of data transmission and accelerated reporting. All members will transition to NextPlane Solutions by January 31, 2016. 878,148 reported events captured through November, 2015.

**CHPSO Reporting: Harm Index**

**DEFINITION:** Reduce the severity of harm through transparency and event reporting, using privileged and confidential data

**MEASUREMENT:** Proportion of reported events with severe harm or death

**TARGET:** Zero Harm

**STEWARD:** Jaffe

**COMMENTS:** *Accelerated Progress.* The proportion of CHPSO reported events resulting in permanent harm or death dropped from a high of 2.25% in 2010 to 1.14% by December 2014. As more hospitals report their historic data, the values may change as we develop a broader view of member reporting. The goal is to increase reports of risk and vulnerabilities for predictive power. NOTE: reports to NextPlane are not included in this graph. Of the 878,148 reports, 120,269 are from NextPlane.
QUALITY IMPROVEMENT

Hospital Acquired Infections

DEFINITION: Potentially serious infections acquired during treatment in an inpatient setting

MEASUREMENT: 6 areas of focus: CAUTI, CLABSI, SSI, C-Diff and MRSA expressed as Standardized Infection ratio (SIR) (lower is better)

TARGET: Mean of top quartile for each measure expressed as CMS benchmark

STEWARD: Morath & HQI Team

COMMENTS: Progressing. SIR improved for CLABSI and SSI following hysterectomy.

C. Difficile

DEFINITION: A healthcare associated infection that may result in fatal inflammation of the colon

MEASUREMENT: number of lab-identified events per 10,000 patient days (lower is better)

TARGET: < 8 events per 10,000 patient days

STEWARD: Regional QPSVPs

COMMENTS: Progressing. The Patient Safety First program has achieved its target for the past three quarters. PSF hospitals currently average 7.7 CDI events per 100,000 patient days. The aim is zero.

Severe Sepsis

DEFINITION: Deaths associated with sepsis, a potentially life-threatening complication of an infection that triggers an inflammatory response and organ system dysfunction and failure

MEASUREMENT: Mortality rate per 100 admissions (lower is better)

TARGET: 20% reduction in State Sepsis cases

STEWARD: HQI Team

COMMENTS: Progressing. IPHI has drafted the final report on severe sepsis incidence and mortality in California hospitals. The report examines source of admission, palliative care status, and presence of sepsis on admission. Through the Patient Safety First program, a 5.6 percentage point reduction in sepsis mortality was achieved between 2011 and 2014.
**Maternal Mortality Rate**

**DEFINITION:** Death of a pregnant woman from any cause

**MEASUREMENT:** Maternal deaths per 100,000 live births (lower is better)

**TARGET:** < 11.4 deaths per 100,000 live births

**STEWARD:** HQI Team

**COMMENTS:** Exceeds Target. Slight increase in maternal mortality rates in 2013. However, California continues to maintain maternal mortality rates below the Healthy People 2020 goals. While the national maternal mortality rate is on the rise, California continues to improve.

**Nulliparous Term Single Vertex Cesarean Section Rate (NTSV)**

**DEFINITION:** Cesarean sections for low-risk births

**MEASUREMENT:** Proportion of NTSV delivered by cesarean section (lower is better)

**TARGET:** 23.9% NTSV births are delivered by cesarean section

**STEWARD:** Regional QPSVPs

**COMMENTS:** Progressing. Hospitals participating in Patient Safety First report NTSV C-section rates approaching the Healthy People 2020 Goal.
PATIENT EXPERIENCE

HCAHPS Scores

**DEFINITION:** The patient experience of inpatient care measured by HCAHPS survey through CMS publicly reported Hospital Compare

**MEASUREMENT:** HCAHPS Survey includes 11 measures in communication, hospital environment, pain control, timely help and patient’s discharge/transition and medication education (higher is better)

**Target:** Top National Quartile by 2017

**STEWARD:** Kalanj

**COMMENTS:** Progressing. The new Care Transition measure is the lowest scoring measure in California and the country as a whole. Note the difference in average scores between the original 10 measures alone (Map 2) and the new complete set of 11 measures, inclusive of the Care Transition measure (Map 3). The low scores indicate gaps in patients’ understanding of the care plan following a transition out of a hospital.

HQI will design and implement a program specific to affecting improvements in care transitions.
At the initiation of public reporting in 2009, California scored in the bottom quartile of HCAHPS performance, with an average of 62 percent of survey respondents selecting “top box responses” for eleven patient experience measures:

**Composite topics**
1. Nurse communication
2. Doctor communication
3. Responsiveness of hospital staff
4. Pain management
5. Communication about medicines
6. Discharge information
7. Care transition

**Individual topics**
8. Cleanliness of hospital environment
9. Quietness of hospital environment

**Global topics**
10. Overall rating of hospital
11. Willingness to recommend hospital

Data Source: Hospital Compare, retrieved May 2015. The scores above are the unweighted average of all top-box responses.
Six years later, California remains in the fourth quartile, despite impressive gains. By 2014, an average of 69 percent of survey respondents were selecting “top-box responses”. This represents an seven percentage point increase.

In April of 2015, a new measure was added to the HCAHPS survey. The scores from this measure have been excluded from this map to produce accurate comparisons between years.

**What is a top-box response?**

The "top-box" is the most positive response to HCAHPS survey questions. The "top-box" response is "Always" for six HCAHPS composites (Communication with Nurses, Communication with Doctors, Responsiveness of Hospital Staff, Pain Management, Communication about Medicines, and Care Transition) and two individual items (Cleanliness of Hospital Environment and Quietness of Hospital Environment), "Yes" for the seventh composite, Discharge Information, "'9' or '10' (high)" for the Overall Hospital Rating item, and "Would definitely recommend" for the Recommend the Hospital item.
California ranks within the 10<sup>th</sup> – 15<sup>th</sup> percentile for state’s composite HCAHPS scores. Ohio and Illinois have enjoyed notable climbs in the percentile ranking, from 39<sup>th</sup> to 62<sup>nd</sup> and from 24<sup>th</sup> to 50<sup>th</sup> respectively. States experiencing declines include MA, AK, and ND.
What measures contribute to California’s low composite score?
California scores in the bottom quartile in all measures, except “Patient would definitely recommend” and “Rated experience a 9 or 10”
Data sorted by composite score

California
The previous slide demonstrates that the newly added HCAHPS measure is a challenge for hospitals nationally. While many hospitals supply patients with information about their care at discharge, patients frequently report difficulty interpreting and applying those instructions after they leave the hospital. In California, only 49 percent of survey respondents reported strongly agreeing with the questions about understanding their care when they left the hospital. 44 percent agreed that they understood how to care for themselves at home, while 7 percent disagreed or strongly disagreed. The addition of this low scoring metric pulls California’s composite score down.
Are Measures Improving?
Is improvement statistically meaningful?

Room Always Clean

Room Always Quiet

The addition of the new measure obscures substantive improvements in individual HCAHPS measure scores. Examination of the top-box responses for individual items reveals that six out of eight HCAHPS have attained improvements beyond one standard deviation from the mean. Furthermore, all items are on a consistent upward trend.
Are Measures Improving?
Is improvement statistically meaningful?

California has seen an 8 percentage point improvement in nurse communication between 2008 and 2014.

Communication about medications has also improved by nearly 9 percentage points over the same time period.
Are Measures Improving?
Is improvement statistically meaningful?

Patient Rate Hospital 9 or 10

HCAHP’s two global topics have also maintained consistent improvement in California. Very few patients (7%) would not recommend their hospital to others, and only 10.6 percent rate their experience a 0 – 6 on a ten-point scale.
Conclusions
What can we learn from the data?

- California’s top-box scores for the HCAHPS composite has improved by 7 percentage points from 62.10 at reporting’s initiation to 69.00 in the most recent Hospital Compare update.
- California remains in a low quartile and percentile rank for HCAHPS composite scores nationally. In terms of ranking, little had changed between the initiation of reporting and the current date. The ranking rarely fluctuate, although some states have “climbed in the rankings”.
- California scores in the fourth quartile on all measures, with the exception of the two global items (would recommend and 9-10 point ranking).
- California’s lowest scores were for topics related to: care transition (49%), room quietness (52%), timely help (62%), and communication about medication (62%).
- A newly added measure, care transition, was a struggle for hospitals nationally, and pulled down composite scores for California.
- California is improving on all HCAHPS topics, with six topics improving meaningfully.
INTRODUCTION

The development of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a now national standard for evaluating patient experience in hospital settings, arguably began over a decade ago (Hospital Consumer Assessment of Healthcare Providers and Systems; U.S. Department of Health and Human Services, 2012). With Crossing the Quality Chasm in 2001, the Institute of Medicine’s (IOM) Committee on Quality of Health Care in America established patient-centeredness as one of six focuses for improvement within the U.S. health care system (Institute of Medicine, 2001). Shortly thereafter, the Agency for HealthCare Research and Quality (AHRQ) advanced efforts to establish a mechanism for monitoring patient experience in healthcare by publishing a call for measures for the first national, nonproprietary method for assessing patient-centered hospital quality. The HCAHPS survey then went on to receive consensus endorsement from The National Quality Forum (NQF) in 2005. Completing the path to public dissemination and use, the Centers for Medicare & Medicaid Services (CMS) first published results from the HCAHPS survey on Hospital Compare website in March of 2008 (Centers for Medicare & Medicaid Services, 2008; Centers for Medicare & Medicaid Services, 2015).

Public reporting for HCAHPS scores supports three overarching goals. First, it assists consumers in making informed decisions on where to receive care by providing them with a method for objectively comparing facilities (Goldstein, Farquhar, Crofton, Darby, & Garfinkel, 2005). Second, it provides hospitals with a reliable way to monitor their respective performance over time and evaluate the efficacy of quality improvement efforts. Third, HCAHPS reporting
helps to create accountability and transparency in health care (Giordano, Elliot, Goldstein, Lehrman, & Spencer, 2010).

The extent to which public reporting achieves these goals is difficult to determine in the absence of a control group. Recent studies, however, suggest that HCAHPS scores have increased during the past five years of public reporting (Elliott, et al., 2010; Elliott, et al., 2015; Gupta, Lee, Mojica, Nairizi, & George, 2014). These studies focus on national trends, and little attention has been paid to progress at the state level despite well documented regional variation in HCAHPS scores (Lehrman, Elliott, Goldstein, Beckett, Klein, & Giordano, 2010; Jha, Orav, Zheng, & Epstein, 2008).

The following analysis seeks to compare the change in HCAHPS performance of California hospitals with hospitals nationally from 2008, when CMS began to publicly report HCAHPS scores, up to the most recent full year of reported data, 2013, and assess where California hospitals are currently with respect to hospitals nationally on HCAHPS performance. If public reporting of HCAHPS measures facilitates improvement at both the regional and national level, one would expect such improvement to be widespread (i.e., most hospitals would improve), variation in scores to decrease, the magnitude of improvements to be significant, and gaps between state and national scores to narrow.

**METHODS**

*HCAHPS Survey:* The HCAHPS program surveys a random sample of patients 18 years of age or older admitted to medical, surgical, or maternity care service lines for an overnight stay, excluding patients on observation status. The program excludes patients from the sample pool for a variety of reasons, such as discharge to hospice care or law enforcement, a primary
psychiatric diagnosis, no-publicity patients, and patients with a foreign address. The HCAHPS surveys is distributed to a patients within 48 hours and 6 weeks of his or her discharge via one of four modes: telephone, mail, mixed (mail with telephone follow-up), or active interactive voice response (Centers for Medicare & Medicaid Services, 2015).

**HCAHPS Measures:** The HCAHPS survey is composed of thirty-two standardized questions (HCAHPS Survey, 2015). Of the thirty-two, four are screening questions, seven are demographic questions, and the remaining twenty-one questions are the substantive survey questions used to compose the ten HCAHPS measures, which each address a core concept. The ten core concepts\(^1\) and associated survey questions are detailed in Appendix 1.

**HCAHPS Scores:** Hospitals submit data for four consecutive quarters four times annually. For each quarterly reporting period, the three oldest months of data roll off in order to accommodate three new months of data. HCAHPS scores are calculated using the percent of respondents selecting the most positive response option, called the “top box” response. Scores are adjusted for patient-mix, survey mode, and nonresponse (Elliott, et al., 2009). The results are then published on the CMS Hospital Compare website (www.medicare.gov/hospitalcompare). Current reporting is generally that of the previous year’s data.

**Sample:** All data for this analysis were obtained from the hospital-level dataset available on the CMS Hospital Compare website. Analyses were conducted on HCAHPS scores for inpatients discharged between January 1\(^{st}\) and December 31\(^{st}\) for the years 2008 and 2013. The year 2008 was selected, because it was the first year of public reporting. The year 2013 was selected, because it was the most recent year of data. A point-in-time comparison was selected

---

\(^1\) An eleventh concept (care transition) was added in 2014. This metric was excluded from the analysis, because multi-year data was unavailable.
to assess change in HCAHPS scores after five years of public reporting, as opposed to year-over-
year improvement. The analysis was limited to hospitals reporting in both time periods.
Investigators identified 3,206 hospitals meeting criteria, of which 286 were located in California.

**Analysis:** Changes in HCAHPS scores were calculated by comparing 2008 discharges to
2013 discharges. Investigators used paired t-tests to determine the statistical significance of
differences between the two time periods. Analyses were conducted in R version 3.1.3.

**RESULTS**

**SPREAD:** HCAHPS scores were found to be significantly higher in 2013 compared to
2008 for a majority of sampled hospitals (Table 1). Noteworthy variation in the number of
hospitals reporting higher scores in 2013 was observed across measures. The measure on which
most hospitals showed improvement relates to the provision of discharge information to the
patient (“Discharge information measure”). Ninety-five percent of hospitals (n = 273) increased
their respective scores on this measure. The measure on which the fewest hospitals showed
improvement assesses a patient’s likelihood to recommend the hospital to family and friends
(“Recommendation measure”). Only 42 percent of hospitals (n = 119) increased their respective
scores on this measure.
Table 1. Changes in HCAHPS scores between 2008 and 2013 for California hospitals reporting data in both years.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Number of hospitals improving (mean improvement)</th>
<th>Number of hospitals declining (mean decline)</th>
<th>Number of hospitals with stable performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse communication</td>
<td>253 (+8.1)</td>
<td>23 (-3.5)</td>
<td>10</td>
</tr>
<tr>
<td>Doctor communication</td>
<td>210 (+4.8)</td>
<td>52 (-3.6)</td>
<td>24</td>
</tr>
<tr>
<td>Responsiveness of hospital staff</td>
<td>232 (+9.0)</td>
<td>43 (-4.4)</td>
<td>11</td>
</tr>
<tr>
<td>Pain management</td>
<td>218 (+6.9)</td>
<td>61 (-4.0)</td>
<td>7</td>
</tr>
<tr>
<td>Communication about medicines</td>
<td>261 (+8.2)</td>
<td>18 (-5.2)</td>
<td>7</td>
</tr>
<tr>
<td>Discharge information</td>
<td>273 (+7.4)</td>
<td>5 (-1.8)</td>
<td>8</td>
</tr>
<tr>
<td>Patients' rating of hospital</td>
<td>230 (+10.1)</td>
<td>44 (-4.0)</td>
<td>12</td>
</tr>
<tr>
<td>Cleanliness of hospital environment</td>
<td>220 (+7.8)</td>
<td>56 (-4.3)</td>
<td>10</td>
</tr>
<tr>
<td>Quietness of hospital environment</td>
<td>219 (+8.9)</td>
<td>56 (-4.1)</td>
<td>11</td>
</tr>
<tr>
<td>Recommendation</td>
<td>119 (+8.7)</td>
<td>72 (-4.4)</td>
<td>15</td>
</tr>
</tbody>
</table>

\[ n = 286 \text{ hospitals} \]

**VARIATION:** Variation in scores decreased slightly for six measures among sampled California hospitals suggesting that performance has become more consistent between hospitals during the course of public reporting (Figure 1). Variability decreased most for nurse communication, communication about medicines, and pain management. In 2008, the most variable measure was Recommendation, which remains highly variable in 2013.
The magnitude of increase in HCAHPS scores was notable among California hospitals. The mean score increased at a statistically significant level ($p < 0.001$) for all HCAHPS measures (Table 3). Seven of the ten domains improved more than five percentage points between 2008 and 2013. The greatest gain occurred for the measure related to the patient’s overall rating of the hospital (+7.4%). Scores on questions related to discharge information and communication about medicines both increased substantially (+7.1%). The smallest gains were for the question related to doctor communication (+2.9%).
GAPS: Despite gains exceeding national averages, California’s 2013 mean score in all HCAHPS measures remains below the national mean. In both 2008 and 2013, the state’s mean score was below the national mean on all HCAHPS measures (Figure 3). The largest gaps in performance between California hospitals and national averages were for quietness of the hospital environment (10.7 percentage point deficit), responsiveness of hospital staff (7.0 percentage point deficit), and nurse communication (6.1 percentage point deficit).
## Table 3. Mean and standard deviation for scores among hospitals submitting data in 2008 and 2013

<table>
<thead>
<tr>
<th></th>
<th>Discharges between 1/1/2008 and 12/31/2008</th>
<th>Discharges between 1/1/2013 and 12/31/2013</th>
<th>Difference between 2008 and 2013 scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>California</td>
<td>USA</td>
<td>California</td>
</tr>
<tr>
<td>Nurse communication</td>
<td>67.6 (±7.7)</td>
<td>73.7 (±7.3)</td>
<td>74.4 (±5.2)</td>
</tr>
<tr>
<td>Doctor communication</td>
<td>75.0 (±6.2)</td>
<td>79.5 (±6.2)</td>
<td>77.8 (±4.7)</td>
</tr>
<tr>
<td>Responsiveness of hospital staff</td>
<td>54.7 (±8.9)</td>
<td>61.7 (±10.1)</td>
<td>61.3 (±8.0)</td>
</tr>
<tr>
<td>Communication about medicines</td>
<td>53.8 (±7.0)</td>
<td>58.4 (±7.7)</td>
<td>60.9 (±5.7)</td>
</tr>
<tr>
<td>Discharge information</td>
<td>76.6 (±5.6)</td>
<td>79.9 (±5.6)</td>
<td>83.6 (±3.9)</td>
</tr>
<tr>
<td>Pain management</td>
<td>64.3 (±7.1)</td>
<td>68.1 (±6.6)</td>
<td>68.6 (±5.7)</td>
</tr>
<tr>
<td>Cleanliness of the environment</td>
<td>64.8 (±7.6)</td>
<td>68.9 (±8.7)</td>
<td>70.0 (±6.5)</td>
</tr>
<tr>
<td>Quietness of the environment</td>
<td>45.1 (±9.1)</td>
<td>55.8 (±11.2)</td>
<td>51.1 (±9.2)</td>
</tr>
<tr>
<td>Patients' rating of hospital</td>
<td>60.4 (±10.8)</td>
<td>64.0 (±9.9)</td>
<td>67.8 (±9.0)</td>
</tr>
<tr>
<td>Recommendation</td>
<td>64.8 (±12.0)</td>
<td>67.6 (±10.7)</td>
<td>69.7 (±10.1)</td>
</tr>
</tbody>
</table>

*p < 0.05   **p < 0.01   ***p < 0.001

CA: n = 286 hospitals
USA: n = 3,206
LIMITATIONS

The chief limitation of this analysis is the response rate for HCAHPS surveys among sampled hospitals. A small amount of nonresponse bias is present in HCAHPS scores and previous studies have suggested that this bias is relevant to regional analyses (Elliott, Edwards, Angeles, Hambarsoomians, & Hays, 2005; Mode and patient-mix adjustment of the CAHPS Hospital Survey, 2007). CMS recommends, but does not require, that hospitals achieve a 40 percent response rate and a minimum of 300 completed surveys over the course of four quarters (Hospital Consumer Assessment of Healthcare Providers and Systems, 2007). The mean response rate for California hospitals included in our study dropped from 30.3 percent in 2008 to 28.0 percent in 2013. Further, slightly fewer hospitals completed the requisite 300 surveys in 2013 than in 2008.

The decision to restrict analyses to two years of data also limits our findings. The study design may obscure temporal aberrations and trends. Longitudinal analysis of HCAHPS is necessary to better detect changes in scores. Further, the study does not account for confounding factors that may impact HCAHPS scores, such as labor markets and other quality improvement initiatives.

DISCUSSION AND POLICY IMPLICATIONS

SPREAD: Among hospitals in California reporting HCAHPS results in 2008 and 2013, improvement in scores was widespread, suggesting that public reporting may have driven hospitals to improve patient experience in the areas surveyed by HCAHPS. The measure improved by the highest number of hospitals was the provision of discharge information. This
change may be due to the more detailed nature of this survey question compared to many others, as such details provide hospitals with greater guidance on how to improve respective performance. For instance, regarding the provision of discharge information, one can clearly discern the intervention necessary (verbal and written communication about the patients’ care outside the hospital), who is to perform the intervention (doctors and nurses), and when the intervention is to take place (before discharge). Clarity in performance measures is believed to contribute to acceleration in improvements in the assessed activity (Cassel, Conway, Delbanco, Jha, Saunders, & Lee, 2014). The specificity inherent in discharge information contrasts sharply with the HCAHPS measure that fewest hospitals improved upon: patients’ likelihood to recommend the hospital to friends and family. Hospitals’ path for improvement on this measure is ill defined and defuse.

**VARIATION:** Variation in performance has long been considered an indicator of defects inherent within the health care service (Agency for Healthcare Research and Quality, 2002). Performance on HCAHPS scores has become more consistent across California hospitals after five years of public reporting of HCAHPS measures, indicating that the program may encourage the standardization of practice and the adoption of best practices. However, it is worth noting that variation decreased most for nurse communication, a change which may be tied to changes in the nursing labor market between 2008 and 2013. Further investigation into the factors that contribute to variation in HCAHPS scores is necessary.

**MAGNITUDE:** California’s mean scores for all HCAHPS measures improved by a statistically significant degree between 2008 and 2013. While California’s scores improved more than the nation as a whole, the state’s mean score remains below the national mean in every HCAHPS measure.
GAPS: Gaps between California’s performance and the rest of the nation on HCAHPS scores could have a negative impact on California hospitals more broadly through other federal transparency and accountability programs. The first such program is the HCAHPS star rating program, which CMS recently published in effort to make quality information more accessible to consumers (HCAHPS Star Ratings). CMS assigns 1, 2, 3, 4, or 5 whole stars for each HCAHPS measure using relative distributions and clustering algorithms (Technical notes for HCAHPS star ratings, 2015). This process effectively defines a hospital’s score relative to all other U.S. hospitals’ performance during the same time period. Gaps between California’s scores and the rest of the nation’s scores may translate into fewer 5 star hospitals statewide, despite fruitful efforts to improve patient experience.

Second, California hospitals may also be negatively impacted by CMS’ Hospital Value Based Purchasing (HVBP) due to gaps in HCAHPS performance with their national counterparts. For FY16, HCAHPS scores will determine 25 percent of reimbursement under HVBP. While one portion of compensation is tied to hospitals’ improvement over baseline scores, another portion is linked to a hospital’s performance relative to other hospitals nationally. California’s mean scores in 2013 were below the HVBP threshold established for FY16 for all HCAHPS measures. Hospitals’ Medicare reimbursements across the state may stagnate or decline should California hospitals’ performance not close the gap with national averages.

CONCLUSION: In conclusion, California hospitals have improved significantly more than hospitals nationally in HCAHPS performance since the implementation of the HCAHPS public reporting program in 2008. This relatively higher gain, however, may have been due to California having more room for improvement than the national average. This article demonstrates that California’s HCAHPS improvements are widespread across the state’s
reporting hospitals, that variation in performance has decreased between these hospitals, and that the magnitude of improvements are significant. Despite these advances, however, California must continue to close the HCAHPS performance gap between California and national averages to avoid financial repercussions for years to come.
WORKS CITED


## Appendix 1. HCAHPS core concepts, associated survey questions, and possible responses

<table>
<thead>
<tr>
<th>Core Concept</th>
<th>Survey Question(s)</th>
<th>Possible Responses (top-box response in italics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication with nurses</td>
<td>1. During this hospital stay, how often did nurses treat you with courtesy and respect?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>2. During this hospital stay, how often did nurses listen carefully to you?</td>
<td>Usually&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>3. During this hospital stay, how often did nurses explain things in a way you could understand?</td>
<td></td>
</tr>
<tr>
<td>Communication with doctors</td>
<td>1. During this hospital stay, how often did doctors treat you with courtesy and respect?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>2. During this hospital stay, how often did doctors listen carefully to you?</td>
<td>Usually&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>3. During this hospital stay, how often did doctors explain things in a way you could understand?</td>
<td></td>
</tr>
<tr>
<td>Communication about medicines</td>
<td>1. Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>2. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?</td>
<td></td>
</tr>
<tr>
<td>Responsiveness of hospital staff</td>
<td>1. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>2. How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted?</td>
<td>Usually&lt;br&gt;Always</td>
</tr>
<tr>
<td>Pain management</td>
<td>1. During this hospital stay, how often was your pain well controlled?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
<tr>
<td></td>
<td>2. During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?</td>
<td></td>
</tr>
<tr>
<td>Cleanliness of the hospital environment</td>
<td>1. During this hospital stay, how often were your room and bathroom kept clean?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
<tr>
<td>Quietness of the hospital environment</td>
<td>1. During this hospital stay, how often was the area around your room quiet at night?</td>
<td>Never&lt;br&gt;Sometimes&lt;br&gt;Always</td>
</tr>
</tbody>
</table>
### Provision of discharge information

1. During this hospital stay, did doctors, nurses or other hospital staff talk with you about whether you would have the help you needed when you left the hospital? **Yes**  
   **No**

2. During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?

### Overall rating of the hospital

1. Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?

   0 1 2 3 4 5 6 7 8 9 10

### Recommendation of the hospital

1. Would you recommend this hospital your friends and family?

   *screening question used to ensure that questions are posed only to appropriate respondents*

   **Definitely no**  
   **Probably no**  
   **Probably yes**  
   **Definitely yes**
HCAHPS Star Ratings Data Visualization Tool for California

Star Ratings for California Hospitals

Select an HCAHPS Metric:

Summary star rating

This interactive data visualization tool was created by Hospital Quality Institute (HQI) in partnership with Institute for Population Health Improvement (IPHI). It depicts Star Ratings of California hospitals based on CAHPS Hospital Compare data update in October 2015, representing HCAHPS patient experience survey data obtained from patients discharged between January 1, 2014, and December 31, 2014.

The intention of this tool is to help California hospitals analyze their patient experience performance, as measured by the new Star Ratings, and review it in comparison to their statewide peers. The tool is a work in progress and will be continuously refined, updated, and expanded to improve its utility in California hospitals.

Five Star Hospitals for selected hospitals

FRANK E. HOWARD MEMORIAL HOSPITAL
FRESNO SURGICAL HOSPITAL
MOAT ORTHOPEDIC INSTITUTE
MAMMOTH HOSPITAL
PATIENTS' HOSPITAL OF REDONDO
STANISLAUS SURGICAL HOSPITAL

AHMC ANAHEIM REGIONAL MEDICAL CENTER
1111 W LA PAUSA AVENUE
ANAHEIM

Number of Completed Surveys: 1512
Survey Response Rate Percent: 91.90%

Hospital Quality Institute
Leadership in quality and patient safety
HCAHPS Star Ratings Data Visualization Tool for California

How did your hospital fare on the Hospital Compare star rating system?

Select a Hospital Name:
ST. JOSEPH HOSPITAL

Select a Provider Number:
50005

<table>
<thead>
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<th>Hospital Name</th>
<th>HCAGPS Questions</th>
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<tr>
<td>ST. JOSEPH HOSPITAL</td>
<td>Care transition</td>
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<td>Discharge info</td>
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<td></td>
<td>Nurse communication</td>
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<td>Overall hospital rating</td>
</tr>
<tr>
<td></td>
<td>Pain management</td>
</tr>
<tr>
<td></td>
<td>Quietness</td>
</tr>
<tr>
<td></td>
<td>Recommend hospital</td>
</tr>
<tr>
<td></td>
<td>Staff responsiveness</td>
</tr>
<tr>
<td></td>
<td>Summary star rating</td>
</tr>
</tbody>
</table>

On April 14, 2015, CMS published its first five-star quality rating system on the Hospital Compare website. The rating system works to make publicly reported quality improvement easier for consumers to use. Twelve star ratings were created, one for each HCAHPS quality measure, and one as an overall measure. The HCAHPS ratings are based on the same survey data used to create publicly reported patient experience measures on Hospital Compare. CMS will update these ratings quarterly via Hospital Compare. For more information, visit:

Hospital Quality Institute
leadership in quality and patient safety
Hospital Quality Institute's HCAHPS Data Dashboard

Select an HCAHPS Metric
Communication About Medicines

Select Hospitals to Compare
(Multiple Values)

Percent of Responses "Top Box"

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
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<td>50002</td>
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</table>

Data Source: Hospital Compare (https://data.medicare.gov/Hospital-Compare/Data-Updates/9zze-6nyd). The dates detailed in the table above are the Hospital Compare public reporting release dates; roll over the cells for dates of discharge included in the figures.
<table>
<thead>
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<th>Hospital Name</th>
<th>Address</th>
<th>City</th>
<th>Medicare ID</th>
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<td>CALIFORNIA PACIFIC MEDICAL CTR - ST. LUKE'S CAMPUS</td>
<td>3558 Cesar Chavez Street</td>
<td>San Francisco</td>
<td>50055</td>
</tr>
<tr>
<td>CALIFORNIA PACIFIC MEDICAL CTR-DAVIES CAMPUS HOSP</td>
<td>601 Duboce Avenue</td>
<td>San Francisco</td>
<td>50008</td>
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<tr>
<td>CALIFORNIA PACIFIC MEDICAL CTR-DAVIS CAMPUS</td>
<td>601 Duboce Avenue</td>
<td>San Francisco</td>
<td>50008</td>
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<tr>
<td>CALIFORNIA PACIFIC MEDICAL CTR-PACIFIC CAMPUS HOSP</td>
<td>2333 Buchanan St</td>
<td>San Francisco</td>
<td>50047</td>
</tr>
<tr>
<td>SAINT FRANCIS MEDICAL CENTER</td>
<td>9330 E Imperial Highway</td>
<td>Lynwood</td>
<td>50104</td>
</tr>
<tr>
<td>SAINT FRANCIS MEMORIAL HOSPITAL</td>
<td>900 Hyde Street</td>
<td>San Francisco</td>
<td>50152</td>
</tr>
</tbody>
</table>

Hospital Name

- Adventist Medical Center
- Adventist Medical Center - Reedley
- Ahmanson-University Hospital
- Alameda County Medical Center
- Alameda Hospital
- Alhambra Hospital Medical Center
- Alta Bates Summit Medical Center
- Alta Bates Summit Medical Center - Alta Bates Campus
- Alta Bates Summit Medical Center - Summit Campus
- Alvarado Hospital
- Alvarado Hospital Medical Center
- Anaheim General Hospital
- Antelope Valley Hospital
- Antelope Valley Hospital Med Center
- Arrowhead Regional Medical Center
- Arroyo Grande Community Hospital
- Bakersfield Heart Hospital
- Bakersfield Memorial Hospital
- Banner Lassen Medical Center
- Barstow Community Hospital
- Barton Memorial Hospital
- Bear Valley Community Hospital
- Bellflower Medical Center
- Beverly Hospital
- Biggs Gridley Memorial Hospital
- Brotman Memorial Medical Center
- California Hospital Medical Center LA
- California Pacific Medical CTR - St. Luke's Campus
- California Pacific Medical CTR-Davies Campus Hosp
- California Pacific Medical CTR-Davis Campus
- California Pacific Medical CTR-Pacific Campus Hosp
- Catalina Island Medical Center
ANALYSIS PLAN: Exploratory Analysis of Perinatal Care Event Reports Submitted to CHPSO

1. **Introduction**

CHPSO is one of 81 federally-listed Patient Safety Organizations (PSOs) created by the Patient Safety and Quality Improve Act of 2005. The Act allows health care professionals to confidentially report patient safety events to CHPSO. CHPSO then organizes the data and communicates its findings back to hospitals to inform their prevention efforts (Agency for Healthcare Research and Quality). CHPSO maintains a database containing reports on nearly 1 million adverse events and near misses from over 100 hospitals (CHPSO, 2009-2015).

2. **Statement of the Problem**

Over 16,000 CHPSO safety events are related to perinatal patient safety and quality (CHPSO, 2009-2015). The complex interrelationship between mother, child, health care worker, and the care environment during labor and delivery creates the potential for manifold misfortunes, some preventable. CHPSO’s mission to eliminate preventable harm depends upon the organization’s ability to transform isolated safety events into useful information for hospitals (CHPSO).

3. **Purpose of the Analysis**

The analysis will identify trends and describe patient safety issues common to perinatal settings, in order that hospitals might detect potential hazards. The study will also detail the situational factors that contribute to patient harm and suggest actions that hospitals can take to prevent safety hazards.

4. **Objectives**

a. To produce public reports that inform hospitals’ patient safety improvement efforts in perinatal care settings (reports will present aggregated data with all identifying information removed)

b. To identify and describe common patient safety issues in perinatal care by classifying CHPSO safety reports according to elements in the *International Classification for Patient Safety* (World Alliance for Patient Safety, January 2009) and the *AHRQ Common Formats for Perinatal Patient Safety* (Agency for Healthcare Research and Quality, April 2012)

c. To identify and describe the factors that contribute to preventable patient harm in perinatal care settings

5. **Research Questions**

a. Can investigators classify CHPSO data according to the *International Classification for Patient Safety* and the *AHRQ Common Formats for Perinatal Patient Safety*?

b. What are the most common patient safety issues in perinatal care?

c. What factors contribute to patient safety events?

6. **Research Design**
The study will address the research questions using two designs: deductive content analysis and text mining. Each method will address weaknesses in the alternate design. These weaknesses are discussed further in the limitations section.

Content analysis is defined as, “a set of [qualitative] methods for analyzing the symbolic content of any communication,” (Singleton & Straits, 2005). The investigator will adopt deductive content analysis for its flexibility of research design (Harwood & Garry, 2003). The methodology lends itself well to simplistic analysis, such as counts (Cavanagh, 1997) and description of data (Downe-Wamboldt, 1992), the primary objectives of the analysis. It also allows investigators to condense rich, broad data into comprehensible themes (Elo & Kyngas, 2007). The event report will serve as the unit of analysis, following guidance from Graneheim & Lundman (2004). The meaning unit (or, code unit) will be the sentence or phrase. Codes are derived from the International Classification for Patient Safety and the AHRQ Common Formats for Perinatal Patient Safety. Coding will focus on manifest and latent content.

Text mining refers to the process of computationally discerning patterns in large bodies of text. Text mining frequently draws upon quantitative methods such as counting word frequency and word correlation (Stanton & De Graaf, 2013). The investigator selected text mining for its replicability and breadth. Because text mining is performed by computer, the results are consistent and reliable. Further, text mining enables the investigator to review the entire body of text at once, detecting trends at a scale impossible by manual means. The unit of analysis for the text mining will be the corpus. The unit of meaning will be the word. The text mining analysis will focus exclusively on manifest content.

7. Sampling and Case Selection Plan
The investigator will draw a random sample of 388 perinatal events from CHPSO’s database. Any event labeled “perinatal” in the CHPSO database will be eligible for sampling. A sample of 388 events will be representative with a 95% confidence level and a 0.05 confidence interval.

8. Data Collection
The investigator will utilize existing events within the CHPSO data system. The events include an open field prompting hospital staff to, “Briefly describe the event that occurred or unsafe condition,” (CHPSO, 2009-2015). Healthcare professionals populate the field with descriptive, unstructured text. This unstructured text will serve as the primary field for this analysis.

9. Quality Assurance / Data Validation
Investigators will assure quality by adhering to codes defined in International Classification for Patient Safety and the AHRQ Common Formats for Perinatal Patient Safety. Both taxonomies define criteria for classifying patient safety events with rigorous detail.

10. Coding and Analysis
For the deductive content analysis, the investigator will conduct computer assisted qualitative
coding (CAQC). CAQC involves manual review of each record and the application of electronic tags
(i.e. highlighting or codes) to words and phrases. The tags mark words or phrases with a structured
query language (SQL) search term. The resulting SQL data-enabled database allows the researcher
to retrieve similarly coded phrases. Coding will be conducted by a single investigator in R version
3.1.3 using the \textit{R-based qualitative data analysis (RQDA)} package (Huang).

For the text mining, the investigator will aggregate all the responses in the open text field into a
single corpus. The investigator will examine the corpus to identify common terms used (frequency)
and associations between terms (correlation). Text mining will be conducted using R version 3.1.3
and the \textit{tm} package (Feinerer, Hornik, Artifex Software). Text mining will reveal basic patterns in
how hospital staff describe patient safety events.

\textbf{11. Sources of Bias}

\begin{itemize}
\item \textit{Response and Nonresponse Bias}: Hospitals submit events to CHPSO voluntarily. Each hospital
and employee exercises personal discretion about how and when to submit patient safety
events. Staffing levels, IT infrastructure, and hospital policy all play a role in this determination.
Therefore, the number, type, and severity of events submitted to the PSO vary substantially
from hospital to hospital, year to year, and employee to employee.
\item \textit{Recall Bias}: Staff submit events retrospectively, sometimes under tight time restrictions. Staff
sometimes relies solely on their memories to produce the event. Staff may intentionally or
unintentionally omit details about the event in their event.
\item \textit{Experimenter bias}: CHPSO events will be categorized and coded by a single researcher, relying
on individual perception. Attempts are made to ameliorate this bias by adhering to the criteria
outlined in the codebook. The investigator will also rely upon authentic citations to increase the
trustworthiness of interpretation (Elo & Kyngas, 2007).
\end{itemize}

\textbf{12. Limitations and Pitfalls}

The analysis makes use of two methodologies in order to offset the major weaknesses of method.
While manual review offers superior insight, it is subjective. Text mining overcomes individual
fallibility, but lacks perception. Despite precautions and careful planning, the analysis includes
unavoidable limitations.

Firstly, several common quality assurance checks in qualitative research (such as peer-debriefing,
investigator triangulation, and peer debriefing) are not performed. This introduces subjectivity that
is only partially mitigated by the use of existing taxonomies (Golafshani, 2003). Second, the events
to CHPSO are not always prolonged or persistent in their description of the patient safety event.
Rushed event submission may introduce premature closure of the data (Nigatu, 2009). Important
details and opportunities for clarification may be truncated.

\footnote{see attached codebook for further detail on the selected codes}
Text mining is also limited in its scope. Computers programs fail to discern meaning in text. Rather, a corpus is treated as, “a bag of words,” (Hearst, 2003). Words that occur frequently within a corpus may or may not indicate that a patient safety hazard is common in hospital settings. Further, highly correlated words cannot sufficiently demonstrate that the objects have a causative or preventive effect.

13. Application of Results
The results of the analysis will help hospitals recognize common patient safety hazards. Understanding the factors that contribute to adverse events will assist hospitals in designing and implementing systems to avert healthcare-associated harm. The investigator will communicate the results of the analysis in a comprehensive report to CHPSO and its member hospitals. Authors will structure the report to inform practical healthcare delivery and quality improvement activities.
### Hospital Quality Institute

**Prospect Research**

Prepared by Mallory Johnson, MPA  
Title: Health Care Analyst, Institute for Population Health Improvement

<table>
<thead>
<tr>
<th>PROSPECT NAME</th>
<th>INCLINATION</th>
<th>GRANT PROGRAM OVERVIEW</th>
<th>RELEVANT INFORMATION</th>
</tr>
</thead>
</table>
| W. K. Kellogg Foundation          | TBD         | **Healthy Kids (Maternal & Child Health):** Support for programs that address disparities in birth outcomes by providing equitable maternal and child health services, conducting innovative research, and developing and communicating best practices. Outcomes of particular interest are infant mortality, low birth weight, and preterm births.  
**Current Funding:** $200k to University of Nebraska Medical Center for curriculum development, training, and dissemination of evidence-based best practices for birth outcomes across multiple states. | Deadline: Rolling  
Program Officer: Diana Derige and Patrick Simpson  
Misc.: robust evaluation is very important to the Kellogg Foundation |
| California Healthcare Foundation  | TBD         | **Better Chronic Disease Care (Objective 1: Effective Providers):** Focus on expanding the number of providers that care for patients with chronic conditions effectively. Projects should include promotion of data-driven quality improvement initiatives, acceleration of the use of electronic health records to improve care, and stimulation of data standards to enable sharing of health information across providers.  
**Current Funding:** $90k to Institute for Healthcare Improvement for a Better Health and Lower Costs for Patients with Complex Needs Collaborative; $100k to San Mateo Medical Center for system-wide Lean management implementation. | Deadline: most grants are made through a foundation-driven RFP process; unsolicited LOIs accepted on an ongoing basis  
Program Officer: Kelly Pfeifer, Giovanna Giuliani, Kate O'Malley |
| John A. Hartford Foundation       | TBD         | **Tools and Measures for Quality Care:** Support for projects that develop or spread geriatric appropriate tools and measures with the goal of promoting the adoption of standards of care for older adults with multiple chronic conditions.  
**Current Funding:** $2 million to Icahn School of Medicine Center to Advance Palliative Care; $415k to NCQA to develop quality measures for dual eligibles. | Deadline: proposals by invitation only  
Program Officer: Wally Patawaran  
Misc.: Foundation Staff: [http://www.jhartfound.org/about/staff/](http://www.jhartfound.org/about/staff/) |
<table>
<thead>
<tr>
<th>Foundation</th>
<th>Program</th>
<th>Deadline</th>
<th>Program Officer</th>
<th>Misc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kresge Foundation</td>
<td>Community Health Partners</td>
<td>rolling</td>
<td>David D. Fukuzawa</td>
<td>Applicants awarded multiyear grants should be prepared to secure matching support after the first year. The match should be equivalent to half the Kresge contribution for the second and, if applicable, third year of the grant.</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>none</td>
<td>Paul &quot;Dino&quot; Dinovitz (Executive Director); Teri Swenson Yeager (Senior Program Officer)</td>
<td>Giving primarily for naming opportunities at medical centers</td>
</tr>
<tr>
<td></td>
<td>Improving Healthcare Systems</td>
<td>March 6, 2015 (LOI) and May 5, 2015 (Application)</td>
<td>Steven Clauser, PhD, MPA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breakthrough Health Care Opportunities</td>
<td>LOIs accepted on a rolling basis</td>
<td>Anne-Marie J. Audet, VP for Breakthrough Opportunities</td>
<td>Watch this program for future development</td>
</tr>
<tr>
<td>Commonwealth Fund</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Hearst Foundation</td>
<td>Patient Centered Outcome Research Institute (PCORI)</td>
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</tr>
</tbody>
</table>

**Kresge Foundation**
3215 W. Big Beaver Road, Troy, Mich. 48084

**Community Health Partners**: Projects to improve community health by encouraging cross-sector collaboration and integration of community health strategies into health care. Support for innovative approaches for integrating communities and clinical care.

**Current Funding**: $150k to Alameda County Public Health Department for a program to reduce risk for obesity; $110k to Cleveland Clinic Foundation to integrate hospital care with research and education.

**Health**: Support for hospitals, medical centers and specialized medical institutions. Funds direct medical services that promote wellness, prevention and rehabilitation. Special interest in geriatrics and the disabled. Support for advanced professional education and training also considered.

**Current Funding**: $35k to American Heart Association for CPR/AED training in San Luis Obispo County; $50k to Community Hospital of the Monterey Peninsula to deliver a program that supports patient-centered care for senior patients.

**Improving Healthcare Systems**: Support for research comparing patient-centered outcomes for health system-level approaches to improving access, supporting patient self-care, innovative use of health information technology, coordinating care for complex conditions, and novel deployment of personnel.

**Current Funding**: 10 current projects for cardiovascular diseases, 7 for cancer and mental/behavioral health, 6 for endocrine disorders, 3 for nervous system disorders, and 20 for "other". Comprehensive list of funding available here: http://www.pcori.org/research-results?combine=&state=All&area=165&research=All&program=All

**Breakthrough Health Care Opportunities**: Program seeks to identify and assess ideas to make healthcare more responsive, efficient, and higher quality. Program will explore emerging technologies, care delivery processes, organizations models, and incentive programs. Focus areas include:
1. Engaging consumers in their care through information technology;
2. Next-generation provider incentives that are grounded in behavioral change theory (emphasizes the behavioral and psychological factors that motivate physicians);
3. "Frugal innovations" from the developing world that may be transferable to the U.S.

**Current Funding**: primarily internal funding for strategic planning (advisory groups, environmental scans); $50k to the University of California to complete a scan for innovative practices with potential to enhance access, reduce cost, and rapid scalability.
### Factors Impacting Inclination

<table>
<thead>
<tr>
<th>Geographic Focus</th>
<th>High (3 points)</th>
<th>Medium (2 points)</th>
<th>Low (1 point)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grantmaker focuses their funding on the project's location.</td>
<td>Grantmaker has broad geographic interests, but currently funds projects in the specified location.</td>
<td>Grantmaker does not currently fund organizations in the specified location, but does not exclude the possibility.</td>
<td></td>
</tr>
<tr>
<td>Population Served</td>
<td>Grant program targets the primary population served by the project.</td>
<td>Grant program targets a secondary population served by the program.</td>
<td>Grantmaker specializes in populations not served by project directly, but may find the model useful for serving their population.</td>
</tr>
<tr>
<td>Organization Type</td>
<td>Grantmaker prefers to funds organizations of this size and type.</td>
<td>Grantmaker primarily funds smaller/larger organizations.</td>
<td>Grantmaker has never funded an organization of this size, but does not prohibit it.</td>
</tr>
<tr>
<td>Relationship</td>
<td>PI has entre with the program officer or board members. The organizations have a positive funding history.</td>
<td>Proposals from the organization have been reviewed positively in the past, but never funded.</td>
<td>PI has no connection to foundation staff. No past organizational history exists.</td>
</tr>
<tr>
<td>Goal Alignment</td>
<td>Significant alignment between the grant program and project's goals.</td>
<td>Moderate alignment between the grant program and project's goals.</td>
<td>Proposal must persuade grantmaker that the project aligns with grant program's objectives.</td>
</tr>
<tr>
<td>Project Scope</td>
<td>The scope of the project is similar to previously funded programs.</td>
<td>Grantmaker typically funds projects marginally smaller or larger than the proposed.</td>
<td>Grantmaker has never funded project of this scope, and is unlikely to do so.</td>
</tr>
</tbody>
</table>

### Inclination Key

<table>
<thead>
<tr>
<th>Inclination Rating</th>
<th>Definition</th>
<th>Capacity Rating</th>
<th>Capacity Key</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>18 - 15 points</td>
<td>1</td>
<td>$500,000+</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>14 - 10 points</td>
<td>2</td>
<td>$499,999 - $100,000</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>9 - 6 points</td>
<td>3</td>
<td>$99,999 - $50,000</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>4</td>
<td>$49,999 - $0</td>
<td></td>
</tr>
<tr>
<td>Grantmaker</td>
<td>Reason for Exclusion</td>
<td></td>
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<tr>
<td>------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td></td>
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</tr>
<tr>
<td>Blue Shield of California Foundation</td>
<td>Focuses grants for health care on community health centers</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Robert R. McCormick Foundation</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ford Foundation</td>
<td>U.S. giving not aligned with HQI project aims</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>William and Flora Hewlett Foundation</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis &amp; Lucile Packard Foundation</td>
<td>Funding in health related to reproductive health (gender equity and family planning)</td>
<td></td>
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<tr>
<td>Amgen Foundation</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Community Foundation</td>
<td>Funding limited to LA county</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockefeller Foundation</td>
<td>Health program focuses on health coverage and food security</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carnegie Corporation of New York</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annenberg Foundation</td>
<td>Support for leadership development within LA non-profits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael and Susan Dell Foundation</td>
<td>Childhood Health program focuses on obesity prevention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanofi Patient Connection</td>
<td>Proposals by invitation only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GE Foundation</td>
<td>Funding currently focused on FQHCs; watch for the future</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Wood Johnson Foundation</td>
<td>Current RFAs do not match HQI programs</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>California Endowment</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Wellness Foundation</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Evelyn and Walter Haas Jr. Foundation</td>
<td>Not a programmatic fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metta Fund</td>
<td>Funding seems limited to Bay Area Nonprofits</td>
<td></td>
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</tr>
</tbody>
</table>
HEN 2.0 Preliminary Resource Planning Document

CONTACT INFORMATION

Julie Morath, RN, MS
jmorath@hqinstitute.org
Hospital Quality Institute
President and CEO

1 Please estimate the number of hospitals in your state that may commit to participate in the AHA/HRET 2.0 project.
Over the past three years, the Hospital Quality Institute (HQI) and the California Hospital Association (CHA) have been proud to partner with HRET to develop the largest State Hospital Association (SHA) cohort within the HRET Hospital Engagement Network (HEN). Over the life of the project, over 150 hospitals submitted data through the California Hospital Engagement Network (HEN) 1.0.

HQI anticipates that the HEN 1.0 hospitals will return for the next iteration of the HEN. Furthermore, a recent survey of HEN 1.0 QI Directors indicated that nearly 80 percent were highly or moderately interested in HEN 2.0 participation. We believe that support for re-engagement is even higher among hospital CEOs, who are eager to engage with national improvement efforts.

In addition to veteran participants, HQI is actively recruiting new hospitals within the state of California. HQI has sent recruitment letters to all hospitals in the State of California, and our staff is personally following up on this correspondence by phone. We anticipate engaging over 150 hospitals in the coming month.

2 Please estimate the number of currently employed full-time equivalents (FTE) your state hospital association has on staff that will be available to work on HEN 2.0.
HQI currently employs 12 FTE. Of these, six FTE will be devoted to the HEN 2.0, including all layers of program management from executive leadership to administrative support.

3 Of these current FTE, how many worked at least quarter time on the previous HEN project?
A total of six current HQI staff members contributed to the previous HEN and plan to continue their work throughout HEN 2.0.
Two current HQI FTE worked full-time on HEN 1.0, Sholeh Varzegar and Mahsa Farahani. Sholeh Varzegar, RN, MHA, MPH currently serves as HQI’s Data and Measurement Leader. During the HEN 1.0, Ms. Varzegar played an integral role in ensuring timely and accurate data submissions from participating hospitals. By collaborating directly with hospital staff, she helped improve measure reporting and data clarity. Mahsa Farahani served as the Project Manager for HEN 1.0 beginning in June 2012. Ms. Farahani’s extensive knowledge of the program’s implementation and history will be critical to the next phase of the HEN.

Additional HQI staff contributed a portion of their time to the HEN 1.0 Julie Morath, RN, MS serves as HQI’s President and Chief Executive Officer. She will continue her role as executive lead for the HEN. Boris Kalanj, MSW led HEN efforts to deliver patient engagement and disparities reduction programming. Mr. Kalanj currently serves as HQI’s Director of Cultural Care and Experience. In this capacity, Mr. Kalanj will contribute to the HEN 2.0’s activities related to patient engagement and culture of safety. Priscilla Magano will continue to support the HEN in an administrative capacity.

4 Not counting FTE already on staff, please estimate the number of FTE or consultants that you plan to hire to work on HEN 2.0 if the contract is awarded.
HQI will supplement its existing staff with consultants and contract employees. We estimate that we will require five contract FTE to fully implement the HEN 2.0.

5 Please provide the time you estimate will be needed to fill any open positions on the HEN 2.0?
HQI will utilize existing partnerships to meet additional contractor needs immediately.

6 Hospitals will be expected to work on all applicable topics. Please rank the average level of interest you expect across your state so that we can develop strategies to most effectively ensure hospitals work to improve across all topics.

<table>
<thead>
<tr>
<th>Topic</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADE</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Opioid Safety</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Anticoagulation Safety</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Glycemic Management</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>CAUTI</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CLABSI</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>EED</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>OB Harm</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>OB Hemorrhage</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Preeclampsia</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Falls</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>PrU</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
7 HRET intends to support improvement in the cross-cutting strategies that may impact the topics included above. Please indicate the expected level of interest from your hospitals in learning about each of the change strategies identified below.

<table>
<thead>
<tr>
<th>Change Strategy</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving and Sustaining Change</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Care Disparities</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital Culture</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership and Governance</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leveraging Patients to Drive Quality Improvement</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Making the Financial Case for Quality</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient and Family Engagement</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician Engagement</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Across the Board</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8 While we recognize that plans are preliminary at this point, please provide estimates for the types and numbers of activities listed below that you intend to complete within your state.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Answer question number 8.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-led coaching calls</td>
<td></td>
</tr>
<tr>
<td>Virtual meetings/webinars</td>
<td></td>
</tr>
<tr>
<td>In-person meetings</td>
<td>Answer question number 8.3</td>
</tr>
<tr>
<td>Site visits</td>
<td>Answer question number 8.4</td>
</tr>
<tr>
<td>Regularly scheduled check-in calls with hospitals</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Answer question number 8.5</td>
</tr>
</tbody>
</table>

8.1 Please estimate the number of coaching calls to be completed during the project.

HQI plans to continue the type and level of activities undertaken during the HEN 1.0 depending upon participating hospitals’ needs. HQI will conduct a comprehensive needs assessment at the
project’s initiation. The assessment will allow HQI to discover changes in hospitals’ preferences between 1.0 and 2.0 as well as gauge new hospitals’ needs.

HQI plans to continue monthly coaching calls, as was executed during the HEN 1.0. These calls allow hospitals to engage in peer-to-peer learning, discuss implementation challenges, and share successes and lessons learned with their members. Specially trained mentors from high-performing hospitals will coach mentee hospitals through their improvement projects.

8.2 Please estimate the number of webinars to be hosted throughout the project as well as the estimated number of participants per webinar.
HQI plans to deliver a mix of webinars and in-person trainings, with virtual trainings being used to augment in-person modalities. We anticipate offering between 24 and 36 webinars for communities of practice across the one-year grant period. An average of 60 participants per webinar is expected.

8.3 Please provide an estimate of the number of in-person meetings to be hosted during the project as well as an estimate of the number of attendees per meeting.
Due to California’s expansive size, HQI plans to regionalize in-person offerings. The replicated training opportunities ensure broad engagement and limit travel for participants. HQI estimates 24 total in-person meetings, half located in Northern California and half in Southern California. Approximately 50 participants are expected to attend each meeting.

HQI intends to use its annual conference to reinforce participation in the HEN 2.0. The multi-day event will expose HEN 2.0 participants to a variety of improvement topics. The event’s themes of Respect, Reliability, and Resilience, underscore the HEN’s cross-cutting strategies of culture, leadership, teamwork, and sustaining change. HQI also plans in-person sessions, such as Safety Culture training and Improvement Boot Camp.

8.4 Please estimate the number of hospital site visits to be completed during the project.
Depending on the hospital’s preference, each hospital will receive one annual visit.

8.5 Please provide a brief description of any other strategies you plan to employ to achieve the goals for the HEN 2.0 project.
HQI will facilitate site visits between mentor and mentee hospitals. These peer-to-peer visits allow attendees to witness best practices in action. California’s Regional Hospital Associations will be included in the development of the agenda for the visits and ensuring staff engagement. HQI will ensure that every mentee hospital has the opportunity to visit their mentor facility. The HEN’s role is to create a platform for hospitals to share their innovations and change package implementation
strategies broadly with their peers. HEN 1.0 taught us that the most valuable learning resource for our hospitals is the opportunity to connect to their peers. During HEN 2.0, we will seek to identify and train experienced hospital staff to serve as improvement mentors to other facilities. These improvement champions will serve as savvy guides for mentee hospitals implementing change packages.

We also plan to implement programs emphasizing HEN 2.0 key cross-cutting strategies. This programming would include:

- **Chief Experience Officer Community of Practice (CXO-CoP)**, a mechanism for dedicated senior organizational leaders accountable for performance in patient experience and patient/family engagement in improvement.

- **Patients On Board (POB) Collaborative**: HQI plans to expand Patients On Board programming to lead a cohort of hospitals through ways to engage patients and families as partners in improvement, governance, and design.

- **Physician Leadership Programs**: HQI will build physician engagement and skills in leadership of clinical improvement topics.

- **Executive Leadership Sessions**: HQI will continue CEO and board forums for leaders learning from each other about their role of driving safety and quality.

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9 Some SHAs have the desire and capacity to support their hospitals independently of AHA/HRET activities while other plan to rely extensively on the resources we will provide. On a scale from 1-10 (10 = very dependent on AHA/HRET; 1= very independent), please describe your expected approach.

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10 Does your state have a state data repository?

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<td>Yes</td>
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<td>No</td>
<td>X</td>
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11 Data submissions to AHA/HRET is a required part of the HEN 2.0 project. Please select ALL of the following ways you expect to collect and share data from hospitals in your state.

<table>
<thead>
<tr>
<th>Choice</th>
<th>Description</th>
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<tbody>
<tr>
<td>Direct data submission from hospitals to the Comprehensive Data System (CDS)</td>
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<tr>
<td>✗ Hospital data submission into a state-level repository and then submitted by the state to AHA/HRET CDS</td>
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<tr>
<td>✗ Hospital submission into NHSN, with rights conferred to either the state or AHA/HRET so these data can be imported into CDS</td>
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<tr>
<td>Submission using the CAH/rural data collection tool by rural and critical access hospitals in your state</td>
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12 If you plan to utilize another data collection strategy, please specify below. California hospitals report quality improvement data to multiple organizations within the State (more below). HQI intends to collaborate with these organizations to share data and reduce the reporting burden for hospitals. The HEN 2.0 will use a state-level data repository to aggregate quality data into one convenient package for hospitals.

- Collaborative Alliance for Nursing Outcomes (CALNOC), CALNOC created the first nursing database registry of nursing sensitive indicators. HEN will utilize data from this source for harm areas like Falls and Pressure Ulcers.
- California Maternal Quality Care Collaborative (CMQCC), CMQCC created the CMQCC Maternal Data Center (CMDC) to generate rapid-cycle performance metrics on maternity care services. HEN will use data from the CMDC for OB measures, including EED.
- National Database of Nursing Quality Indicators (NDNQI), NDNQI is a national nursing quality measurement program. HEN will use data from NDNQI for nursing sensitive measures.
- National Healthcare Safety Network (NHSN), the Centers for Disease Control and Prevention’s NHSN tracks healthcare-associated infections. The HEN will use data from the NHSN for CAUTI, CLABSI, and SSI.
- Rural hospitals and critical access hospitals will submit data into a state-level repository and then transfer their state submitted data to the Comprehensive Data System (CDS).

13 Which best describes your approach to coordinating with the QIO/QIN representing your state:

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<tr>
<td>✗ We intend to subcontract with them.</td>
<td>(Answer question number 13.1)</td>
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<tr>
<td>We intend to work closely with them to coordinate activities and avoid duplication of effort.</td>
<td>(Answer question number 13.1)</td>
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<tr>
<td>We will attempt to understand their plans and avoid duplicating their efforts.</td>
<td></td>
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<tr>
<td>We do not expect any coordination of effort with our QIO/QIN</td>
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13.1 Please explain your tentative plans for working with the QIO/QIN in your state and specifically how you intend to avoid duplication of work.
HQI collaborates closely with the QIN in California, Health Services Advisory Group (HSAG), to deliver a coordinated, synergistic package of improvement materials and activities to hospitals. HQI will soon serve as subcontractor for HSAG’s Hospital Acquired Infection (HAI) program, enabling the organization to keep fully abreast of QIN activities that relate to the HEN 2.0. In this capacity, HQI is uniquely positioned to avoid duplication of work.

14 What other organizations do you plan to partner and/or coordinate with in pursuit of the HEN 2.0 project goals.

- California Hospital Patient Safety Organization (CHPSO): CHPSO is one of the largest and most established Patient Safety Organizations (PSOs) in the country. As one of HQI’s flagship resources, the organization works to provide members with a “safe harbor” to report medical errors and near misses. Educational programs, data analysis, and root-cause-analysis critiques accelerate and spread solutions to patient safety challenges.
- Institute for Population Health Improvement (IPHI): IPHI works to create, apply, and disseminate knowledge about the many determinants of in order to improve health and health security and to support activities which improve health equity and eliminate health disparities. IPHI serves as HQI’s academic medical center affiliate.
- Patient Safety First (PSF): the PSF program seeks to improve patient safety and perinatal care in California. The program focuses on harm areas that reinforce HEN goals: C. difficile, sepsis mortality, EED, C-section rate, obstetrical hemorrhage, and surgical safety.
- Hospital Council of Northern and Central California, Hospital Association of Southern California, and Hospital Association of San Diego and Imperial County: facilitates regional site visits and peer-to-peer learning opportunities for hospitals.
- California Maternal Quality Care Collaborative (CMQCC): CMQCC is the strategic partner to align maternity care improvement activities, including American Congress of Obstetricians and Gynecologists (ACOG) and March of Dimes.

15 If you plan to work with any other major subcontractors, please list their name and a short explanation of their planned role

- Education Contractor: will develop and deliver virtual and in-person training to HEN hospitals. These subject matter experts will also provide expert consultation to mentor hospitals as they work to promote improvements at their mentee institutions.
  - Under consideration: Pascale Carayon, PFCC Partners, Allen Frankel, and Davis Marx
- Data and Analytics Contractor: will develop a database management system to aggregate data from California’s many existing reporting systems (see question 12). This system will reduce the reporting burden for hospitals and conveniently packages measure results for easy analysis. The data and analytics contractor will also produce reports for individual hospitals analyzing their HEN data. This contractor will serve as the main contact for all data validation and reporting to HRET.
DATE December 8, 2015
REQUESTING ORGANIZATION Hospital Quality Institute (HQI)
PRIMARY CONTACT Julie Morath, RN, MS
TITLE President and CEO
ADDRESS 1215 K Street, Ste 800 / Sacramento, CA 95814

PROJECT TITLE Promoting Optimal NTSV Delivery Rates (PONDR)

BRIEF SUMMARY OF PROPOSED PROJECT

PONDR will reduce cesarean section overuse for low risk births by helping California’s maternity hospitals understand what conditions precipitate unnecessary surgery and what hospitals can do to improve outcomes in maternity care.

PROPOSED BUDGET $190,000
PROJECT TIMETABLE 12 months
PROJECT DIRECTOR Julie Morath, RN, MS
ORGANIZATION Hospital Quality Institute (HQI)

Project Objectives

Promoting Optimal NTSV\(^1\) Deliver Rates (PONDR) will reduce cesarean section overuse for low risk births in California hospitals.

Specific objectives include:

- To analyze safety event reports submitted to CHPSO\(^2\), identifying the system vulnerabilities that contributing to high rates of cesarean section (C-sections), including NICU data where available.
- To interview 20-25 high-performing community and rural hospitals about their perinatal policies, procedures, practices, organizational structures, and culture in order to identify the factors that support low NTSV C-section birth rates.
- To collaborate, support, and accelerate the work of CMQCC.

Project Background

\(^1\) Nulliparous term singleton vertex (NTSV) births are first-time births that have reached 37 weeks gestation and consist of a single fetus in the head-down position.

\(^2\) Previously known as the California Hospital Patient Safety Organization
Pregnancy and childbirth are the second leading reason for inpatient admissions in the United States. In California, more than 500,000 deliveries are completed each year, with approximately one-third of those deliveries occurring by C-section. The proportion of deliveries completed by C-section in California has increased by 50 percent over the past decade (CDC/NCHS National Vital Statistics System).

While C-sections can be life-saving procedures, risks of surgical intervention can exceed the benefit. C-sections are linked to poorer neonatal outcomes, including increased respiratory distress, low APGAR scores, and premature delivery among neonates (Bailit et al 2002, Bailit et al 2006, Kamath et al 2009, and Gould 2004). For mothers, abdominal surgery increases risk of infection, hemorrhage, and death (American Pregnancy Association, January 2014). The cost-benefit balance for low-risk, nulliparous term singleton vertex (NTSV) births leans heavily against surgical treatment unless specifically indicated.

High-performing hospitals deliver by C-section in 19 percent of NTSV births, while low-performing hospitals deliver by C-section in 56 percent of NTSV births (California Hospital Assessment and Reporting Taskforce, 2014). This variation demonstrates inconsistency in the delivery of care provided in California hospitals as well as an opportunity to standardize and improve practice.

However, even hospitals that are motivated to address the issue of expensive, risky overtreatment struggle to create change in their delivery services. Health care decisions are often made at the confluence of organizational policy, interpersonal relationships, institutional culture, and the physical environment. Little is known about how these influences contribute to the over-utilization of surgical intervention in maternity care.

The Hospital Quality Institute (HQI) will address this knowledge deficiency through Promoting Optimal NTSV Delivery Rates (PONDR), which will use robust qualitative data to inform California hospitals about practical ways to address C-section rates for NTSV births.

Activities / Approaches

PONDR will conduct two robust and complementary qualitative analyses. The results will provide hospitals with a rich understanding of why unnecessary surgical intervention occurs and how to promote optimal outcomes. The first analysis will draw upon safety event reports submitted to CHPSO, a patient safety organization devoted to helping hospitals prevent health care associated harm. Analysis of CHPSO adverse event reports will allow HQI to identify and vividly describe common situations that lead to unnecessary C-sections. The second analysis will include interviews with high-performing community and rural hospitals to determine how hospitals achieve and sustain high performance.

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<tr>
<th align="left">Table 1. PONDR Analytic Activities</th>
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<td align="left"><strong>Analysis</strong></td>
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<tr>
<td align="left">Analysis One: CHPSO Safety Event Reports</td>
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(highlighted content added)
Analysis Two: Hospital Interviews

Interviews with high-performing rural and small community hospitals
To understand how hospitals attain high performance
To identify organizational factors that facilitate performance
Organizations

High-performing rural and community hospitals differ from their urban counterparts by employing a diverse staffing mix. These hospitals are more likely to include certified nurse midwives, family practice physicians, and general surgeons in delivery care, thus reducing the dependence on obstetricians.

Analysis One: CHPSO Adverse Event Reports

CHPSO, an HQI division, is a trusted leader in the collection, analysis, and dissemination of patient safety information for hospitals. CHPSO is a federally-listed Patient Safety Organizations created by the Patient Safety and Quality Improve Act of 2005. The Act allows health care professionals to confidentially report patient safety incidents to CHPSO. CHPSO then organizes the data and communicates its findings back to hospitals to inform their prevention efforts.

CHPSO maintains a robust data system that assembles confidential reports on adverse events and “near misses” in patient care. The system contains about 16,000 entries related to perinatal care. The PONDR program will mobilize CHPSO to analyze these entries. Analysts will conduct a systematic, deductive content analysis of a sample of reports made to CHPSO in order to identify and describe the situational factors that contribute to unnecessary C-sections.

Analysis Two: Interviews with Rural and Small Community Hospitals

The second analysis in the PONDR program will consist of a qualitative analysis of interviews with top-performing rural and community hospitals, which deliver high quality maternity care despite limited resources. Rural hospitals have been shown to have lower C-section rates than their urban counterparts (Kozhimannil, 2014). These differences in quality persist despite staffing challenges (Kozhimannil et al, 2015) and differences in procedure volume (Kozhimannil et al, 2014). Analysts will seek to develop an understanding of how rural hospitals provide high quality obstetrics care despite the restraints common in rural settings.

HQI will collaborate with the California Maternal Quality Care Collaborative (CMQCC) to identify and recruit 20-25 top-performing small community and rural hospitals to participate in the analysis. HQI will conduct intensive interviews with hospital staff, including CEOs, CMOs, quality managers, obstetrical physicians and service personnel. Validated interview notes will be compiled and summarized into comprehensive case studies, which will undergo qualitative coding. Analysts will review the coding to identify commonalities and best practices identified by these hospitals. The analysis will also work to understand how these best practices may be translated into other settings.
COMMUNICATION OF FINDINGS:

HQI will widely communicate the findings from both analyses throughout its extensive network of hospitals, state patient safety organizations, and improvement agencies. Analysts will compose comprehensive reports and news releases that will increase hospitals’ awareness of the issues and inform their improvement efforts. HQI will also collaborate with CMQCC to convene a safe table forum for CHPSO members, which will offer hospitals the opportunity to react to the analysis’ findings.

Audience / Stakeholders

PONDR’s primary audience is the 255 hospitals that provide delivery services in California. HQI is uniquely positioned to access this audience through its affiliation with the California Hospital Association (CHA) and Regional Associations. HQI has a demonstrated track record for effectively engaging hospital leaders and front-line staff in improvement efforts.

High Level Work Plan and Timeline

CHPSO Obstetrics Event Analysis

- Literature review and background research (Month 1-3)
- Develop coding infrastructure (Month 3-6)
- Report coding (Month 6-7)
- Analyze coded events (Month 7-9)
- Develop communication materials (Month 10-12)
- Disseminate communication materials (Month 10-12)
- CHPSO-sponsored safe table event for CHPSO members (Month 10)
- Safe table follow-up (Month 12)

Hospital Interviews

- Hospital recruitment (Month 1-2)
- Interview scheduling (Month 1-2)
- Conduct interviews (Month 2-6)
- Transcribe interviews and compose case studies (Month 2-8)
- Analyze interviews (Month 8-10)
- Develop final report (Month 10-12)
- Promote final report to hospitals (Month 12)

Grantee Organization

The Hospital Quality Institute (HQI) was established in 2013 to lead statewide patient safety and quality improvement activities in California hospitals. The organization also harmonizes quality improvement initiatives across California in order to advance the state as a national leader in quality.
HQI’s alliance with the California Hospital Association (CHA), the Hospital Council of Northern and Central California (HCNCC), the Hospital Association of Southern California (HASC), and the Hospital Association of San Diego and Imperial Counties (HASDIC) provides them unprecedented access to decision-makers and clinicians in California’s hospitals.

HQI has an established track record for effecting change in obstetrics care. Through the national Partnership for Patients collaborative, HQI’s California Hospital Engagement Network (CalHEN) led a significant number of hospitals to notable improvements in Early Elective Deliveries (EED). Sixty five participating hospitals achieved a 40 percent reduction in EED. Another ten hospitals entered with the program with zero EED and successfully sustained their change efforts. **Project Staff**

- **Julie Morath, RN, MS:** Julie Morath serves as HQI’s President and Chief Executive Officer. She will serve as the executive lead for PONDR. Morath is the inaugural recipient of the John Eisenberg Award for Individual Lifetime Achievement in Patient Safety and founding and current member of the Lucian Leape Institute of the National Patient Safety Foundation. Morath is a distinguished advisor to the National Patient Safety Foundation and past member of the National Quality Forum Best Practices Committee. Morath serves on the Board of Directors of the Virginia Mason Medical Center and Health System. In 2013, she was named by Becker Hospital Review as one of the top 50 experts leading patient safety. Morath has more than three decades of executive and academic experience in health care. She Co-Led the development of the Minnesota Mother-Baby program and facility design.

- **Rory Jaffe, MD, MBA:** Dr. Jaffe serves as the Executive Director of CHPSO. He will lead efforts to analyze the obstetrics event reports for PONDR. Dr. Jaffe has extensive experience in both clinical care and health system leadership. Prior to becoming Executive Director of CHPSO, he was Executive Director of Medical Services for the University of California system. In this role, he served as the senior physician in the system, which included oversight of quality of care at the
five academic health systems and ten student health centers. Dr. Jaffe served on the review committee for developing the March of Dimes Elimination of Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age Toolkit. He also has served on a number of federal and state advisory committees. Dr. Jaffe is an anesthesiologist with obstetrical anesthesia experience.

- **Qualitative Researcher**, TBD
- **Clinical Lead**, TBD, obstetrician or advanced practice nurse

**Other Project Resources**

- **CMQCC**: HQI has a strategic relationship with CMQCC, and collaborated in the 2011-2014 deployment of the California Hospital Engagement Network (CalHEN) through Partnership for Patients. The PONDR program would allow us to build on our shared goals for improving obstetrics care in California hospitals.

- **California Hospital Association and Regional Associations**: HQI’s affiliation with CHA allows HQI access to personnel at many levels in California’s Hospitals. HQI leverages CHA’s communication channels and professional networks extensively in their work.

**Desired Outcomes**

1. To increase California hospitals’ awareness of attributes for success to reduce high rates of cesarean delivery among NTSV births
2. To improve communication to California hospitals about the vulnerabilities in their perinatal care systems that contribute to high rates of C-sections for NTSV births
3. To engage all maternity hospitals in California to actively work to reduce unnecessary C-section rates
4. To collaborate, support, and accelerate the work of CMQCC

**References**


