2020 Denver Health Quality, Safety, and Service Annual Report

DENVER HEALTH™
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FOR LIFE'S JOURNEY

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To the Denver Healthcare Community

Our commitment to the communities we serve is to provide reliable high quality and safe care and outstanding service at every point of contact with Denver Health. To fulfill this commitment, we must continuously evaluate and improve our services. We are proud to present our 2020 Quality, Safety, and Service Annual Report. Our intent is to present a year-end summary of our quality, safety and service initiatives and associated outcomes as well as key results of publicly reported performance measures. As the local, regional, and national landscape of healthcare quality measurement becomes more complex, we hope this will be a resource to all who care to track Denver Health's successes and opportunities. In the spirit of our education mission, we hope it will serve as a valuable resource for both internal and external safety and quality measures. Most importantly, we hope the report will drive ongoing efforts to improve the value of the services we provide.

Department of Patient Safety and Quality Mission

To eliminate patient harm and maximize healthcare quality, value, and experience.

Department of Patient Safety and Quality Goals

1. Foster a culture that supports continuous quality improvement, safety event learning, and waste reduction.
2. Use health system data to drive care improvements and high reliability.
3. Put patients and family at the center of everything we do.

EXECUTIVE SUMMARY

- The COVID-19 pandemic had a measurable and substantial impact on quality and safety measures in both the inpatient and outpatient settings. Notably, the number of Target Zero events in 2020 exceeded the annual totals for 2017, 2018 and 2019. This was due in large part to a higher incidence of Target Zero events in patients hospitalized with COVID-19. Similarly, the Ambulatory Bundle performance did not achieve its goals in 2020 due to a sharp rise in telehealth care during the pandemic.
- Denver Health and Hospital Authority (DHHA) received The Joint Commission's Pioneers in Quality recognition and was a Top Performer on Key Quality Measures for 2020.
- Denver Health rose from a 3-Star to a 4-Star ranking in the 2020 Vizient Quality and Accountability Study.
- CMS HAC reduction program – resulting from sustained reductions in hospital acquired infections, for the second year in a row, DHHA avoided this program's ~$300,000 penalty and had the best overall score in the 7 years of its existence.
- Value Based Purchasing – DHHA exceeded the national average performance for 3 years in a row and exceeded the state average score for 2 years in a row. The 2020 performance resulted in an incentive payment to DHHA.
- Meaningful Use of a Certified Electronic Health Record – for the quality and objective measures associated with the Medicaid provider program, DHHA received $2,800,000 in payments.
- For the 5th consecutive year of the CMS Readmissions Reduction Program, DHHA performed better than the mean and faces a small penalty that is 1/25th the maximum penalty under the program.
- Resulting from concentrated QI efforts, psychiatric inpatients who screened positive for alcohol or other drug use disorders received treatment at discharge significantly more frequently compared to 2018-2019.
- Denver Health Medical Center was designated as one of *Newsweek*'s Best Maternity Care Hospitals in 2020.
- Resulting from focused process improvement work, 86% of psychiatric inpatients discharged on at least one antipsychotic medication in 2020 were screened for diabetes, a substantial increase from 2018-2019.
- The number of total falls among hospitalized patients has been below the National Database of Nursing Quality Indicators (NDNQI) median benchmark for 9 consecutive quarters.
- According to the American College of Surgeon Trauma Quality Improvement Program (TQIP) database, Denver Health's overall risk-adjusted mortality is in the best decile of hospitals nationally.
- Post-discharge reviews by the Clinical Documentation Integrity Specialists at Denver Health averted 37% of AHRQ-defined Patient Safety Indicators (PSI) and 30% of CMS-defined Hospital Acquired Conditions (HAC), which substantially impacts multiple pay for performance programs.
- The COVID-19 pandemic demanded creativity in how hospital teams managed patients while preserving PPE and protecting staff. One innovation was the adoption of continuous glucose monitoring for hospitalized patients with diabetes and COVID-19.
- Compared to providers in Denver County and in the State of Colorado, DHHA providers have lower rates of two important high risk opioid prescribing practices: high dose and co-prescribing of benzodiazepines.
- The outpatient behavioral health services division (OBHS) was recognized by the Colorado Department of Human Services with the Medication-assisted Treatment Prescription Drug Opioid Hub Provider Excellence in Project Partnership Award.
- DHHA's designation was renewed in 2020 as an Antimicrobial Stewardship Center of Excellence by the Infectious Diseases Society of America. Consistent with this designation, inpatient antibiotic utilization remained significantly below expected throughout 2020.
- A multifaceted intervention in the two urgent care clinics at Denver Health in 2020 resulted in significant improvements to adherence to guideline-recommended 5-day durations of antibiotic therapy, reducing the community risk of antibiotic resistance.

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1. PUBLIC REPORTING & INCENTIVES

1.1. CMS Hospital Readmissions Reduction Program (HRRP)—FFY2021

The Affordable Care Act established the Hospital Readmissions Reduction Program requiring the Centers for Medicare and Medicare Services (CMS) to reduce payments to inpatient hospitals with excess readmissions starting in Federal Fiscal Year (FFY) 2013. CMS utilizes claims data to determine readmissions within 30 days of discharge from the same or another inpatient hospital. CMS implemented a socio-demographic status adjustment beginning in FFY 2019.

- Inclusion Criteria — Medicare Fee-For-Service (FFS) beneficiaries with Part A and Part B coverage who have continuous enrollment for the 12 months prior to admission to at least one month after discharge. Beneficiaries must be 65 years or older at admission.
- Exclusion Criteria — length of stay over 365 days, in-hospital death, left against medical advice, transferred to another acute care hospital, planned readmissions.
- Excess readmission ratios are risk-standardized for clinically relevant factors, such as patient demographic characteristics, comorbidities, and frailty.
- Hospitals are grouped into quintiles based on their ratio of full-benefit dual eligible patients (Medicaid and Medicare) to total Medicare FFS and Medicare Advantage patients. Hospitals are compared to the condition-specific median excess ratio within their quintile.
- DHHA is in the quintile with the most dual eligible patients.

- **Financial Impact**
  - ◊ 3.0% maximum payment reduction, i.e. potential $400,000 loss.
  - ◊ Reduction applies to the Base Operating DRG payment amount (including wage-adjustment and new technology amounts) for discharges of Medicare FFS patients.
  - ◊ DHHA will be penalized –0.11% for FFY 2021 discharges, which is estimated as a $16,000 loss (Figure 1.1-1).
  - ◊ The –0.11% penalty was the largest penalty received by DHHA in the eight year program, but it is far less than the maximum penalty (Figure 1.1-2).
  - ◊ DHHA's ranking dropped from the top quartile to the top half.

- **PI Activities**
  - ◊ Enterprise-wide patient flow initiative with executive oversight targeting all aspects of patient flow.
  - ◊ Readmission prevention was chosen as a 2020 tactic for the Department of Patient Safety and Quality, with Lean events and disease-specific workgroups.

Figure 1.1-1: CMS Hospital Readmissions Reduction Program FFY 2021*

Condition**	Number of Eligible Discharges	Readmission Rate	Excess Readmissi… Ratio (Better ↓)	Penalty
Acute Myocardial Infarction (AMI)	40	30.0%	1.0986	Yes
Chronic Obstructive Pulmonary Disease (COPD)	64	17.2%	0.9622	No
Heart Failure (HF)	72	26.4%	1.0344	Yes
Pneumonia (PN)	68	14.7%	0.9598	No
Estimated Financial Impact	**- $16,000**			

* Performance Period 7/1/16-6/30/19

** Total Hip or Knee Arthroplasty and Coronary Artery Bypass Graft Surgery are excluded because fewer than 25 eligible discharges

Figure 1.1-2: Denver Health 5-Year Performance on CMS Hospital Readmissions Reduction Program

Condition	Penalty				
	FFY 2017	FFY 2018	FFY 2019	FFY 2020	FFY 2021
Acute Myocardial Infarction	No	Yes	Yes	Yes	Yes
Chronic Obstructive Pulmonary Disease	No	No	No	No	No
Heart Failure	No	No	No	No	Yes
Pneumonia	No	No	Yes	No	No
Denver Health Penalty	**0%**	**-0.02%**	**-0.05%**	**-0.09%**	**-0.11%**

Abbreviation: FFY, Federal Fiscal Year

1.2. CMS Hospital-Acquired Conditions Reduction Program (HACRP) —FFY 2021

The Affordable Care Act established the Hospital-Acquired Conditions (HAC) Reduction Program to encourage hospitals to reduce preventable conditions that patients did not have upon admission to the hospital, but which developed during the hospital stay. Hospitals ranking in the lowest-performing quartile with respect to risk-adjusted HAC quality measures received a payment reduction beginning in FFY 2015. CMS publicly reports hospital-specific results on its Hospital Compare website.

- **Measures**
  - ◊ Healthcare-Associated Infections (HAI): HAIs are identified by the Infection Prevention department through chart-abstracted surveillance data and reported to the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN). Standardized infection ratios (SIRs) provide risk-adjustment at hospital- and patient-care unit levels.
  - ◊ Agency for Healthcare Research and Quality (AHRQ) Patient Safety and Adverse Events Composite (PSI-90): weighted average of the risk- and reliability-adjusted versions of 10 Patient Safety Indicators (PSIs). Figure 1.2-1 lists the PSIs in this PSI-90 measure.

Figure 1.2-1: AHRQ Patient Safety and Adverse Events Composite Measure (PSI-90)	
PSI 03—Pressure Ulcer Rate	PSI 11—Postoperative Respiratory Failure Rate
PSI 06—Iatrogenic Pneumothorax Rate	PSI 12—Periop Pulmonary Embolism or Deep Vein Thrombosis Rate
PSI 08—In-Hospital Fall with Hip Fracture Rate	PSI 13—Postoperative Sepsis Rate
PSI 09—Perioperative Hemorrhage or Hematoma Rate	PSI 14—Postoperative Wound Dehiscence Rate
PSI 10—Postoperative Acute Kidney Injury Requiring Dialysis Rate	PSI 15—Unrecognized Abdominopelvic Accidental Puncture/Laceration Rate

- **Financial Impact**
  - ◊ 1% maximum payment reduction in FFY 2021 if total HAC Score is worse than 75th percentile, i.e. potential $300,000 loss for DHHA.
  - ◊ Reduction applies to the Base Operating DRG payment amount after adjustments have occurred for the Hospital Value-Based Purchasing and Readmissions Reduction Programs for discharges of Medicare FFS patients.
  - ◊ First time DHHA received a negative final score, i.e. performed better than expected (Figure 1.2-2).
  - ◊ DHHA was not penalized for either the FFY 2020 or 2021 programs (Figure 1.2-3).

- **PI Activities**
  - ◊ DHHA's Clinical Documentation Integrity (CDI) team reviewed all PSI events to determine if the event was due to a coding error, inaccurate documentation, or true HAC.
  - ◊ For efforts to reduce HAIs, see the Infection Prevention section of this report.

Figure 1.2-2: CMS Hospital-Acquired Conditions Reduction Program FFY 2021

Measure	Result	Contribution to Total HAC Score
AHRQ PSI 90 Composite*	0.876	- 0.1237
Central Line-Associated Bloodstream Infection (CLABSI) SIR†	0.711	0.0138
Catheter-Associated Urinary Tract Infection (CAUTI) SIR†	0.959	0.0759
Surgical Site Infection - colon and abdominal hysterectomy SIR†	0.801	-0.0007
Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia SIR†	0.478	-0.0995
Clostridioides difficile infections (CDI) SIR†	0.717	0.0611
Total HAC Score		**-0.0731**

Better

* Performance period 7/1/17—6/30/19

† Performance period 1/1/18—12/31/19

Payment Reduction Threshold ≥ 0.3383

Figure 1.2-3: HACRP Financial Impact

Program Year	Subject to 1% Payment Reduction	Financial Impact
FFY 2015	No	$0
FFY 2016	Yes	- $295,053
FFY 2017	Yes	- $296,679
FFY 2018	Yes	- $300,621
FFY 2019	Yes	- $308,138
FFY 2020	No	$0
FFY 2021	No	$0

1.3. CMS Quality Payment Program (QPP)—FFY 2022

In January 2017, CMS implemented the Quality Payment Program (QPP) to reward high value, high quality Medicare clinicians with payment increases while simultaneously reducing payments to clinicians with subpar performance. Clinicians may participate in QPP via the Merit-based Incentive Payment System (MIPS) or Advanced Alternative Payment Models (APMs). As a large enterprise with a single Medicare Tax Identification Number (TIN), DHHA chose to participate in MIPS as a group practice. DHHA is considered non-patient facing for QPP because at least 75% of the eligible clinicians (ECs) billing under the group's TIN had less than 200 Medicare FFS patient facing encounters in the performance period. DHHA is also considered a facility-based group because at least 75% of the ECs furnished at least 75% of their covered professional services in an inpatient hospital, outpatient hospital, or emergency room. This program is based on Medicare Part B professional services paid under the Physician Fee Schedule (PFS).

The QPP program is evolving every year and a few of the major changes are shown below (Figure 1.3-1). In 2020, CMS required that at least 50% of clinicians in the group perform the same Improvement Activity. The MIPS maximum payment adjustments have increased from 4% in the first program year to 9% for reporting year 2021. CMS doubled the complex patient bonus for the 2020 performance period to account for the additional complexity of treating patients due to COVID-19.

Figure 1.3-1: CMS Quality Payment Program Major Changes by Program Year

	Year 3 Reporting Year 2019 Payment Year 2021	Year 4 Reporting Year 2020 Payment Year 2022	Year 5 Reporting Year 2021 Payment Year 2023
Eligible Clinicians	Physician, Physician Assistant, Nurse Practitioner, Clinical Nurse Specialist, Certified Registered Nurse Anesthetist, Physical Therapist, Chiropractor, Occupational Therapist, Speech-Language Pathologist, Audiologist, Clinical Psychologist, Registered Dietician	Same	Same
Low-Volume Threshold Exclusion Medicare Part B allowed professional charges Medicare Part B beneficiaries Medicare Part B professional services	≤ $90,000 charges or ≤ 200 beneficiaries or ≤ 200 services	Same	Same
Performance Threshold	30 points	45 points	60 points
Exceptional Performance Threshold	75 points	85 points	Same
Performance Payment Adjustment	- 7% up to + 7% x scaling factor (SF)*	- 9% up to + 9% x SF*	Same
Exceptional Performance Payment Adjustment	0.5% up to +10% x scaling factor (SF)*	Same	Same
Category Weights Quality Promoting Interoperability Improvement Activities Cost	45% 25% 15% 15%	Same	40% 25% 15% 20%
Improvement Activities	Only 1 EC needs to perform the activity	≥ 50% ECs perform activity	Same
Measures for Cost Performance Category	• Medicare Spending per Beneficiary • Total per Capita Cost • 8 Episode-based Cost measures	• 10 additional Episode-based Cost measures	Same
Complex Patient Bonus	Up to 5 points	Up to 10 points	Up to 5 points

* Scaling factor to achieve budget neutrality: not to exceed 3 for Performance and not to exceed 1 for Exceptional Performance

1.3. CMS Quality Payment Program (QPP)—FFY 2022

DHHA has preliminarily received 90 of 100 points, without accounting for up to 15 points in the Cost Category (Figure 1.3-2). The Cost Performance Category results will be released by CMS in the summer of 2021. The preliminary score qualifies DHHA for the Exceptional Performance Bonus.

- **Financial Impact**
  - ◊ Between –9.0% and 27% payment adjustment (based on the scaling factor) will be applied to all Medicare Part B allowed charges for professional services paid under PFS for FY 2022.

Figure 1.3-2: CMS Quality Payment Program FFY 2021 —Denver Health Group Practice Submission

Quality (45%)				
Quality ID	**Measure**	**Denver Health**	**Performance + Bonus Points***	**Category Score†**
240	Childhood Immunization Status	50.4%	7.75 + 1[E]	61.1 achieved = 60 possible 102%*45 weight = 45.9 → 45 max **45 points**
008	Heart Failure: Beta-Blocker Therapy for Left Ventricular Systolic Dysfunction	94.7%	7.14 + 1[E]	
239	Weight Assessment & Counseling for Nutrition and Physical Activity for Children & Adolescents	75.5%	8.28 + 1[E]	
310	Chlamydia Screening for Women	58.5%	7.49 + 1[E]	
379	Primary Caries: Prevention Intervention as Offered by Primary Care Providers & Dentists	25.4%	9.97 + 1[E]	
001	Diabetes: Hemoglobin A1c Poor Control (>9%)	42.8%	8.45 + 1[E]	
065	Appropriate Treatment for Children with Upper Respiratory Infection	92.9%	1[H]	
191	Cataracts: 20/40 or Better Visual Acuity within 90 Days Following Cataract Surgery	91.2%	1[H]	
236	Controlling High Blood Pressure	54.0%	2[H]	
66	Appropriate Testing for Children with Pharyngitis	77.4%	1[H]	
305	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment	3.4%	1[H]	
Promoting Interoperability (25%)				
Measure		**DHHA**	**Points**	**Category Score**
Complete a Security Risk Analysis		Yes	n/a	80 achieved = 100 possible 80%*25 weight = **20 points**
Electronic Prescribing		97.1%	10 / 10	
Query of Prescription Drug Monitoring Program (bonus points)		Yes	5 / 0	
Support Electronic Referral Loops by Sending Health Information		60.0%	12 / 20	
Clinical Information Reconciliation		57.2%	11 / 20	
Provide Patients Electronic Access to Their Health Information		80.7%	32 / 40	
Public Health and Clinical Data Exchange: active engagement with two registries		Yes	10 / 10	
Improvement Activities (15%)				
Improvement Activity		**Priority**	**Points**	**Category Score**
Collection and Follow-up on Patient Experience and Satisfaction Data on Beneficiary Engagement		High	40	180 achieved = 40 possible 4.5*15 weight= 67.5 → 15 max **15 points**
Participation in CAPHS or Other Supplemental Questionnaire		High	40	
Regularly Assess the Patient Experience of Care Through Surveys, Advisory Councils, etc.		Medium	20	
Participation in Joint Commission Evaluation Initiative (Ongoing Professional Performance Evaluation)		Medium	20	
Participation in an AHRQ-listed Patient Safety Organization		Medium	20	
Practice Improvements for Bilateral Exchange of Patient Information		Medium	20	
Use of Decision Support and Standardized Treatment Protocols		Medium	20	
Cost (15%)				
Measure		**DHHA**	**Points**	**Category Score**
Medicare Spending per Beneficiary		TBD	TBD	TBD with max score of 15
Total per Capita Cost		TBD	TBD	
Episode-Based Cost Measures		TBD	TBD	
Additional Bonus for Complex Patients		yes	9.7	**5**
OVERALL SCORE = (45 + 20 + 15 + cost score + 9.7 bonus) / 100 = 89.7 plus up to 15 cost points				

* Performance points are based on the benchmark deciles with the best decile receiving 10 points. [E] End-to-End electronic reporting. [H] High Priority Measure. Only the top six measures are included in the performance points.
[†] Performance and Bonus points are capped at 100%

1.4. CMS Hospital Value-Based Purchasing (VBP) Program —FFY 2021

In October 2012, Medicare began incentivizing hospitals to provide high-quality care through the Hospital Value-Based Purchasing (VBP) Program. Incentive payments are based on either how well the hospital performs on each measure compared to other hospitals during a baseline period or how much the hospital improves its performance on each measure compared to its performance during the baseline period. For FFY 2021, CMS added Chronic Obstructive Pulmonary Disease (COPD) 30-day Mortality Rate and removed Elective Delivery Prior to 39 Completed Weeks Gestation (PC-01). Next year, FFY 2022, CMS is adding CABG 30-day Mortality. For the FFY 2023 program, the Modified AHRQ PSI-90 (Patient Safety & Adverse Event Composite) will return to the VBP program.

- **Financial Impact**
  - ◊ Payment reduction applies to the Base Operating DRG payment amount for Medicare FFS discharges.
  - ◊ 2% payment withholding with the ability to earn back up to 3% based on performance.
  - ◊ DHHA will receive a 0.48% incentive for FFY 2021 discharges, which is estimated at $70,000 (Figure 1.4-1).

Figure 1.4-1: CMS Hospital Value-Based Purchasing Program - FFY 2021

Clinical Outcomes Domain (25%) Data Source: CMS Claims	**Baseline Rate***	**Performance Rate****	**Achievement Threshold**	**Points**	**Domain Points**
Acute Myocardial Infarction 30-Day Mortality Rate	0.867	0.879	0.860	9 (A&I)	**19 / 40**
Chronic Obstructive Pulmonary Disease 30-Day Mortality Rate	0.930	0.924	0.923	1 (A)	
Heart Failure 30-Day Mortality Rate	0.890	0.883	0.884	0	
Pneumonia 30-Day Mortality Rate	0.848	0.867	0.836	9 (A) / 8 (I)	
Elective Primary Total Hip or Knee Arthroplasty Complication Rate	0.037	0.023	0.031	--	
Person and Community Engagement Domain (25%) Data Source: HCAHPS	**Baseline Rate (CY 2017)**	**Performance Rate (CY 2019)**	**Achievement Threshold**	**Points**	**Domain Points**
Communication with Nurses	75.0%	76.5%	79.1%	1 (I)	**4 / 80 for metrics** **17/20 for consistency**
Communication with Doctors	77.8%	77.2%	79.9%	0	
Responsiveness of Hospital Staff	60.2%	63.7%	65.8%	1 (I)	
Communication about Medicines	62.3%	64.9%	63.8%	2 (I) / 1 (A)	
Hospital Cleanliness and Quietness	59.8%	60.9%	65.6%	0	
Discharge Information	87.4%	87.2%	87.4%	0	
Care Transition	46.8%	46.4%	51.9%	0	
Overall Rating of Hospital	71.3%	71.2%	71.8%	0	
HCAHPS Consistency (based on Cleanliness and Quietness)	--	--	--	17	
Safety Domain (25%) Data Source: CDC NHSN Standardized Infection Ratio	**Baseline Rate (CY 2017)**	**Performance Rate (CY 2019)**	**Achievement Threshold**	**Points**	**Domain Points**
Catheter-Associated Urinary Tract Infection	1.000	1.536	0.774	0	**13 / 50**
Central Line-Associated Blood Stream Infection	0.888	0.457	0.687	4 (A&I)	
Clostridioides difficile Infection	0.810	0.573	0.748	3 (A&I)	
Methicillin-Resistant *Staphylococcus aurerus* Bacteremia	0.174	0.588	0.763	3 (A)	
Surgical Site Infection—Abdominal Hysterectomy	--	--	0.726	--	
Surgical Site Infection—Colon Surgery	1.051	0.704	0.754	3 (I) / 1 (A)	
Efficiency and Cost Reduction Domain (25%) Data Source: CMS Claims	**Baseline Rate (CY 2017)**	**Performance Rate (CY 2019)**	**Achievement Threshold**	**Points**	**Domain Points**
Medicare Spending per Beneficiary	0.946	0.905	0.987	6 (A) / 4 (I)	**6 / 10**
OVERALL SCORE = 25(19/40) + 25(21/100) + 25(13/50) + 25(6/10) = 38.625					

(A) Achievement score higher. (I) Improvement score higher. (--) minimum case requirements not met.
* Baseline periods: AMI, HF, COPD 7/1/10—6/30/13; PN 7/1/12—6/30/15; THA/TKA 4/1/11—3/31/14.
** Performance periods: AMI, HF, COPD 7/1/15—6/30/18; PN 7/1/17—6/30/19; THA/TKA 4/1/16—3/31/19.

1.4. CMS Hospital Value-Based Purchasing (VBP) Program —FFY 2021

In order to determine if DHHA has improved its value-based care, a hospital's Total Performance Score should be compared to state and national results. CMS has added, removed, and updated measures annually so a hospital cannot directly compare its performance year over year. In addition, CMS applies an automatic reduction to the Base Operating DRG payments to finance the VBP program and the reduction increased over the first five years of the program making it difficult to directly compare the financial impact.

Figure 1.4-2 shows DHHA's performance compared to the Colorado and national average scores. DHHA surpassed the national average score the past three years and surpassed the state average score the past two years. This improvement can be attributed to focused efforts on reducing hospital-acquired infections. DHHA will receive an incentive payment of approximately $70,000 in FFY 2021 (Figure 1.4-3).

Figure 1.4-2: CMS Hospital Value-Based Purchasing Program— Denver Health Compared to Colorado and National Averages

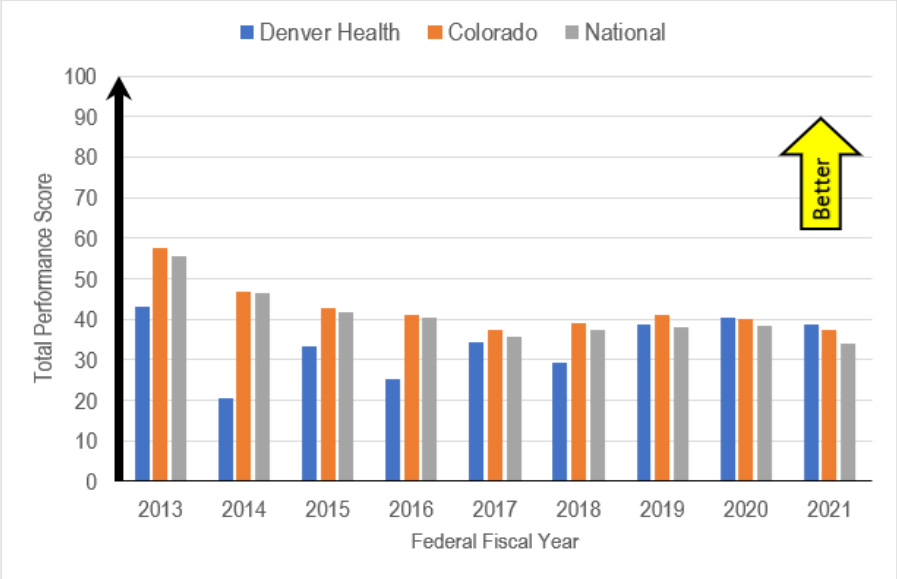


Figure 1.4-3: CMS Hospital Value-Based Purchasing Summary

Reporting Year	Base Operating DRG Payments			Financial Impact
	Automatic Reduction	DHHA Earned Back	DHHA Net Change	DHHA
FFY 2013	- 1.00%	0.793%	- 0.207%	- $34,417
FFY 2014	- 1.25%	0.538%	- 0.712%	- $107,256
FFY 2015	- 1.50%	1.297%	- 0.203%	- $29,688
FFY 2016	- 1.75%	1.225%	- 0.525%	- $74,583
FFY 2017	- 2.00%	2.104%	0.104%	$15,443
FFY 2018	- 2.00%	1.687%	- 0.313%	- $44,336
FFY 2019	- 2.00%	2.200%	0.200%	$27,000
FFY 2020	-2.00%	2.266%	0.266%	$36,715
FFY 2021	-2.00%	2.478%	0.478%	$70,000*

* Estimated

1.5 CMS Promoting Interoperability (PI) Programs

The American Recovery and Reinvestment Act (ARRA) of 2009 established incentive payments to eligible hospitals (EHs) and eligible providers (EPs) to promote the adoption and meaningful use (MU) of interoperable health information technology (HIT) and qualified electronic health records (EHRs). In 2018, CMS changed the program's name from EHR Incentive to Promoting Interoperability (PI).

Successful participation in the program is based on meeting the thresholds for all objective measures and electronic submission of clinical quality measures (eCQMs). The criteria for successful participation in the EHR Incentive Program differs for EHs vs. EPs and for Medicare vs. Medicaid.

Hospitals can participate in both the Medicare and Medicaid programs. Medicare encouraged hospitals by offering incentive payments for participation and penalized those hospitals that did not submit data. Beginning in program year 2017, Medicare stopped providing incentive payments. Medicaid encouraged hospitals by providing incentive payments for the first three years of participation. DHHA currently only participates in the Medicare EH program because there are no penalties or remaining incentives with Medicaid.

In comparison, providers were required to select either the Medicare or Medicaid program (depending on their patient population). When possible, DHHA selected Medicaid for EPs because it provided incentive payments for participation whereas Medicare only penalized for lack of participation. DHHA's EPs could successfully demonstrate meaningful use to Medicare or Medicaid for the first time in 2016. In prior years, the EPs had only been able to show "adoption, implementation and upgrade." The final year of the Medicaid program is 2021.

- **Financial Impact**
  - ◊ DHHA has received incentive payments of approximately $36 million from the Promoting Interoperability Program, with nearly $12 million for the Eligible Hospital program and $24 million for the Eligible Provider program (Figure 1.5-1).
  - ◊ DHHA has avoided Medicare payment reductions of over $3.5 million by participating in both the hospital and provider versions of the Promoting Interoperability Programs.

Figure 1.5-1: EHR Incentive / Promoting Interoperability Payments by Program Year

Program Year	Eligible Hospital (EH)		Eligible Provider (EP)	
	Medicare	Medicaid	Medicare	Medicaid
2012	$0	$4,501,504	n/a	$4,632,500
2013	$1,155,115	$3,601,203	n/a	$0
2014	$916,026	$900,301	n/a	$2,231,250
2015	$602,916	n/a	n/a	$913,750
2016	$233,047	n/a	n/a	$5,682,250
2017	n/a	n/a	n/a	$2,550,000
2018	n/a	n/a	n/a	$2,320,500
2019	n/a	n/a	n/a	$2,881,500
2020	n/a	n/a	n/a	$2,800,000*
Total Payment	$2,907,104	$9,003,008	n/a	$24,011,750*
Total Payment by Program	**$11,910,112**		**$24,011,750***	
Overall Financial Impact	**$35,921,862***			

*Estimated

1.5. CMS Promoting Interoperability (PI) Programs
Medicare Eligible Hospital Promoting Interoperability Program

DHHA's hospital successfully participated in the Medicare Promoting Interoperability Program in 2020. A minimum total score of 50 points was required to successfully pass the program and avoid a penalty. Performance on the objective measures is shown in Figure 1.5-2. The clinical quality measures are discussed in Section 1.6 (CMS/The Joint Commission Clinical Quality Measures) and performance is shown in Figure 1.6-1.

Figure 1.5-2: Medicare Eligible Hospital Promoting Interoperability Program Objectives and Measures for 2020

Objective	Measure	DHHA Performance*	DHHA Points
Electronic Prescribing	E-Prescribing of Discharge Prescriptions	84.6% (36,850 / 44,646)	13 of 10
	Query of Prescription Drug Monitoring Program (Bonus 5 points)	Yes	
Health Information Exchange	Support Electronic Referral Loops by Sending Health Information — create a summary of care record and electronically exchange the record for transitions of care or referrals outside the system	15.7% (1410 / 8962)	6 of 40
	Support Electronic Referral Loops by Receiving and Incorporating Health Information — conduct clinical information reconciliation for medication, medication allergy, and current problem list for transitions of care, referrals into the system, or new patients	16.1% (2300 / 14,272)	
Provider to Patient Exchange	Provide Patients Electronic Access to Their Health Information — Provide timely access to health information to view online, download and transmit to a third party and to access using an application of the patient's choice	99.6% (18,886 / 18,971)	40 of 40
Public Health and Clinical Data Exchange	Choose two of the following options: a) Immunization Registry Reporting (bidirectional) b) Syndromic Surveillance Reporting (urgent care setting) c) Electronic Case Reporting d) Public Health Registry Reporting e) Clinical Data Registry Reporting f) Electronic Reportable Laboratory Result Reporting	a) Colorado Immunization Information System e) Vizient Clinical Data Base and Clinical Practice Solutions Center	10 of 10

*Reporting period is calendar year 2020.

69 points achieved so passed the program

- **PI Activity**
  - ◊ Developed bi-directional feed with Colorado Immunization Information System (CIIS).
  - ◊ Enterprise-wide effort to encourage patients to sign up for MyChart and access their health information.
  - ◊ Communication to the medical staff from the Chief Quality Officer and Chief Medical Information Officer about the importance of clinical information reconciliation and tip sheets on how to complete the process.

- **Program Changes**
  - ◊ CMS is adding an electronic clinical quality measure on Safe Use of Opioids—Concurrent Prescribing (NQF #3316e). The measure determines the proportion of patients aged 18 years and older who are prescribed two or more opioids or an opioid and benzodiazepine concurrently at discharge. Exclusions exist for patients with a cancer diagnosis or order for palliative care. The eCQM will be optional for CY 2021 and mandatory for CY 2022.

1.5. CMS Promoting Interoperability (PI) Programs
Medicaid Eligible Provider EHR Incentive Program

The Department of Health Care Policy and Financing (HCPF) manages Colorado's Medicaid program and it decided not to change the name of the EHR Incentive Program. HCPF accepts submissions for this program at least four months after the program ends, therefore the 2020 results are estimated. For each provider, a 90-day period was identified where the EP met the thresholds of all objective measures. Six eCQMs which are related to the EP's scope of practice were submitted. Figure 1.5-3 shows the percentage of providers compliant with each objective measure. Figure 1.5-4 shows the percentage of patients or encounters passing each quality measure during Q4 2020. This is preliminary data because providers who fail an objective measure in Q4 2020 may pass all objective measures in another 90-day period. Furthermore, eligibility for the 2020 Medicaid program has not been verified, i.e. must meet threshold for percentage of Medicaid patients and percentage of non-hospital based encounters. It is estimated that 339 EPs will attest to program year 2020, resulting in incentive payments of $2,800,000.

Figure 1.5-3: Medicaid Eligible Provider EHR Incentive Program Objective Measures

Objectives	Measures	Threshold	Program Year 2020 Compliant Providers*
Protect Patient Health Information	Conduct a security risk analysis	Yes	100% (339/339)
Clinical Decision Support (CDS)	Implement CDS Interventions	5 CDS	100% (339/339)
	Implement Drug-Drug & Drug-Allergy Checks	Yes	100% (339/339)
Computerized Provider Order Entry (CPOE)	Medication orders using CPOE	>60% orders	99% (195/196)
	Laboratory orders using CPOE	>60% orders	99% (188/189)
	Diagnostic imaging orders using CPOE	>60% orders	95% (45/47)
Electronic Prescribing	Prescriptions queried for a drug formulary and transmitted electronically	>60% prescriptions	99% (156/157)
Patient Electronic Access to Health Information	Provide timely access for patient to view online, download, and transmit his or her health information, and allow patient to access the data using any application meeting the technical specifications of the Application Programming Interface (API)	>80% patients	94% (292/308)
	Provide patient-specific educational resources electronically	>35% patients	100% (308/308)
Coordination of Care through Patient Engagement (must meet 2 of 3 measures)	Patients view, download, or transmit to a third party their health information or access information through application chosen by patient and configured to API	>5% patients	94% (292/308)
	Secure message sent to patient	>5% patients	97% (301/305)
	Patient generated health data or data from non-clinical setting incorporated into certified electronic health record (EHR)	>5% patients	96% (298/308)
Health Information Exchange (must meet 2 of 3 measures)	Electronically transmit summary of care record to receiving provider of transfer or referral (minimum 100 transfers/referrals)	>50% transfers/ referrals	All excluded
	Incorporate electronic summary of care into EHR for transfers, referrals, or new patients	>40% transfers/ referrals/new patients	100% (202/202)
	Clinical information reconciliation (medications, medication allergies, problem list) for transfers, referrals, or new patients	>80% transfers/ referrals/new patients	38% (77/202)
Public Health and Clinical Data Registry Reporting	Active engagement in registry reporting, including Immunization registry (bidirectional), Syndromic surveillance, Electronic case reports, Public Health registry, or Clinical data registry	2 registries	100% (339/339)

*Preliminary results based on 10/1/2020—12/31/2020.

- **PI Activity**
  - ◊ List of providers failing measures reported quarterly at Pay for Performance Committee. Chief Quality Officer and Chief Medical Information Officer contacted these providers to promote improvement.
  - ◊ Enterprise-wide effort to encourage patients to sign up for MyChart and access their information led to a 5% improvement in timely access to health information and patient engagement measures.

1.5. CMS Promoting Interoperability (PI) Programs
Medicaid Eligible Provider EHR Incentive Program

Figure 1.5-4: Medicaid Eligible Provider EHR Incentive Program Clinical Quality Measures for Quarter 4 2020 Encounters

Domain	CMS ID	Measure Name	Numera-tor	Denomina-tor	Compli-ance
Efficiency and Cost Reduction	146	Appropriate Testing for Children with Pharyngitis	27	42	64%
	154	Appropriate Treatment for Children with Upper Respiratory Infection	636	659	97%
Patient Safety	68	Documentation of Current Medications in the Medical Record	106,701	143,098	75%
	156	Use of High-Risk Medications in the Elderly: One Medication	1601	6308	25%
		Use of High-Risk Medications in the Elderly: Two Medications	622	6308	10%
Community and Population Health	138	Tobacco Use: Tobacco Screening	31,871	32,530	98%
		Tobacco Use: Cessation Intervention for Tobacco Users	3345	6323	53%
		Tobacco Use: Tobacco Screening and Cessation Intervention for Tobacco Users	28,893	32,530	89%
	147	Influenza Immunization	28,722	44,858	64%
	153	Chlamydia Screening: Women 16-20 years of age	1554	2356	66%
		Chlamydia Screening: Women 21-24 years of age	1818	2950	62%
	155	Weight Assessment & Counseling: Age 3-11 years old—BMI Percentile, Height, & Weight	7780	8849	88%
		Weight Assessment & Counseling: Age 3-11 years old—Counseling for Nutrition	7211	8849	81%
		Weight Assessment & Counseling: Age 3-11 years old—Counseling for Physical Activity	7119	8849	80%
		Weight Assessment & Counseling: Age 12-17 years old—BMI Percentile, Height, & Weight	6309	7250	87%
		Weight Assessment & Counseling: Age 12-17 years old—Counseling for Nutrition	5447	7250	75%
		Weight Assessment & Counseling: Age 12-17 years old—Counseling for Physical Activity	5386	7250	74%
Effective Clinical Care	74	Primary Caries Prevention Intervention: 0-5 years old	5448	10,528	52%
		Primary Caries Prevention Intervention: 6-12 years old	1833	8221	22%
		Primary Caries Prevention Intervention: 13-20 years old	879	9775	9%
	75	Children Who Have Dental Decay or Cavities	3291	28,524	12%
	122	Diabetes Hemoglobin A1C Poor Control	2762	7502	37%
	125	Breast Cancer Screening	5001	8494	59%
	127	Pneumococcal Vaccination Status for Older Adults	5170	6308	82%
	130	Colorectal Cancer Screening	8614	17,073	50%
	134	Diabetes: Medical Attention for Nephropathy	6671	7502	89%
	137	Initiation/Engagement of Alcohol & Drug Dependence Treatment: Ages 13-17, initiated treatment	12	100	12%
		Initiation/Engagement of Alcohol & Drug Dependence Treatment: Ages 13-17, multiple services	7	100	7%
		Initiation/Engagement of Alcohol & Drug Dependence Treatment: Ages 18 & older, initiated treatment	150	3103	5%
		Initiation/Engagement of Alcohol & Drug Dependence Treatment: Ages 18 & older, multiple services	59	3103	2%
	144	Heart Failure: Beta-Blocker Therapy for Left Ventricular Systolic Dysfunction	36	39	92%
	165	Controlling High Blood Pressure	6458	11,114	58%

- **PI Activity**
  - ◊ See Section 5 (Outpatient Safety and Quality Initiatives) for detailed information

1.6. CMS/The Joint Commission Clinical Quality Measures

CMS Inpatient Quality Reporting (IQR) Program

The Hospital Inpatient Quality Reporting (IQR) Program provides consumers with quality of care information so they can make informed decisions about healthcare options. The program offers financial incentives to hospitals to report the quality of their services. Hospitals that fail to report will face a 2 percentage point reduction in the annual market basket update. DHHA has successfully participated in the IQR Program since its inception.

The FFY 2022 payment determination is based on the CY 2020 reporting period. There were 23 required measures (2 chart-abstracted, 11 claims-based, 1 NHSN, 1 patient experience survey, 8 electronic). CMS mandated hospitals report at least four of the eight electronic clinical quality measures (eCQMs) that align with the Medicare Promoting Interoperability Program. As shown in Figure 1.6-1, DHHA submitted cases from Q1 2020 for six eCQMs.

CMS conducts validation studies of chart-abstracted process measure sets and Healthcare-Associated Infection (HAI) measures. Hospitals can be randomly selected or specifically targeted based on failing last year's validation study. If a hospital fails validation (<75% agreement), it loses the annual market basket update. DHHA was not randomly selected for the FFY 2022 IQR Inpatient Data Validation program but it was chosen for the FFY 2023 program.

- **Program Changes**
  - ◊ CY 2021: CMS is removing one claims-based measure (COMP-HIP-KNEE), retiring the chart-abstracted measure ED-2, sunsetting the electronic quality measure eED-1, and adding one measure (Safe Use of Opioids—Concurrent Prescribing). Safe Use of Opioids is an optional eCQM.
  - ◊ CY 2022: Safe Use of Opioids is a mandatory measure. Hospitals selected for validation studies will submit both chart-abstracted measures and eCQMs.
  - ◊ The reporting period for eCQMs increases by an additional self-selected quarter each year, i.e. 1 self-selected quarter in CY 2020 up to a full year in CY 2023.

The Joint Commission ORYX Initiative

The Joint Commission's (TJC) ORYX initiative integrates outcomes and other performance measures into the accreditation process. TJC requires four chart-abstracted perinatal care measures (PC-01, PC-02, PC-05, and PC-06) and at least four eCQMs. Chart-abstracted measures are reported for the entire year whereas the eCQM measures are reported for a self-selected quarter. DHHA submitted the same six eCQMs to TJC and CMS (Figure 1.6-1). Hospitals that fail to participate will lose their accreditation.

- **Program Changes**
  - ◊ CY 2021: TJC is adding two eCQMs (eOPI-1 Safe Use of Opioids and ePC-06 Unexpected Complications in Term Newborns) and retiring eED-1. For any or all of the chart-abstracted Perinatal Care measures, hospitals may submit a minimum of two quarters of eCQM data instead of four quarters of the corresponding chart-abstracted measure.
  - ◊ Similar to CMS, the reporting period for eCQMs increases by one self-selected quarter per year.

Figure 1.6-1: Electronic Clinical Quality Measures

Measure ID	Electronic Clinical Quality Measure	Program Year 2020*
ePC-05	Exclusive Breast Milk Feeding	56% (374/672)
eSTK-2	Discharged on Antithrombotic Therapy	94% (15/16)
eSTK-3	Anticoagulation Therapy for Atrial Fibrillation or Flutter	100% (1/1)
eSTK-6	Stroke Patients Discharged on Statin Medication	94% (15/16)
eVTE-1	Venous Thromboembolism Prophylaxis for Non-Intensive Care Unit Patients	93% (1187/1283)
eVTE-2	Venous Thromboembolism Prophylaxis for Intensive Care Units Patients	99% (662/668)

* Reporting period is Quarter 1 2020

1.6. CMS/The Joint Commission Clinical Quality Measures
Hospital Inpatient

Severe Sepsis and Septic Shock (SEP)
Severe Sepsis and Septic Shock Management Bundle (SEP-1) was a mandatory chart-abstracted measure in 2020 for the CMS IQR program and publicly reported on Hospital Compare. This measure and its components are publicly reported on Hospital Compare. CMS plans to add compliance on this measure to a pay-for-performance program at a future date.

- **2020 Results**
  - ◊ 38% of patients passed all applicable measure components in the Sepsis Composite.
  - ◊ 93% of patients meeting severe sepsis criteria received antibiotics between 24 hours prior through 3 hours after meeting criteria, surpassing the stretch goal of 90% (Figure 1.6-3).
  - ◊ The component that continues to be primarily missed is remeasure lactate if initial lactate is greater than 2.0 (Figure 1.6-4).
  - ◊ Some processes with bundle compliance were disrupted during the COVID-19 pandemic due to limited staff allowed in the emergency department (75% of abstracted cases location) as well as staff turnover.

Figure 1.6-2: Early Management Bundle: Severe Sepsis / Septic Shock (SEP-1)

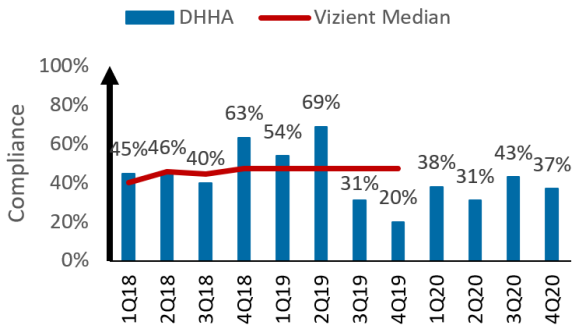
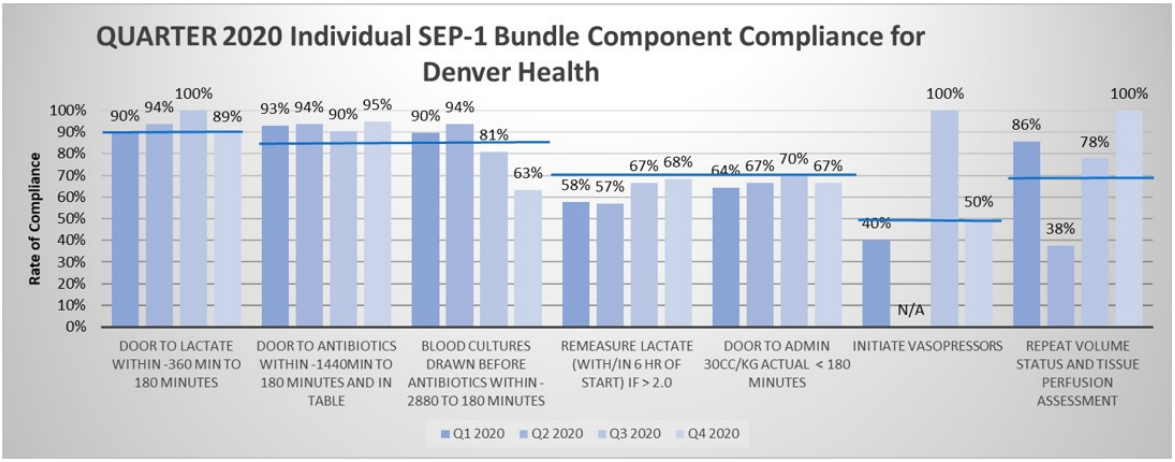


Figure 1.6-3: Denver Health Compliance with Early Management Bundle: Severe Sepsis / Septic Shock (SEP-1)

BUNDLE	MEASURE	TARGET GOAL	STRETCH GOAL	2020 DHHA COMPLIANCE
3 HOUR BUNDLE	Initial lactate drawn between 6 hours prior through 3 hours after meeting severe sepsis criteria	90%	100%	**93%**
	Blood cultures drawn between 48 hours prior through 3 hours after meeting severe sepsis criteria	85%	90%	**82%**
	Antibiotics administered between 24 hours prior through 3 hours after meeting severe sepsis criteria	85%	90%	**93%**
	Fluid resuscitation (30 cc/kg) administered within 3 hours of initial hypotension or septic shock presentation	70%	75%	**67%**
6 HOUR BUNDLE	Re-measure lactate (if initial lactate >2.0) within 6 hours of meeting severe sepsis criteria	70%	75%	**64%**
	Vasopressors given within 6 hours of septic shock presentation if persistent hypotension after fluid bolus	50%	70%	**50%**
	Physical reassessment after fluid resuscitation started and within 6 hours of septic shock presentation	70%	80%	**76%**
OVERALL		**50%**	**70%**	**38%**

Below Target Goal	Between Target and Stretch Goals	Above Stretch Goal

Figure 1.6-4: DHHA SEP-1 Bundle Components Compliance



- **PI Activity**
  - ◊ Real time screens of Septic Shock cases in the Emergency Department were sent to Emergency Department Leadership weekly. This feedback loop was relegated to monthly reports during the Covid pandemic but will return to weekly feedback in 2021.
  - ◊ Emergency Department Leadership received provider-level reports on Septic Shock compliance every quarter
  - ◊ Attending Physicians in the Emergency Department are held accountable for the care of Septic Shock patients via the Ongoing Professional Performance Evaluation (OPPE) process.
  - ◊ Monthly and continuous education provided to MICU residents and interns on documentation of the physical reassessment, diagnosis and sepsis alert process.
  - ◊ Implementation of sepsis screening process into inpatient Rapid Response Team.
  - ◊ Trialing screening tools for sepsis in Acute Care Areas.
  - ◊ Collaborating with the Epic team to build a reflex lactate order to help alert physicians to **remeasure lactate** if initial value comes back greater than 2.0 mmol/L. This automatic order will be active as of 2Q2021.

1.6. CMS/The Joint Commission Clinical Quality Measures
Hospital Inpatient

Perinatal Care Conditions (PC)
PC-01 was a mandatory chart-abstracted measure in 2020 for the CMS IQR program.

Perinatal Care measure set (PC-01, PC-02, PC-05, PC-06) must be chart-abstracted for the 2020 TJC ORYX program. Quarterly results for the prior three years are displayed in Figures 1.6-5 to 1.6-8.

- **2020 Results**
  - ◊ 0% of pregnant women had an elective delivery between 37 and 39 weeks gestation (PC-01).
  - ◊ 19% of nulliparous women with a term baby in a vertex position were delivered by cesarean section (PC-02).
  - ◊ 52% of full term newborns were exclusively fed breast milk during the inpatient stay following birth (PC-05).
  - ◊ 3% of full term newborns with no pre-existing conditions had unexpected complications (PC-06).

Figure 1.6-5: Pregnant Women with Elective Delivery between 37 and 39 Weeks Gestation (PC-01)

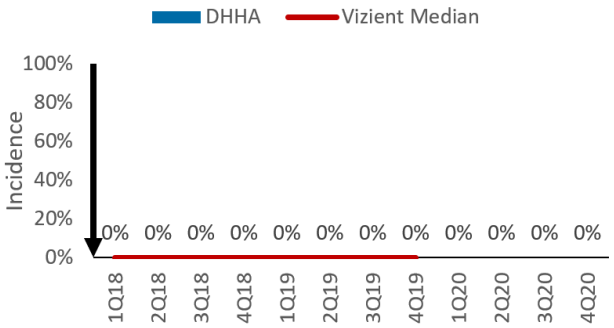


Figure 1.6-6: Nulliparous Women with Term Baby in Vertex Position Delivered by Cesarean Section (PC-02)

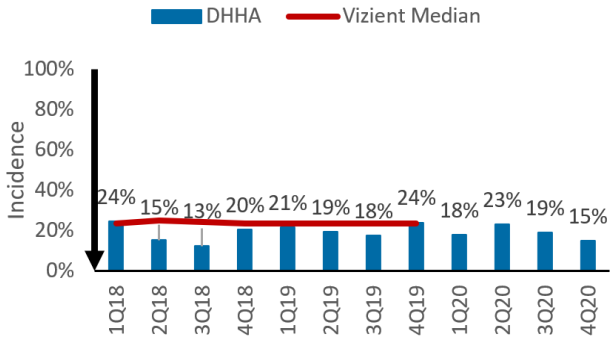


Figure 1.6-7: Exclusive Breast Milk Feeding of Full Term Newborns (PC-05)

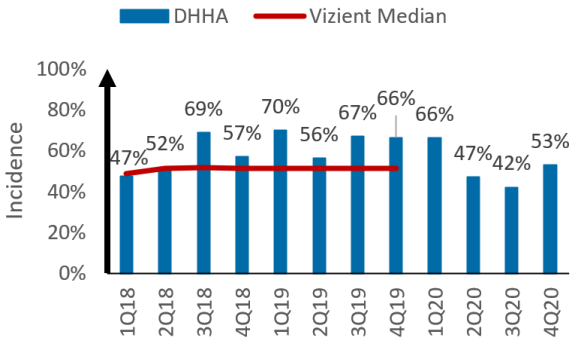
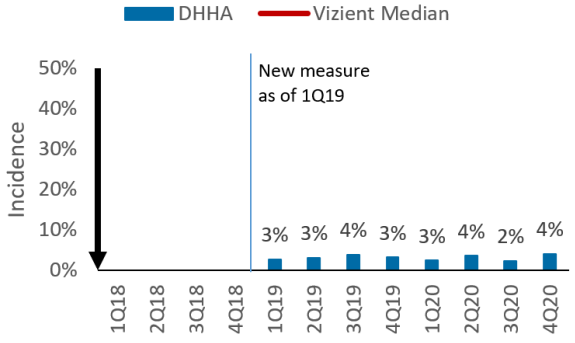


Figure 1.6-8: Unexpected Complications in Full Term Newborns with No Pre-Existing Conditions (PC-06)



- **PI Activity**
  - ◊ Exclusive breast milk feeding results reviewed at the Breast Feeding Council monthly.
  - ◊ Department of Patient Safety (DPSQ) and Clinical Documentation Integrity (CDI) staff reviewed 8 failed PC-06 cases to identify possible coding errors with a reversal rate of 38%.

1.6. CMS/The Joint Commission Clinical Quality Measures
CMS Hospital Outpatient Quality Reporting (OQR) Program

The Outpatient Prospective Payment System (OPPS) pays for services furnished to Medicare beneficiaries in hospital outpatient departments and ambulatory surgery centers. Hospitals that fail to meet the outpatient quality reporting (OQR) requirements receive a 2 percentage point reduction in payments. For the CY 2021 payment determination (i.e. program year 2019), there were 14 measures (4 chart-abstracted, 4 web-based, 6 claims-based).

DHHA was not randomly selected by CMS for Outpatient Data Validation for the CY 2021 annual payment update determination. Hospitals that fail validation (<75% agreement) will lose the annual market basket update.

Chart Abstracted Measures
These measures are based on care in the Emergency Department (ED) so they will be described along with the inpatient ED CQMs in the Emergency Department CQM section of this report.

Claims-Based Measures
These measures are based on Medicare FFS claims. They are all reverse measures, i.e. lower scores indicate better performance. Denver Health providers ordered contrast for abdominal Computed Tomography (CT) scans over 12 times less often than the national average but ordered Magnetic Resonance Imaging (MRI) scans for low back pain 43% more frequently (Figure 1.6-9).

Figure 1.6-9: CMS Hospital Outpatient Quality Reporting Program: Claims-Based Measures

ID	Measure	DHHA	National	Encounters
OP-8	Magnetic Resonance Imaging (MRI) Scan of Lumbar Spine for Low Back Pain	55.6%	39.0%	7/1/18-6/30/19
OP-10	Abdomen Computed Tomography (CT) — Use of Contrast Material	0.5%	6.4%	7/1/18-6/30/19
OP-13	Cardiac Imaging for preoperative risk assessment for non-cardiac low-risk surgery	1.5%	4.1%	7/1/18-6/30/19
OP-32	Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy per 1,000 colonoscopies	17.4	16.4	1/1/17-12/31/19
OP-35	■ Admissions for Patients Receiving Outpatient Chemotherapy ■ ED Visits for Patients Receiving Outpatient Chemotherapy	13.5 6.7	12.0 5.9	1/1/19-12/31/19
OP-36	Hospital Visits After Hospital Outpatient Surgery	1.3	n/a	1/1/19-12/31/19

Web-Based Measures
These measures are submitted annually. DHHA had zero cases for External Beam Radiotherapy for Bone Metastases (OP-33). ED Patient Left Without Being Seen (OP-22) is reported in the ED CQM section. DHHA had perfect compliance in 2020 for the appropriate follow-up interval for normal colonoscopies compared to a national rate of 91% (Figure 1.6-10).

Figure 1.6-10: CMS Hospital Outpatient Quality Reporting Program: Web-Based Measures

ID	Measure	DHHA				
		2016	2017	2018	2019	2020
OP-29	Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients	97%	100%	98%	100%	100%

1.6. CMS/The Joint Commission Clinical Quality Measures
Emergency Department

CMS does not have a separate payment system or quality reporting program for Emergency Department (ED) encounters. Instead, these visits are incorporated into either the Inpatient Quality Reporting or Outpatient Quality Reporting programs depending on a patient's final discharge disposition. Patients who are discharged home from the ED are considered outpatients whereas patients who are admitted are considered inpatients. The Joint Commission only monitors the inpatient ED measures. Quarterly or annual results are displayed in Figures 1.6-11 to 1.6-13 based on the mandatory frequency for reporting.

- **2020 Results**
  - ◊ There were no cases for the denominator of Fibrinolytic Therapy Received within 30 minutes of arrival (OP-2).
  - ◊ There were no cases for the denominator of Median time to transfer to another facility for acute coronary intervention (OP-3).
  - ◊ 239 minutes was the median time from ED arrival to ED departure for patients discharged from the ED (OP-18b).
  - ◊ 3% of ED patients left without being seen (OP-22).
  - ◊ 22% of stroke patients had a head CT or MRI scan interpreted within 45 minutes of ED arrival (OP-23).

Figure 1.6-11: Time from ED arrival to departure for discharged patients (OP-18b)

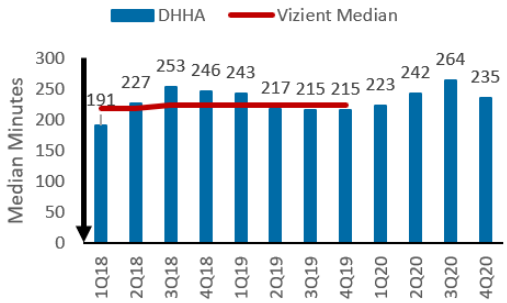


Figure 1.6-12: Left ED Without Being Seen (OP-22)

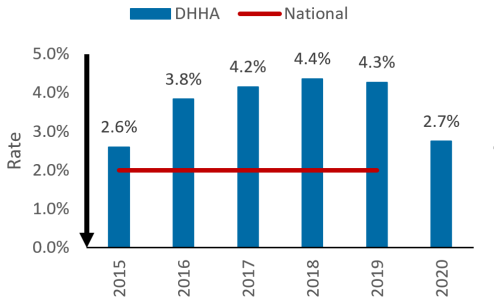
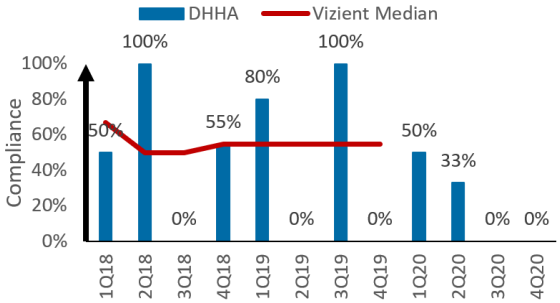


Figure 1.6-13: Stroke MRI Interpretation within 45 minutes (OP-23)



- **PI Activity**
  - ◊ Provided OP-23 data for Q1 2019 – Q4 2020 to Neurology providers and ED nursing leadership.

1.6. CMS/The Joint Commission Clinical Quality Measures
CMS Inpatient Psychiatric Quality Reporting (IPFQR) Program

The Inpatient Psychiatric Facility Quality Reporting (IPFQR) program's goals are to help consumers make more informed decisions about healthcare options and to encourage hospitals to improve the quality of care. Inpatient Psychiatric Facilities (IPFs) collect aggregate data by quarter and submit to CMS annually. IPFs that do not participate or meet reporting requirements receive a 2.0 percentage point reduction of their annual payment update. The reduction is non-cumulative across payment years. There are 14 measures and 4 sub-measures for the FFY 2022 payment determination. CMS is adding a new measure "Medication Continuation Following Inpatient Psychiatric Discharge" for FFY 2021 discharges. Quarterly results for the prior three years are shown in Figures 1.6-14 to 1.6-17.

Alcohol Use (IPF-SUB)

- **2020 Results**
  - ◊ 96% of psychiatric inpatients who screened positive for unhealthy alcohol use, alcohol abuse, or alcohol dependence were offered a brief intervention during the hospital stay (IPF-SUB-2).
  - ◊ 86% of psychiatric inpatients who screened positive for unhealthy alcohol use, alcohol abuse, or alcohol dependence received a brief intervention during the hospital stay (IPF-SUB-2a).
  - ◊ 91% of psychiatric inpatients who screened positive for unhealthy alcohol use or other drug use disorder were offered treatment at discharge (IPF-SUB-3).
  - ◊ 74% of psychiatric inpatients who screened positive for unhealthy alcohol use or other drug use disorder received treatment at discharge (IPF-SUB-3a).

Figure 1.6-14: Brief Intervention Offered in Hospital Stay (IPF-SUB-2)

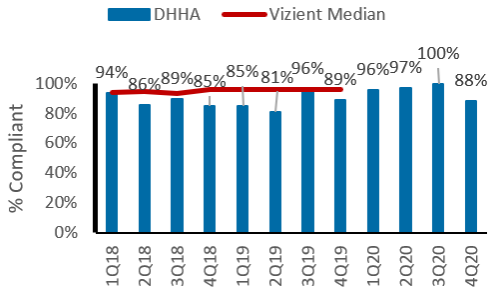


Figure 1.6-15: Brief Intervention Received in Hospital Stay (IPF-SUB-2a)

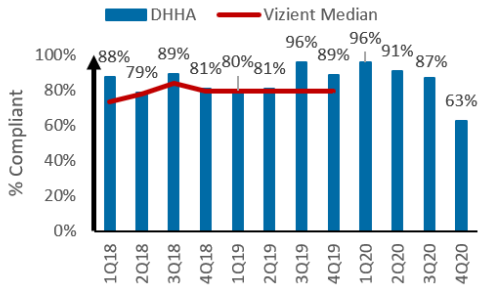


Figure 1.6-16: Alcohol and Other Drug Use Disorder Treatment Offered at Discharge (IPF-SUB-3)

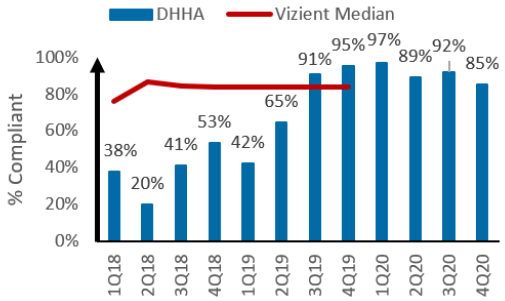
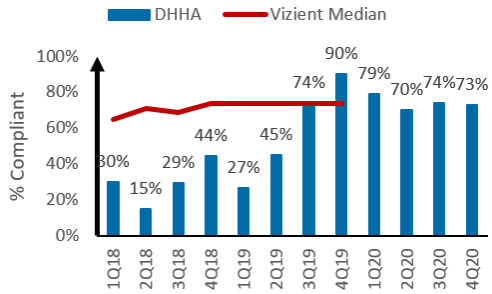


Figure 1.6-17: Alcohol and Other Drug Use Disorder Treatment Provided at Discharge (IPF-SUB-3a)



- **PI Activity**
  - ◊ To continue to make improvements as well as to maintain gains, failures are shared with staff in a timely manner, aggregate data is shared regularly, and quarterly quality meetings provide oversight.

1.6. CMS/The Joint Commission Clinical Quality Measures
CMS Inpatient Psychiatric Quality Reporting (IPFQR) Program

Tobacco Use (IPF-TOB)

- **2020 Results**
  - ◊ 99% of psychiatric inpatients who used tobacco within the past 30 days were offered cessation counseling and tobacco cessation medication during the hospital stay (IPF-TOB-2).
  - ◊ 16% of psychiatric inpatients who used tobacco within the past 30 days received cessation counseling and tobacco cessation medication during the hospital stay (IPF-TOB-2a).
  - ◊ 53% of psychiatric inpatients who used tobacco within the past 30 days were offered an outpatient counseling referral and tobacco cessation medication at discharge (IPF-TOB-3).
  - ◊ 27% of psychiatric inpatients who used tobacco within the past 30 days received an outpatient counseling referral and tobacco cessation medication at discharge (IPF-TOB-3a).

Figure 1.6-18: Tobacco Use Treatment Offered in Hospital Stay (IPF-TOB-2)

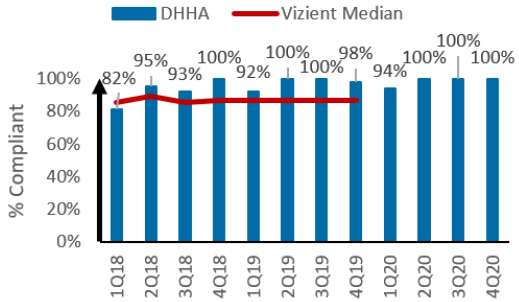


Figure 1.6-19: Tobacco Use Treatment Received in Hospital Stay (IPF-TOB-2a)

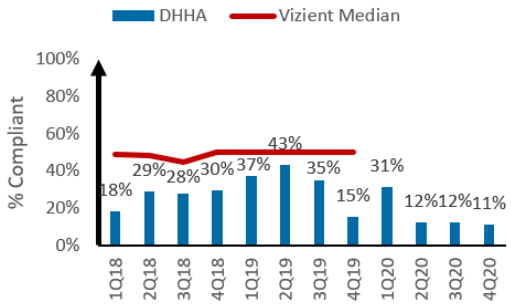


Figure 1.6-20: Tobacco Use Treatment Offered at Discharge (IPF-TOB-3)

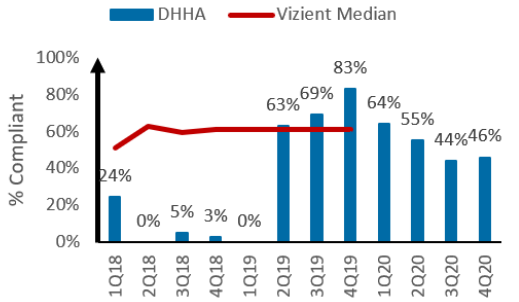
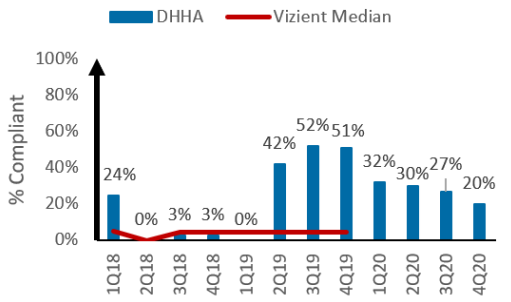


Figure 1.6-21: Tobacco Use Treatment Provided at Discharge (IPF-TOB-3a)



- **PI Activity**
  - ◊ DPSQ worked with the Behavioral Health division to drastically improve compliance:
    - ◊ Tobacco use treatment offered at discharge (IPF-TOB-3) increased from 9% in 2018 to 53% in 2020.
    - ◊ Tobacco use treatment provided at discharge (IPF-TOB-3a) increased from 8% in 2018 to 27% in 2020.
  - ◊ Measure performance is shared regularly with the Behavioral Health division and discussed quarterly at quality meetings.
  - ◊ Failures are shared with staff in a timely manner so the staff recognize where an opportunity was missed.

1.6. CMS/The Joint Commission Clinical Quality Measures
CMS Inpatient Psychiatric Quality Reporting (IPFQR) Program

Hospital-Based Inpatient Psychiatric Services (HBIPS)

- **2020 Results**
  - ◊ 0.57 hours of physical restraint usage per 1,000 patient hours (HBIPS-2).
  - ◊ 1.2 hours of seclusion used per 1,000 patient hours (HBIPS-3). The increase in seclusion hours compared to 2019 can be attributed to one patient that required multiple episodes of seclusion before staff determined the underlying problem was a medical issue.
  - ◊ 53% of patients discharged on multiple antipsychotics had appropriate justification documented (HBIPS-5a).

Figure 1.6-22: Physical restraint rate (HBIPS-2)

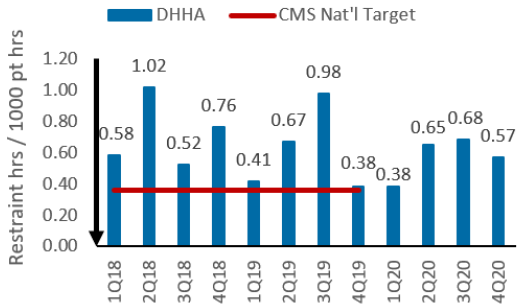


Figure 1.6-23: Seclusion rate (HBIPS-3)

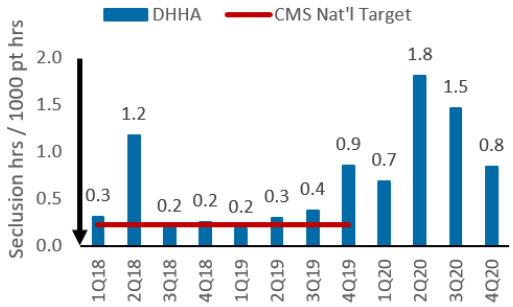
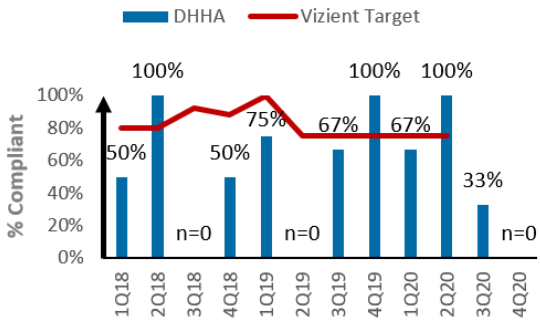


Figure 1.6-24: Discharged with Multiple Antipsychotics Justified (HBIPS-5a)



- **PI Activity**
  - ◊ Results discussed quarterly with Behavioral Health team.
  - ◊ Unit managers notified of outlier restraint/seclusion cases.
  - ◊ DPSQ and Epic Inpatient Clinical Documentation teams collaborated to create a drop-down list with allowable justifications for multiple antipsychotic medications in the provider discharge summary.
  - ◊ Process for real time feedback to providers was developed for learning and ongoing improvement.

Influenza Immunization (IPF-IMM-2)

- ◊ During the 2019-2020 flu season, 99.7% of psychiatric inpatients received their influenza immunization
- ◊ During the first half of the 2020-2021 flu season, 100% of psychiatric patients received their influenza immunization.

1.6. CMS/The Joint Commission Clinical Quality Measures
CMS Inpatient Psychiatric Quality Reporting (IPFQR) Program

Transitions of Care (IPF-TTR) and Screening for Metabolic Disorders (IPF-SMD)

- **2020 Results**
  - ◊ 100% of psychiatric inpatients received their transition record with the 11 mandatory elements (IPF-TTR-1).
  - ◊ 87% of psychiatric inpatients received their transition record within 24 hours of discharge (IPF-TTR-2).
  - ◊ 86% of patients discharged with at least one routinely scheduled antipsychotic medication received a metabolic screening in the 12 months prior to the discharge or during the inpatient psychiatric stay (IPF-SMD-1).

Figure 1.6-25: Transition Record with Specified Elements Received by Discharged Patients (IPF-TTR-1)

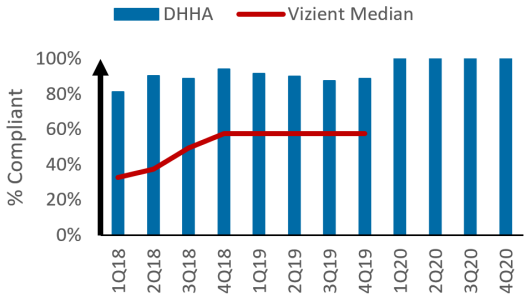


Figure 1.6-26: Timely Transmission of Transition Record (IPF-TTR-2)

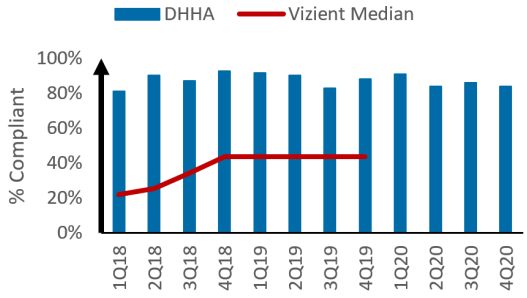
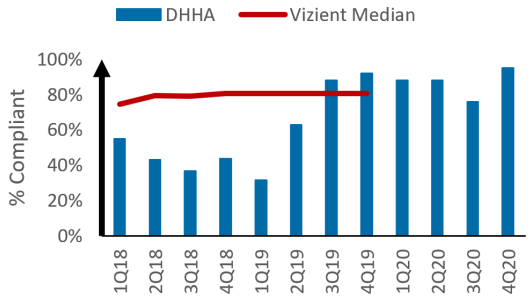


Figure 1.6-27: Screening for Metabolic Disorders (IPF-SMD-1)



- **PI Activity:**
  - ◊ To continue to make improvements as well as to maintain gains, failures are shared with staff in a timely manner, aggregate data is shared regularly, and quarterly quality meetings were established for oversight.

Claims-Based Measures

Higher rates for Follow-up After Hospitalization and Medication Continuation indicates better performance whereas lower rates for Unplanned Readmission indicates better performance. Medication continuation occurred for 86% of inpatient psychiatric discharges which is in the best 5%^{ile} of hospitals.

Figure 1.6-28: CMS Inpatient Psychiatric Facility Quality Reporting Program: Claims-Based Measures

Measure ID	Measure	DHHA	National Median (Interquartile Range)	DHHA Performance Percentile
FUH-30	Follow-Up within 30 Days After Hospitalization for Mental Illness*	36.1%	49.1% (40.0% - 58.8%)	17th
FUH-7	Follow-Up within 7 Days After Hospitalization for Mental Illness*	19.4%	25.7% (18.5% - 35.0%)	29th
READM-30-IPF	30-Day All-Cause Unplanned Readmission Following Hospitalization in an Inpatient Psychiatric Facility**	19.0%	20.0% (18.4% - 21.9%)	34th
n/a	Medication Continuation Following Inpatient Psychiatric Discharge*	86.4%	76.2% (70.2% - 81.1%)	95th

* Encounters from July 1, 2018—June 30, 2019.
** Based on index discharges from July 1, 2017 to June 30, 2019

1.7. CMS Overall Hospital Quality Star Rating

CMS developed the Overall Hospital Star Ratings in response to consumer and patient feedback that information displayed on *Hospital Compare* was difficult to understand. Existing quality measurements were aggregated into a 5-star rating system. CMS was unable to maintain quarterly releases due to methodology concerns. The 2021 release replaced the latent variable model with the arithmetic mean, added peer groups, and retired 25% of the measures.

DHHA has achieved a 3-Star rating since 2019 (Figure 1.7-1) and performed similar to other hospitals in the nation on five domains (Figure 1.7-2).

Figure 1.7-1: CMS Overall Hospital Star Rating

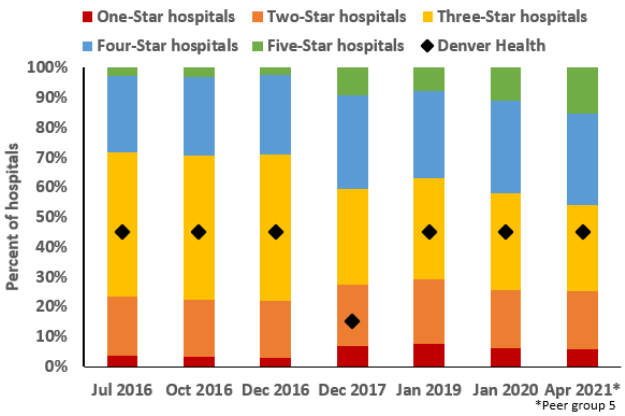


Figure 1.7-2: Overall Hospital Star Rating for Denver Health—April 2021

Readmission*

Measure ID	Measure Description	DHHA Result	National Rate
READM-30-COPD	30-Day Readmission Rate: COPD	18.8%	19.6%
READM-30-HOSP-WIDE	Hospital-Wide All-Cause Unplanned Readmission	15.2%	15.5%
EDAC-30-AMI	Excess Days in Acute Care after Hospitalization for AMI	5.9	6.3
EDAC-30-HF	Excess Days in Acute Care after Hospitalization for Heart Failure	50.4	4.2
EDAC-30-PN	Excess Days in Acute Care after Hospitalization for Pneumonia	- 4.1	4.8
OP-32	7-Day Hospital Visit Rate after Outpatient Colonoscopy	16.7	16.5
OP-35-ADM	Admissions for Patients Receiving Outpatient Chemotherapy	12.0	12.6
OP-35-ED	Emergency Department Visits for Patients on Outpatient Chemotherapy	6.6	6.0
OP-36	Hospital Visits after Hospital Outpatient Surgery	1.0	1.0

* Minimal volume thresholds not met for Coronary Artery Bypass Graft 30-Day Readmission Rate and Hospital-Level 30-Day All-Cause Risk-Standardized Readmission Rate Following Elective Primary Total Hip Arthroplasty and Total Knee Arthroplasty

Safety of Care*

Measure ID	Measure Description	DHHA Result	National Rate
CLABSI	Central-Line Associated Bloodstream Infection	0.46	0.69
CAUTI	Catheter-Associated Urinary Tract Infection	1.54	0.72
SSI-Colon	Surgical Site Infection - Colon Surgery	0.70	0.81
MRSA	Methicillin-Resistant *Staphylococcus aureus* Bacteremia	0.59	0.81
CDI	Clostridium difficile Infection	0.57	0.58
PSI-90	AHRQ Patient Safety and Adverse Events Composite	0.88	0.99

* Minimal volume thresholds not met for Surgical Site Infection – Abdominal Hysterectomy and Complication Rate Following Elective Primary Total Hip Arthroplasty and Total Knee Arthroplasty

Patient Experience

Measure Description	DHHA Result†	National Rate†
Nurse Communication	3.00	3.50
Doctor Communication	2.00	3.09
Responsiveness of Hospital Staff	3.00	3.28
Communication About Medicines	3.00	3.07
Discharge Information	3.00	3.23
Care Transition	2.00	3.12
Cleanliness and Quietness	2.50	3.05
Overall Rating of Hospital	3.00	3.24

† Number of stars

Mortality*

Measure ID	Measure Description	DHHA Result	National Rate
MORT-30-AMI	Acute Myocardial Infarction 30-Day Mortality Rate	12.2%	12.7%
MORT-30-COPD	Chronic Obstructive Pulmonary Disease 30-Day Mortality Rate	7.1%	8.5%
MORT-30-HF	Heart Failure 30-Day Mortality Rate	12.0%	11.5%
MORT-30-PN	Pneumonia 30-Day Mortality Rate	12.4%	15.7%
MORT-30-STK	Acute Ischemic Stroke 30-Day Mortality Rate	13.2%	13.6%
PSI-4	Death Rate Among Surgical Inpatients with Serious Treatable Complications	171	164

* Minimal volume thresholds not met for Coronary Artery Bypass Graft

Timely & Effective Care

Measure ID	Measure Description	DHHA Result	National Rate
OP-8	MRI Lumbar Spine for Low Back Pain	55.6%	39.9%
OP-10	Abdomen CT Use of Contrast Material	0.5%	6.5%
OP-13	Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery	1.5%	4.1%
ED-2b	Minutes from Admit Decision to ED Departure	98	99
OP-18b	Minutes from ED Arrival to Departure for Discharged Patients	220	142
IMM-3	Healthcare Personnel Influenza Vaccination	97%	90%
OP-22	ED-Patient Left Without Being Seen	4%	1%
OP-29	Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients	98%	89%
PC-01	Elective Delivery Prior to 39 Completed Weeks Gestation	0%	2%
SEP-1	Severe Sepsis and Septic Shock	44%	59%

* Minimal volume thresholds not met for OP-3b, OP-5, OP-30, OP-33

1.8. Hospital Quality Incentive Payment Program (HQIP)

The Colorado Department of Health Care Policy and Financing (HCPF) started the Hospital Quality Incentive Payment Program (HQIP) in 2011 to incentivize hospitals to improve health care and patient outcomes. The state's Medicaid agency retains a percentage of each hospital's payment and distributes incentive payments based on each hospital's performance on selected nationally recognized measures. In 2020, HCPF decided not to add new measures in response to the COVID-19 global pandemic.

DHHA received full points on the Patient Safety domain and the Advance Care Planning measure was in the best quartile. DHHA's patient experience scores for discharge information and care transition were in the worst quartile while communication about medications was slightly worse than the median. DHHA received a final score of 69%. (Figure 1.8-1). DHHA has received over $37.3 million in incentive payments from this program (Figure 1.8-2).

Figure 1.8-1: HQIP Program Year 2020

Measure Group	Measure Name	Rate/Result	Points
Maternal Health and Perinatal Care	Breastfeeding Practices • Exclusive Breast Milk Feeding (PC-05) • Baby-Friendly Designation, 4-D Pathway, or Breastfeeding Policy	59% Policy	1 of 1 1 of 4
	Cesarean Section rate for nulliparous women with term baby in vertex position (PC-02)	19.1%	1 of 5
	Perinatal Depression and Anxiety—readiness, recognition and prevention, response, reporting	Yes	5 of 5
	Maternal Emergencies and Preparedness—policy, electronic process, resources, formal debriefs	Yes	5 of 5
	Reproductive Life/Family Planning—counseling offered	Yes	4 of 4
	Incidence of Episiotomy	0.9%	5 of 5
Patient Safety	Hospital Acquired *Clostridioides difficile* Standardized Infection Ratio (SIR)	Better than national mean	5 of 5
	Adverse Event Reporting	Yes	5 of 5
	Culture of Safety Survey	Yes	5 of 5
Patient Experience	Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) • Communication about Medications • Discharge Information • Care Transition	65% 87% 46%	1 of 15
	Advance Care Planning for patients 65 years or older	99.9%	5 of 5

Figure 1.8-2: HQIP Incentive Payments to Denver Health by Program Year

	2014	2015	2016	2017	2018	2019	2020
Points	21 of 46	30 of 50	27 of 50	30 of 40	64 of 80	82 of 100	45 of 65
Incentive Payment	$3,402,655	$5,857,931	$4,612,904	$7,933,197	$7,551,062	$7,957,310	TBD

- **PI Activity:**
  - ◊ Enterprise-wide initiatives to improve patient experience
  - ◊ Review of cesarean sections to determine if medically necessary
- **Program Changes**
  - ◊ Four new measures added for 2021: Reduction of Peripartum Racial and Ethnic Disparities, Sepsis, Antibiotics Stewardship, Handoffs and Signouts, Zero Suicide

1.9. The Leapfrog Group Hospital Safety Grade

The Leapfrog Hospital Safety Grade is a single letter grade which represents a hospital's overall performance in keeping patients safe from preventable harm and medical errors. The score uses 28 performance measures from CMS, the Leapfrog Hospital Survey, AHRQ, CDC, and the American Hospital Association's Annual Survey and Health Information Technology Supplement. The Safety Grade is assigned to over 2,600 hospitals nationwide twice annually. Safety scores are accessible to the public via http://www.hospitalsafetygrade.org.

DHHA's decline to a letter grade of B in the Fall of 2019 and Spring of 2020 is due to a single adverse event that occurred in 2018 (Figure 1.9-1). The decline to a C in the Fall of 2020 reflects a doubling in the rate of falls and trauma and a 50% increase in abdominopelvic accidental punctures and lacerations. Results for individual measures are shown in Figure 1.9-2.

Figure 1.9-1: Denver Health Hospital Safety Grades

Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
B	B	B	C	C	C	C	C	C	A	A	B	B	C

Figure 1.9-2: Denver Health Performance on Leapfrog Hospital Safety Grade Measures

Outcome Measures	DHHA Spring 2020	DHHA Fall 2020
Foreign object retained*	0.362	0.359
Air embolism*	0.000	0.000
Patient falls and trauma*	0.371	0.770
Central line associated blood stream infection**	0.579	0.579
Catheter associated urinary tract infection**	0.826	0.826
Surgical site infection after colon surgery**	1.004	1.004
Methicillin resistant *Staph aureus* infection**	0.486	0.486
C. difficile infection**	0.700	0.700
PSI 3: Pressure ulcers*	0.16	0.21
PSI 4: Death from treatable serious complications*	159	171
PSI 6: Iatrogenic pneumothorax*	0.29	0.23
PSI 11: Postop respiratory failure*	8.69	6.37
PSI 12: Perioperative PE/DVT*	6.03	3.43
PSI 14: Postop wound dehiscence*	0.91	0.89
PSI 15: Abdominopelvic accidental puncture/laceration*	1.13	1.72

Performance Period:
* Spring 7/1/2016-6/30/2018 & Fall 7/1/2017-6/30/2019
** Spring 7/1/18-6/30/2019 & Fall 1/1/2019-12/31/2019

Process Measures	DHHA Spring 2020	DHHA Fall 2020
Doctors order medications through a computer†	100	100
Safe medication administration†	100	100
Specially trained doctors care for ICU patients†	100	100
Effective leadership to prevent errors†	120	120
Staff work together to prevent errors†	110.8	110.8
Enough qualified nurses†	100	100
Hand hygiene†	60	60
HCAHPS: Communication with nurses‡	90	90
HCAHPS: Communication with doctors‡	90	90
HCAHPS: Responsiveness of hospital staff‡	84	84
HCAHPS: Communication about medicines‡	80	80
HCAHPS: Communication about discharge‡	87	87

Performance Period:
† Spring 1/1/2019-12/31/2019 & Fall 1/1/2020-12/31/2020
‡ Spring 4/1/18-3/31/19 & Fall 10/1/2018-9/30/2019

Perfect Score	Within Mean ± Standard Deviation	Worse than Mean ± Standard Deviation

1.10. Colorado Department of Public Health and Environment (CDPHE)

Colorado Department of Public Health and Environment (CDPHE) publishes Healthcare-Associated Infection (HAI) rates annually per legislation for state licensure. These HAIs include infections associated with surgeries, central lines, and hospital acquired *Clostridiodes difficile* infections. Data are reported by each institution to the CDC's National Healthcare Safety Network (NHSN). Denver Health's most recent performance on all measures was not statistically different from the national benchmarks (Figure 1.10-1). Improvement efforts are described in the Infection Control section. The following table is the most recent data available as CDPHE did not create a 2020 Annual Report due to COVID-19.

Figure 1.10-1: Denver Health Healthcare—Associated Infections

		2016				2017				2018			
		Number of Procedures	Number of Infections	SIR	National Comparison	Number of Procedures	Number of Infections	SIR	National Comparison	Number of Procedures	Number of Infections	SIR	National Comparison
Breast Surgery (Inpatient)		52	3	2.1	Same	42	2	1.9	Same	43	1	0.9	Same
Breast Surgery (Outpatient)		169	2	1.2	Same	158	0	0	Same	155	1	0.5	Same
Colon Surgery		129	13	1.5	Same	137	9	1.0	Same	121	5	0.6	Same
Hip Replacement		109	2	1.2	Same	92	3	2.6	Same	143	2	1.0	Same
Knee Replacement		160	1	1.0	Same	103	1	***	***	156	2	1.8	Same
Abdominal Hysterectomy		74	1	0.5	Same	76	4	1.9	Same	79	1	0.5	Same
	Unit Type	**Number of Central Line Days**	**Number of Infections**	**SIR**	**National Comparison**	**Number of Central Line Days**	**Number of Infections**	**SIR**	**National Comparison**	**Number of Central Line Days**	**Number of Infections**	**SIR**	**National Comparison**
Central Line-Associated Bloodstream Infections	Critical Care	4,594	9	1.5	Same	3,473	6	1.3	Same	3,712	7	1.5	Same
	Neonatal Critical Care	1,043	3	***	***	714	0	***	***	845	1	0.9	Same
	Acute Care Wards	6,630	7	1.1	Same	6,126	4	0.7	Same	5,857	3	0.5	Same
	Inpatient Rehab	110	0	***	***	217	0	***	***	201	0	***	***
		Number of Patient Days	**Number of Infections**	**SIR**	**National Comparison**	**Number of Patient Days**	**Number of Infections**	**SIR**	**National Comparison**	**Number of Patient Days**	**Number of Infections**	**SIR**	**National Comparison**
C. difficile Infections		95,481	90	1.2	Same	98,519	64	0.8	Same	102,669	75	0.8	Same

Abbreviation: SIR, Standardized Infection Ratio
*** Data suppressed because predicted number of infections was less than one or facility had fewer than 20 procedures in the year

2. NATIONAL COLLABORATIVES

2.1. Vizient Inpatient Quality and Accountability (Q&A) Scorecard

Vizient created the Quality and Accountability (Q&A) Study in 2005 to help organizations assess their performance across a broad spectrum of high-priority dimensions of patient care. The Q&A Scorecard allows institutions to benchmark their results against similar institutions. Vizient applies a proprietary risk adjustment methodology, thereby allowing hospitals to be compared using observed to expected (O/E) ratios. Due to the COVID-19 pandemic, Vizient limited data to an 8-month period (July 2019 to February 2020). DHHA ranked 32nd out of 97 large, specialized complex care medical centers. This translated into four of five stars in 2020 (Figure 2.1-1). DH performed best on the Mortality and Patient Centeredness domains (Figure 2.1-2).

Figure 2.1-1: Vizient Q&A Scorecard Star Ratings for Denver Health

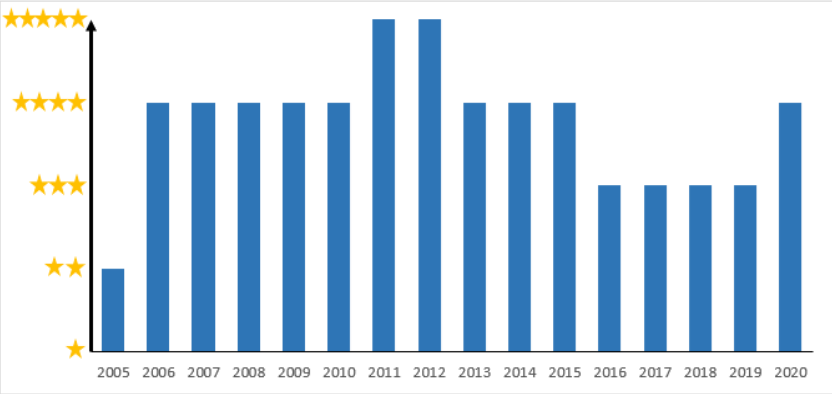
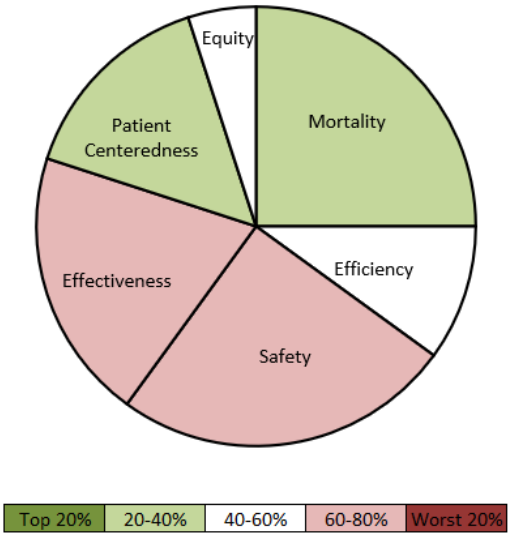


Figure 2.1-2: Vizient 2020 Q&A Scorecard Summary for Denver Health



- **PI Activity**
  - ◊ The Patient Flow Committee will continue its work to decrease length of stay.
  - ◊ Readmission reduction is an enterprise-wide focus for 2021, involving staff from DPSQ, Ambulatory Care Services (ACS), medical providers, case management, and managed care.
  - ◊ At Datapalooza, a multidisciplinary group reviews data for mortality, length of stay, readmissions, excess days, and AHRQ PSIs.

Figure 2.1-3: Vizient 2020 Quality and Accountability Scorecard for Denver Health

As shown in Figure 2.1-3, DHHA was in the best performing decile for communication about medications, colon surgical site infections, and hypoglycemia after insulin use. The standardized infection ratio improved in 75% of HAI metrics compared to the 2019 Q&A. However, DHHA was in the worst performing decile for postoperative hemorrhage or hematoma, postoperative sepsis, and catheter-associated urinary tract infection. The Clinical Documentation Integrity and Infection Prevention teams are actively working to improve these three metrics.

Mortality* (25%)			
Vizient Service Line	**O/E**	**Decile Rank**	**Compared to Q&A 2019**
Cardiology	0.73	3rd	▲
Gastroenterology	0.54	3rd	▼
Medicine General	0.66	3rd	▲
Neurology	0.78	5th	▲
Neurosurgery	1.09	7th	▼
Oncology	0.83	6th	▼
Ortho/Spine	0.29	4th	▲
Pulmonary/Critical Care	0.89	4th	▲
Surgery General	0.55	3rd	▼
Trauma	0.71	3rd	▲
Vascular Surgery	1.00	7th	▲

*Timeframe: July 2019 - Feb 2020 (only 8 months due to Covid)

Patient Centeredness* (15%)			
HCAHPS Dimension	**% Top Box**	**Decile Rank**	**Compared to Q&A 2019**
Nurse communication	79.5	6th	▲
Doctor communication	82.2	4th	▲
Medication communication	70.7	1st	▼
Cleanliness and quietness	65.6	4th	▼
Responsiveness of staff	70.1	2nd	▲
Discharge information	89.0	4th	▼
Overall rating of hospital	75.3	5th	▼
Transition of care	49.1	9th	▼

*Timeframe: April 2019 - Sept 2019 (only 6 months due to Covid)

Safety* (25%)				
AHRQ PATIENT SAFETY INDICATORS				
Metric ID	**Description**	**O/E**	**Decile Rank**	**Compared to Q&A 2019**
PSI-3	Pressure ulcer	1.17	8th	▼
PSI-6	Postoperative iatrogenic pneumothorax	0.70	6th	▼
PSI-9	Postoperative hemorrhage or hematoma	1.92	10th	▼
PSI-11	Postoperative respiratory failure	0.56	6th	▲
PSI-13	Postoperative sepsis	1.69	10th	▼
NHSN HEALTHCARE ASSOCIATED INFECTIONS				
Metric ID	**Description**	**SIR**	**Decile Rank**	**Compared to Q&A 2019**
CAUTI	Catheter-associated urinary tract infection	1.41	10th	▼
CLABSI	Central line-associated blood stream infection	0.43	4th	▲
C-Diff	*Clostridioides difficile* infection	0.62	7th	▲
SSI	Surgical site infections: colon	0.00	1st	▲
OTHER				
Description		**%**	**Decile Rank**	**Compared to Q&A 2019**
Total hip/total knee arthroplasty complication rate		1.05	2nd	▼
Hypoglycemia and insulin use		0.88	1st	▲
Elevated INR after warfarin administration		3.92	7th	▼

*Timeframe: AHRQ & lab metrics Jul 2019 - Feb 2020; NHSN Apr -Sep 2019; THK Apr 2019 - Feb 2020

Figure 2.1-3 (continued): Vizient 2020 Quality and Accountability Scorecard for Denver Health

DHHA was in the best performing decile for 30-day all-cause unplanned readmissions for two service lines (SLs), excess days for three SLs, and direct cost for five SLs. However, DHHA was in the worst performing decile for Neurosurgery length of stay, General Surgery excess days, 30-day all-cause unplanned readmissions for three SLs, and return within 7 days of outpatient arthroscopy. No significant difference was found in 91% of the equity measures. A slight difference in time to initial lactate measurement was seen in sepsis patients based on socio-economic status (SES). The only statistically significant equity difference occurred for heart failure patients with low SES having a higher percentage improvement in brain natriuretic peptide (BNP) over the hospital stay.

Efficiency* (10%)

LENGTH OF STAY

Vizient Service Line	O/E	Decile Rank	Compared to Q&A 2019
Cardiology	0.99	8th	▼
Gastroenterology	0.90	5th	▲
Gynecology	0.86	3rd	▲
Medicine General	0.87	4th	▼
Neurology	0.95	6th	▲
Neurosurgery	1.59	10th	▼
Obstetrics	0.95	4th	▲
Oncology	0.96	7th	▲
Ortho/Spine	0.93	6th	▲
Pulmonary/Critical Care	1.09	9th	▼
Surgery General	0.89	7th	▲
Trauma	0.92	6th	▲
Urology	0.99	8th	▲
Vascular Surgery	0.97	8th	▼

DIRECT COST

Vizient Service Line	O/E	Decile Rank	Compared to Q&A 2019
Cardiology	0.69	1st	▼
Gastroenterology	0.59	1st	▼
Gynecology	0.62	1st	▲
Medicine General	0.63	1st	▼
Neurology	0.62	1st	▲
Neurosurgery	1.03	8th	▼
Obstetrics	0.76	4th	▼
Oncology	0.63	2nd	▲
Ortho/Spine	0.78	3rd	▼
Pulmonary/Critical Care	0.84	4th	▼
Surgery General	0.67	2nd	▼
Trauma	0.91	6th	▲
Urology	0.50	2nd	▲
Vascular Surgery	0.84	5th	▼

*Timeframe: July 2019 - Feb 2020 (only 8 months due to Covid)

Effectiveness* (20%)

30-DAY ALL CAUSE UNPLANNED READMISSIONS

Vizient Service Line	Rate (%)	Decile Rank	Compared to Q&A 2019
Cardiology	14.6	9th	▼
Gastroenterology	15.7	9th	▲
Medicine General	14.0	6th	▲
Neurology	3.1	1st	▲
Neurosurgery	14.3	10th	▼
Oncology	15.1	7th	▼
Ortho/Spine	8.2	10th	▲
Pulmonary/Critical Care	6.3	1st	▲
Surgery General	12.1	9th	▲
Trauma	5.8	2nd	▼
Vascular Surgery	24.2	10th	▼

EXCESS DAYS

Vizient Service Line	Days	Decile Rank	Compared to Q&A 2019
Cardiology	- 2.8	5th	▲
Gastroenterology	7.7	7th	▲
Medicine General	7.2	7th	▼
Neurology	0.1	3rd	▲
Neurosurgery	-18.7	1st	▲
Oncology	- 27.8	1st	▲
Ortho/Spine	5.7	8th	▼
Pulmonary/Critical Care	- 8.2	4th	▲
Surgery General	24.8	10th	▼
Trauma	8.1	8th	▲
Vascular Surgery	- 55.8	1st	▲

OTHER

Description	Rate (%)	Decile Rank	Compared to Q&A 2019
Return within 7 days of outpatient procedure: Colonoscopy	0.6	2nd	▲
Return within 7 days of outpatient procedure: Biliary	5.4	7th	▼
Return within 7 days of outpatient procedure: Urological	5.6	7th	▼
Return within 7 days of outpatient procedure: Arthroscopy	3.6	10th	▲
Sepsis: Lactate level not done within 12 hours of admit labs	2.9	3rd	▼
Transfusion for hemoglobin ≥ 9 prior to first RBC transfusion	2.1	7th	▼

*Timeframe: July 2019 - Feb 2020 (only 8 months due to Covid)

Equity* (5%)

Metric	Gender		Race		Socioeconomic status	
	Male	Female	White	Non-white	Non-low SES	Low SES
Sepsis lactate timing (hours)	1.79	2.22	2.27	1.07	1.54	2.27
Sepsis mortality O/E	0.60	0.44	0.60	0.45	0.57	0.53
NSTEMI troponin timing (hours)	0.12	0.00	0.10	0.00	0.01	0.15
NSTEMI mortality O/E	0.80	0.72	LV	LV	LV	LV
Heart Failure BNP Improvement	4%	3%	3%	4%	2%	7%
Heart Failure Mortality O/E	0.59	1.30	0.50	1.61	LV	LV
Maternal hemoglobin change (g/dL)	--		0.51	0.44	0.35	0.50
Maternal transfusion rate	--		0.01	0.01	LV	LV

*Timeframe: July 2019 - Feb 2020 (only 8 months due to Covid)

Equal | Caution | Unequal | Low Volume

2.2. Vizient Ambulatory Quality and Accountability (AQA) Scorecard

The Vizient Ambulatory Quality and Accountability (AQA) Scorecard provides a holistic view of ambulatory performance thereby enabling institutions to deliver high quality, accessible, and cost efficient care. Fifty-one academic medical centers and their affiliate physician organizations participated in 2020. Organizations were ranked on five domains composed of 29 metrics and 119 sub-metrics. DHHA received three stars with its ranking of #20 (Figure 2.2-1). DHHA performed best in the domain of Equity (Figure 2.2-2). Performance on each metric is shown in Figure 2.2-3. Equity discrepancies reflect that Medicaid patients had timelier new patient visits in Primary Care and Commercial patients had timelier new patient visits in Orthopedics.

Figure 2.2-1: Denver Health AQA Star Rank

Figure 2.2-2: Vizient 2020 AQA Scorecard Summary for Denver Health

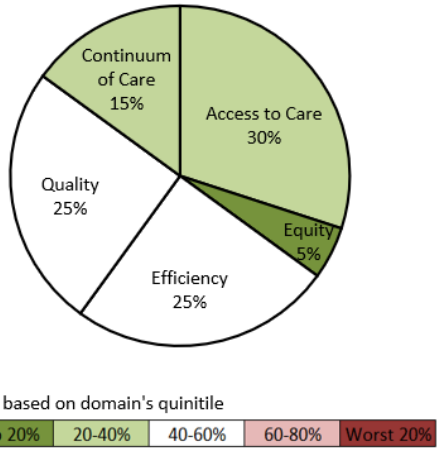


Figure 2.2-3: Vizient 2020 Ambulatory Quality and Accountability Scorecard for Denver Health

Domain	Metric	Specialty																
		Cardiology	Dermatology	Endocrinology	ENT	GI & Hepatology	Hematology & Oncology	Infectious Disease	Nephrology	Neurology	OB/GYN	Opthalmology	Orthopaedics	Primary Care	Pulmonology	Rheumatology	Surgery	Urology
Access to Care	New patient visits (%)	18	12	20	45	34	13	24	25	27	6	26	20	10	30	14	30	30
	New patients seen within 10 days of scheduling an appointment (%)	27	31	30	26	56	35	92		18	55	32	58	43	36	29	27	48
	Median days from scheduling appointment to visit for new patients visits	18	49	17	22	8	16	0		30	9	32	8	21	13	18	22	12
Efficiency	Appointments cancelled by provider or clinic within 30 days of appointment date (%)	4.1	2.9	4.4	7.9	6.2	5.7	1.9	2.2	3.2	2.8	3.6	4.3	3.3		1.2	7.2	8.9
	Median encounters per provider per hour	1.0	2.3	1.4	1.8	1.3	1.5	1.3	1.5	1.3	1.5	1.8	2.0	1.9	1.3	1.3	1.4	1.2
	Consistency in encounters per provider per hour	0.3	1.2	0.6	0.7	0.5	0.6	0.4	0.4	0.5	0.7	0.8	0.8	0.7	0.5	0.5	1.0	0.5
Equity	Disparity in new patients seen within 10 days of scheduling an appointment by commercial vs. Medicaid payer	-	-	-	-	-	-	-	-	-	-	-	D	D	-	-	-	-

Continuum of Care Domain		
Metric		Performance
ED visits that are low acuity		42.5%
Patients with 4 or more ED visits per year		4.3%
Patients with return to ED within 7 days		9.2%
Follow up visit within 7 days of admission for ...	... pneumonia	25.0%
	... urinary tract infection	33.3%
	... chronic obstructive pulmonary disease	25.4%
	... heart failure	32.6%
	... diabetes short-term complications	24.3%
	... diabetes long-term complications	45.5%
	... uncontrolled diabetes admission	26.7%
	... lower extremity amputation diabetic admission	33.3%

Quality Domain		
Metric		Performance
Hospitalization rate for ambulatory care-sensitive condition	Bacterial pneumonia (acute)	0.01%
	Urinary tract infection (acute)	0.02%
	COPD or asthma (chronic)	2.8%
	Heart failure (chronic)	12.5%
	Diabetes short-term complications (chronic)	0.7%
	Diabetes long-term complications (chronic)	0.8%
	Uncontrolled diabetes (chronic)	0.2%
	Lower extremity amputation diabetics (chronic)	0.2%
Return within 7 days post outpatient procedure	Colonoscopy	0.9%
	Orthopedic procedures	4.3%
	Urology procedures	4.3%

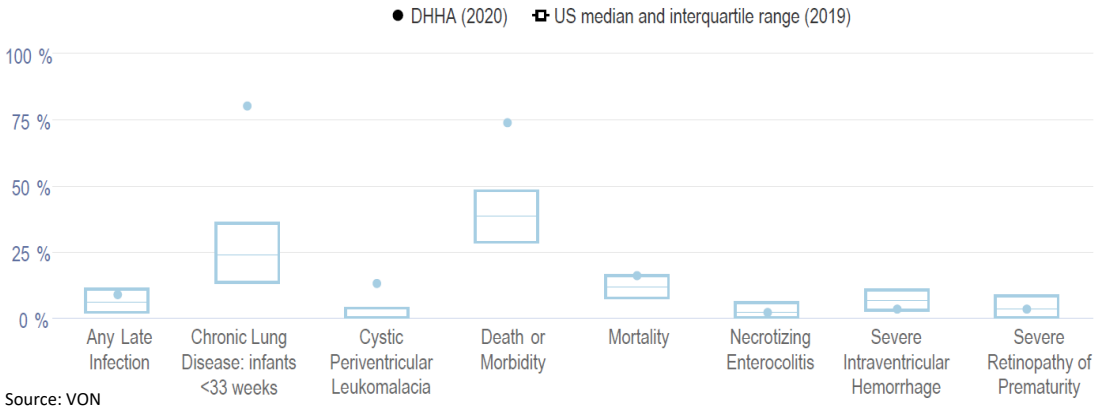
LEGEND
Best Quartile
25-50%
50-75%
Worst Quartile
Low volume
Significant Difference
- is no difference

2.3. Vermont Oxford Network (VON)

The Vermont Oxford Network (VON) is a voluntary collaborative focused on improving the quality and safety of medical care for newborn infants and their families through a coordinated program of research, education, and quality improvement projects. Data are used to analyze the care and outcomes of high-risk newborn infants for quality management, process improvement, internal audit, peer review, outcomes research, randomized clinical trials, and epidemiological studies. VON provides reports which benchmark hospital-specific data to neonatal centers from around the world. Findings are important for the development of educational materials and programs for health care professionals, policy makers, families of high-risk infants, and the public.

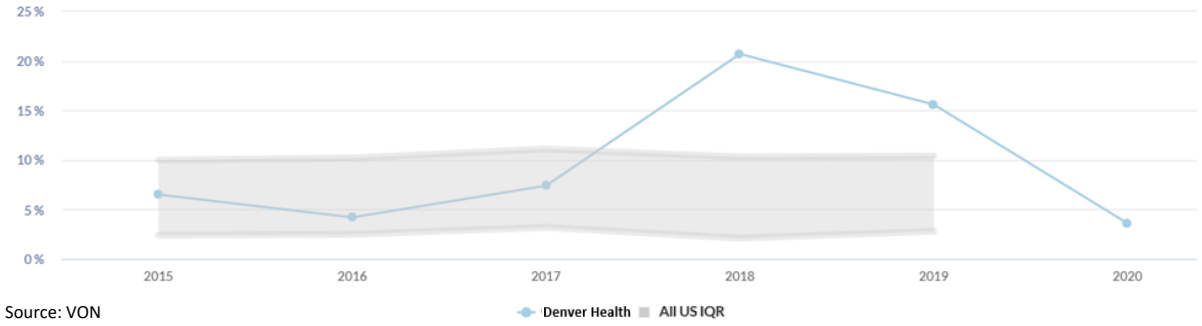
VON's very low birthweight (VLBW) database includes infants born between 501 and 1500 grams. DHHA performed worse than the national interquartile range for chronic lung disease when born before 33 weeks gestation, cystic periventricular leukomalacia, and death or morbidity (Figure 2.3-1). Both the chronic lung disease measure and the death or morbidity measure are greatly affected by Denver's high altitude. An infant's need for supplemental oxygen is much higher in Denver compared to those born at sea level and any child who is discharged on oxygen is in the numerator for both these measures. Denver Health's VLBW measure for Severe Intraventricular Hemorrhage fell below the national median in 2020 (Figure 2.3-2) and the incidence of Late Infection declined for 2 consecutive years (Figure 2-3.3).

Figure 2.3-1: Vermont Oxford Network Key Performance Measures for Very Low Birth Weight Infants Born in 2020



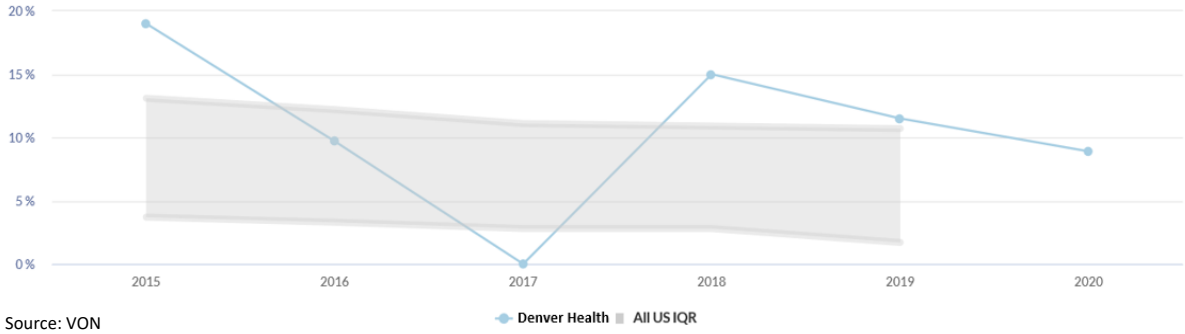
Source: VON

Figure 2.3-2: Severe Intraventricular Hemorrhage among Very Low Birth Weight Infants



Source: VON

Figure 2.3-3: Late Infection among Very Low Birth Weight Infants



Source: VON

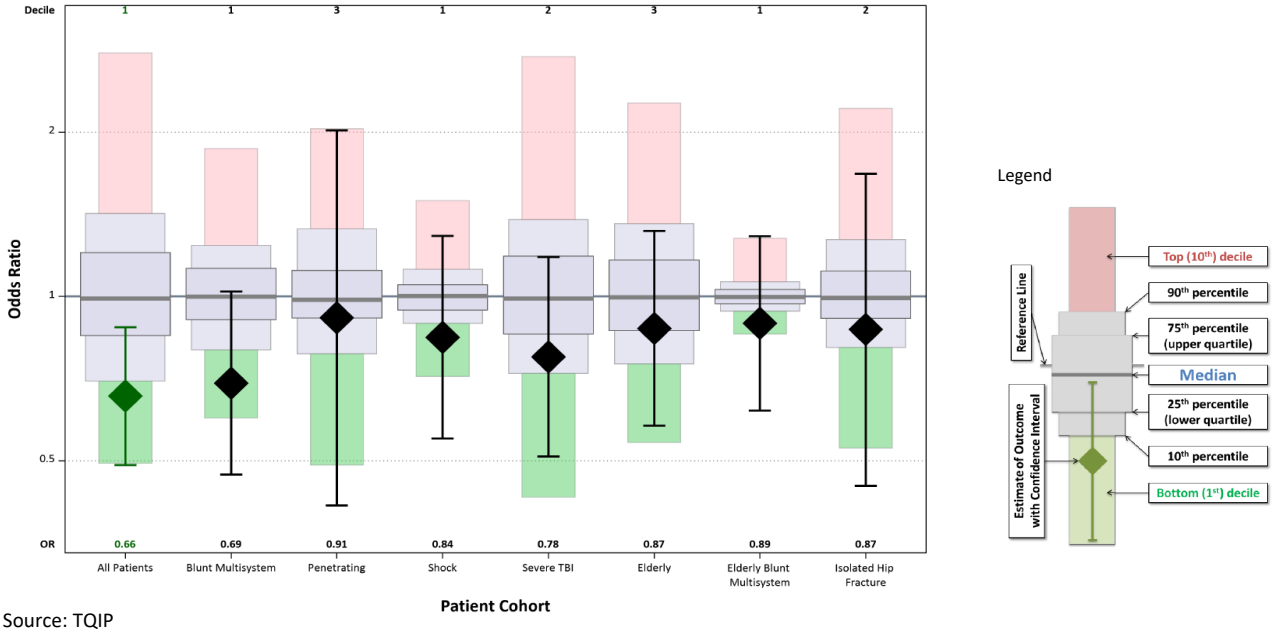
2.4. American College of Surgeons Trauma Quality Improvement Program (TQIP)

The American College of Surgeons Trauma Quality Improvement Program (TQIP) has approximately 500 participating Trauma Centers throughout the United States. The program is designed to raise the bar for facilities providing trauma care. Its goals are to collect data from Trauma Centers, evaluate the data and provide feedback about each center's performance. Trauma centers are benchmarked against other facilities to provide best practice standards in trauma care. The data below are based on admissions from Quarter 1 2019 through Q1 2020.

Risk-Adjusted Mortality

Mortality for trauma patients treated at DHHA rank amongst the lowest in the nation with an overall risk-adjusted mortality odds ratio of 0.66 (Figure 2.4-1). DHHA performs better than expected in all mortality categories and is in the best decile for blunt multisystem, shock, and elderly blunt multisystem related mortality.

Figure 2.4-1: Risk-Adjusted Mortality by Cohort

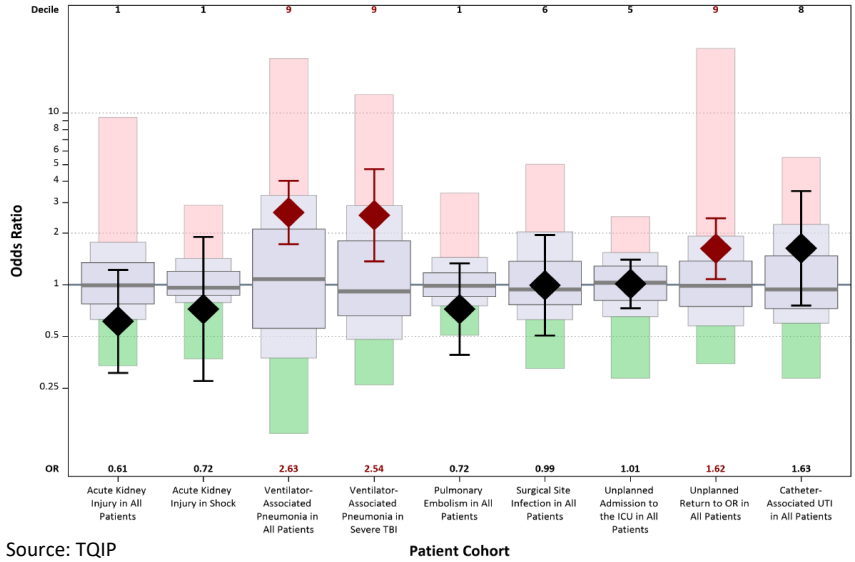


Source: TQIP

Risk-Adjusted Adverse Events

Trauma patients at DHHA suffered less acute kidney injury and pulmonary embolism and ranked in the best decile for both adverse events. Deliberate efforts to reduce catheter-associated UTI are beginning to show effect with an improvement in odds ratio from previous reports. Areas identified with an opportunity for improvement include ventilator-associated pneumonia and unplanned return to the operating room.

Figure 2.4-2: Risk-Adjusted Adverse Events by Cohort



Source: TQIP

Hip Fracture Repair in Elderly Patients

The goal in the elderly population of patients with hip fractures is to have definitive repair within 48 hours of admission. As identified in Figure 2.4-3, DHHA was 93% compliant with this measure compared to a 92% national average. DHHA recognizes the importance of operating room availability for trauma cases and the need for timely repair of hip fractures.

Figure 2.4-3: First Operative Internal or External Fixation in Elderly Patients with Isolated Hip Fracture

Group	Isolated Hip Fracture	Operative Fixation	Hours to Operative Fixation (Median [IQR])	Timely Operative Fixation within 48 Hours of Admission
DHHA	85	87.1%	21.0 [16.4-27.2]	93.2%
All Hospitals	44,304	90.2%	21.2 [15.5-28.8]	92.2%

Hemorrhagic Shock Care

As shown in Figure 2.4-4, 66% of hemorrhagic shock patients at DHHA received surgery for hemorrhage control compared to the national average of 53%. The median time to surgery was 14 minutes faster at DHHA than the national median of 55 minutes. DHHA dramatically improved time to angiography this past year and now performs the procedure almost two hours faster than the national median. DHHA decreased its time from 4.6 hours to 1.0 hours whereas the national median did not change.

Figure 2.4-4: Hemorrhagic Shock Management within First 24 Hours

Group	Hemorrhagic Shock Patients	Surgery for Hemorrhage Control	Minutes to Surgery (Median [IQR])	Angiography	Hours to Angiography (Median [IQR])
DHHA	56	66.1%	41 [23-72]	17.9%	1.0 [0.8-2.5]
All Hospitals	7,766	52.5%	55 [33-112]	17.1%	2.8 [1.5-4.6]

Note: Patients may have both surgery for hemorrhage control and angiography.

Traumatic Brain Injury Care

Trauma centers nationwide perform cerebral monitoring in 23.5% of Traumatic Brain Injury (TBI) cases. DHHA aggressively manages patient with TBI as evidenced by a 51.8% rate of cerebral monitoring device placement and places them earlier in the course of care than the national average (Figure 2.4-5). DHHA is fortunate to have Neurosurgery specialized Advanced Practice Providers always present in the hospital with the ability to place cerebral monitoring devices.

Figure 2.4-5: Cerebral Monitoring for Severe Traumatic Brain Injury Patients

Group	Severe Traumatic Brain Injury Patients	Cerebral Monitoring	Hours to Cerebral Monitoring (Median [IQR])
DHHA	114	51.8%	2.8 [1.6-4.5]
All Hospitals	23,601	23.5%	3.9 [2.2-9.1]

Venous Thromboembolism (VTE) Prophylaxis

Overall, 81% of DHHA's trauma patients received VTE prophylaxis, which is 16% more often than the national rate (Figure 2.4-6). Performance improvement was seen in every cohort of DHHA trauma patient and can be attributed to a hospital-wide focus on VTE prevention. DHHA's overall trauma VTE prophylaxis rate increased by 8% compared to last year and the largest improvement was in severe traumatic brain injury with a 19% improvement.

Figure 2.4-6: Pharmacologic VTE Prophylaxis by Cohort*

Group	All Patients	Blunt Multisystem	Penetrating	Shock	Severe TBI	Isolated Hip Fracture
Denver Health	81.1%	92.7%	97.3%	92.3%	82.6%	97.6%
All Hospitals	69.8%	82.7%	84.7%	81.9%	67.9%	87.1%

*Excluding deaths in the ED, deaths within the first 48 hours of arrival, and deaths with unknown time to death.

3. INPATIENT SAFETY & QUALITY INITIATIVES

3.1. Target Zero

Target Zero is an enterprise-wide initiative to protect patients from preventable harm due to infections, falls, blood clots, pressure injuries, and medication events (Figure 3.1-1). Denver Health began this strategic initiative in 2015 and until the COVID-19 pandemic hit, had been experiencing year over year improvements (Figure 3.1-2). In 2020, while patients hospitalized with COVID-19 accounted for only 10% of adult admissions, approximately 1/3 of all Target Zero events occurred in COVID-19 patients (Figure 3.1-3). The high frequency of Target Zero events in COVID-19 patients was most striking for venous thromboembolism.

Catheter-Associated Urinary Tract Infections (CAUTI)
Hospital-acquired CAUTIs are identified by Infection Preventionists (IPs) using the CDC's NHSN criteria, i.e. inpatients with a urinary catheter who have a fever and positive urine culture.

Central Line-Associated Blood Stream Infections (CLABSI)
Hospital-acquired CLABSIs are identified by IPs using the NHSN definition.

***Clostridioides difficile* Infections (*C. difficile*)**
Hospital-acquired *C. difficile* infections are identified by IPs using the CDC NHSN criteria, i.e. diagnosed in inpatients after at least two hospital days.

Falls with Injury
Falls voluntarily reported in Safety Intelligence (SI) which led to moderate or major injury or death.

Hospital Acquired Pressure Injuries (HAPI)
A pressure injury is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful.

Medication Safety Events
Ambulatory or Inpatient events voluntarily reported in SI with a high harm score which indicates temporary or permanent harm or death. Pharmacy and DPSQ review each event to determine if it qualifies for Target Zero.

Surgical Site Infections (SSI)
Infection Preventionists (IPs) identify SSI after colon, breast, hip arthroplasty, knee arthroplasty, and abdominal hysterectomy procedures using National Healthcare Safety Network (NHSN) criteria from the Centers for Disease Control and Prevention (CDC).

Venous Thromboembolism (VTE)
Hospital-acquired venous thromboembolism, i.e. pulmonary embolism or deep vein thrombosis based on final billing diagnoses.

Figure 3.1-1: Target Zero Events

Event Category	2015	2016	2017	2018	2019	2020	% Change Since 2015
C. difficile infection	95	93	68	81	49	53	**-44%**
CAUTI	40	33	21	11	32	38	**-5%**
CLABSI	32	20	10	11	5	12	**-63%**
Falls with Injury	24	10	9	9	11	15	**-38%**
HAPI	13	19	22	32	26	31	**138%**
Hospital Acquired VTE	43	44	29	28	24	39	**-9%**
Surgical Site Infection	24	23	28	12	16	14	**-42%**
Total	**271**	**242**	**187**	**184**	**163**	**202**	**-25%**

Lives impacted: 377 more patients would have suffered harm if 2016-2020 rates remained at 2015 levels.

Figure 3.1-2: Average Monthly Target Zero Events

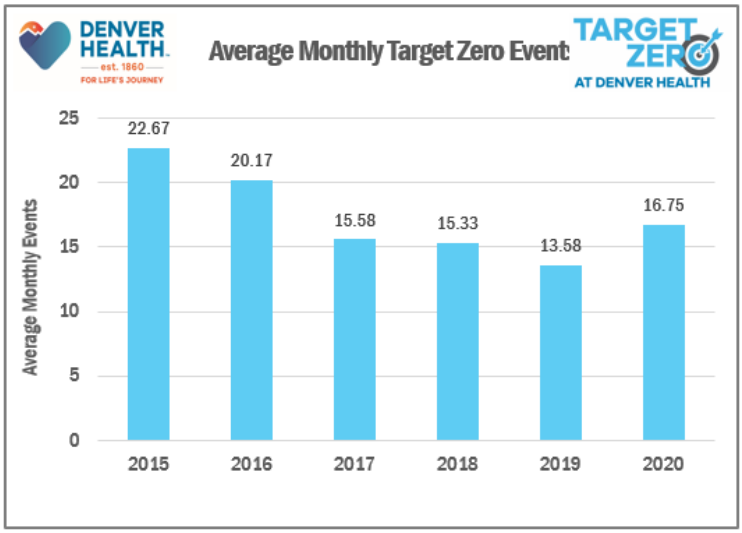
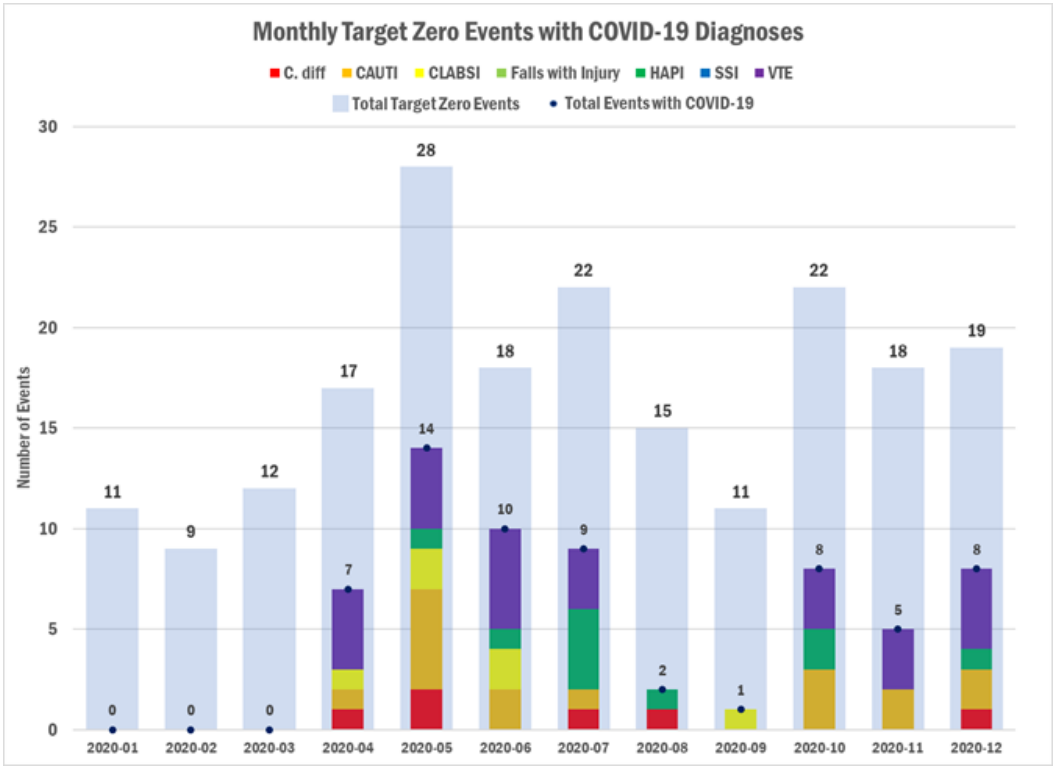


Figure 3.1-3: Impact of COVID-19 on Target Zero Events



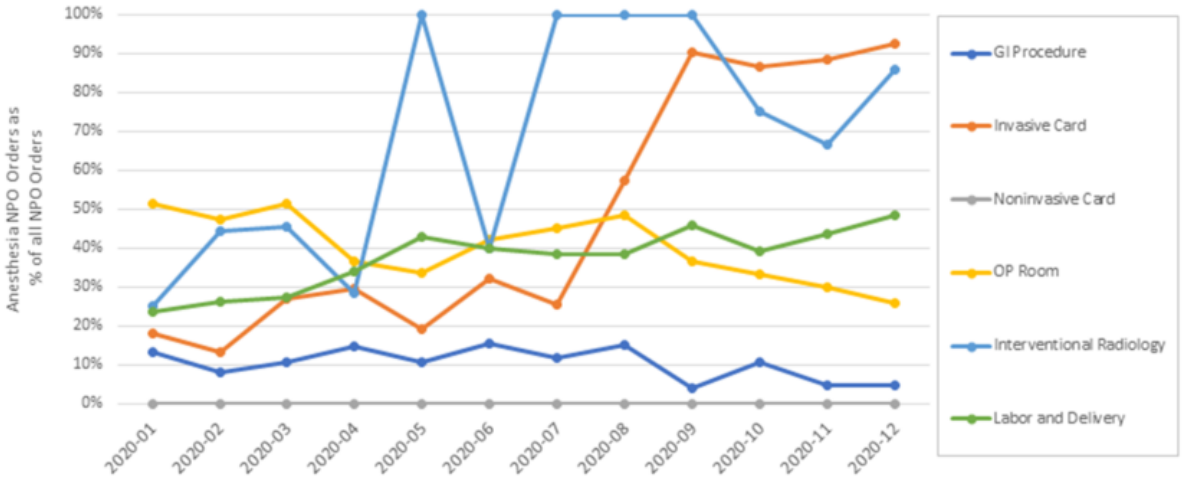
Goals of Target Zero:

- Every hospital employee can identify Target Zero as a major hospital safety initiative.
- Every inpatient unit staff member can name at least one component of the Target Zero Metric.
- Every inpatient unit manager regularly accesses unit-specific performance to share with teams.
- Visual management boards reflect local performance on Target Zero components.
- Safety measures designed to prevent harm are followed 100% of the time.
- DHHA experiences sustained year-over-year decline in preventable adverse events.

3.2 Pre-Procedure Dietary Orders

Denver Health embarked on an effort to improve comfort and safety for patients awaiting surgery. Previously, DHHA had one standardized order— "nil per os (NPO) after midnight", i.e. nothing through the mouth after midnight. A multi-disciplinary team used evidence-based Enhanced Recovery After Surgery (ERAS) principles to create a new "NPO per Anesthesia" order set, which was designed to provide more liberal diet and oral fluid orders. Effective October 1, 2019, this order set became the default dietary option for elective inpatient surgical cases. Dietary and cafeteria staff are alerted that the patient is NPO, thereby disallowing the patient from ordering food from the cafeteria. Nursing staff, however, can provide the patient with nutrition items from their unit's floor stock. The NPO per Anesthesia order set is being used in all surgical areas (Figure 3.2-1). Attention to use of this orderset in the main operating room waned during the 2020 pandemic. Efforts to re-educate the rotating group of surgical and anesthesia residents will begin in 2021.

Figure 3.2-1 Pre-Procedure Dietary Orders



3.3 Suicide Screening, Assessments, and Prevention

In late 2019 Denver Health embarked on implementation of new Joint Commission requirements related to suicide screening, assessment, and prevention. In collaboration with the psychiatric consult team, a multi-disciplinary team worked diligently throughout 2020 to create new processes and a policy to ensure the best care for our patients. Details include:

- Suicide screening for all patients admitted to the hospital.
- Suicide screening for patients who present to emergency services with a specific complaint, for example alcohol or drug intoxication. The list of complaints was vetted and approved by interested parties.
- Use of 1:1 observation for all patients who screen high risk for suicide.
- A psychiatric consult team assessment for all patients who screen moderate or high risk for suicide.
- Environmental assessments for all patients who screen moderate or high risk for suicide to mitigate potential self-harm.
- Use of purple gowns for moderate and high-risk patients until a psychiatric assessment is complete to further identify risk. The purple gowns are used to communicate to all staff (both clinical and non-clinical) that the patient is at risk of self-harm and to report any concerning behavior.

In October of 2020, the multi-disciplinary team worked with Epic team members to further improve psychiatric team evaluation timeliness. Data were not analyzed for February through April due to staff restructuring for the COVID-19 pandemic. The number of suicide screens per month has increased over the year (Figure 3.3-1). In addition, a larger percentage of moderate and high risk patients received a psychiatric consult as the year progressed (Figure 3.3-2). Furthermore, the time from screening to consultation order decreased dramatically (Figure 3.3-3).

Figure 3.3-1: Number of Moderate & High Risk Suicide Screens by Month

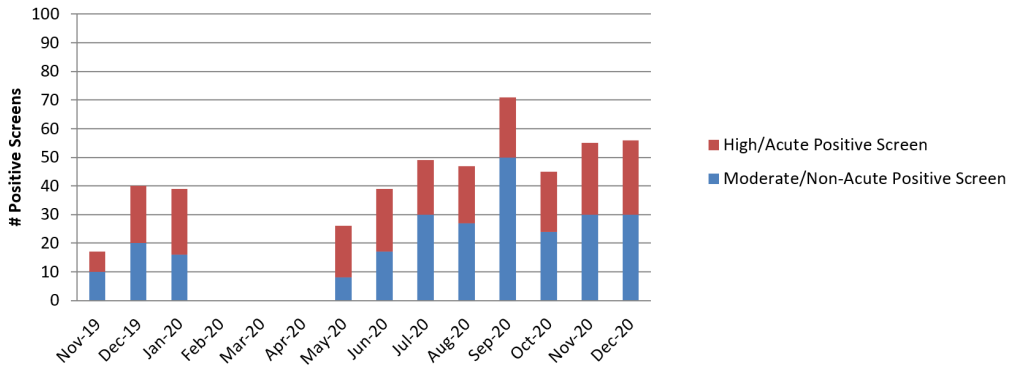


Figure 3.3-2: Psychiatric Consult and Sitter Orders for Suicide Risk Patients

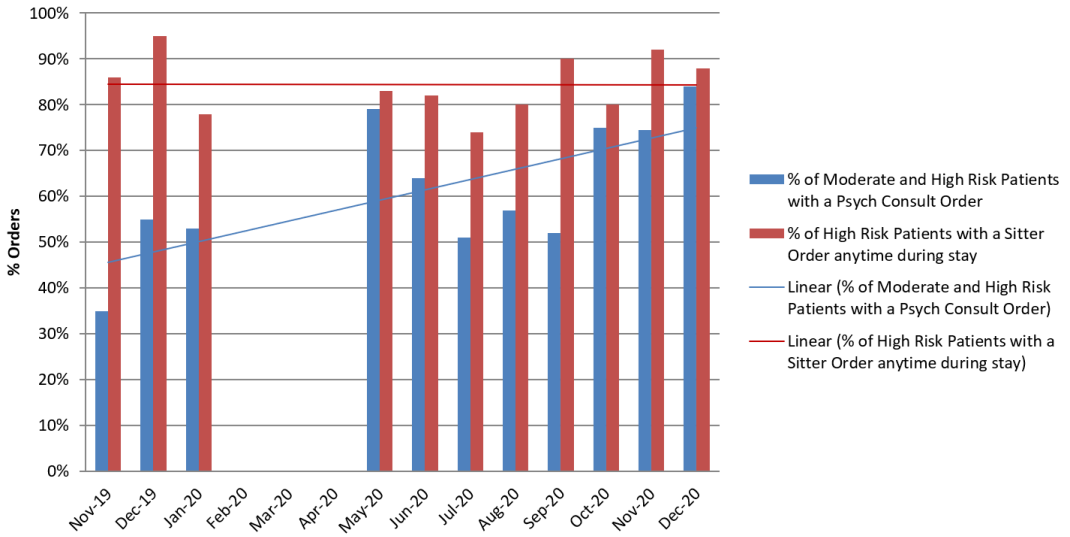
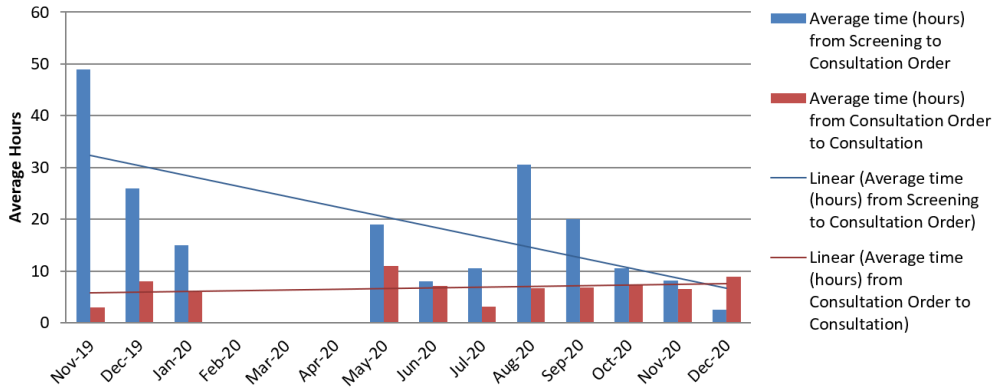


Figure 3.3-3: Time from Screening to Consult Order to Consultation



PI Activity:

- Throughout the year a tremendous amount of improvement was made to achieve safe, efficient, and effective care for this vulnerable population.
- DPSQ continued to work with a multi-disciplinary team to ensure maintenance of performance improvement and for ongoing improvement to goal.
- Suicide screening, assessment, and prevention data was reported quarterly at the Behavioral Health Quarterly Quality Meeting.
- Additionally, collaboration with state and local partners for expansion of processes to comply with HQIP Zero Suicide are underway with a goal of implementation in 2021.

3.4. Pain and Opioid Stewardship

The opioid crisis continues to be a national epidemic. For the last two years, DHHA focused on decreasing opioid prescriptions, educating staff and monitoring clinical practice. The Inpatient Pain and Opioid Management Committee, comprised of a multidisciplinary group of inpatient providers, is dedicated to this work.

Goals of the Inpatient Pain and Opioid Management Committee:

- To ensure that the inpatient pain and opioid management processes of care at DHHA reflect evidence-based standards of care
- To ensure education of staff regarding pain and opioid management
- To monitor metrics related to inpatient pain and opioid management
- To oversee patient care related policies, procedures, clinical practice guidelines, and clinical resources related to inpatient pain and opioid management
- To review and provide feedback to departmental leadership on departmental and organizational performance improvement activities and goals related to inpatient pain and opioid management
- To provide guidance on the annual and long-range strategic priorities for inpatient pain and opioid management

2020 Inpatient Pain and Opioid Management Accomplishments:

- Systematic review of all inpatient naloxone administrations
- Individual provider Chronic Opioid Therapy (COT) registry metric reports—released once in 2020 with plan for quarterly releases in 2021
- Ongoing 1-on-1 education sessions with high volume opioid prescribers from 6 different primary care clinics
- Updates to standard urine toxicology testing orders to include fentanyl
- Initiation of multidisciplinary pain education class curriculum for patients (hope is to educate many patients to shift expectations away from medications and towards holistic and active self-management of pain)
- Ongoing development of inpatient addiction consult service in 2020, including
    - Increased collaboration between inpatient addiction providers and Treatment on Demand ED counselors to help initiate buprenorphine therapy for DH inpatients
    - Coordination of care between inpatient addiction team and Outpatient Behavioral Health Services (OBHS) to facilitate effective patient transfers

Addiction Services Awarded for Opioid Program

The Colorado Department of Human Services recognized Outpatient Behavioral Health Services' adult addiction services with the *Medication-assisted Treatment Prescription Drug Opioid Abuse Hub Provider Excellence in Project Partnership* Award. The award recognizes Denver Health's achievements in response to the opioid epidemic. This prestigious honor underscores DHHA's pioneering efforts in serving people with substance misuse through no wrong door. "What set us apart from other programs is our willingness to try new ways to improve patient access, our ability to collaborate across units and departments at Denver Health, and our unwavering commitment to the dignity and well-being of every individual needing our services," said Lisa Gawenus, Director of Outpatient Behavioral Health Services. "Every team member has played an important role in developing hub & spoke care."

Colorado Prescription Drug Monitoring Program (PDMP) Report

Every year, Denver Health receives a report that reflects the prescribing practices of our medical staff compared to all of Denver County and to the State of Colorado. In Figure 3.4-1, Denver Health's providers demonstrate lower rates on 2 of the most important opioid safety metrics: high dose opioid use and co-prescribing of opioids with benzodiazepines.

Figure 3.4-1 Colorado Prescription Drug Monitoring Program (PDMP) 2020

PDMP Indicator	Q1 & Q2 2020		
	Denver Health	Denver County	CO
Percent of patients receiving more than 90 morphine milligram equivalents	5.0%	6.1%	6.7%
Percent of patients receiving more than 120 morphine milligram equivalents	2.7%	3.4%	3.7%
*Rate of multiple provider episodes per 100,000 residents	0	5.1	7.5
Percent of patients prescribed long duration opioids who were opioid-naïve	12.6	13.6	11.2
Percent of patient prescription days with overlapping opioid prescriptions	15.9%	15.9%	17.6%
Percent of patient prescriptions days with overlapping opioid and benzodiazepine prescriptions	3.8%	5.9%	6.9%

Limited to CO residents receiving schedule 2-4 controlled substance prescriptions
Excludes buprenorphine prescriptions used to treat opioid use disorder
Annual percentages are based on the average of quarterly percentages
For Denver Health, MPE denominator was the number of patients who received at least one opioid prescriptions from a Denver Health prescriber
*Rates calculated with 2019 population estimates.

3.5. COR Zero and ICU Transfers

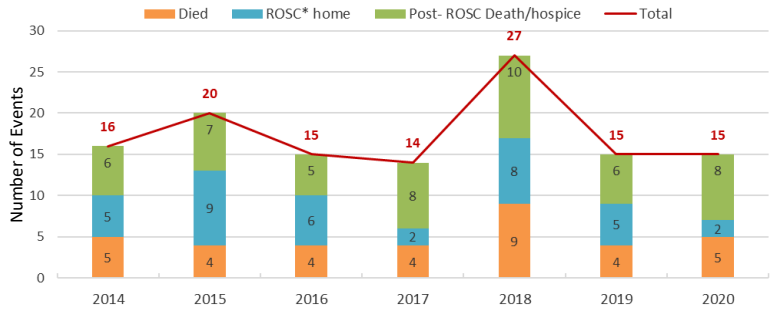
Denver Health is committed to providing care at the right time and in the right setting. In an effort to ensure that high quality of care is provided, DPSQ has standard work in place to review the clinical care of patients who require a rapid assessment and response. The Code Blue Committee quickly recognized with COVID-19 that Personal Protective Equipment (PPE) for staff responders would need to be implemented for Code Blue team response. Through collaboration between Infection Prevention and the Code Blue Committee, it was determined that only responders performing the assessment and resuscitation would enter the patient's room and all other staff would remain outside the door to be available if needed. This change in practice allowed DHHA to monitor and sustain appropriate scarce PPE resources, such as N-95 masks, shields, gowns, etc. while ensuring high quality patient care.

Coronary/Respiratory Arrest (COR Zero and/or Code Blue)
A review of medical emergencies was conducted by the Code Blue Committee. In 2020, there were 15 "Code Blue" events on the Acute Care units (Figure 3.5-1). An ACLS trained Code Blue team is called to the patient's room to assess and resuscitate the patient.

In 2019, DHHA implemented Epic's Deterioration Index (DI) tool as an adjunct to nursing clinical judgement of a patient's deteriorating condition and therefore need for a Rapid Response call. The DI tool helped to decrease Code Blue calls because patients received interventions by the Rapid Response Team (RRT) thereby averting coronary and/or respiratory arrests. Furthermore, the RRT quickly identified patients requiring a higher level of care and promptly transferred the patients to the intensive care unit (ICU). This resulted in more effective and efficient high quality care with the ultimate goal of decreasing length of stay in the ICU.

Even with the COVID-19 pandemic, DHHA was able to maintain its lower level of Code Blue activations in 2020. This can be attributed to utilization of Rapid Response rounding, escalation huddles and use of the Rapid Response Team.

Figure 3.5-1: Acute Care COR Zero / Code Blue Events

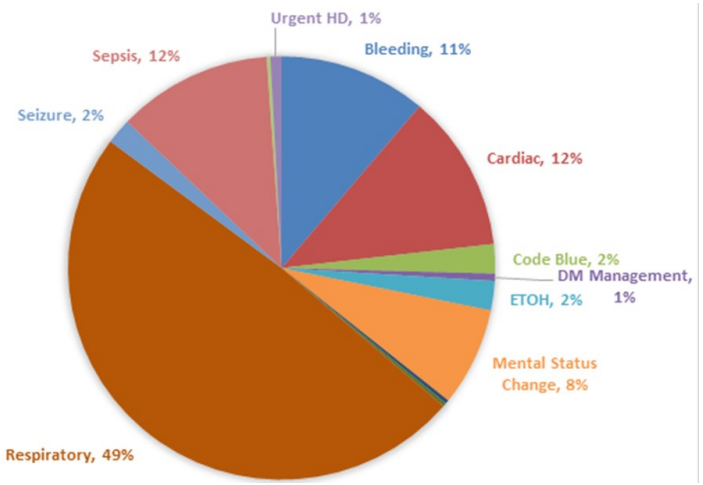


*ROSC: Return of Spontaneous Circulation

Intensive Care Unit Transfers

Transfers from Acute Care units to ICUs increased by 41% between 2019 and 2020 (347 and 491 transfers, respectively). After careful analysis of the events, it was determined that respiratory conditions contributed to nearly half of the transfers in 2020 (Figure 3.5-2). In addition to the COVID-19 pandemic surge of patients, the implementation of the DI Score and Rapid Response team helped to identify and move critical patients from the floor to ICU level of care. Education related to recognition of respiratory deterioration and sepsis increased with the COVID-19 pandemic. The increase in ICU transfers is correlated with the DHHA's COVID-19 surge. Furthermore, DHHA transitioned some Acute Care units to ICUs in order to accommodate the critical care needs of COVID-19 patients.

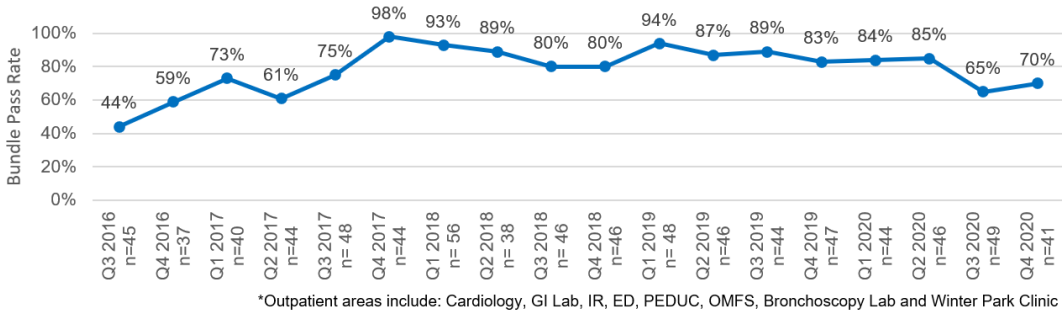
Figure 3.5-2: Reason for Transfer from Acute Care to Intensive Care Units, 2020



3.6. Procedural Sedation

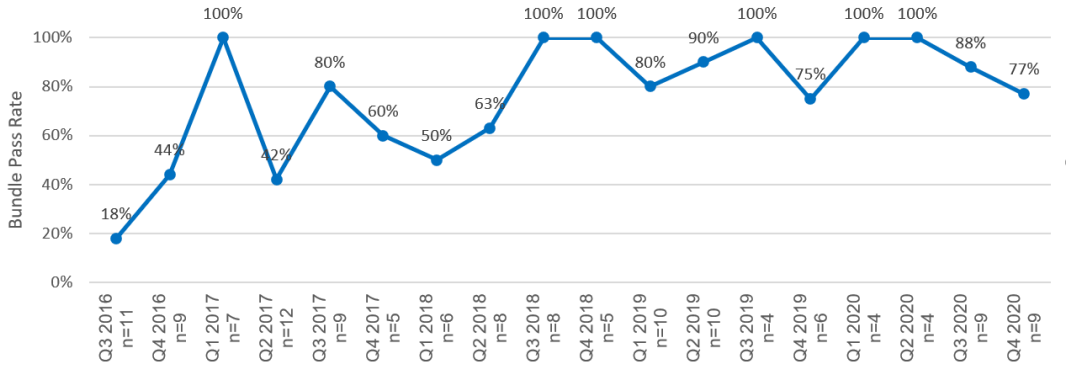
Procedural Sedation is a high-risk intervention that requires well written guidelines for practice, physician, nurse and respiratory therapy training, and ongoing competency. These procedures are performed by non-anesthesiologists for planned sedation cases on non-intubated patients. Documentation is analyzed to facilitate and support practice as well as to follow-up for performance improvement. The Procedural Sedation Committee reviews data and makes recommendations to ensure ongoing performance improvement. The graphs display a summary of the quarterly documentation data and annual sedation events that are reviewed. Figures 3.6-1 and 3.6-2 display the bundle pass rate for outpatient and inpatient documentation, respectively.

Figure 3.6-1: Outpatient* Procedural Sedation Bundle Pass Rate



*Outpatient areas include: Cardiology, GI Lab, IR, ED, PEDUC, OMFS, Bronchoscopy Lab and Winter Park Clinic

Figure 3.6-2: Inpatient* Procedural Sedation Bundle Pass Rate

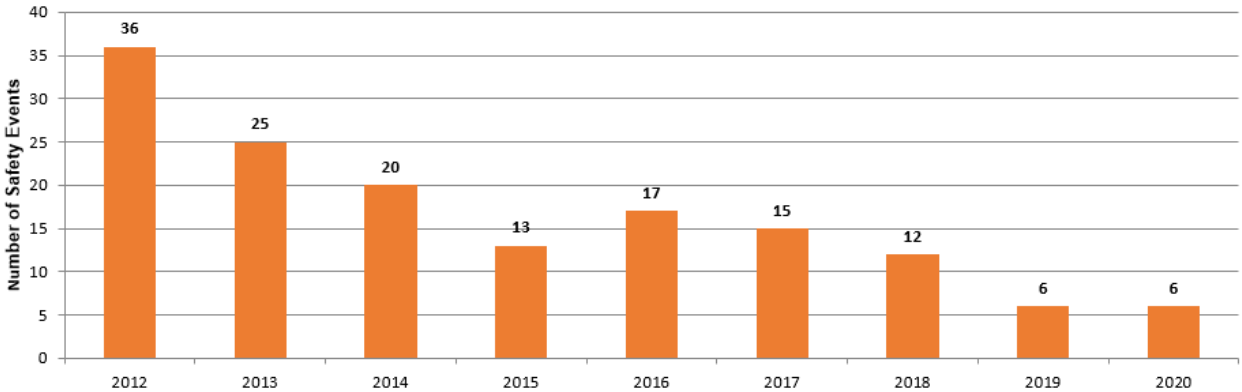


*Inpatient units: MICU, PICU, SICU, PCU and NICU

Procedural Sedation Occurrence/Safety Events

In 2020, there were six self-reported safety events related to procedural sedation (Figure 3.6-3). All events were immediately recognized and there was no harm to the patients. Three cases did require administration of Narcan. Safety remains high as demonstrated by a low safety event rate. All cases are reviewed by DPSQ, Anesthesia and individual units for system and process improvement opportunities.

Figure 3.6-3: Procedural Sedation Safety Events by Year*



* Procedural sedation areas include Emergency Department (ED, PEDUC, Winter Park), Invasive and Non-Invasive Cardiology, Interventional Cardiology, GI Lab, Bronchoscopy, Oral Maxillofacial Services, Adult Critical Care (MICU, SICU, PCU), and Pediatrics Critical Care (PICU, NICU).

3.7. DPSQ SPRINT Projects: BLS, FMS, and Vent Failures

SPRINT Methodology

A quality process involving a small group of key stakeholders with focused deliverables leading to a process decision and/or enhancement. The timeline for this process is 4-8 weeks with ½ hour weekly meetings. The problem is stated up front with a clearly defined objective outcome. Each meeting is facilitated by a quality team member and participants agree to accountability for attending all meetings with deliverables completed. The participants have the authority to make decisions and these are recorded and sustainable.

Fecal Management System (FMS) SPRINT

A fecal management system is utilized in patients who have excessive diarrhea, may be immobile and at a high risk for skin breakdown. In 2020 FMS usage increased. An adverse event resulting in a lower gastrointestinal bleed was brought to the attention of the Quality team. Data was obtained including volume, indications and outcomes of the FMS use. Analysis of this data indicated that the use of the FMS system was appropriate and safe for continued use. Recommendations from the SPRINT team were implemented to ensure that all physicians place timely orders, a guideline of care was created, and education disseminated to appropriate staff.

Basic Life Support Requirement (BLS) SPRINT

It was recognized that Denver Health has an inconsistent process surrounding BLS requirement for employees. A SPRINT team convened involving ACS, Human Resources and other relevant stakeholders. The goal of this team was to identify job positions requiring BLS certification, determine which certifications are acceptable, and establish a timeframe for completing BLS certification upon hire or within a set timeframe of hire. The outcome provided a clear and consistent recommendation that those individuals who have direct patient care and are required to have BLS certification as indicated by their Job Description must have the BLS certification upon hire.

Ventilator SPRINT

DPSQ recognized a trend of ventilator malfunctions being entered into Safety Intelligence in 2020. Due to the potential for patient harm, an immediate review occurred by Quality, Respiratory Therapy, BioMed and other key stakeholders. Data was collected and analyzed. Due to COVID-19 and the need for increased ventilators, additional medications used, and ventilator days (patients on ventilators) data was collected and all malfunctions were reviewed. It was determined that some of the malfunctions may be due to user's inadequate knowledge on new ventilators obtained for the COVID-19 surge and an increase in the use of epoprostenol which is a thick medication that is known to clog the filters. The recommendations included standardization of practice when using epoprostenol, filter changes every 12 hours vs. every 24 hours by Respiratory Therapy and reporting of any events into the SI system. Standardization of practice was immediate with the team and no additional malfunction events occurred.

The Joint Commission Perinatal Standards SPRINT

The goal of this SPRINT was to implement a new Joint Commission Standard that became effective on January 1, 2021. Due to competing priorities with COVID-19, a SPRINT was utilized to ensure timely implementation of these standards. The defined outcome was to review the Perinatal measures, assign owners and implement a plan for implementation by December 31, 2020. The majority of these outcomes were met and ongoing monitoring and compliance with these new measures will continue throughout 2021.

PolicyStat Emergent Disaster Documents SPRINT

DHHA identified a need in 2020 for a centralized site for all DHHA Emergent/Disaster Documents. COVID-19 arrived in Denver in March 2020 and the organization immediately created changes in guidelines and processes to support the safety of our patients, employees and community during the pandemic. Revisions and changes to guidelines and policies occurred daily and were placed on a COVID-19 website. Front line staff frequently inquired whether they should go to PolicyStat or the COVID-19 website for the most current version. This confusion demonstrated why one centralized location for guidelines and policies was needed. The team's recommendation was to continue with the current process in addition to implementing an expedited approval process in PolicyStat because the system has the ability to version control and front line users are familiar with PolicyStat. Therefore a process with the DPSQ team, Incident Command and Public Relations (PR) and Marketing was created. First, Incident Command must approve any revisions or changes to policies and guidelines. Second, DPSQ reviews and approves these edits and then sends the edits to the DPSQ PolicyStat coordinator to makes the changes and revisions in PolicyStat (including version control). Finally, the updates are sent to PR and Marketing to post on the COVID-19 website. While documents are still displayed in two locations, the goal will be to remove the COVID-19 website eventually and only use PolicyStat in the future for Emergent/Disaster documentation.

3.8. Diabetes Program

2020 was a year where two colossal pandemics collided: COVID-19 and diabetes. Early on, evidence emerged that diabetes was a major risk factor for severe illness and death due to COVID-19. Additionally, essential self-care behaviors needed to effectively manage diabetes (i.e. healthy eating, being active, healthy coping, reducing risks, etc.) were placed under enormous strain as people struggled to adapt to a new reality that included social isolation, decreased contact with the healthcare system, and disruptions to daily self-care routines. Loss of economic resources (i.e. job income and health insurance) also conspired to make an already challenging chronic condition that much more difficult to manage. DHHA diabetes specialists quickly mobilized to address the ongoing needs of patients with diabetes. Below is a summary of some of the care innovations implemented by staff in the last 12 months to enable DHHA healthcare professionals to continue providing high quality care to people with diabetes in the face of a once in a century pandemic:

Telehealth

- As Denver Health ambulatory care services quickly rolled out telehealth to enable ongoing access to outpatient care, inpatient diabetes providers also quickly developed a way to continue connecting with patients remotely (when needed). “In-person” visits with a diabetes specialist to teach and demonstrate hands-on diabetes self-care skills continued via video conferencing technology. Many patients were able to use their own smart devices or hospital provided tablets to participate in critical diabetes-related education and support (via video) without increasing the risk of exposure for all parties involved.
- A series of training and education videos were also quickly created (in English and Spanish) to teach critical self-care skills that could be accessed by patients at any time via YouTube. The diabetes care team is proud to report that the Spanish version of “How to Inject Insulin with an Insulin Pen” video has been viewed over 31,000 times!

Floor Diabetic Ketoacidosis protocol:

- Early on, there was an urgent need to decompress the medical intensive care unit (MICU) in anticipation of a surge of COVID-19 patients. Historically, all patients admitted for diabetic ketoacidosis (DKA) were often treated in the MICU with an insulin infusion. Hospital staff quickly realized that less severe DKA could successfully be managed in an acute care setting with frequent subcutaneous administrations of rapid-acting insulin. To safely care for these patients, a diverse group of healthcare professionals (internal medicine hospitalists, endocrinology providers, and nurse educators) created an evidenced-based floor DKA protocol to guide the care of these patients, which freed up valuable space in the MICU for critically ill COVID-19 patients.

Continuing education (CE) offerings

- Learning never stops (even during a global health crisis), so DHHA diabetes care and education specialists continued providing CE opportunities for frontline staff. Many were focused on COVID-19 as the understanding of the novel coronavirus and its impact on the diabetes population grew. Below are some of the virtual offerings provided:
  - ◊ June 2020 Lunch and Learn: Diabetes in the age of COVID-19 **(**50-60 participants)
  - ◊ November 2020 Annual Diabetes Conference: Diabetes and Kidneys: A deeper dive into the ABCs of CKD ½ day conference **(**47 participants) and 4.1 Nursing CEs offered
  - ◊ February 2021 Nursing Grand Rounds: Diabetes & COVID-19 **(**42 participants) and 1 Nursing CE offered
  - ◊ February 2021 Lunch and Learn: Beyond A1C: Leveraging CGM technology to Enhance Patient Care **(**54 participants) and 1 Nursing CE offered

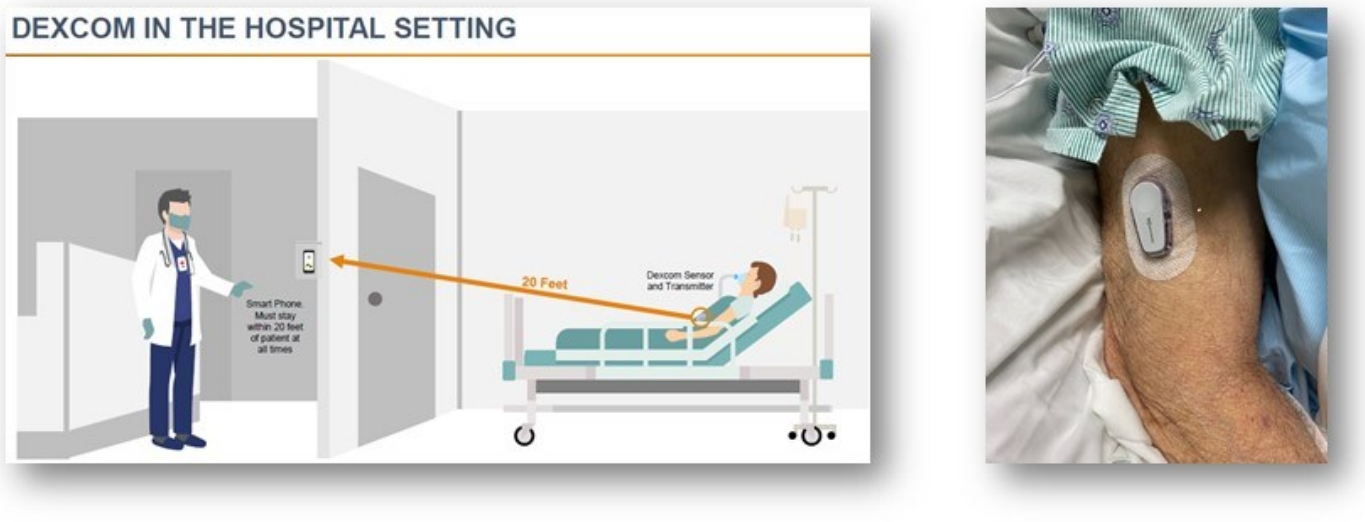
Inpatient continuous glucose monitoring (CGM) program

- One of the challenges encountered by staff early in the pandemic was how to preserve personal protective equipment (PPE) and limit staff exposure to COVID-19 (see Figure 3.8-1). People with diabetes in the hospital often require frequent glucose monitoring for safe insulin dosing. Performing this task results in multiple in-person encounters throughout the day, and for patients receiving an insulin infusion, these encounters are hourly. To limit staff exposure to COVID-19 and preserve PPE, the inpatient diabetes team quickly created a program to enable remote continuous glucose monitoring using a commercially available CGM system that is FDA approved for at-home / personal use. This project was made possible by an “enforcement discretion” decision by the FDA which allowed device manufacturers to provide hospitals with CGM supplies during the current pandemic. Over the course of a few weeks an inpatient CGM guideline was written, updates were made to the electronic medical record, and staff were trained on how to place and use these devices. CGM has been successfully utilized on approximately 85 hospitalized patients. CGM has allowed staff to:
  - ◊ Safely care for isolated patients who require insulin
  - ◊ Monitor glucose levels in real-time
  - ◊ Be alerted to impending low levels
  - ◊ Limit room entry to perform glucose testing
  - ◊ Save thousands of instances of PPE use

Feedback from staff in areas that utilize CGM (primarily MICU and 9A) has also been overwhelmingly positive. In a recent survey, over 60 RN respondents cited convenience, safety (specifically the low alert feature), less staff exposure, and glucose trend information as what they liked best about using CGM.

Looking ahead, the inpatient diabetes team at Denver Health is looking forward to creating more original content and useful educational resources for staff, and to continue leveraging the use of technology to enhance patient care and outcomes.

Figure 3.8-1: Inpatient Continuous Glucose Monitoring (CGM)



3.9 Patient Flow Workgroups / Length of Stay

In 2020, the Patient Flow efforts were focused around maintaining the gains achieved in Length of Stay Index in the second half of 2019 in the following APR-DRGs (All Patients Refined Diagnosis Related Groups):

Septicemia (DRG 720) – Utilizing guidelines for standardizing care, such as how long a patient should remain on IV antibiotics, when to transition to oral antibiotics, demarcating the lines for whether cellulitis was improving or increasing, as well as improving post-discharge follow up through the Hospital Transition Clinic (HTC).

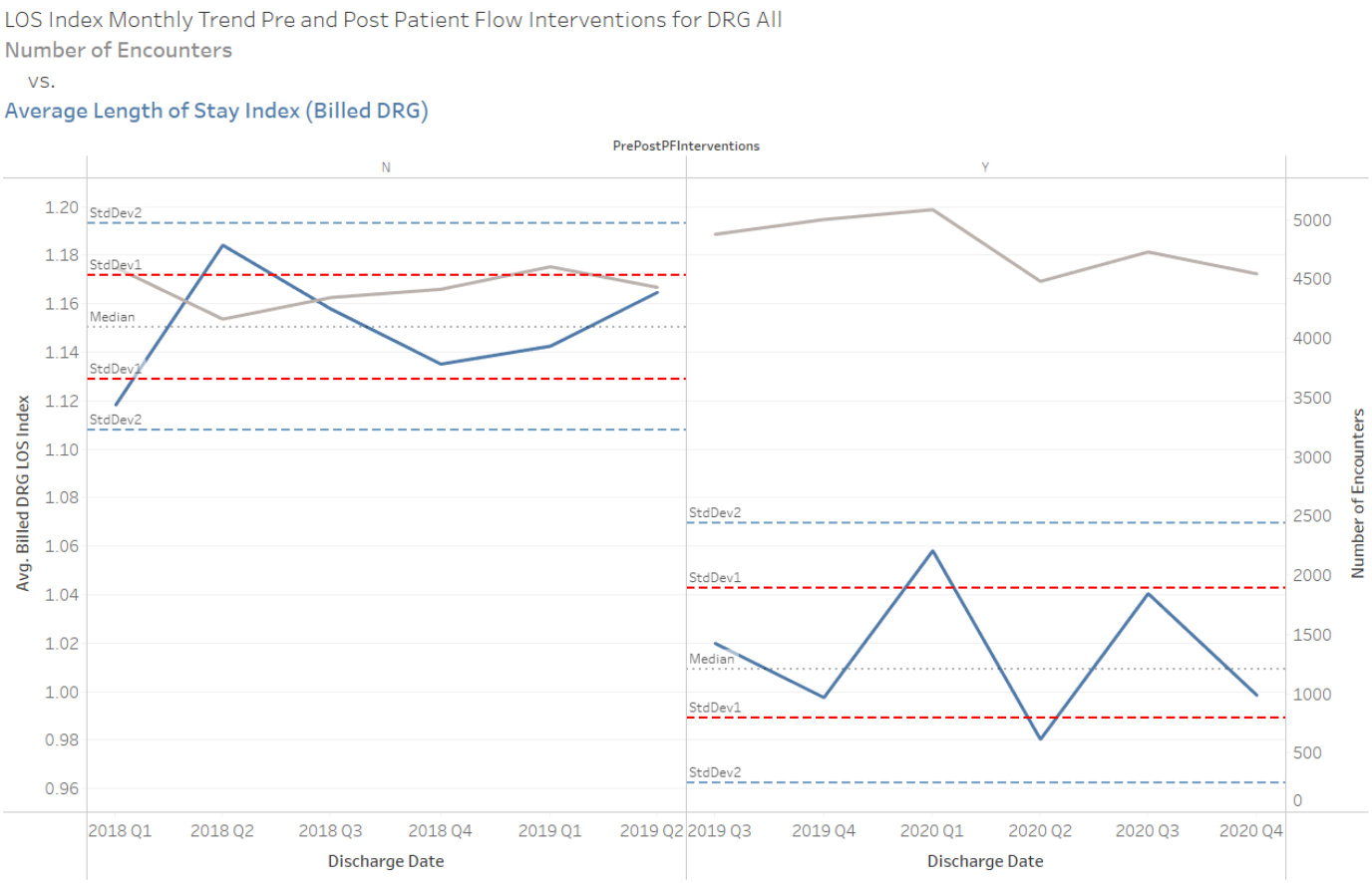
Vaginal and Cesarean Deliveries (DRGs 540 and 560)– Interventions included communication to staff that patients with Vaginal Deliveries could discharge on post-partum day 1 and Cesarean Deliveries on post-op day 2, as well as the addition of a nighttime lactation consultant. The collaborative work between nursing, providers (Pediatrics, Obstetrics, and Midwives), care management, and others worked to shift the culture around expected length of stay.

Behavioral Health: Schizophrenia, Major Depressive Disorders, and Bipolar (DRGs 750, 751, and 753) – Interventions included educating providers on expected length of stay for patients with these conditions as well as increasing the number of discharges that could be done on weekends.

In addition, improvements were made in Orthopedics with increased interdisciplinary communication, especially during the time of COVID-19 when discharge rounds were virtual instead of in-person.

Length of Stay Index (LOSI) is the ratio of a patient's actual length of stay to the expected length of stay for the patient's diagnosis related group (DRG). Denver Health's average LOSI decreased dramatically once the interventions began in mid-July 2019 (Figure 3.9-1) and have maintained a significantly lower median since (despite the impacts of COVID-19). Median LOSI for the 18 months pre-intervention (January 2018 – June 2019) was 1.15, and the 18 months post-intervention (July 2019 – December 2020) was 1.01.

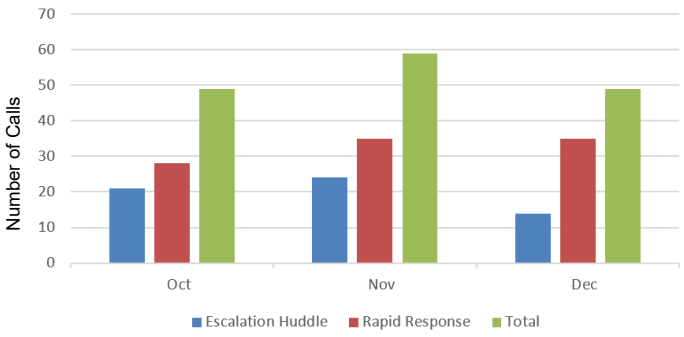
Figure 3.9-1: Average Length of Stay Index (Billed DRG)



3.10 Rapid Response System Redesign

In 2019 DHHA set a goal to integrate an Epic predictive model known as the Deterioration Index (DI) into clinical workflows and to redesign the organization's rapid response process. Throughout 2020, work has been completed to solidify the redesign and to ensure improved patient outcomes while maintaining staff satisfaction with DI related improvement. In November of 2020, the first Rapid Response Committee Meeting was held with plans to meet every other month moving forward. While the high level metrics have been greatly impacted by COVID-19, the utilization of Escalation Huddles and Rapid Response as well as the process measures indicate that DHHA is managing these patients appropriately.

3.10-1: Total Calls & Type of Calls (Oct—Dec 2020)



3.10-2: Post-Call Outcomes (Oct—Dec 2020)

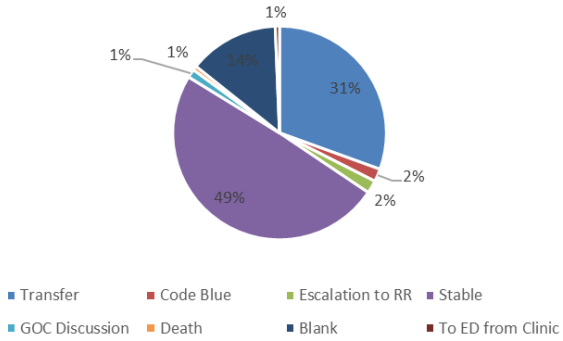
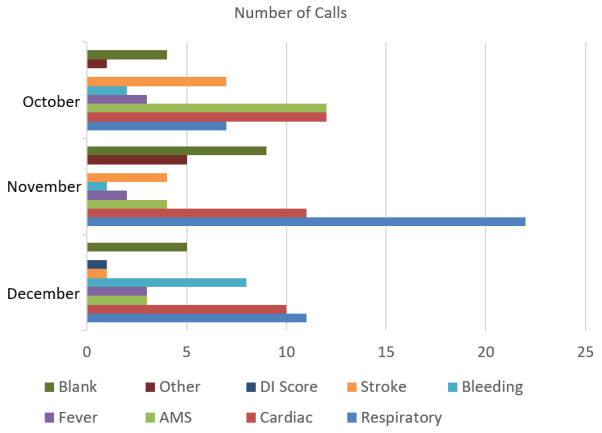
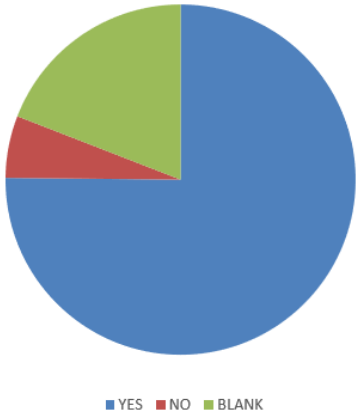


Figure 3.10-3: Reason for Call (Oct—Dec 2020)



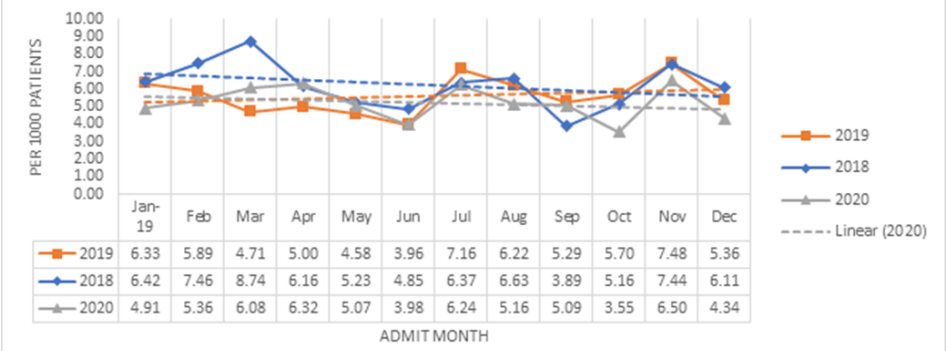
3.10-4: Response Time Appropriate (Oct—Dec 2020)



High level metrics include unplanned ICU transfers, Vizient mortality ranking, and Code Blue events. Unplanned ICU transfers are down from prior years. Ongoing evaluation is needed to ensure this reflects improved processes versus expansion of ICU level services for COVID-19 surge. Proactive rounding by the rapid response nurse was implemented in 2020. These rounds are meant to identify early signs of deterioration to improve staff response to changes in the patient's condition. Additionally, these rounds are used to coach and educate bedside nurses and teams on early signs of deterioration and how to address them.

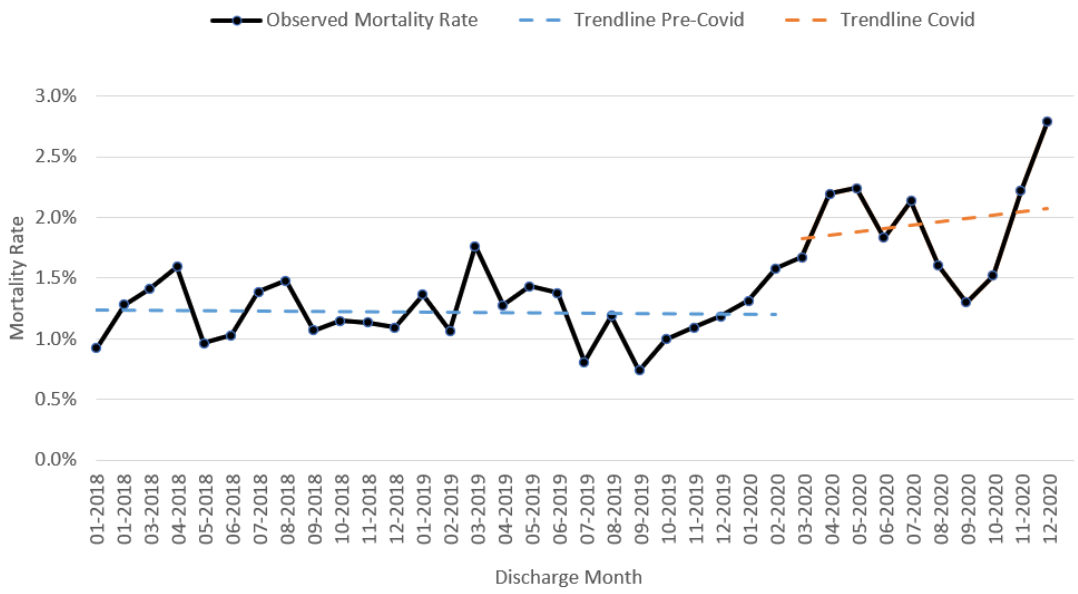
As indicated in Figures 3.10-5 and 3.10-6, COVID-19 impacted some high level metrics. Ongoing evaluation will determine if future performance improvement activities are needed.

Figure 3.10-5: Unplanned ICU Transfer Rate



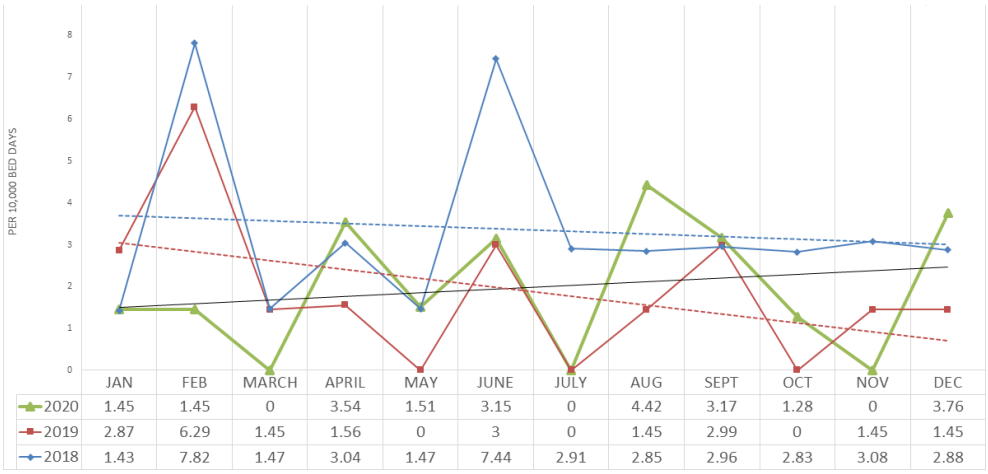
	Jan-19	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	6.33	5.89	4.71	5.00	4.58	3.96	7.16	6.22	5.29	5.70	7.48	5.36
2018	6.42	7.46	8.74	6.16	5.23	4.85	6.37	6.63	3.89	5.16	7.44	6.11
2020	4.91	5.36	6.08	6.32	5.07	3.98	6.24	5.16	5.09	3.55	6.50	4.34

Figure 3.10-6: Denver Health Mortality Rate



Cardiac arrest events outside of the ICU are up compared to 2019 (Figure 3.10-7). Again this could be related to COVID-19 surge activities and ICU level patients being cared for on non-ICU level units. The team will continue to monitor.

Figure 3.10-7: Cardiac Arrest Event Rate on Non-ICU units



	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
2020	1.45	1.45	0	3.54	1.51	3.15	0	4.42	3.17	1.28	0	3.76
2019	2.87	6.29	1.45	1.56	0	3	0	1.45	2.99	0	1.45	1.45
2018	1.43	7.82	1.47	3.04	1.47	7.44	2.91	2.85	2.96	2.83	3.08	2.88

PI Activity

- The Rapid Response Committee met every other month. The focus of the committee is to analyze data (both performance and outcome) to drive identification of performance improvement areas and to make changes.
- The committee provided regular feedback to process end users and solicited their thoughts about ongoing improvement efforts.

3.11 COVID-19 Pandemic

Background
On March 4, 2020, nine surveyors arrived for The Joint Commission Hospital triannual site visit just as Colorado and Denver Health were preparing for an emerging pandemic. The Joint Commission left after 4 days. However, it became apparent that the pandemic (COVID-19) was not leaving anytime soon. In retrospect, it is simply amazing the number of changes in process implementations by DHHA employees to ensure our community, including patients, families and employees, remained safe.

On March 6, 2020, DHHA implemented an Incident Command to address the emerging spread of COVID-19 throughout Colorado. Patient Information on symptoms and prevention flyers in English, Spanish, Amharic, Arabic, French, Mandarin, Russian, Somali, and Vietnamese were available by March 11, 2020. The Colorado Department of Public Health and Environment (CDPHE) identified 10 new presumptive positive cases of COVID-19 on March 12th. These incidences provided evidence of community spread, i.e., some patients had no recent domestic or international travel so contracted the virus near home. On March 13, 2020, CMS issued an emergency declaration issuing blanket waivers intended to ease requirements on healthcare providers. These blanket waivers helped in the response to contain the spread of the novel coronavirus 2019. All waivers were retroactively effective to March 1, 2020.

Predictions were alarming, however DHHA remained focused and determined to combat this pandemic by preventing the spread of COVID-19 and treating those who contracted Coronavirus.

- Controlled access was implemented to limit points of entry with screeners placed to ask questions about symptoms of fever and respiratory illness symptoms.
- Patients arriving with symptoms were offered a mask and hand hygiene as they entered to receive care.
- A restricted Visitor Policy was put in place.
- COVID-19 test supplies and personal protective equipment (PPE) were in critically low supply and conservation was encouraged through notices to all employees.
- Testing protocols changed weekly as new information about the virus and illness were obtained.
- Isolation room cleaning and disinfection of all equipment were reviewed for efficient, effective, and quick turn-over of rooms.
- Daily plans were discussed and debated by Leadership to ensure that the hospital could handle a surge in patient capacity, provide enough personnel to care for patients, and support critical areas.
- Leadership requested that all non-essential meetings were canceled and this practice remains through 2021.

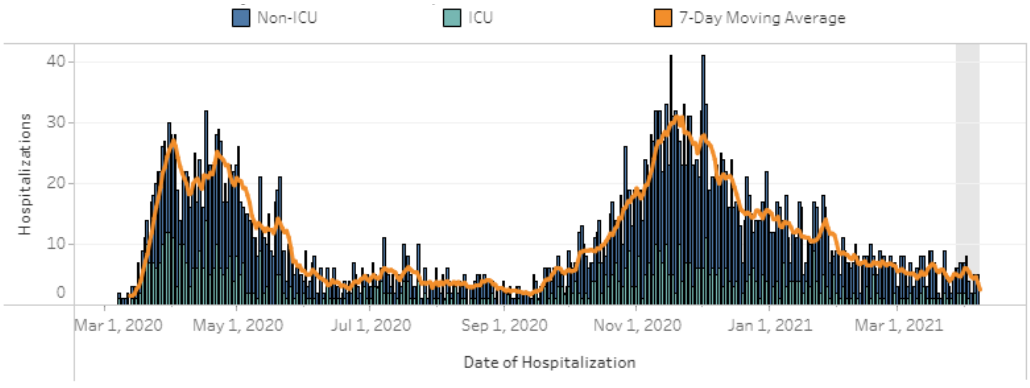
First and foremost, changes in practice were consistently evaluated for patient safety and quality of care. Below are some examples.

Patient Safety and Quality Concerns

- **Bed Surge Capacity**

In March 2020, early modeling indicated that DHHA would likely experience great stress on its ICU system, ranging from around 20 new patients/day accessing the ICUs to over a hundred at peak periods. If SARS-CoV-2 demonstrated more aggressive transmission, Denver hospitals would face patient demand on the order of two to four times capacity by late spring. DHHA was prepared for both surges which thankfully never reached the predicted peaks (see Figure 3.11-1).

Figure 3.11-1: New Denver County COVID-19 Hospitalizations



Source: Denver Public Health, CEDRS.

Surge meetings led by the Chief Quality Officer (CQO), Dr. Thomas MacKenzie, were held weekly. Attendance and participation was active including physicians, nurses, facilities personnel, infection prevention personnel, and operational leaders. The outcome from these weekly meetings ensured that we had increased the ICU bed capacity, built a COVID-19 specific unit, and determined staffing needs to support the increase in patients. At baseline, pre-COVID, the Adult ICU, Progressive Care Unit (PCU) and floor medical/surgical units had a total of 225 beds. After the surge meetings, 53 new adult beds were added to these units. In order to add some of these beds, care that had previously only been provided in the ICU had to be provided on medical/surgical units instead to ensure mechanically ventilated COVID-19 patients could have a bed in the ICU.

- **Nursing Practice Modifications**

Modifications were made to current policies and procedures in addition to creating new clinical practices guidelines. Two critical clinical changes were implemented in caring for patients with Diabetic Ketoacidosis and those with Cardiac conditions. Patients were admitted to units that were not used to treating specific conditions. Nurses were trained and passed competencies to ensure knowledge and safety in caring for these new types of patients. Patient Safety and Quality established new guidelines of care in collaboration with providers, nurses, and ancillary support services. These newly established guidelines will continue to be in effect in 2021.

- **Intravenous (IV) Pump Location**

IV pumps were moved from inside to outside the ICU patient rooms to protect staff from unnecessary exposure since they no longer needed to enter the room to check a pump or hang additional medications. This process change also conserved PPE. Risks and benefits were analyzed to ensure that patients would continue to receive high quality care. Examples of questions reviewed are: Did extension tubing increase risk of infection due to tubing lying on the floor? Was the patient receiving the correct dosage of medication through the extended tubing? Did bundling patient care and services thereby reducing nursing contact with patients lead to increasing feelings of isolation, fear and loneliness?

- **Cross Training**

Cross training staff from medical/surgical units to adult critical care and acute care areas required intensive competency training and monitoring. Nursing Education and Research created training materials and Patient Safety and Quality staff monitored activity closely for adverse events through the Daily Patient Safety Call, the Safety Intelligence System and frequent rounding on units.

- **Disaster Charting**:

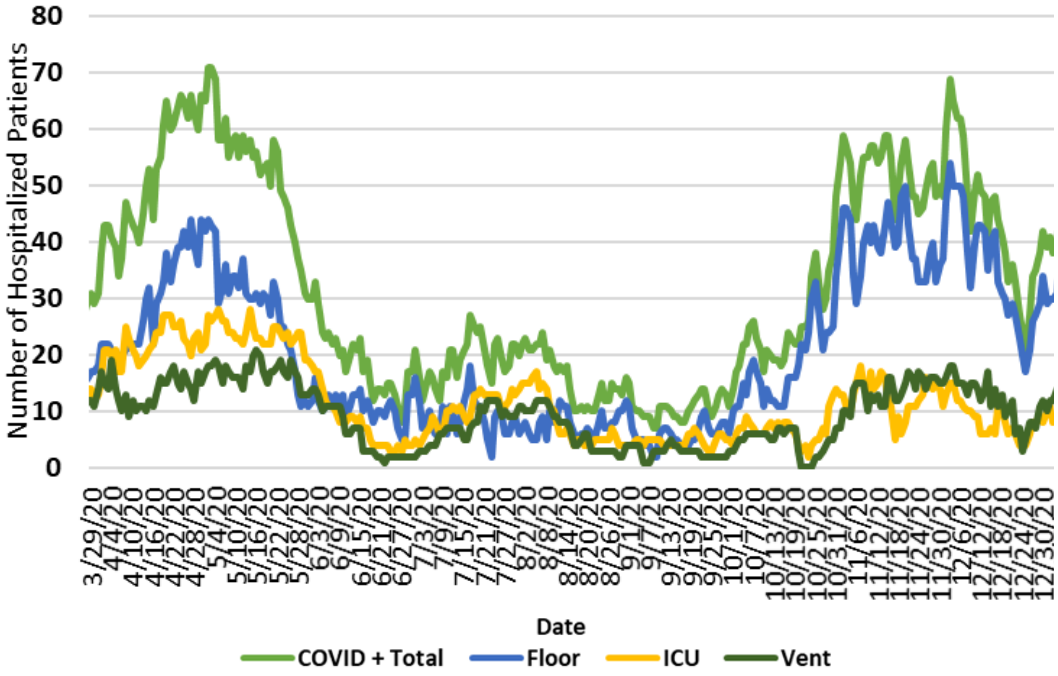
Nursing documentation is critical for communication between healthcare providers. Nurses document medications, treatments and other patient care and inform others as to past and current details required for healing. There are also requirements by The Joint Commission, Federal, and State regulations for required documentation in a patient medical record. Nurses were caring for 4-5 COVID-19 positive patients at a time that required intensive nursing care. DPSQ, in collaboration with nursing leadership, assessed and approved “disaster documentation” identifying critical elements that must be documented and other documentation that could be placed on hold.

DHHA cares for many vulnerable patients where it is essential for their safety to have a Patient Safety Care Attendant (PSCA) “within arms reach” to prevent falls and other self-harm. The Joint Commission mandates that all patients who screen positive for high suicidal risk have a 1:1 PSCA to keep them safe. The regulation requires immediate action to intervene as necessary. The Center for Disease Control (CDC) recommendations are for individuals to remain at least 6 feet apart to prevent transfer of COVID-19. Staff verbalized concerns with being “within arm’s length” and DPSQ evaluated the risk of patient transmission to staff with the risk of patient harm and determined that it was appropriate to remove the “arm’s length” and reinforced PSCA’s should remain at least 6 feet away with constant patient visualization and ability to react quickly.

The unknown of the disease progression of COVID-19 and high mortality rates heightened the fear and isolation of patients admitted to the hospital during this timeframe. Visitors were limited, patients were on ventilators and many individuals in our community do not have English as their primary language. All employees, especially the Patient Advocate team, exceled at ensuring that Denver Health Language services were utilized for communication between physicians, nurses and the patients and their families.

All DHHA employees focused to ensure that our hospital and clinics were prepared to implement alternative health care delivery models ensuring that any changes in process or practice continued to meet DHHA high standards for patient safety and quality of care. Overall, COVID-19 positive patients were cared for on the floor as well as the ICU (see Figure 3.11-2).

Figure 3.11-2: Care Settings for Denver Health COVID-19 Positive Patients



For more information on COVID-19, please refer to the Diabetes Program, Infection Prevention, and Antibiotic Stewardship sections.

3.12 Policy Management

Processes were developed for COVID-19 policy management. These processes did not follow normal requirements, and ultimately identified gaps within DHHA's escalated document management processes.

Changes to existing and new COVID-19 related documents were sent to the Incident Command Center, and then Patient Safety and Quality for review and approval. Once the documents were approved, Marketing posted the document on the COVID-19 Subsite under Policies and Procedures. Current documents in PolicyStat were identified, and notes added at the top of the document directed staff to the updates on the subsite.

In 3Q20, a DPSQ Sprint was used to identify newly created COVID-19 policies and procedures that were modified due to the pandemic. Any policies that would assist DHHA in the next COVID-19 surge were turned into standard practice.

In 4Q20, a decision was made to centralize all COVID related policies into one central repository, PolicyStat. All new and revised policy changes were posted in PolicyStat and hyperlinks to each document were added to the COVID-19 site.

PolicyStat Document Management Stats

- 1,495 Documents
- 97 New Documents
- 21 New COVID Documents
- 20 Retired Documents

Past Due Policies

- The highest number of delinquent policies occurred in May 2020 (120 policies, 8%). This was due to the COVID-19 surge and shutdowns in various areas.
- The lowest number of past due policies (2%) occurred in March 2020 during the week of the Joint Commission accreditation visit.
- On average, 4% of policies were past due at any time in 2020.

4. INPATIENT NURSING SENSITIVE INDICATORS

4.1. National Database of Nursing Quality Indicators (NDNQI)

The National Database of Nursing Quality Indicators (NDNQI) is a nursing quality improvement program that examines the relationship between nursing and patient outcomes. NDNQI tracks more than 250 structure, process, and outcome measures and delivers actionable data to guide quality improvement initiatives. Furthermore, this national database of nursing-sensitive quality indicators provides benchmarks to comparable institutions. DH's nursing department collaborates with NDNQI to identify evidence-based interventions to improve patient safety and quality. Data collected and reported to NDNQI are used to meet regulatory requirements.

4.2. Hospital-Acquired Pressure Injuries (HAPI)

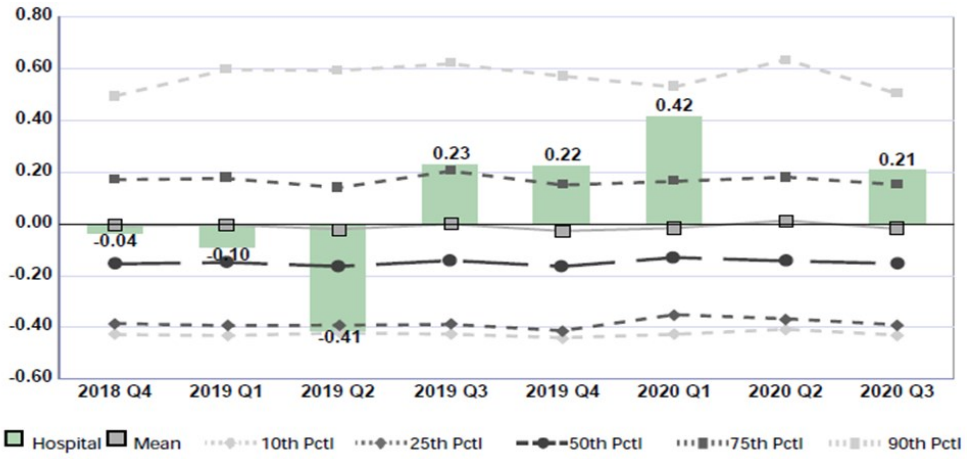
Wound Care Nurses and the Nursing Education and Research Department led an NDNQI pressure injury data collection team that included didactic and hands-on components. In 2020, this focused team met on February 20th, April 23rd, September 4th, and November 19th.

The origins of pressure injuries must be determined (hospital, hospital/unit or community acquired) for patients with pressure injuries. Calculation of the Hospital-Acquired Pressure Injuries (HAPI) rate requires the medical record for all patients admitted at the time of the survey be examined for evidence of a pressure injury. If a review of the patient record finds no evidence of the pressure injury being present upon admission, then the pressure injury is considered "hospital-acquired".

HAPI Reduction
DHHA's HAPI rate has been worse than the benchmark since 2019 Q3 (Figure 4.2-1). In response to this increased rate, a multidisciplinary HAPI Taskforce was created. The taskforce identified several interventions for improvement:

- Developed a workflow with Clinical Documentation Integrity (CDI) for reviewing provider documentation of HAPIs.
- Revised the Braden Score interventions in Epic.
- Improved communication of HAPIs through a weekly Pressure Injury Report to Nursing Leadership.
- Started a multidisciplinary rounding pilot in the ICUs.
- Initiated a HAPI Target Zero campaign.

Figure 4.2-1: NDNQI Pressure Injury Outcomes, Stage II and Above



Source: NDNQI; graph displays standardized HAPI scores. Green bars are DHHA's performance while the gray line is the benchmark performance. Green bars underneath the gray line indicate low HAPI rates. No data available for Q2 2020 due to the COVID-19 surge response.

4.3. Patient Falls

The 2020 goal of Denver Health's Fall Prevention Program was to use current evidence to reduce the total number of falls by 7.5%. Injury fall prevention is a Target Zero initiative and falls with injury reporting is a requirement for Magnet®. The fall prevention work is ongoing and every unit in the hospital focuses on fall prevention and improved reporting. Preventing patient falls requires a collaborative, evidence-based, data-driven, multidisciplinary approach.

Fall Reduction

Hospital falls decreased 1.4% between 2019 and 2020 and 29% over the past four years (Figure 4.3-1). Furthermore, DHHA out-performed NDNQI's benchmark for the past 8 quarters (Figure 4.3-2). DHHA outperformed NDNQI's injury falls benchmark in Q1 2020 and Q3 2020 (Figure 4.3-3). According to the Colorado Hospital Association Report Card, DHHA had the best fall rate in Q1 2020 when compared to other hospitals in the state of Colorado with over 100 beds (Figure 4.3-4).

Figure 4.3-1: Number of Inpatient Falls at Denver Health, Hospital-Wide

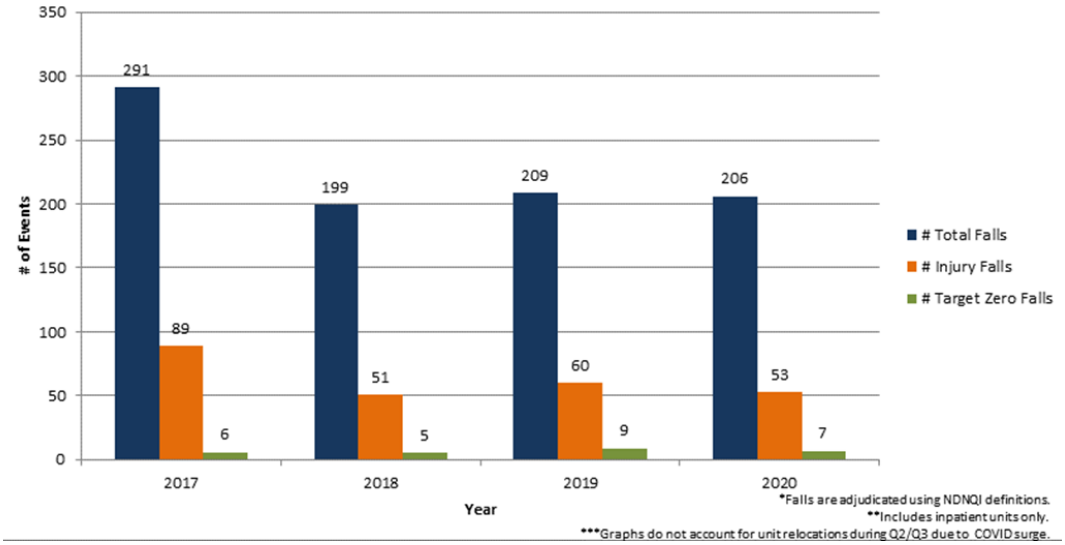
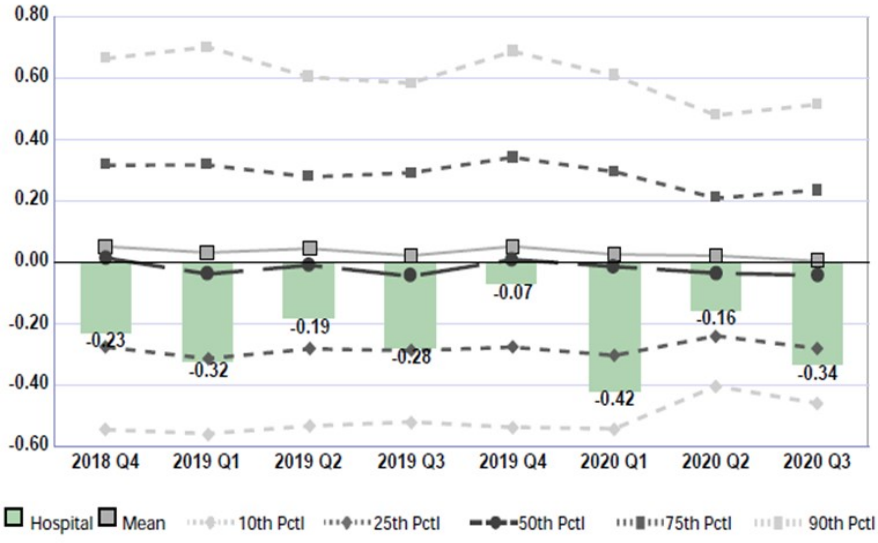
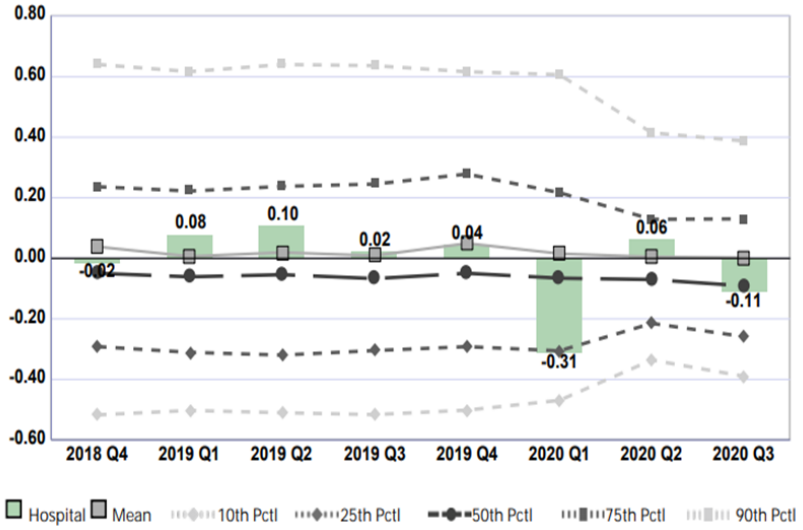


Figure 4.3-2: NDNQI Total Falls per 1000 Patient Days for Inpatient Units



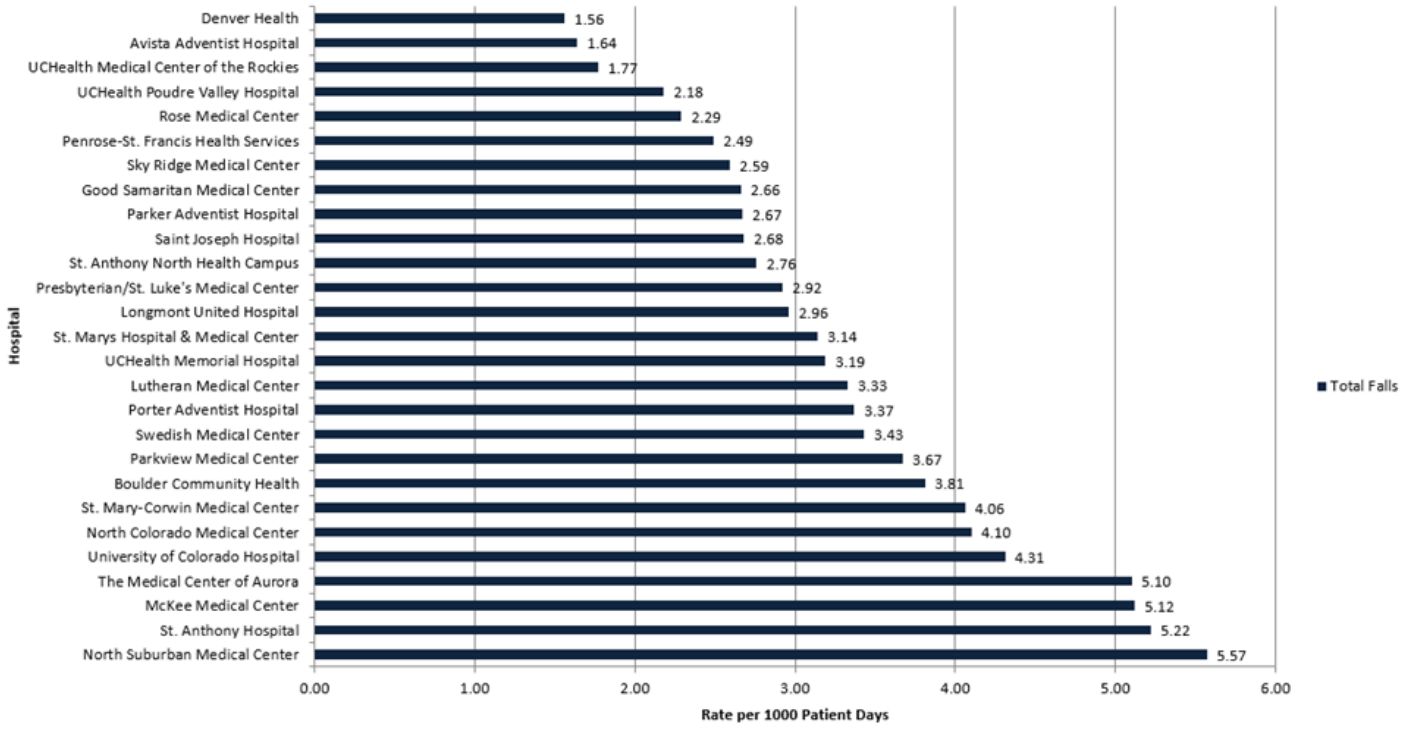
Source: NDNQI; graph displays standardized injury fall scores. Green bars are DHHA's performance while the gray line is the benchmark performance. Green bars underneath the gray line indicate low injury fall rates.

Figure 4.3-3: Injury Falls per 1000 Patient Days



Source: NDNQI; graph displays standardized total fall scores. Green bars are DHHA's performance while the gray line is the benchmark performance. Green bars underneath the gray line indicate low fall rates.

Figure 4.3-4: Colorado Hospital Association Total Falls per 1000 Patient Days



*CHA uses the same total fall definition as NDNQI.
**Includes Medical-Surgical Units only. For Denver Health, this is Acute Care Division.

Acute Care Division Fall Prevention

Total falls in the Acute Care Division decreased by 9.6% between 2019 and 2020 (Figure 4.3-5). There was one additional injury fall in 2020 compared to the prior year. DH's Acute Care Division performed better than the NDNQI benchmark for all but one month of the year (Figure 4.3-6). Quality improvement initiatives conducted in 2020 by the Acute Care Division include:

- Maintained "The Big 3" of fall prevention.
- Increased awareness and accountability through revisions to standard work.
- Piloted Epic's Inpatient Risk of Falls predictive analytics model on 6A, 7A, 9A, & 4B.
- Conducted a Lean event to evaluate the falls program.

Figure 4.3-5: Injury Falls per 1000 Patient Days

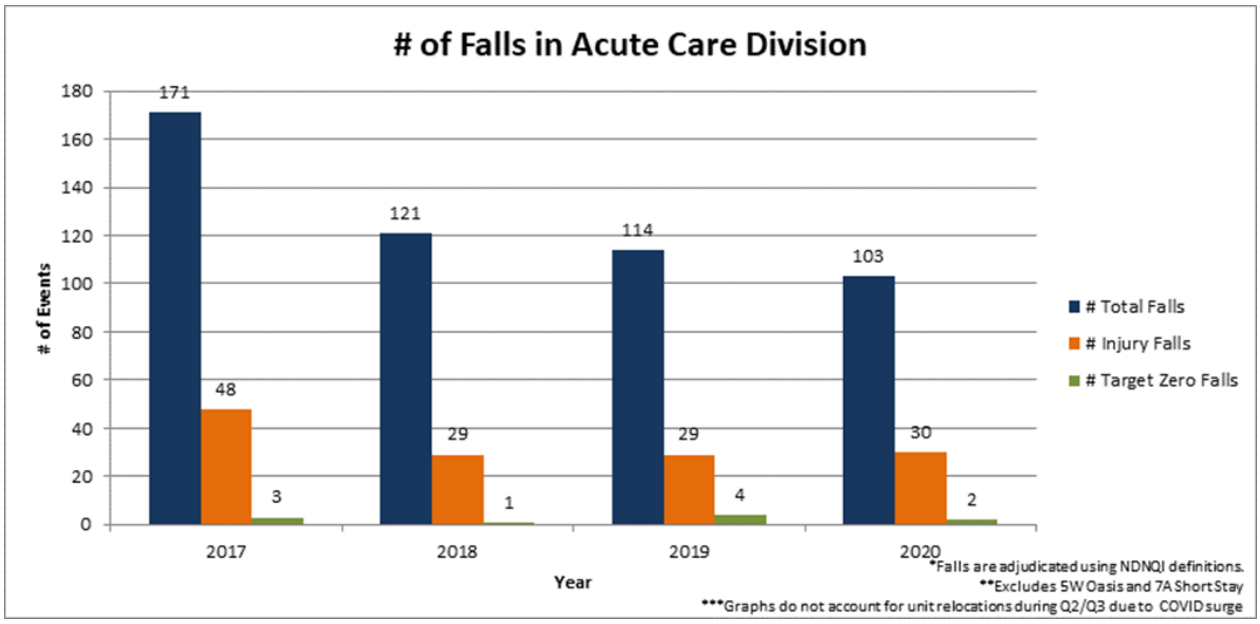
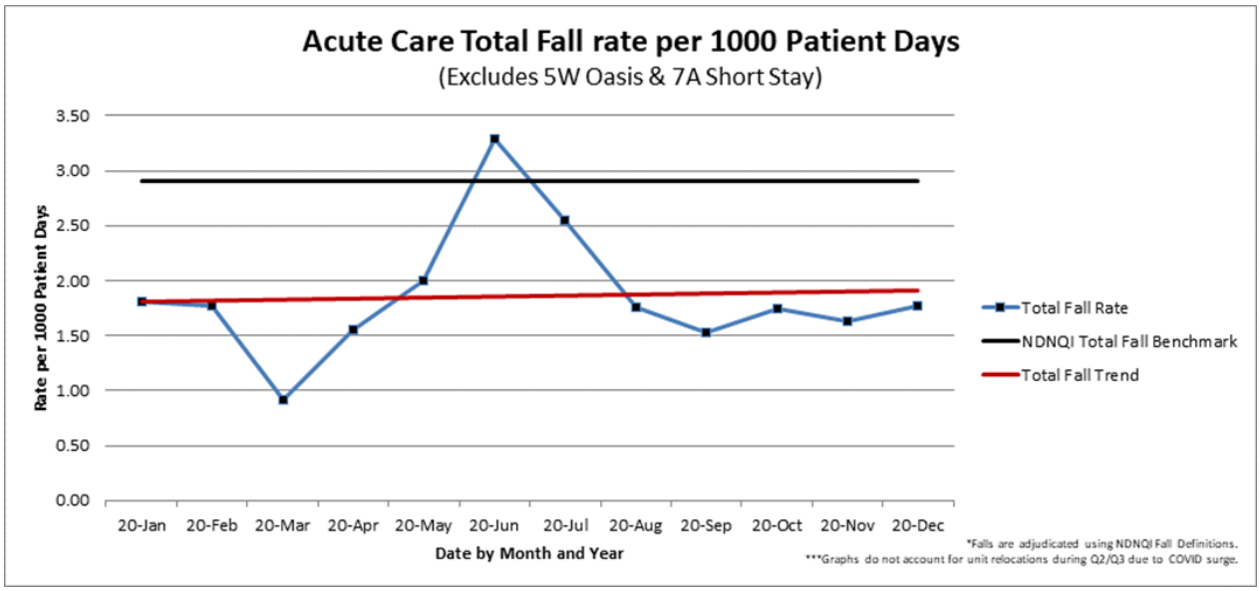


Figure 4.3-6: Acute Care Total Fall rate per 1000 patient days



Behavioral Health Division Fall Prevention

Total falls in the Behavioral Health Division decreased by 27% compared to 2017 (Figure 4.3-7). However, in 2020 there was a 4.6% increase in falls over the prior year (Figure 4.3-8). Adult psychiatry falls were worse than the NDNQI benchmark for the majority of 2020. Patients with Huntington's disease are excluded from NDNQI fall reporting unless they sustain a moderate or major injury. Quality improvement initiatives conducted in 2020 by the Behavioral Health Division include:

- Reinforced the falls prevention bundle
- Implemented wireless chair alarms
- Educated staff on best practices for preventing falls in patients with Huntington's disease

Figure 4.3-7 Number of Falls in Inpatient Behavioral Health

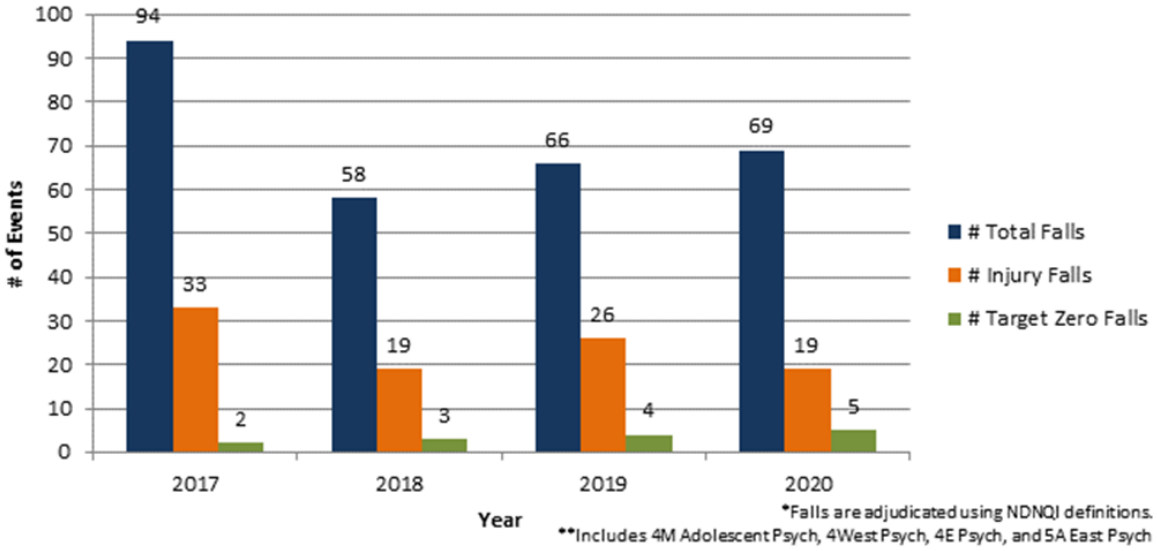
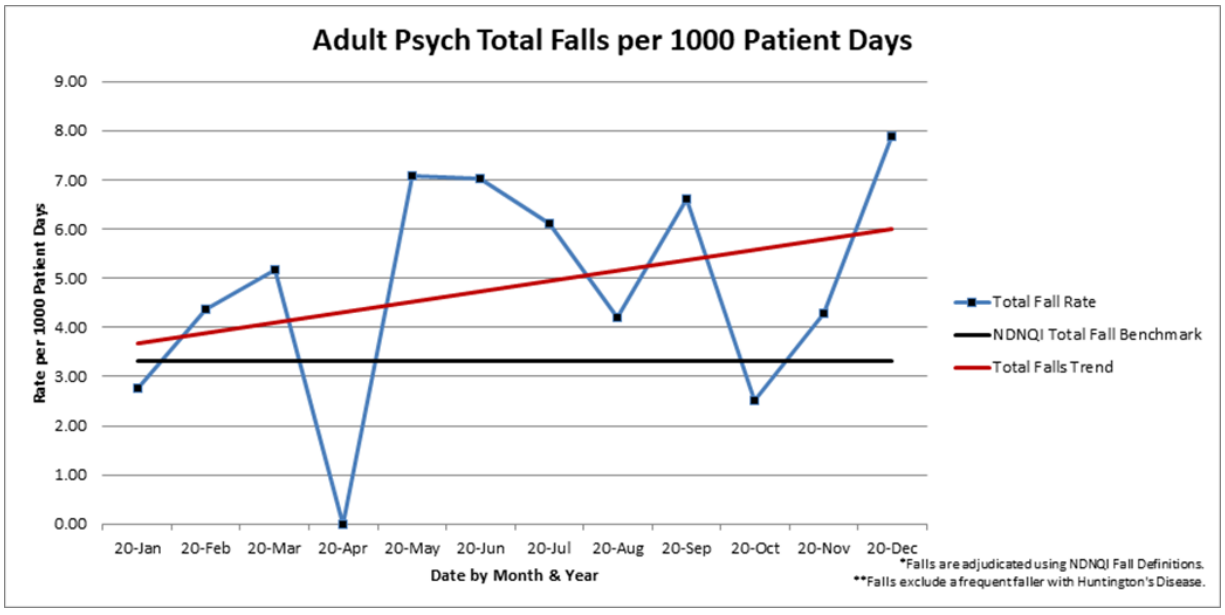


Figure 4.3-8 Total Falls per 1000 Patient Days on Inpatient Behavioral Health



5. OUTPATIENT SAFETY & QUALITY INITIATIVES

5.1. Ambulatory Care Services (ACS) Quality Improvement (QI) Committee

The Ambulatory QI Committee (QIC) is a multidisciplinary committee which monitors QI performance efforts and vets potential new processes in the Ambulatory Care Services (ACS) clinics. The 18 QI Workgroups (Figure 5.1-1) provide regular updates to QIC on measure performance and improvement initiatives. Projects involving DH clinics (from interventions developed in clinics to research projects to national initiatives) must be evaluated and approved by QIC.

Figure 5.1-1: Ambulatory Quality Improvement Committee and Workgroups

Asthma Management	Anticoagulation
Diabetes Care	Medical Neighborhood
Cardiovascular Disease (CVD) prevention and treatment	Care Management of complex patients
Cancer Screening (colorectal, breast, and cervical cancer)	Transition of Care from inpatient to outpatient setting
Integrated Behavioral Health	Sexually Transmitted Infections
Immunization for pediatric and adult patients	Perinatal Health
Chronic pain management and opioid use	Tobacco Cessation
Health Equity	Epic Optimization to facilitate QI
Pediatrics	Weight Management

5.2. ACS Strategic Clinical Performance Metrics

ACS and Denver Health leadership annually identifies strategic clinical performance metrics based on national key performance indicators from organizations such as NCQA, HEDIS, Bureau of Primary Healthcare, CMS, and PCMH Recognition. QIC works with ACS QI workgroups to define targets for these metrics. ACS developed a scoring system, Ambulatory Quality Strategic Index, to monitor progress throughout the year. The index is a count of individual metrics meeting the target goal. Eleven Strategic Indicators were identified for 2020. Threshold and Target values for the Index Score were set at 6 and 12, respectively. Denver Health reached its threshold goal in March 2020. However, the index score dropped below threshold in September and remained at that value until the end of the year (Figure 5.2-1). The COVID-19 Pandemic greatly impacted QI efforts in 2020 as patient care shifted from face-to-face visits to telehealth visits.

Figure 5.2-1: Ambulatory Quality Strategic Index (December 2020)

Strategic Metrics

		Chlamydia Screening at Visit 14-24 yrs 67%	Depression Screen and Follow-up Plan if Positive 70%	Peds Vaccinations Combo 7 73%	Breast Cancer Screening 68%	Cervical Cancer Screening 77%	Colorectal Cancer Screening 66%	Diabetes A1c<=9 77%	Diabetic Medical Attention for Nephropathy 91%	First Trimester Entry into Prenatal Care 73%	Hypertension BP Controlled 68%	Persistent Asthma on Controller Meds 5-64 yrs 75%
CHS Overall		62.9%	59.8%	72.7%	54.4%	67.0%	53.7%	65.9%	86.2%	75.2%	62.3%	76.1%
Family Med	Total	65.3%	60.7%	69.4%	54.0%	69.0%	52.9%	66.1%	87.8%	77.0%	62.7%	78.2%
Internal Med	Total	49.0%	57.6%	86.7%	55.8%	67.0%	55.3%	66.1%	84.7%	69.6%	61.4%	72.8%
Peds	Total	48.1%	67.4%	75.5%								77.2%
SBHC	Total	43.8%	59.0%									77.6%
Womens Care	Total	86.0%	53.7%		26.2%	57.6%	9.2%			73.9%		42.9%

Diabetes Control and Attention to Nephropathy

- Metrics:
  - ◊ Percent of adult patients in the diabetes registry whose last hemoglobin A1c was below 9.0% (Goal is 77%)
  - ◊ Percent of patients who completed nephropathy screening and/or ACEi or ARB medication (Goal is 91%)

- Results:
  - ◊ 65.9% of adult diabetes patients had a last hemoglobin A1c below 9.0%. Glycemic control worsened from 72.7% in January 2020 down to 65.9% in December 2020. This is likely due to a more sedentary lifestyle during the pandemic.
  - ◊ 86.2% of patients had a nephropathy screening and/or ACEi or ARB medication. Medical attention to nephropathy decreased 1.5% over the year.
  - ◊ DHHA's diabetes registry has grown by 113 patients over the past year (N=10,327)

- QI Activities:
  - ◊ Diabetes Management efforts were driven by the Diabetes workgroup using a multi-pronged approach. Strategies included provider education of new guidelines, diabetes facesheets at point of care, diabetes SmartSets, utilization of medical-therapy-management with a clinical pharmacist, incorporation of Diabetes Self-Management Classes, nurse insulin titration clinics, and utilization of continuous glucose monitoring.
  - ◊ Outreach efforts were limited during the spring and summer months of 2020 due to the COVID pandemic as efforts to decrease patients coming into the clinic were a priority. Patient hesitancy to come in for visits and tests then became an issue as the clinics re-opened to patients.

Hypertension Control

- Metric: Percent of patients in the hypertension registry with the most recent blood pressure taken in ACS during the last 18 months < 140/90 mmHg (age < 80) or < 150/90 mmHg (age ≥ 80). Goal is 68%.

- Results:
  - ◊ 62.3% of hypertension patients had control of their hypertension in December 2020
  - ◊ As patients returned in late summer and early fall, the percentage of patients with uncontrolled blood pressure increased. The typical seasonal variation in blood pressure control was not seen in 2020.
  - ◊ Race/ethnic differences continue in blood pressure control with African Americans having the lowest control rates compared to Hispanic and White patients.
  - ◊ In addition to patient factors (e.g. non-adherence with medication and lifestyle), there continues to be hesitancy for medication intensification, specifically for patients with blood pressures slightly above recommended goals (systolic blood pressures in the low 140's mm Hg).
  - ◊ The number of patients in DHHA's hypertension registry continues to grow every year, with the population growing more than 1,000 patients over the past year to 24,736 patients in December 2020.

- QI Activities:
  - ◊ Outreach efforts focused on bringing patients with uncontrolled blood pressure back to the clinic. Clinical pharmacist resources were involved in the visits.
  - ◊ A Strategic Metric Guide was used to outline roles for each team member at the clinics, including patient navigators, clerks, medical assistants, nurses, clinical pharmacists and providers.

Depression Screening and Follow-Up Plan

- Metric: Percent of visits by empaneled patients in the prior month, >=12 years old, who had a depression screen at the time of the visit, and if positive, had a follow up. (Goal is 70%)

- Results:
  - ◊ 59.8% of visits for patients aged 12 years and older had a depression screen during the visit, and if screened positive, a follow-up plan.
  - ◊ During the year, there was a decrease in performance in the depression screening. However, there was an improvement with follow up (3%) for patients with a positive depression screen.

- QI Activities:
  - ◊ The Integrated Behavioral Health workgroup created a process to perform the depression screen during telehealth visits. Clinics had trouble with this process due to medical assistant capacity.

Cervical Cancer Screening

- Metric: Percent of active female patients with a Pap test in the past 3 years (age 24 – 64) or a Pap + HPV test in the past 5 years (age 30 – 54). Goal is 77%.

- Results:
  - ◊ Performance decreased from a baseline value of 70.2% in January 2020 to 67.1% in December 2020.
  - ◊ Active female patients between 24 and 64 years old increased by more than 2,500 patients in 2020.

- QI Activities:
  - ◊ The Cancer Screening workgroup led DHHA's efforts for this metric. The efforts focused on improving orders of Pap/Pap+HPV tests during visits, performing a Pap during the visit, and/or scheduling patients to Pap focused clinics.
  - ◊ Additional efforts included obtaining medical records and then documenting number of Paps performed outside DHHA.

Breast Cancer Screening

- Metric: Percent of active female patients age 51-74 years with a mammogram in the past 2 years. (Goal is 68%)

- Results:
  - ◊ Performance decreased throughout the year from 59.9% to 54.4%
  - ◊ Active female patients between 51 and 74 years increased by nearly 600 patients over the past year.
- QI Activities:
  - ◊ Efforts focused on increasing screening test orders during the visit. During 2020, efforts were hampered by patient hesitancy to go to the main campus due to the COVID pandemic coupled with not having a mammovan. The old mammovan became non-functional while construction of the new mammovan (Oregon) was delayed due to the manufacturer shutting down during the pandemic.
  - ◊ ACS' Population Health Team continued their efforts to outreach patients who need breast cancer screening with a focus on Medicare patients.

Colorectal Cancer Screening

- Metric: Percent of active adult patients age 51-75 years with at least one of the following services: FIT in the past 15 months, flexible sigmoidoscopy in the past 5 years or colonoscopy in the past 10 years. (Goal is 66%)

- Results:
  - ◊ Performance was 53.7% in December 2020, reflecting an 8% decrease over the year.
  - ◊ The number of patients has increased by more than 1,000 patients in the past year.

- QI Activities:
  - ◊ The Cancer Screening workgroup developed a process to mail FIT cards to patients with follow up phone calls reminding the patient to return the card. The pilot study that was successful but unable to be expanded due to financial constraints.
  - ◊ Efforts continued to focus on ordering and giving FIT kits during each patient's visit.

Persistent Asthma on Controller Medication

- Metric: Percentage patients with persistent asthma 5-64 years old, who are on a controller medication. (Goal is 75%)

- Results:
  - ◊ DHHA exceeded its target goal with a 76.1% compliance rate in December 2020

- QI Activities:
  - ◊ Review of patient diagnosis to verify the persistent asthma diagnosis was appropriate
  - ◊ Confirmed by medical record audits that a patient always has an active prescription of a controller medication available for pick up
  - ◊ The asthma workgroup continued efforts to operationalize the Asthma Medication Ratio but they encountered methodology difficulties, especially with prescriptions filled outside Denver Health.

Pediatric Vaccination (Combo 7)

- Metric: Percentage of patients who have received 4 DTaP, 3 Polio, 1 MMR, 3 HIB, 3 Hepatitis B, 1 Varicella, 4 Pneumococcal immunizations, 1 Hepatitis A, 2 Rotavirus by 24 months of age. (Goal is 73%)

- Results:
  - ◊ The threshold target was reached by December 2020 (72.8%), just shy of the 73% goal.

- QI Activities:
  - ◊ Education developed for families with vaccination hesitancy
  - ◊ Continued efforts to pre-schedule patients for 2, 4, and 6 month Well Child Checks (WCC) which is when the vaccinations are given.
  - ◊ Some clinics focused on following up with patients who missed a WCC appointment.
  - ◊ Efforts focused on adhering to standard work at the visit and ensuring that medical assistants use the Best Practice Alerts to facilitate the vaccination process for those patients with a clinic visit.

First Trimester Entry into Prenatal Care

- Metric: Percent of pregnant women who received care at DHHA during the calendar year and had an OB intake date within 13 weeks into their pregnancy. (Goal is 73%)

- Results:
  - ◊ This metric steadily increased by 8% during 2020, resulting in DH meeting its goal with 75.2% compliance in December 2020

- QI Activities:
  - ◊ A new process was implemented to capture prenatal care for patients who transferred to DHHA.
  - ◊ Better adoption of a new OB template in Epic
  - ◊ Increased the number of prenatal visits available at the clinics
  - ◊ Changed type of visits from a “positive pregnancy test visit” to a prenatal visit

Universal Chlamydia Screening:

- Metric: Percent of primary care visits for patients 14 – 24 years old with a completed chlamydia screening at the visit or within the prior year. (Goal is 67%)

- Results:
  - ◊ Performance increased from 63.5% at baseline at 63.5% to a Stretch value of 80.7% by May 2020.
  - ◊ This indicator remained at Stretch levels until September 2020 when lack of reagent supplies required the screening process to stop.

- QI Activities:
  - ◊ Uptake of the standard work was immediately adopted by the clinics.
  - ◊ Although this screening remains a high priority to the clinics, this measure was not included in the 2021 QI bundle given the uncertainty of reagent supplies.

5.3. Gaps in Care

ACS updated its QI approach in 2019 through a Population Health Strategic Plan. The approach included “during-visit” and “between-visit” strategies and followed a team-based approach utilizing resources available in the clinics. Strategic Metric Guides were created and updated for each QI indicator based on best practices.

During-Visit Intervention

A “Gaps in Care Dashboard” was created to track utilization of Epic’s Best Practice Advisories (BPA). These scorecards help monitor Medical Assistant responses to the BPAs and provides leading metrics to achieve completion of the Strategic Indicator with which it is associated. Figure 5.3-1 shows an example of the daily scorecard. The Gaps in Care Dashboard allowed clinic managers to review their performance at the clinic, medical assistant, and provider levels (Figure 5.3 -2).

The COVID-19 pandemic resulted in a transition from face-to-face visits to telehealth visits and medical assistants were not involved in the visits. Thus, clinics were unable to use the Gaps in Care Scorecard. During the late summer and early fall, DHHA started seeing more patients in clinics as procedures were developed to mitigate exposure and infection from COVID-19. Unfortunately, medical assistant priorities shifted towards processes focused on COVID-19 mitigation with less emphasis on addressing BPAs during the check in process.

Figure 5.3-1: Gaps in Care Daily Performance Scorecard

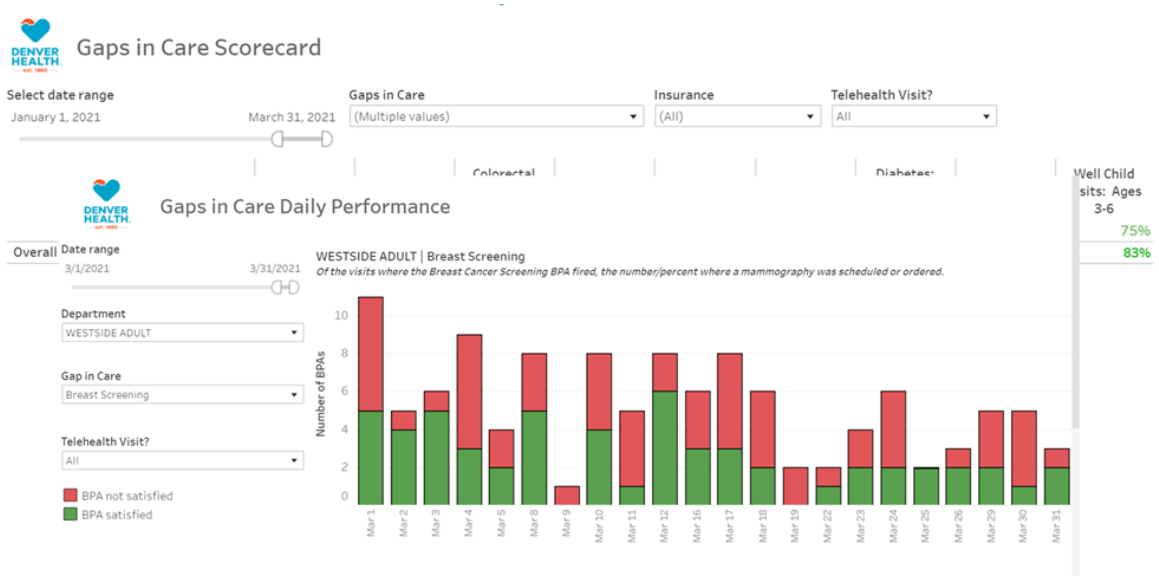
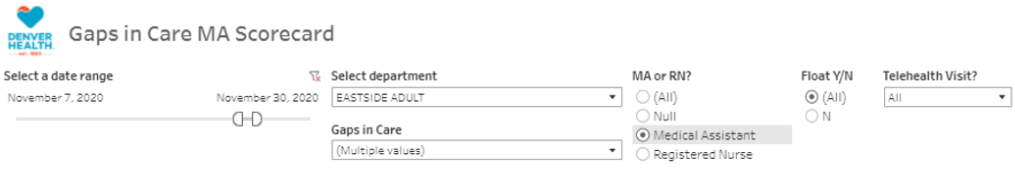


Figure 5.3-2: Gaps in Care Medical Assistant Scorecard



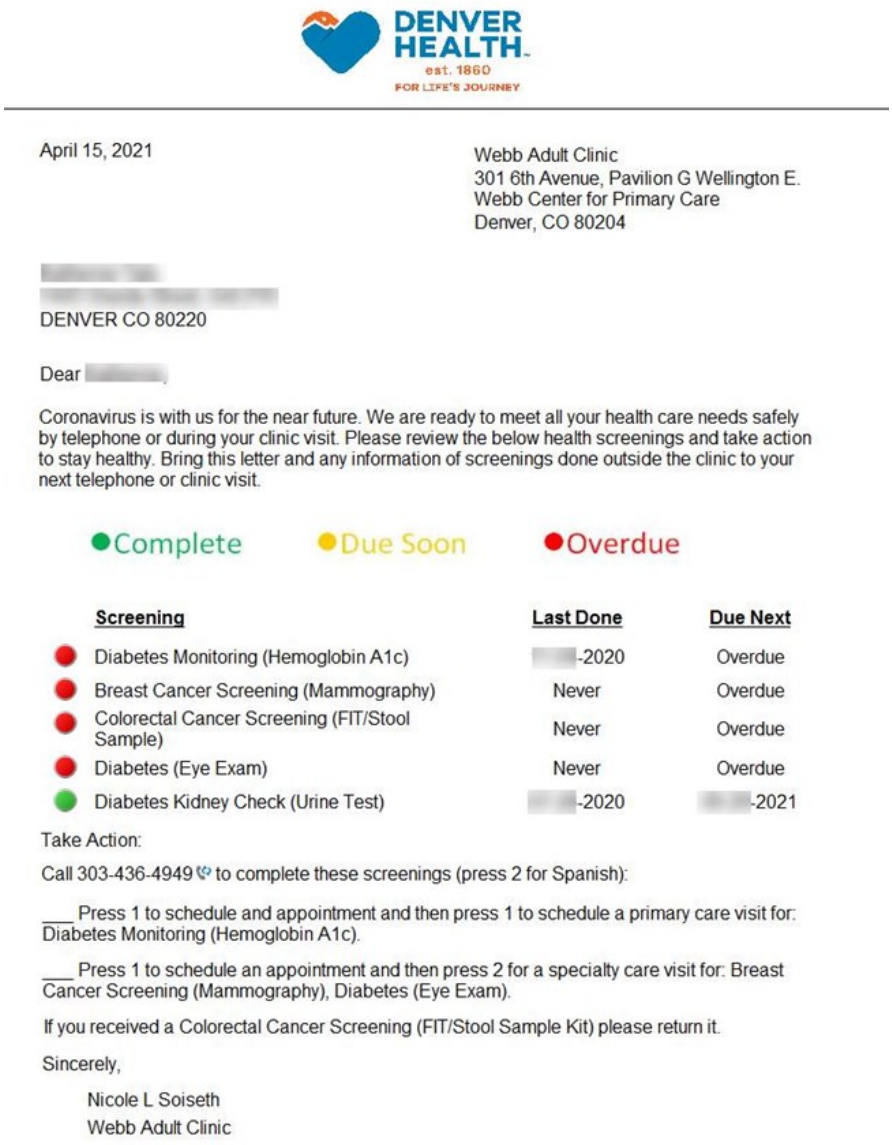
EASTSIDE ADULT

		Breast Screening	Cervical Screening	Colorectal Screening: Colonos..	Colorectal Screening: FIT	Depression Screening	Diabetes: A1c ordered	Diabetes: Microalbumin order..
	Goal:	70%	80%	74%	74%	85%	90%	92%
Grand Total	BPAs fired	60	113	46	103	268	16	25
	BPA satisfied	17	12	2	39	214	8	10
	Pct satisfied	28%	11%	4%	38%	80%	50%	40%
MA #1	BPAs fired	7	12	5	11	37	2	2
	BPA satisfied	3	1	0	6	31	2	2
	Pct satisfied	43%	8%	0%	55%	84%	100%	100%
MA #2	BPAs fired	5	4	4	6	9	1	1
	BPA satisfied	1	0	0	2	7	1	1
	Pct satisfied	20%	0%	0%	33%	78%	100%	100%
MA #3	BPAs fired	3	4	3	5	11		2
	BPA satisfied	0	0	0	0	4		1
	Pct satisfied	0%	0%	0%	0%	36%		50%

Between-Visit Intervention

A Population Health Team was created in 2019 to lead efforts in between visit interventions. The team is composed of a clinical pharmacist and two medical assistants. They developed a Health Summary letter in 2019 and implemented the intervention in 2020. The letter updated patients on the status of their various indices of care (blood pressure and diabetes control, cancer screening compliance, etc.) and provided recommendations take action in their gaps in care, such as scheduling a primary care clinic appointment or a mammogram (Figure 5.3-2). The Population Health Team and medical assistants mailed the letters beginning in August 2020, resulting in outreach to 4148 patients.

Figure 5.3-3: Health Summary Letter



DENVER HEALTH
est. 1860
FOR LIFE'S JOURNEY

April 15, 2021

Webb Adult Clinic
301 6th Avenue, Pavilion G Wellington E.
Webb Center for Primary Care
Denver, CO 80204

[redacted]
DENVER CO 80220

Dear [redacted],

Coronavirus is with us for the near future. We are ready to meet all your health care needs safely by telephone or during your clinic visit. Please review the below health screenings and take action to stay healthy. Bring this letter and any information of screenings done outside the clinic to your next telephone or clinic visit.

Complete Due Soon Overdue

Screening	Last Done	Due Next
Diabetes Monitoring (Hemoglobin A1c)	[redacted]-2020	Overdue
Breast Cancer Screening (Mammography)	Never	Overdue
Colorectal Cancer Screening (FIT/Stool Sample)	Never	Overdue
Diabetes (Eye Exam)	Never	Overdue
Diabetes Kidney Check (Urine Test)	[redacted]-2020	[redacted]-2021

Take Action:

Call 303-436-4949 to complete these screenings (press 2 for Spanish):

___ Press 1 to schedule and appointment and then press 1 to schedule a primary care visit for: Diabetes Monitoring (Hemoglobin A1c).

___ Press 1 to schedule an appointment and then press 2 for a specialty care visit for: Breast Cancer Screening (Mammography), Diabetes (Eye Exam).

If you received a Colorectal Cancer Screening (FIT/Stool Sample Kit) please return it.

Sincerely,

Nicole L Soiseth
Webb Adult Clinic

5.4. Medical Neighborhood

The medical neighborhood workgroup encompasses primary and specialty care clinics. Quality Improvement (QI) metrics drive outcomes and process improvement/QI activities. The medical neighborhood focuses on referral relationships/ outcomes of primary, specialty, ED, inpatient, and external partners to Denver Health. Referral tracking and Patient Centered Specialty Practice recognition, through NCQA, is also under the medical neighborhood. The design is to create a high valued care coordination model that reduces waste, increases communication, and decreases gaps in care for patients. The group is comprised of Directors of Service, physicians, navigators, nurses, and other partners within Denver Health. The team works in partnership to provide complete and coordinated care. Collaborative care guidelines between each partnership demonstrates connected and valued care. Figure 5.4-1 shows a few of the metrics focused on by the Medical Neighborhood workgroup.

Figure 5.4-1: Medical Neighborhood Metrics Dashboard

Medical Neighborhood Metrics Dashboard	GOAL	2020											2021	
		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
% Loop Closure - Internal	>=80%	62.8%	49.0%	40.0%	43.1%	46.6%	48.2%	48.4%	52.0%	60.0%	47.0%	40.0%	48.0%	53.3%
% Loop Closure - External (Incoming Ref)		26.2%	24.4%	29.7%	43.0%	45.5%	45.6%	38.9%	38.8%	42.3%	41.2%	39.1%	41.5%	42.5%
% Loop Closure - Ext. (EpicCare Link)	>=80%	54.8%	46.0%	44.0%	50.0%	54.8%	54.8%	38.2%	47.5%	53.7%	48.6%	51.4%	35.0%	30.8%
% Loop Closure - Ext. (Fax/AC)		19.7%	21.3%	27.0%	37.0%	44.0%	44.0%	39.0%	37.5%	40.2%	39.9%	36.8%	42.7%	44.2%
% Referral Rejection - All Others (No ED/UC/AC + Epic Care Link)		5.2%	8.2%	6.3%	6.8%	5.1%	5.9%	5.5%		5.7%	5.5%	5.3%	5.5%	4.8%
% Referral Rejection - AC	<=5%	18.3%	20.1%	20.5%	15.3%	15.9%	17.5%	22.8%		14.6%	15.6%	20.3%	15.2%	17.9%
% Referral Rejection - Epic Care Link		17.5%	17.9%	12.2%	14.5%	15.0%	13.2%	10.2%		10.5%	10.8%	9.4%	5.1%	6.4%
% Referral Rejection - ED/UC		6.8%	8.3%	6.0%	4.7%	4.9%	5.8%	6.7%		5.7%	7.2%	6.1%	7.4%	5.4%
Referral Processing Time (Business Days)	<=15	18.0	19.0	20.0	11.0	14.0	17.0	19.0	23.0	20.0	22.0	24.0	19.0	21.0
Created-to-Triaged	*<=1*	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0
Triaged-to-Scheduled	*<=3*	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Scheduled-to-Seen	*<=11*	14.0	15.0	15.0	6.0	8.0	12.0	14.0	18.0	17.0	19.0	21.0	16.0	16.0
% Referrals - Need Tracking							14.9%	12.6%	12.2%	11.7%	10.3%	8.3%	7.6%	7.9%
% Internal Need Tracking	<=5%						7.6%	5.6%	5.6%	5.1%	3.3%	2.8%	2.7%	2.8%
% External Need Tracking							7.3%	7.0%	6.6%	6.6%	7.0%	5.5%	4.9%	5.1%

Loop Closure (CTL – Close the Loop) Metrics:

- Internal Loop Closure: This metric shows the percent completion of CTL messages to the Denver Health referring clinician after the patient is seen for their first specialty visit.
- External (Incoming) Loop Closure: This metric shows the percent completion of CTL messages to the External referring clinician after the patient is seen for their first specialty visit.

Referral Rejections:

- This metric looks at the percent of referrals that are rejected. The results are analyzed based on the following areas where referrals are placed:
  - Appointment Center (Incoming Referral)
  - Epic Care Link (Incoming Referral)
  - Emergency Department/Urgent Care (Internal Referral)
  - All Other Departments [that don't meet categories above] (Internal Referral)
- These data are provided monthly to clinic groups – practices are able to review their clinic performance and see reasons why referrals were rejected.

Referral Processing Time:

- This metric monitors the timeframe from when a referral is placed until an appointment is made. Measures included overall days, Created-to-Triaged days, Triaged-to-Scheduled days, and Scheduled-to-Seen days.

Referral Tracking:

- This metric displays the percent of referrals (both internal and outgoing/external) that meet the criteria for outreach on referral status.
- In July 2020, referral tracking program was redesigned. Standard work was restructured, individuals were re-trained, and a program website with a monthly performance report was created.

5.5. Patient Centered Specialty Practice (PCSP) Recognition

The Patient Centered Specialty Practice (PCSP) Recognition program builds on the success of the Patient-Centered Medical Home (PCMH) Recognition program by recognizing specialty practices that excel in delivering high-quality, patient-centered care. It focuses on proactive coordination and sharing of information. Everyone in the practice works as a team to coordinate care with primary care, other referring clinicians, community resources and secondary services.

There are a total of 421 PCSP recognized practices in the United States. Denver Health Specialty Clinics make up 20 of the 23 recognized PCSP organizations in Colorado. Denver Health is the only large hospital system in Colorado to have this recognition. Denver Health Specialty Clinics earned Level 3 recognition (highest level) for the 1/29/19-1/29/22 recognition cycle.

6. ACCREDITATION

6.1. Hospital Joint Commission Survey

On March 10, 2020, TJC surveyors arrived to assess the hospital's compliance with Medicare conditions of participation. Denver Health welcomed 9 surveyors over 4 days. The hospital received Joint Commission accreditation and TJC's recommendation for continued Medicare certification. The Accreditation cycle is effective March 14, 2020 and is valid for up to 36 months.

6.2. Hospital Lab Joint Commission Survey

The Joint Commission Ambulatory Care Services Laboratory survey was conducted from October 6 through October 9, 2020. Initially this survey was led by a solo Joint Commission surveyor, but due to the expansiveness of Denver Health, a second surveyor joined by the end of the week. Surveyors inspected the 10 ACS Clinic laboratories in addition to two of the School Based Health Centers that offer laboratory services. Both surveyors were complimentary of the work being done in DHHA's community health clinic laboratories. They spent time engaging with frontline staff and were impressed with their level of competence and dedication. Ten deficiencies were noted, three of which were addressed immediately during the survey; no deficiencies were in the high-risk category, and only one was considered widespread. Lab leadership and staff developed plans to address all deficiencies and these were submitted to and accepted by The Joint Commission within 60 days. Denver Health was granted Accreditation for all services surveyed under the Comprehensive Accreditation Manual for Laboratory and Point-of-Care Testing, effective October 10, 2020.

6.3 CDPHE / CMS Surveys

Colorado Department of Public Health and Environment (CDPHE)
From November 30 through December 2, 2020, Denver Health received an unannounced visit from CDPHE related to an alleged violation of the Emergency Medical Treatment and Labor Act (EMTALA). The surveyors also reviewed DHHA's process for COVID-19 screening of patients, visitors and employees. After review of multiple patient records, policies and practices, CDPHE concluded that the allegations were unsubstantiated, and DHHA received no citations or deficiencies.

The Joint Commission (TJC) Complaint
In February 2020, DHHA was notified of a patient-initiated complaint to The Joint Commission. The patient indicated that he was unable to obtain a copy of his results or needed supplies for his medical condition. After a thorough review of the patient's medical record, DPSQ demonstrated that the care provided was appropriate and no further action was taken by TJC.

6.4. 27-65 Behavioral Health Survey

In April 2020, Denver Heath's Annual Behavioral Health designation survey was completed. This survey evaluated the organization's adherence to Colorado Revised Statute 27-65-101 et seq., 2 CCR 502-1 Behavioral Health Rule, and the Office of Behavioral Health's "Procedure Manual of Care and Treatment of the Mentally Ill." Denver Health was deemed compliant and its 27-65 designation was renewed. The organization's next designation survey will be held in January of 2021.

6.5. Environment of Care

The goal for Environment of Care (EOC) is to promote a safe, functional, and supportive environment within the hospital so that quality and safety are preserved. The environment of care is made up of three basic elements:

1) The building or space, including how it is arranged and special features that protect patients, visitors, and staff
2) Equipment used to support patient care or to safely operate the building or space
3) People, including those who work within the hospital, patients, and anyone else who enters the environment, all of whom have a role in minimizing risks

Important aspects of the environment of care include the following:

- Safety and security—addresses risks in the physical environment, access to security-sensitive areas, product recalls, and smoking.
- Hazardous materials and waste—addresses risks associated with hazardous chemicals, radioactive materials, hazardous energy sources, hazardous medications, and hazardous gases and vapors.
- Fire safety—addresses risks from fire, smoke, and other products of combustion; fire response plans; fire drills; management of fire detection, alarm, and suppression equipment and systems; and measures to implement during construction or when the Life Safety Code cannot be met.
- Medical equipment—addresses selection, testing, and maintenance of medical equipment and contingencies when equipment fails.
- Utilities—addresses inspection and testing of operating components, control of airborne contaminants, and management of disruptions.

2020 EOC Program Accomplishments

- Each department with equipment, food, supplies or pharmaceuticals that could be impacted by a product recall provided information to the EOC committee on a quarterly basis. Quarterly updates were received from IT, Lab, Pharmacy and Food & Nutrition. Recall information on vehicles & supplies were collected.
- Hand hygiene in the Laboratory has exceeded their goal of 85% and reached 91.5% in 2020.
- The Joint Commission Survey for the main hospital was completed with minimal EOC deficiencies.
- The Security Department exceeded their goal of implementing a new access control system in all locations on the main campus and two offsite clinics by adding this system to the entire organization in 2020.
- The Department of Safety worked with Nursing Education to educate Charge Nurses on medical gas shut off valves which had been identified as a gap in knowledge during safety rounds.
- All maintenance assets were assigned tasks in the TMS work order system to prevent assets from not receiving their monthly, quarterly or annual preventive maintenance. Also, all critical system components were barcoded.
- The chemical inventory was updated by the end of 2020.
- All Emergency exercise & real event After-Action Reports were completed by the end of 2020.
- The Emergency Management program was moved from the Safety Department to the Paramedic Division
- The electronic hand hygiene staff roster was stabilized. SICU staff badges were assessed and tested, batteries were replaced, and a team was troubleshooting potentially malfunctioning badges. Badges were deployed to hospitalists and APPs.
- Some performance improvement interventions were largely put on hold system-wide during the initial and second phase of the pandemic; however, data was fed back to leadership on each unit with eHH and top performers have been identified and rewarded for their performance.

6.6. Emergency Management Program

Mission:
Emergency Management seeks to establish a program of excellence to communicate, facilitate, and coordinate activities necessary to prevent, prepare for, respond to, and recover from all hazards which do or may have an impact to operations of the Denver Health and Hospital Authority enterprise.

2020 Emergency Management Program Initiatives

- Mandatory Emergency Response Real-world Events, Exercises, and Drills:
  - ◊ *COVID-19 Pandemic Response*: In response to the COVID-19 Global Pandemic, DHHA activated its Incident Command Team to fulfill roles of the Hospital Incident Command System on March 4, 2020 to address all areas of operations impacted by the emerging viral infection. This activation has spanned the course of 12 months, flexing span and control as COVID-19 cases in Colorado have surged and declined based on implementation and adoption of public health measures in the community.
  - ◊ *Licensed Independent Practitioner Credentialing Exercise*: Prepared staff in the Labor Pool Credentialing Unit to receive Disaster Healthcare Volunteers during a disaster and incorporate those volunteers into hospital operations.
  - ◊ *Crisis Standards of Care Tabletop Exercise:* Systematically reviewed the prevalence and content of the ethical guidance document provided by the state for disaster response, specifically around Crisis Standards of Care.
  - ◊ *Suspicious Package and 601 Evacuation:* Response to an unidentified, suspicious package adjacent to the 601 N. Broadway Building which instigated a full evacuation of the building on December 30, 2020.

- Joint Commission Survey Readiness
  - ◊ DHHA Main – 2020 Emergency Operations Plan review
  - ◊ Development of “Shelter-In-Place” & “RCRA Contingency” policies
  - ◊ Winter Park Medical Center (WPMC) – 2020 EOP
  - ◊ Emergency Preparedness Charter

- Mass Casualty Incident Planning—2021
  - ◊ Complete a draft “No Notice Incident” Plan and complete 5 departmental job aids.

7. CLINICAL DOCUMENTATION INTEGRITY (CDI) QUALITY INITIATIVES

7.1. Patient Safety Indicators (PSIs) & Hospital Acquired Conditions (HACs)

The Clinical Documentation Integrity (CDI) team reviews the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSIs) and select Centers for Medicare and Medicaid Services (CMS) Hospital Acquired Conditions (HACs) for coding and documentation accuracy. PSI performance rates are included in many national and Colorado quality scorecards and pay-for-performance programs. The CDI team reviews all PSIs tied to external programs and/or publicly reported. HACs impact payment as part of the Deficit Reduction Act Hospital Acquired Conditions Payment Provision. Therefore, it is important to ensure that PSIs and HACs are accurately reported.

Methodology:
After a patient is discharged, the medical record is coded and a claim is sent to the payor. Once these steps have occurred, the encounter is processed through the AHRQ and CMS algorithms to determine if a PSI and/or HAC occurred during the hospitalization. All potential cases are adjudicated weekly in a SharePoint audit tool. A CDI member reviews each record to determine if the ICD-10 code(s) that triggered the PSI or HAC are accurately assigned given the existing documentation and clinical criteria in the medical record. The medical record is also reviewed for any potential exclusions and CDI staff verify that the appropriate ICD-10 code was assigned for the exclusion condition. If there is ambiguous or conflicting documentation, the CDI staff recommends for HIM coders to query the provider for clarification. If the CDI member identifies potential coding issues, an electronic communication is sent to the Coding Educator requesting a coding review. When a coding error or query opportunity is identified and documentation is updated, PSIs and HACs can be averted. On a monthly basis, the CDI team compares PSI and HAC cases in their audit tool with the Vizient Clinical Database to ensure that case reporting is accurate and averted cases have not been incorrectly reported.

The CDI team collaborates with a surgical provider who does a secondary review of all PSIs to determine if the documentation by the providers supported the coding of the PSI. This surgeon also educates providers regarding the importance of accurate, detailed documentation.

In 2020, DHHA embarked on a project to identify PSI and HAC cases prior to the claim being sent to the payor. This joint effort between CDI, DPSQ, and Epic staff will reduce the need to rebill since the correct claim will go to the payor the first time. The process was piloted with a single PSI and will be extended to other PSIs in 2021.

Results:
During 2020, the CDI team reviewed 81 PSI and 40 HAC cases. The highest aversion rates were achieved this year with 37% of PSIs and 30% of HACs being averted (Figures 7.1-1 and 7.1-2). The aversion rates have continually improved over the past five years due to these reviews. CDI staff identified coding opportunities for some cases whereas others required a query to the physician when the documentation conflicted with the clinical findings or when a condition could be clarified as possibly or definitely being present on admission (POA).

Figure 7.1-1: AHRQ Patient Safety Indicator Cases Averted by the CDI Team

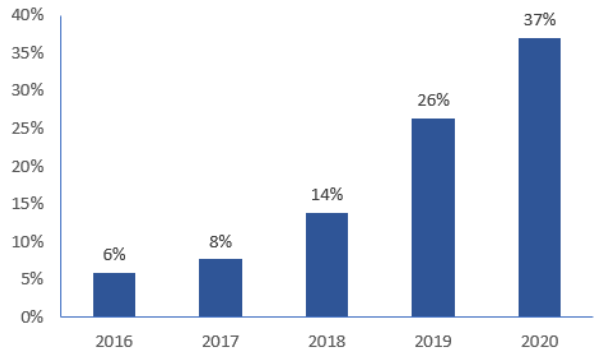
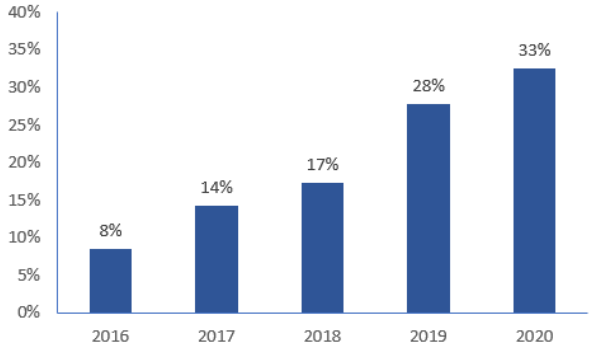


Figure 7.1-2: CMS Hospital Acquired Condition Cases Averted by the CDI Team



7.2. Mortality Reviews

The Mortality Index compares patients' actual mortality rates to their expected mortality rates from risk adjusted models. Expected mortality scores are impacted mainly by acute and chronic conditions that are present on admission (POA) and have been shown to have a statistically significant impact on mortality. The APR-DRG grouper developed by 3M Health Information Systems assigns severity of illness (SOI) and risk of mortality (ROM) scores to each inpatient discharge. The admission SOI and ROM are determined by the complexity of acute and chronic illnesses present at the time of admission. These scores along with individual ICD-10 codes are used in risk adjustment models. The goal of mortality reviews is to determine if there are documentation and coding opportunities that would more accurately reflect the patient's comorbidities at admission and therefore impact the Vizient mortality risk adjustment calculation.

Methodology:
The CDI team uses an Epic Workqueue to review inpatient deaths with an admission SOI or ROM score of less than the highest level, i.e. "extreme". These cases have already been coded and CDI nurses review the accounts prior to claim submission. Prioritizing reviews based on the SOI/ROM allows for timely selection of cases because Vizient's expected mortality scores are not available until weeks after the patient is discharged. The mortality review focuses on coding and documentation opportunities to improve the SOI/ROM and/or increase model-specific risk adjustment scores. Mortality reviews are tracked in Epic and summarized in a secure SharePoint audit tool. When documentation or coding issues are identified, the case is sent to the Coding Reviewer to independently review the record. If a query is required due to inconsistent or incomplete documentation, the Coding Reviewer or CDIs send a query to the provider. If a coding error is identified during the coding review, the Coding Reviewer recodes the account. After the coding review is complete, the account is rerouted back to CDIs to reconcile.

The CDIs also review the Office of Decedent Affairs death log on a monthly basis to ensure that all admissions meeting criteria have been reviewed. If any cases meeting the SOI/ROM criteria were not reviewed pre-bill, they are reviewed post-bill and the claim is resubmitted if any coding changes are made.

Results:
108 accounts were reviewed in 2020 for mortality. Of those 108 reviews, 45 of the accounts (42%) were sent to coding for review. Of those 45 accounts sent to coding, 26 cases (24% of all mortality reviews) were impacted with an increase to the SOI or ROM.

The CDIs provided individual education to specific providers regarding documentation opportunities that will impact accurate reporting of patients' severity of illness, risk of mortality, and risk profiles. The CDI team had a goal of meeting with each clinical service during the year to share this information. Unfortunately, the COVID pandemic disrupted that plan as providers focused on treating patients. Group education will start as soon as the pandemic has subsided.

7.3. Outpatient CDI Program

CDI's outpatient program was created four years ago to improve documentation in primary care clinics for Denver Health Medical Plan (DHMP) Medicare Advantage patients. Managed care plans pay DHMP a capitated rate per patient to provide health care for the patient. The payment is risk adjusted so DHMP receives higher payments for patients with more comorbidities. Each January 1, Medicare resets a member's health status, meaning a Medicare member is considered completely healthy until diagnosis codes are reported on claims. Therefore, it is essential that providers capture all current and active diagnoses for each member, as well as re-capture any diagnoses related to the member's chronic conditions annually.

Methodology:
Due to the success of this program, an additional CDI nurse was added in December 2019 thereby allowing the program to expand from eight to 14 clinics in 2020. Using data supplied by Population Health, the CDI nurses review each patient's medical record for chronic diagnosis that map to a Hierarchical Condition Category (HCCs). If a chronic diagnosis was captured in the prior year (2019) and the diagnosis has not been captured in the current calendar year (2020), the CDI nurse queries the primary care provider one day prior to the patient's scheduled appointment. Each case is followed to determine if the provider agreed and documented the chronic condition. After the diagnosis is coded, the CDI team calculates the associated risk adjustment factor (RAF) that is added to the patient's overall risk adjustment score. Results are shared with individual clinics and providers can request drilldowns into their data. The three CDI nurses plan to expand this program to DHMP Exchange members in 2021.

Results:
The Outpatient CDI team examined 2,866 patient records during 2020 and issued 1,696 physician queries. The percentage of Medicare Advantage members reviewed has increased by almost 20% yearly (Figure 7.3-1). Providers agreed with the query and updated their documentation 71% of the time. Figure 7.3-2 shows the improvement in provider engagement over time (Figure 7.3-1). The average increase in RAF per agreed and documented query has increased each year allowing program growth (Figure 7.3-3). This program resulted in a revenue increase in 2020 of $2,660,416.

Figure 7.3-1: Percentage of DHMP Medicare Advantage Patients with a CDI Review

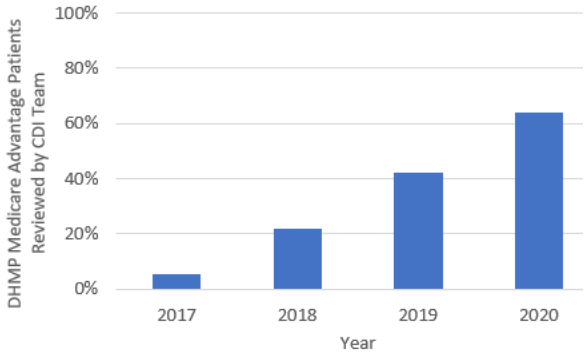


Figure 7.3-2: Queries where Provider Agreed with CDI Query and Updated Documentation

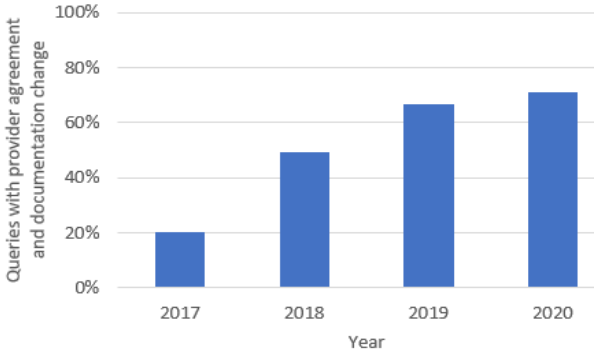
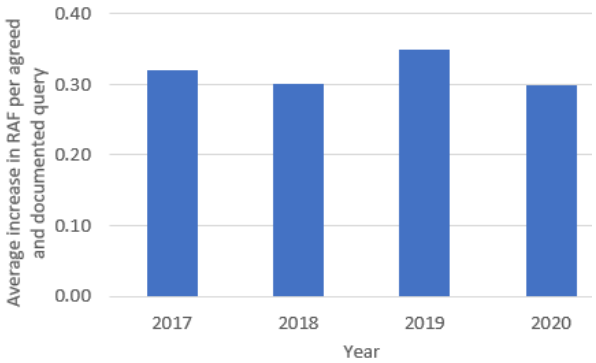


Figure 7.3-3: Risk Adjustment Factor Points Added due to CDI Query



7.4. Inpatient CDI Concurrent Reviews

Institutions across the nation have shifted to concurrent reviews of admitted patients in an effort to improve physician documentation and improve HIM coding efficiency. DHHA's Inpatient CDI team helps physicians' to optimize their documentation so that coders receive accurate, clear, and concise information at the time of discharge. This reduces the need to query physicians for additional details thereby allowing bills to be sent earlier and preventing rebills.

Methodology:
CDI nurses utilize an Epic Workqueue (WQ 008) to identify all inpatients currently in the hospital and track the concurrent reviews and queries. Various risk models help to determine diagnoses that impact the overall severity of illness (SOI) and risk of mortality (ROM). While a patient is still hospitalized, CDI nurses enter a principal diagnosis, appropriate secondary diagnoses, and procedures into the 3M Encoder software to determine a "working DRG". The software provides an associated SOI, ROM, and expected length of stay. CDI nurses query providers for clarification of non-specific terminology and when the status of present of admission has not been documented for relevant conditions. CDI's reviews, queries, and "working DRG" are visible to the coders.

Throughout 2020, the CDI team continued to strengthen the workflow between CDI and the coding department for DRG mismatches. Prior to 2020, if the coder didn't match the CDI "working DRG", the coder routed the case to the coding auditor to review prior to final bill. This process was changed because the volume of secondary reviews was too much for one person and many of the mismatches were easily understood by CDI.

In the new process, patients from WQ 008 populate to Epic Workqueue 050 "CDI Patient Accounts No Longer Open with Active CDI Review" when the patient is discharged. This allows the CDI nurses to compare CDI's "working DRG" with the coder's final billing DRG. If there are coding discrepancies and CDI disagrees with the final coding, the CDI nurse routes the account to the coding auditor for a secondary review via the "CDI/Coding Review" Workqueue (WQ 1614). The auditor decides whether to approve the suggested codes, makes any applicable changes to the account, and sends the account back to CDI to close the loop.

Results:
In 2020, 7306 records were concurrently reviewed, which is a 25% increase over 2019. The CDI nurses generated 1,243 queries to providers with a response rate of 92%. The response rate has been better than the 90% goal for the past two years (Figure 7.4-1). The expectation is for providers to respond to the query and clarify the documentation, but not necessarily agree with the CDI suggestions. Providers agreed with the query and updated their documentation appropriately 76% (n=949) of the time (Figure 7.4-2). The remaining queries were a mix of no response, disagree, and, agreed but not documented in the record. The CDI team worked with HIM to make the CDI queries part of the legal medical record. A small percentage of queries will now 'count' toward agreed and documented, as the provider would agree and answer the query on the query itself. This allows the coder to generate ICD-10 codes from the CDI query along with other provider documentation.

Figure 7.4-1: Provider Query Response Rate to CDI Concurrent Reviews

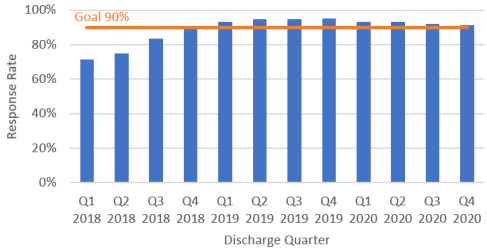


Figure 7.4-2: Provider Query Outcomes

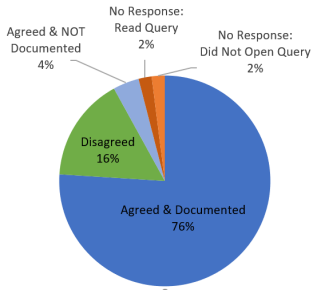
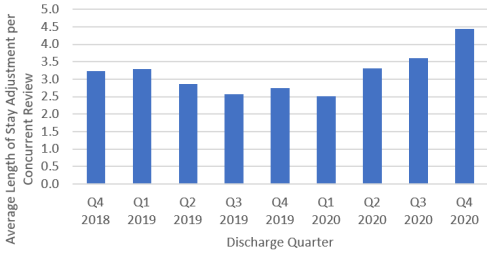


Figure 7.4-3: Average Increase in Expected Length of Stay from CDI Queries

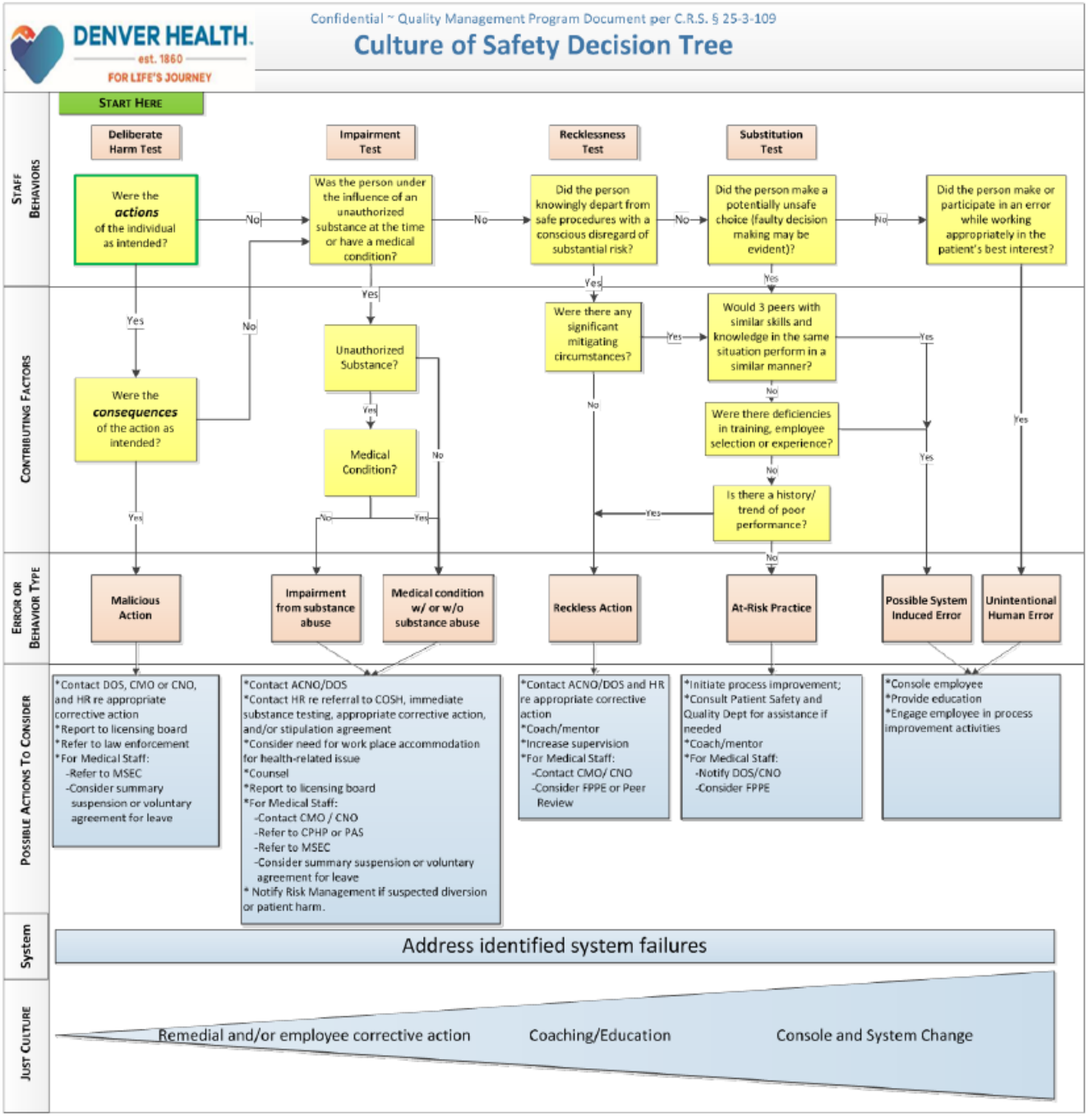


8. CULTURE OF PATIENT SAFETY

8.1. Culture of Safety Decision Tree and Algorithm

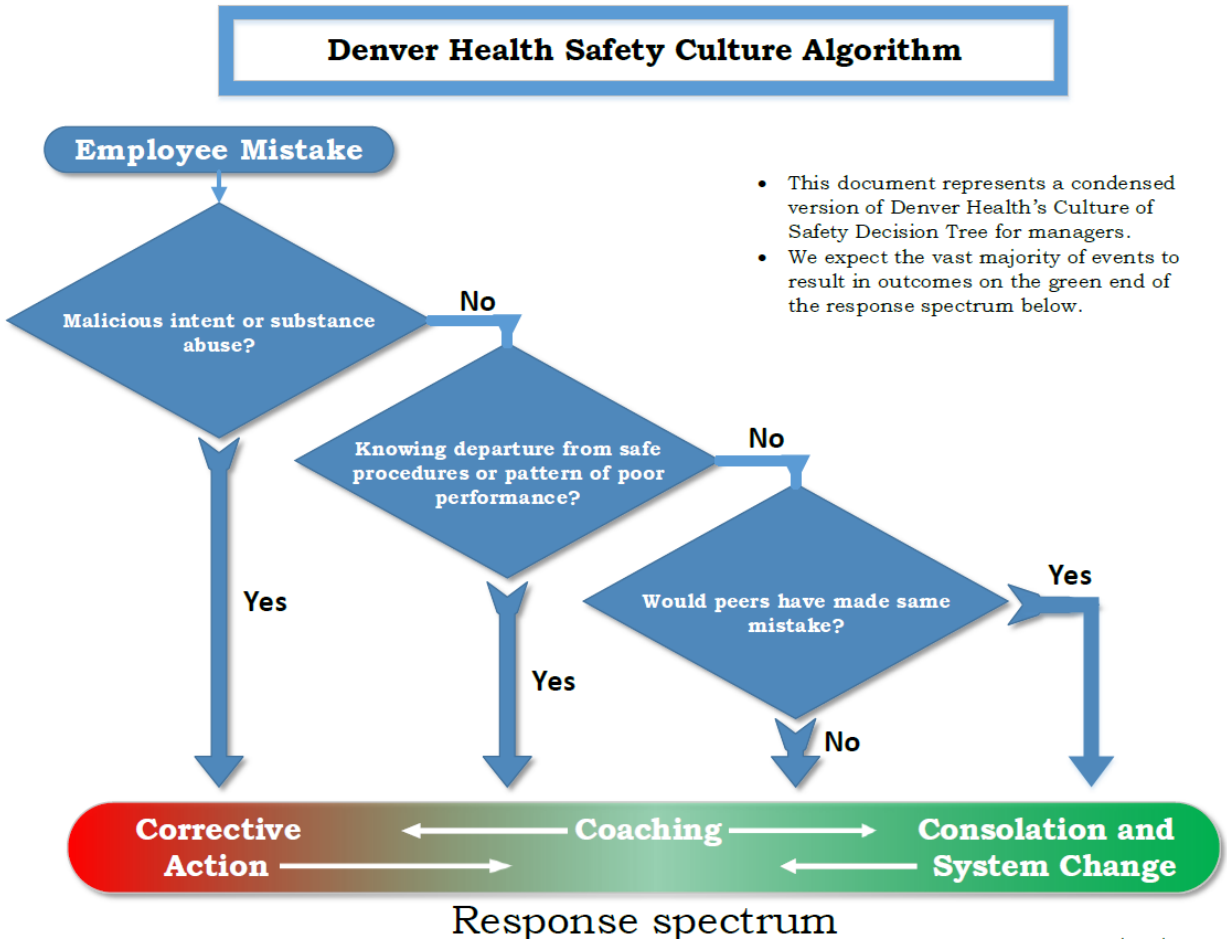
A Culture of Safety balances the need for an open and honest reporting environment with appropriate individual and organizational accountability to our patients and to each other. Furthermore, patient safety improves when employees are empowered to actively monitor and participate in safety efforts. Denver Health's Culture of Safety Decision Tree tool (Figures 8.1-1) was first developed and presented to managers at DHHA in 2014. The tool helps leaders to evaluate employee conduct and determine appropriate follow-up action after an adverse event or near miss. It encourages leaders to decrease the focus on individual blame and instead view an adverse event or near miss as an opportunity to console and re-educate staff, improve systems, and reduce risk. The Culture of Safety Decision Tree tool has been distributed as part of the 2016-2019 annual reports and has been included with the monthly culture of safety results distributed to leaders in 2017, 2018, and 2019. The tool is also referenced periodically during the Daily Patient Safety Briefing.

8.1-1: Culture of Safety Decision Tree for Leaders



In early 2020, there was a request for a simplified version of the Culture of Safety algorithm that would convey to front line workers the spirit of a just culture that drives leaders to system change far more often than employee corrective action. The result of that request is shown in Figure 8.1-2.

8.1-2: Culture of Safety Algorithm



Source: DHHA DPSQ

8. CULTURE OF PATIENT SAFETY

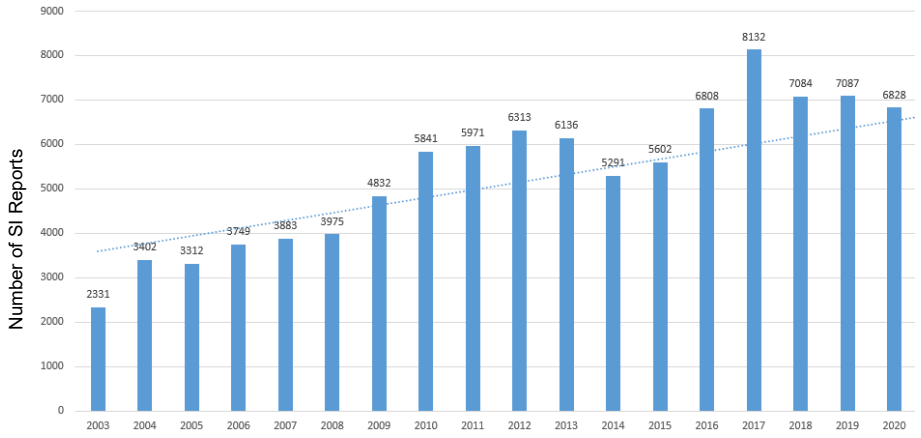
8.2. Safety Intelligence (SI) Reporting

Upon the discovery of an occurrence, Denver Health employees, physicians, independent contractors, students, and others as appropriate are expected to complete an occurrence report. The Safety Intelligence (SI) system is the recognized occurrence reporting system for DHHA. Occurrence reports are confidential privileged quality management documents, per C.R.S. § 25-3-109, and are not part of the medical record.

- DH advocates a proactive patient safety culture with emphasis on the quality improvement of care delivery systems.
- DH encourages staff participation in the detection and reporting of occurrences, the identification of potential system-based causes of occurrences, and the implementation of system and individual improvements to reduce the likelihood of untoward events.
- Occurrence reporting provides a tool for the analyses of individual and aggregate data to identify opportunities to improve and design systems, enhance patient care, and assess liability exposure.
- DHHA shall not take disciplinary action against an employee in retaliation for making a report or disclosure in good faith, regarding patient safety information or quality of patient care.

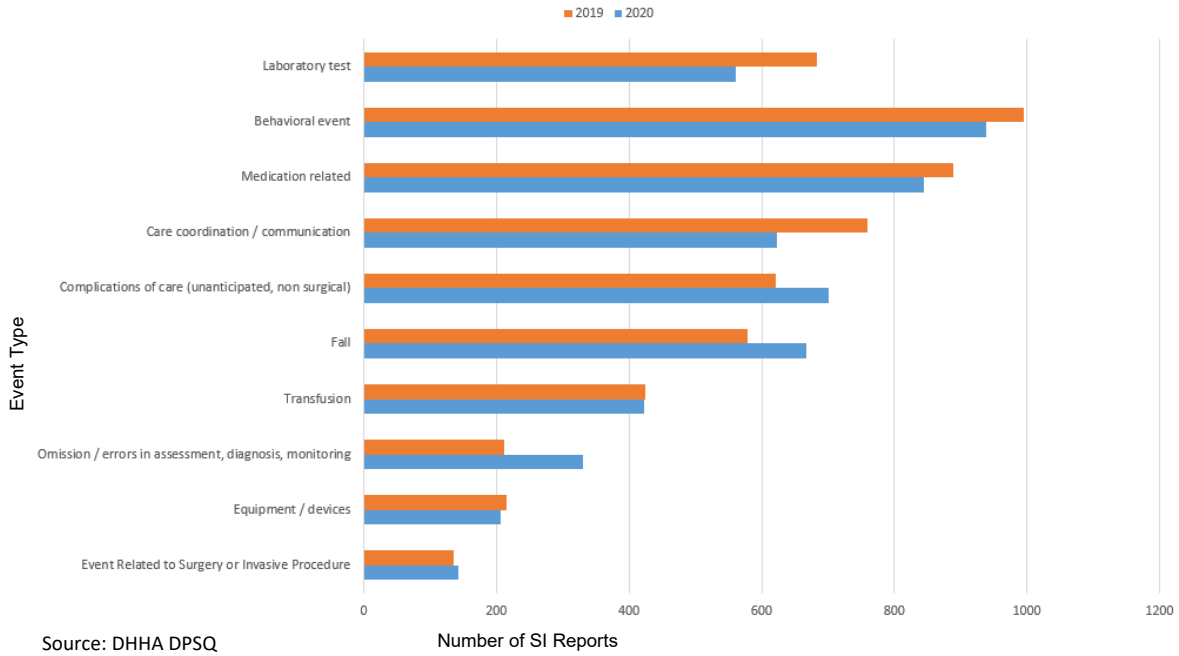
Figure 8.2-1 shows an increase in total SI reports from 2003 to 2020. Education is critical to ensure that employees understand that the SI system is a non-punitive reporting system to identify opportunities for system and process enhancements. Figure 8.2-2 shows event types by year for 2019 and 2020. Care Coordination/Communication has improved from 2019 to 2020 in that this category decreased in 2020.

8.2-1: Total SI Reports by Year—All Locations



Source: DHHA DPSQ

8.2-2: Top 10 Reported Event Types



Source: DHHA DPSQ

8.3. Culture of Safety Survey

Culture of Safety Survey

Embedded in the annual employee engagement survey is a set of questions assessing Denver Health's culture of safety. Some of the questions have been asked for multiple years to gauge change over time. For all years, the results from the provider survey are presented separately from all other employees. Prior to 2019, the provider survey was divided between clinic-based and hospital-based providers. The graphs below represent a selection of the individual culture of safety questions for which there is have longitudinal data (Figures 8.3-1 to 8.3-5). The results are the average scores across a 5 point scale from Strongly Disagree to Strongly Agree. The lines on the graphs are the benchmarks that represent average performance for the prior two years at all institutions in the U.S. using this vendor's survey tool. During this atypical pandemic year, Denver Health saw a decline in culture of safety across multiple domains compared to prior years and compared to the benchmarks (from years 2018-2019).

Figure 8.3-1: Senior Management Provides a Climate that Promotes Patient Safety

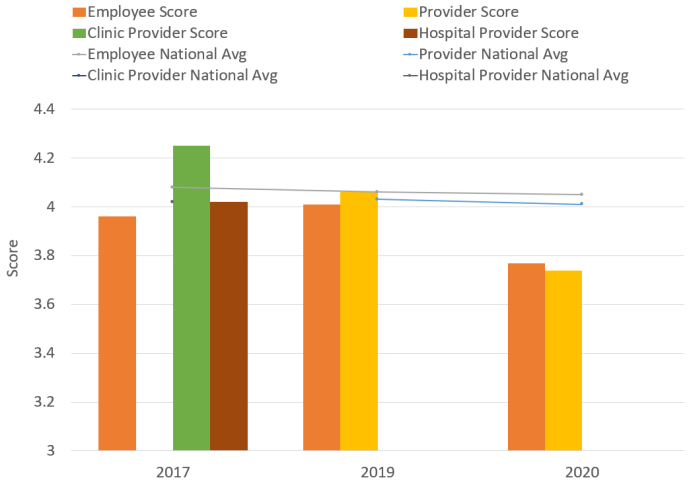


Figure 8.3-2: When a Mistake is Reported, It Feels Like the Focus Is On Solving The Problem, Not Writing Up The Person

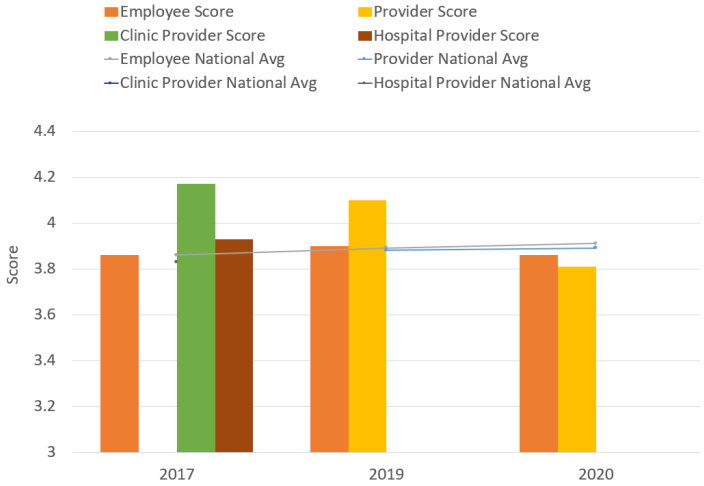


Figure 8.3-3: Communication between departments is effective in this organization

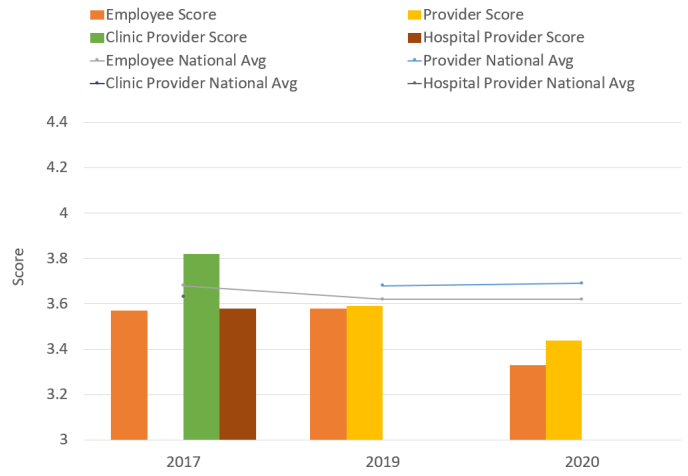


Figure 8.3-4: This organization makes every effort to deliver safe, error-free care to patients

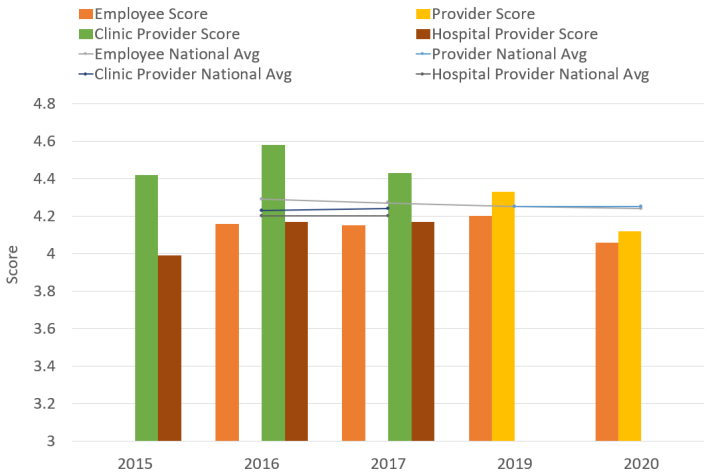
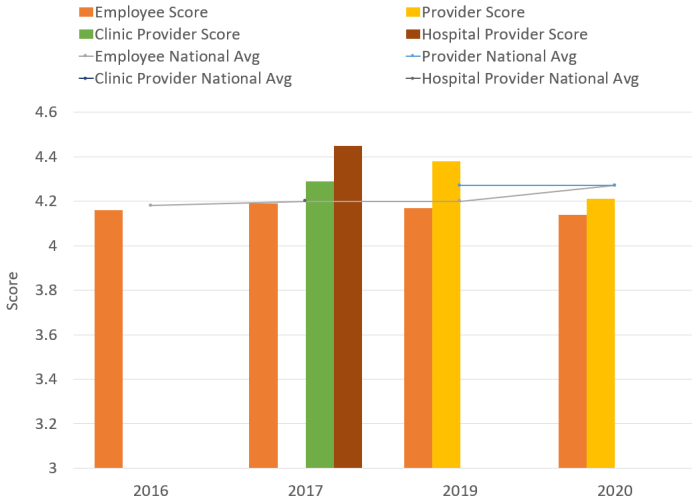


Figure 8.3-5: In my department, we discuss ways to prevent errors from happening again



Interventions to improve the Culture of Safety

- Great Catch! Certificates- Managers, educators, and consultants on SI reports have the option to nominate a staff member or reporter for a Great Catch! Certificate. The awarded employee will receive a thank you letter and a signed certificate from Patient Safety and Quality.
- Feedback to the University of Colorado Residency Program- A summary of SI reports submitted by residents is sent over to the Residency Program Coordinators on a monthly basis.
- Denver Health Graduate Medical Education Committee (DHGMEC) - Reports that focus on resident reporting are compiled and presented on a quarterly basis at the DHGMEC meeting. These reports include top event types, event categories, and highest reported harm scores.
- Workplace Violence– SI Reports that focus on staff assaults and patient behavioral events are compiled and discussed at the Workplace Violence Committee on a monthly basis.
- Regulatory Visits- Regulatory surveyors request a list of SI reports within a specified time frame to ensure that DHHA is adhering to mandatory and federal requirements.
- Daily patient safety briefings
- Education about the culture of safety decision tree (see first section)

9. PATIENT EXPERIENCE

9.1. Voice of the Customer

The Patient Experience department uses a variety of methods to listen to and integrate the Voice of the Customer (VOC) to retrieve immediate and actionable feedback in an ongoing effort to drive patient experience improvement efforts based on patient and customer input. Information gathered from various listening methods is used to hone in on feedback about the care and services provided. This information is used to make process improvements and identify opportunities for innovative change. The various listening approaches used for patient and community customers are indicated in Figure 9.1-1.

Figure 9.1-1: DHHA's Methods for Obtaining Patient Feedback

Patient Listening Method	IP	OP	ED	Comm
HCAHPS/CAHPS/Press Ganey surveys	X	X	X	
Rounding	X	X	X	
AIDET	X	X	X	X
Focus groups	X	X	X	X
Social media	X	X	X	X
Music/pet therapy visits	X		X	
Service Recovery	X	X	X	X
Patient Advocates	X	X	X	X
Pre-admission phone calls		X		
Post-discharge phone calls	X	X		
Community health educational events	X	X		X
Reach Out and Read	X	X		
Patient Family Advisory Council (PFAC)	X	X	X	
Foundation programs	X	X	X	
Advisory/governance bodies	X	X	X	X
DHHA and Patient Experience websites	X	X	X	X
Support groups	X	X	X	
24/7 nurse hotline		X		X
Complaint submissions	X	X	X	X
Affiliate hospital boards	X	X	X	
Lean event participation	X	X	X	X
Leadership Development Institute (LDI)	X	X	X	X
MyChart patient health portal	X	X	X	

*IP = Inpatient; OP = Outpatient; ED = Emergency Department; Comm = Community

Denver Health uses a variety of integrated learning processes to respond to the VOC throughout the various stages of a patient's relationship with DHHA. Through highly successful patient-centered engagement methods, such as the Patient Family Advisory Council (PFAC), DHHA has expanded its approach to include new councils that segment patient populations representative of specific units and clinics. This allows DHHA to gain valuable VOC insight and actionable information from council members, enabling DHHA to make improvements based on ongoing feedback provided by patients representing a specific area. In addition to the various councils, DHHA patients are rounded on during their stay and asked specific questions related to their care and experience. Rounds are documented through a program called My-Rounding, which allows DHHA to track data and address issues with the appropriate supervisors and/or departments and directly communicate with patients to resolve the problems. DHHA reaches out to patients after their visit as well, through emails, phone calls, surveys, and MyChart.

The various listening mechanisms used to seek actionable feedback from the VOC allows DHHA to identify patient and community needs, as well as opportunities for process improvement, strategic planning, and innovation. Feedback and insights from the VOC are communicated to DHHA leadership teams and incorporated into strategic goals and action plans for immediate change.

Strategic planning incorporates VOC using a framework that includes a dimension dedicated to the patient experience. Liaised through the Chief Experience Officer, patient experience data is analyzed with plans created that focus on gaps within the patient experience. Goals specific to patient experience are established annually with action plans created to ensure movement toward these goals. All patient experience goals established inside of strategic planning are monitored by senior leaders.

9.2. Patient Family Advisory Council (PFAC)

DHHA regularly hosts a PFAC to bring together patient and family advisers to foster a culture of patient- and family-centered care. The council is composed of patients, family members, community members and health care system staff who volunteer to be advisors and is facilitated by an elected volunteer chair and the Patient Experience department leadership. The purpose of the council is to strengthen collaboration between patients, family members and the health care team to enhance Denver Health's ability to provide patient and family-centered care. The objectives of the council are:

- To be a collaborative partner in strengthening the standard of excellence in quality and the delivery of safe, comprehensive, and compassionate health care
- Identify and articulate the patient and family perspective with regard to improving the patient experience
- Bring together patient and family advisors to foster a culture of patient and family centered care
- Share ideas in the implementation of new and existing programs across the health care system

The reporting of specific issues are presented and discussed during regular council meetings to generate feedback for improving the patient experience. Topics and opportunity areas are determined by the current needs and requests of the hospital and clinics, as well as from HCAHPS and other patient experience surveys. Results and outcomes of PFAC discussions will be shared with members at future meetings and/or through written communication.

The PFAC provides DHHA with a VOC that allows DHHA to make immediate improvements or innovative changes to meet the needs of DHHA customers and improve the patient experience in all aspects of care delivery. DHHA has made improvements and introduced new programs through the work and input of the PFAC. As a result of its success, DHHA has expanded the program to create new councils that segment the patient population to include those who represent a specific unit or clinic such as the Neonatal Intensive Care Unit (NICU) PFAC.

9.3. Patient Advocates

The patient advocates serve as dependable partners within Denver Health by connecting through compassion, respect, and empathy. The team strives for resolutions that address the concerns and meet the needs of our diverse community by providing a voice for our patients through collaboration and support.

Patient advocates identify opportunities for improvement and innovations to improve the patient experience, assist caregivers in meeting patient needs and expectations, educate staff on how to provide the best customer service possible, and serve as a resource for both patients and health care providers. Through the VOC, patient advocates have been able to implement change and improve communication with staff, patients, and family members. In 2020, the advocates transitioned to primarily a virtually platform in order to work with patients and families as a result of the COVID-19 pandemic.

9.4. Complaint/Grievance Management

DHHA has implemented a complaint and grievance management system and process that is used across all DHHA inpatient and outpatient areas and clinics. Patient advocates respond to all grievances within three days and review, investigate, and resolve each patient grievance within seven business days, ensuring that the patient and/or family members are satisfied with the progress and end result. All grievances submitted through the DHHA web portal are immediately acknowledged. Through the grievance process and patient interactions and feedback, patient advocates have been able to make process improvements to enhance the patient experience and our ability to serve our patients. Data from the system is reviewed regularly, reported out on the weekly safety call and shared with various departments/clinics/units.

9.5. Patient Rounding

To ensure that DHHA is listening to the VOC, DHHA utilizes a number of rounding methods with patients and customers, which consist of leader rounding and hourly rounding on patients, and leader rounding on employees and customers. Rounding has given DHHA an opportunity to learn from patients and customers, improving processes and services through the VOC. Through MyRounding, units and clinics document patient rounds in a systematic way that allows DHHA to track issues and rounding percentages by unit, with a minimum documented goal of 75 percent of patients being rounded on by a leader. DHHA then comparatively tracks responses in the Press Ganey survey that asks patients whether a leader rounded on them during their visit. Through consistent patient hourly and leader rounding, there is no delay in providing service recovery to our patients and families, as dissatisfaction is immediately brought to the front line where staff can address and resolve customer complaints. This approach is highly engaging for our patients and

prevents the accumulation of complaints and grievances that can be costly and negatively impact our relationships with our patients in the long term. With this system in place, relationship are built with patients and family members, which improves their experiences while in our care. Staff also continue to use the communication tool of AIDET (Acknowledge, Introduce, Duration, Explanation, Thank You) – a standard introduction that employees are expected to use at each encounter with patients, visitors, and coworkers. Through AIDET communication and daily interaction with patients, feedback is solicited from patients and family members which enables DHHA to improve service and the patient experience. By connecting with patients, staff build and manage relationships that provide a forum for change.

9.6. Communication with Care Partners

Steps are continually taken to build meaningful relationships with patients and customers at each interaction by improving overall communication with patients, family members, visitors, and each other. At the onset of the Covid crises, the Patient Experience department create the Patient and Family Information Center to ensure families were able to connect to their loved ones and be part of the care journey once visitor restrictions were instituted and loved ones did not have the same access to patients or the care team.

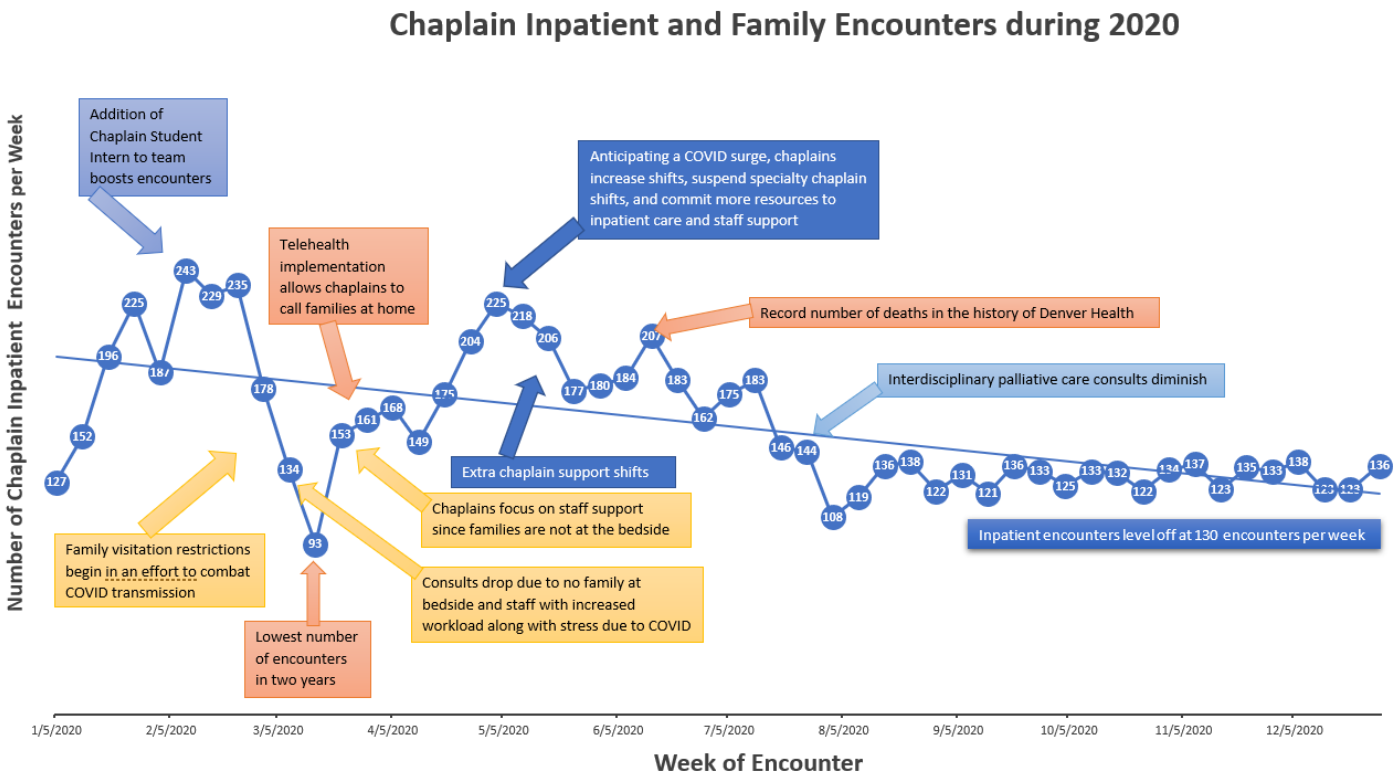
9.7. Service Recovery

DHHA continues to implement its unique Service Recovery (SR) program which provides employees with a channel for identifying and acting upon opportunities for improvement in the customer experience. The SR program offers staff members resources, education, and strategies that allow employees to be owners of service recovery and provide timely and effective methods to correct any breakdowns in service and restore the relationship with the customer who experienced the service failure. Service issues are logged and tracked so that DH can correct the issues as they arise, and prevent similar breakdowns from occurring in the future. Issues are categorized and tracked by unit and/or clinic. Trends are identified and addressed at the appropriate level where a simple and flexible tier-based system is used to provide the right intervention for each customer.

9.8. Chaplain Support of Patients, Families and Staff

The chaplaincy department provides essential spiritual care support for both patients, families, and staff in the inpatient as well as the outpatient environments. In the inpatient departments, the chaplains provide services on a 24/7 basis. They provided over 8,000 encounters in 2020 during first surge of COVID-19. They added additional shifts to support staff and assist families to say good-bye to their loved ones at end of life. (Figure 9.8-1) Denver Health continued to utilize the spiritual care service to their full potential in supporting staff on the units, including COVID-19 Units, and were present with families and allowed for exceptions to the visitation policy for end of life and deaths so that patients did not die alone and families were either able to be at bedside or have chaplains assist for video conferencing so that loved ones could say their good-byes. They are supportive of patients that are need of assistance during their stay and aid the clinical team in their care coordination for patients. In 2020, they were highly utilized by the palliative care team as part of their interdisciplinary rounds and in the care of their patients on their service.

Figure 9.8-1: Chaplain Inpatient and Family Encounters in 2020



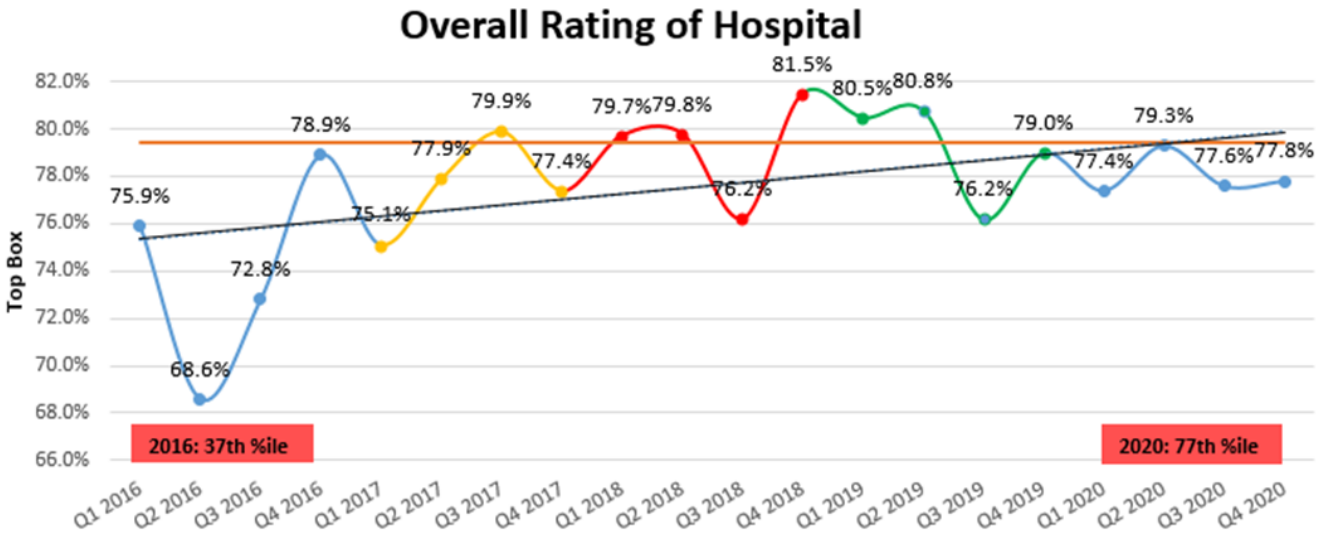
9.9. Measuring Patient Experience

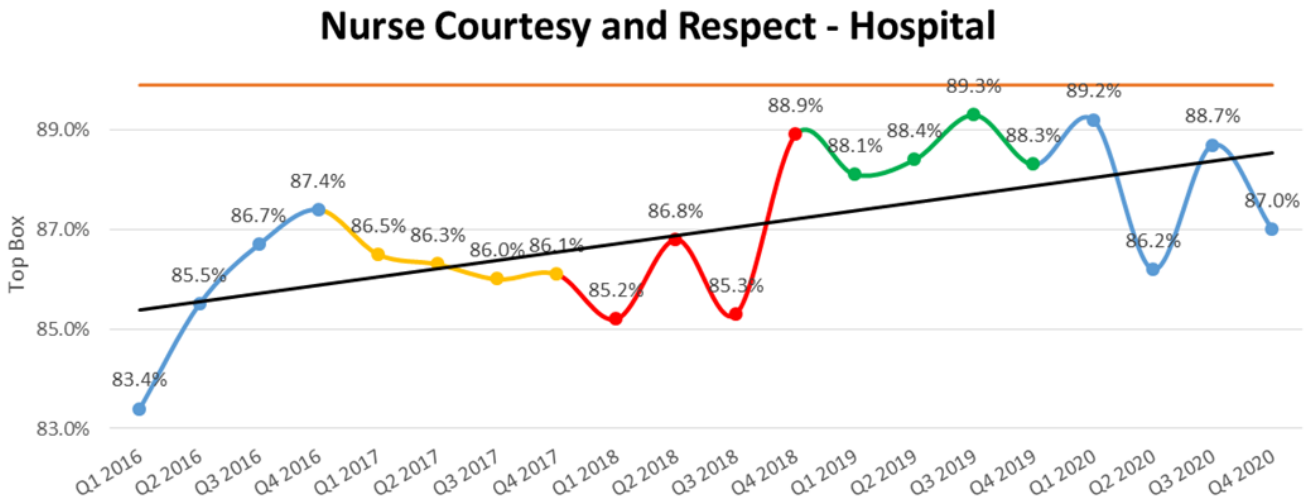
DHHA primarily uses nationally administered surveys to determine patient satisfaction and engagement. A third-party company (Press Ganey) administers the surveys by telephone, mail, email, and text messaging. Press Ganey is an approved CMS vendor that administers the surveys and provides detailed reports and data which allows DHHA to continuously drive quality improvement. The surveys combine nationally required HCAHPS questions with patient-centered questions to provide the most comprehensive view of the overall patient experience. All departments are responsible for monitoring and posting scores on their communication boards, as well as addressing departmental concerns or issues during staff meetings and daily huddle meetings. DHHA units prioritize, track trends, and implement change through data, patient feedback and comments, and survey reports. Over the past six years DHHA has tracked the Overall Rating metrics at an institutional level (Figure 9.9-1).

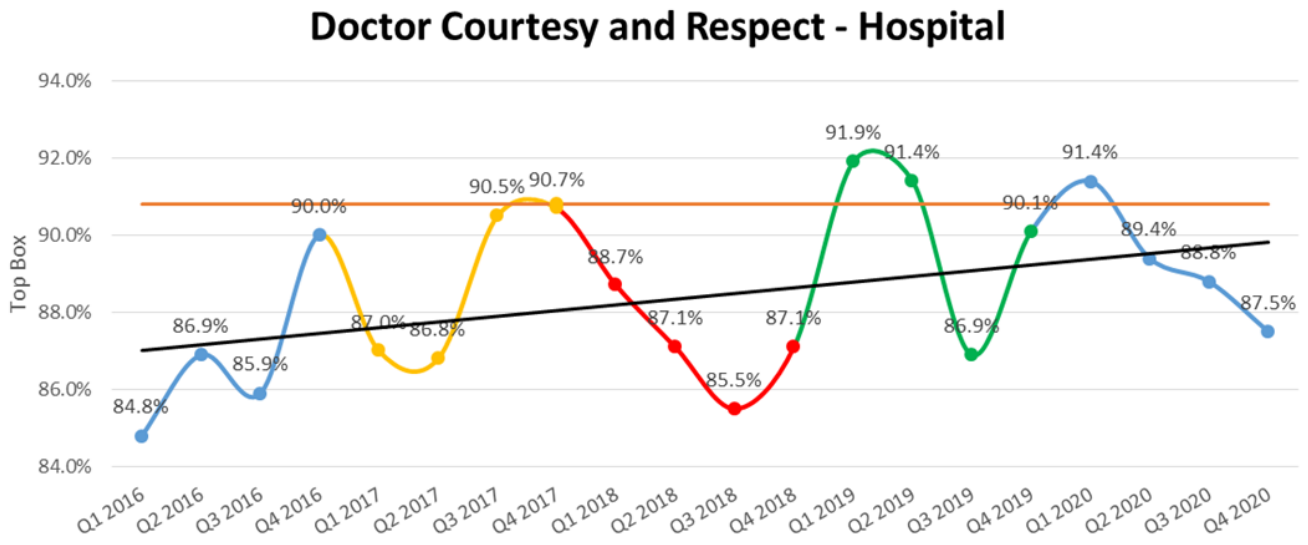
DH utilizes monthly priority reports generated from Press Ganey survey responses, which are specific to each unit, clinic, or area to determine the highest levels of dissatisfaction. The reports allow DH to directly address the issues that have the highest correlation to the overall provider or hospital rating in an effort to improve service and resolve dissatisfaction at all levels. DH also closely monitors patient experience through social media channels. These comments/postings are categorized and tracked for improvement efforts. When possible, outreach to patients occurs to ensure healthcare needs are being met.

Additionally, DH hosts focus groups, Patient Family Advisory Council (PFAC) meetings, as well as employee and physician engagement surveys to determine satisfaction and engagement by customer type and segment, and to ensure that initiatives meet the needs of stakeholders.

Figure 9.9-1: Overall Rating of Hospital, Nurse Courtesy and Respect — Hospital, and Doctor Courtesy and Respect – Hospital







Source: Press Ganey

10. Infection Prevention

10.1. Infection Prevention Goals

This chapter summarizes the status of goals and achievements that were initiated as part of the 2020 program at DHHA.

- Improve hand hygiene adherence.
- Decrease the rate of device-related infections.
- Decrease surgical site infection (SSI) rates.
- Decrease healthcare transmission of multi-drug resistant organisms (MDRO) and ensure containment of organisms of significance.
- Collaboration with Center of Occupational Safety & Health (COSH) to decrease occupational infection related hazards.
- Collaborate closely with Environmental Services (EVS).
- High-Risk Pathogen Preparedness.
- Optimization of High-Level Disinfection (HLD).
- Shared Medical Equipment Cleaning.

10.2. Improve Hand Hygiene Adherence

Denver Health utilizes the WHO's 5 Moments of Hand Hygiene methodology to determine the facility's hand hygiene (HH) adherence rate as well as electronic hand hygiene monitoring. Denver Health monitors HH through both manual (inpatient and outpatient settings) (Figure 10.2-1) and electronic (SICU, MICU, 3B Flex [formerly 3B and 3PCU], 4B, and 8A) (Figure 10.2-2) observations. Manual observations are collected by Infection Prevention (IP) staff, inpatient managers, and hospital leadership. Each unit's leadership was expected to observe a minimum of 15 observations each month and submit the data to IP using a smart phone application. The data is used to determine the monthly and quarterly HH rates.

Each HH champion in the ACS clinics was trained in the WHO 5 Moments of Hand Hygiene and provided access to the smart phone applications to report observations. The ACS clinics exceeded the HH adherence goal of 85% during every quarter of 2020 (Figure 10.2-1).

Figure 10.2-1: 2020 DHHA Manual Hand Hygiene Adherence Rates—Inpatient and Outpatient

DHHA Hand Hygiene Adherence Rates	1Q20	2Q20	3Q20	4Q20
Inpatient Locations (Goal 85%)	85% (n=979)	85% (n=337)	82% (n=947)	81% (n=672)
ACS Clinics (Goal 85%)	89% (n=390)	92% (n=241)	93% (n=240)	94% (n=307)

HH observations were conducted at the outpatient behavioral health services (OBHS) clinic. In 2018, a HH Champion Program was established and it continued through 2020. The OBHS HH observations focused on medication administration. Each month, the HH champions aim to collect 40 observations. Overall, the average hand hygiene adherence in 2020 was 68% at the OBHS clinic.

DHHA did not meet its electronic hand hygiene (eHH) goal of 70% during 2020 (Figure 10.2-2) in part due to disruptions from the COVID-19 pandemic. In the MICU, staff did not always wear their tracker badges when caring for COVID-19 patients in order to reduce the amount of items needing disinfection after leaving the patient's room. Staff were switched on two units (7A and 4B) to accommodate COVID patients so 7A staff hand hygiene was tracked during March to May but not all 7A staff were in the eHH system.

Figure 10.2-2: 2020 DHHA eHH Hand Hygiene Adherence Rates—Inpatient, SICU, MICU, 3B Flex, PCU, 4B, 7A, 8A

	Jan	Feb	Mar ¥	Apr ¥	May ¥	Jun	Jul	Aug	Sep	Oct §	Nov §	Dec §
Adherence Rate (Goal 70%)	50%	54%	60%	54%	55%	55%	60%	59%	61%	65%	63%	61%
N	192,170	205,540	173,588	117,337	138,309	156,433	180,878	164,983	187,744	163,341	153,761	186,731

¥7A and 4B staff switched places so 7A staff hand hygiene was tracked during that period. Not all 7A staff were in the eHH system.
§SICU data were excluded from Oct 2020—Dec 2020.

10.3. Decrease the Rate of Device-Related Infections

Denver Health tracks device-related infections through the CDC's National Healthcare Surveillance Network (NHSN). In 2020, IP staff updated the Annual Education modules to include short segments on job-specific training. All staff who have direct face-to-face contact with patients are expected to complete a module on transmission-based precautions.

Target Zero has been a major institutional focus since 2016. Between 2016 and 2019, Target Zero events decreased by 35%. Reductions in the rate of hospital-onset *C. difficile* colitis were the largest driver of this success, having decreased by over 47% during this time period. Unfortunately, a further decrease in Target Zero was not seen in 2020, largely driven by HAI in patients with COVID-19. Summary, unit-level, and individual-level data are posted on the Target Zero website which is available to all staff members.

Central Line Associated Bloodstream Infections (CLABSI)

- Staff who insert, maintain, or care for patients with central lines must complete a CLABSI module.
- Regular audits are conducted for adherence to best practice central line care and to the total parenteral nutrition (TPN) Guideline.
- Bedside audits on central line maintenance practices are performed on a biweekly basis.
- Real-time CLABSI notifications were provided to nurse managers and physicians as well as the monthly line listing to each unit.
- Universal decolonization was continued in the critical care units (including chlorhexidine bathing and mupirocin nasal ointment) and chlorhexidine bed baths for patients on acute care floors.
- Avoidance of unnecessary central lines continued to be a 2020 Denver Health goal.
- Nursing Informatics created a view in Epic which allows nurses to mark peripheral IVs placed outside DHHA for removal.
- In January 2020, the Paramedics implemented a new peripheral IV catheter kit (including a saline lock) intended to decrease the risk of infection.

Ventilator Associated Pneumonia (VAP)

VAP rates in the MICU, SICU, and PCU have historically been monitored and benchmarked against national mean rates for comparable units using NHSN (Figure 10.3-1).

Interventions are championed by the IP, Patient Safety and Quality, unit managers and educators, directors, respiratory therapists, and other frontline staff. The VAP Bundle includes the following key elements:

- Minimize duration of ventilation
- Daily assessment of readiness to wean
- Daily interruption of sedation
- Elevate head of bed
- Regular oral care
- Continuous aspiration of subglottic secretions

Figure 10.3-1: VAP rate per 1000 ventilator days

	2016	2017	2018	2019	2020
MICU	1.0	0.7	1.1	0.0	2.2
SICU	1.2	1.8	3.7	4.1	4.9
PCU††	0.0	0.0	0.0	5.6	0.9

†† Expanded from 12 beds to 30 beds, 10/1/2020.

Catheter-Related Urinary Tract Infections (CAUTI)

With higher acuity and reduced staff contact time, it was hypothesized that patients with COVID-19 would have higher indwelling catheter utilization and higher CAUTI rates. A retrospective cohort study concluded that median indwelling urinary catheter usage increased during the initial pandemic period by 36% (998 to 1355 catheter days, p=0.13); Hospital-wide, median CAUTI rates remained constant (2.9 and 2.7 infections/1000 catheter days, p=1.00). Urine culture ordering was 73% higher in COVID-19 units. Prolonged prone positioning may have contributed to increased CAUTI rates because it is challenging to provide appropriate catheter maintenance, including peri-care, when a patient is in a prone position.

Due to the onset of the SARS-CoV-2 pandemic, organizational resources were diverted to pandemic response and CAUTI quality improvement work was suspended. In October 2020, CAUTI reduction efforts were revitalized, and a group of stakeholders came together for a 3-day quality improvement event. This group re-evaluated the CAUTI reduction plan and determined that the interventions identified in the previous year were still relevant and should be carried over into 2021 with the addition of a few new interventions including:

- Daily multidisciplinary Foley rounds on 3 pilot units (4C South, 8A and SICU)
- Review and update indwelling urinary catheter policy, Nurse Driven Protocol, and urinary retention algorithm
- Develop new CAUTI prevention video for new employee orientation
- Expand Foley rounding to include annual point-prevalence review of catheter care and maintenance practices in all inpatient units

10.4. Decrease Surgical Site Infection (SSI) Rates

DHHA performs SSI surveillance for 17 procedures including 5 state-reported procedures (2 of which are nationally reported), and 12 additional procedures deemed high impact to our patient population. As a result, Infection Preventionists (IPs) began surveillance for SSI after ambulatory transrectal prostate biopsy and gender confirmation surgeries in 2020. SSI rate per 100 procedures since 2016 can be found in Figure 10.4-1.

Figure 10.4-1: SSI rate per 100 procedures and SSI Standardized Infection Ratio (SIR)

	2016	2017	2018	2019	2020*	2020* SIR
Knee Arthroplasty	0.6	1.0	1.4	1.7	1.8	2.6
Hip Arthroplasty	2.8	3.3	0.8	3.6	1.6	1.2
Abdominal Hysterectomies	1.2	4.8	1.2	0.8	1.0	0.6
Vaginal Hysterectomies	3.0	1.2	0.0	1.3	2.8	-
Craniotomies	3.9	4.1	2.3	1.4	1.9	1.0
Spinal Fusions	1.3	0.6	3.5	1.8	2.2	1.6
C-sections	1.7	2.0	0.7	0.4	0.4	0.3†
Herniorrhaphy	1.6	1.9	0.2	1.1	0.3	0.0
Colon Surgeries	11.0	6.2	3.4	3.5	1.7	0.3†
Breast Surgeries	2.2	1.0	1.4	0.7	0.0	0.0
Prostate and Nephrectomy Surgeries	1.9	0.0	4.1	0.0	0.0	-
Open reduction of fracture	1.8	1.4	1.8	1.3	2.7	2.1†
Vascular surgery‡	2.0	0.8	1.8	0.0	0.0	-

†Significantly different than expected (SIR less than 1.0 indicates fewer infections than expected; SIR greater than 1.0 indicates more infections than expected).
‡Vascular surgery SSI surveillance includes abdominal aortic aneurysm, AV shunt for dialysis, carotid endarterectomy, and peripheral vascular bypass.
*Cumulative data includes 4Q2019 –3Q2020.

Interventions:

- **Colon SSI Prevention Bundle:** Pre-, intra-and post-operative interventions were continued. Since the introduction of the colon bundle, a dramatic reduction in colon SSI has been observed.
- **Gynecology SSI Prevention Bundle**: Implemented an evidence-based SSI prevention bundle for abdominal hysterectomy and Caesarian section surgeries. Adherence to the bundle is tracked electronically by the gynecology team and reviewed by IP.
- **Perioperative skin preparation**: In-service sessions by the skin preparation manufacturers were undertaken with the staff throughout the year. A post-education evaluation of skin preparation revealed significant improvements.
- **Perioperative antibiotic selection**: Recommendations for colon surgery perioperative antibiotic selection was updated to cefazolin plus metronidazole in 2019. IP and AS continue to review and update the perioperative antibiotic prophylaxis guideline to provide best practices. These guidelines are revised with input from surgical specialties. Perioperative antibiotic selections are audited periodically and discussed with providers when prescribing practices are inconsistent with guideline recommendations.
- **Surgeon-specific reports:** Since 2011, Infection Prevention has generated biannual surgeon-specific SSI reports to support the Ongoing Physician Performance Evaluations (OPPE) process.
- **Sterile Processing Management (SPM) implementation:** In 2018, Ambulatory Care Services (ACS) implemented the existing hospital SPM scanning technology in order to reduce lost instruments, help recognize instruments that needed to be repaired or replaced, and to eliminate the manual process used by ACS. The process also improves the identification of instruments used with each patient.

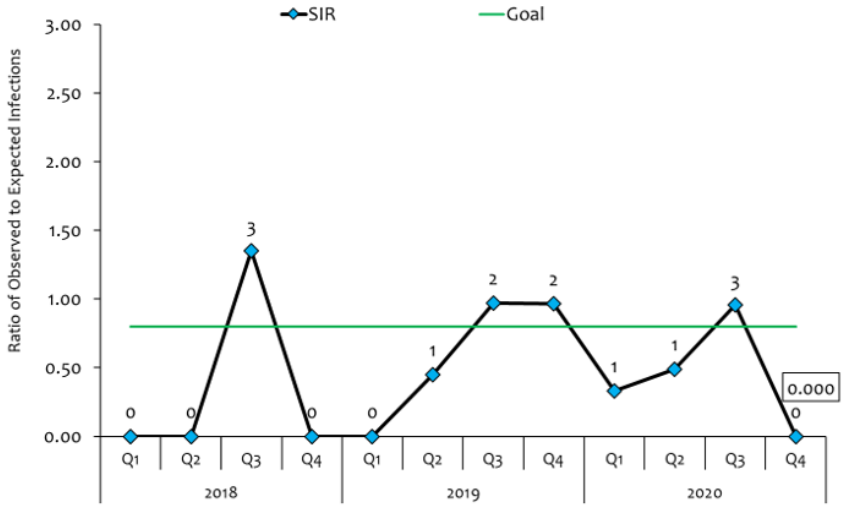
10.5. Decrease Healthcare Transmission of Multi-Drug Resistant Organisms (MDRO) and Ensure Containment of Organisms of Significance

Infection Prevention (IP) maintains a close relationship with the microbiology lab. IP attends microbiology rounds (which were put on hold for the majority of the pandemic to avoid gathering) each week during which any concerning infection patterns, incoming microbiology testing platforms, and interesting clinical cases are discussed. Weekly surveillance of the following MDROs/organisms/infections of significance in 2020 included: *Aspergillus,* Multi-drug resistant and susceptible *Acinetobacter baumannii,* Imipenem-resistant *Pseudomonas aeruginosa,* Carbapenemase-producing *Enterobacteriaceae* (CRE), Extended spectrum beta lactamases (ESBL), Methicillin-resistant *Staphylococcus aureus* (MRSA), Vancomycin-resistant *Staphylococcus aureus* (VRSA/VISA), Vancomycin-resistant enterococci (VRE), *Clostridioides difficile,* Influenza, SARS-CoV-2 pandemic response, Hospital-onset legionellosis, Hepatitis A, and Shigella.

Methicillin-resistant *Staphylococcus aureus* (MRSA)

In March 2020, a temporary suspension of Contact Precautions was implemented for patients with a history of or active MRSA infection, in an effort to conserve personal protective equipment during the SARS-CoV-2 (COVID-19) pandemic. A review of current literature indicated that discontinuing Contact Precautions for these patients does not lead to increased hospital-acquired infections or other adverse infectious sequelae and may even decrease certain noninfectious adverse events (i.e., patient experience). Therefore, the IP team decided to continue with the practice of not isolating MRSA patients. Surveillance for hospital-acquired MRSA infections is conducted weekly by IP, and any possible reinstatement of Contact Precautions for these infections will be re-evaluated based on these data. Public reporting requirements for hospital-acquired MRSA bacteremia continue, and data are benchmarked in NHSN (Figure 10.5-1).

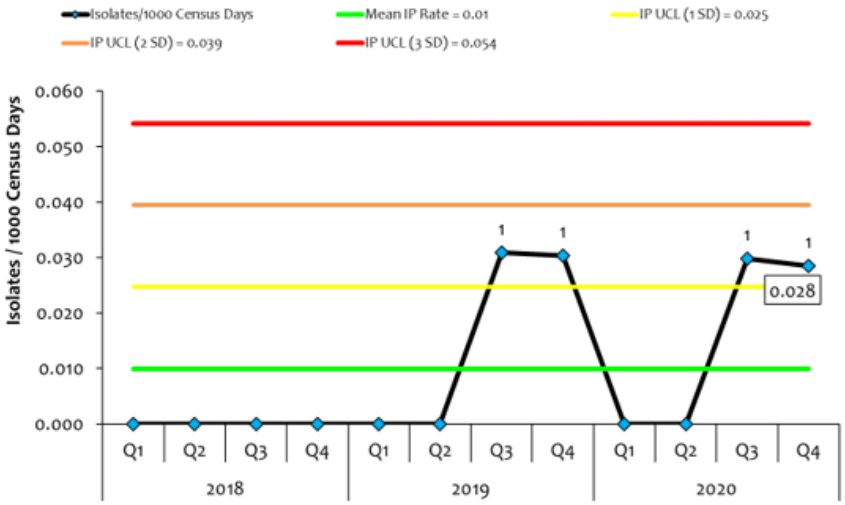
Figure 10.5-1: Hospital acquired MRSA bacteremia Standardized Infection Ratio (SIR)



Vancomycin-resistant enterococci (VRE)

Just as with MRSA, Contact Precautions for patients with a history of or active VRE infections were discontinued in June 2020. The antibiotic stewardship program continues to be closely involved in the VRE reviews and discussions. No concerning trends were observed throughout the rest of 2020 after removal of the requirement to isolate patients with VRE.

Figure 10.5-2: Carbapenem-Resistant Enterobacteriaceae (CRE) Organisms



Carbapenemase-producing *Enterobacteriaceae* (CRE)

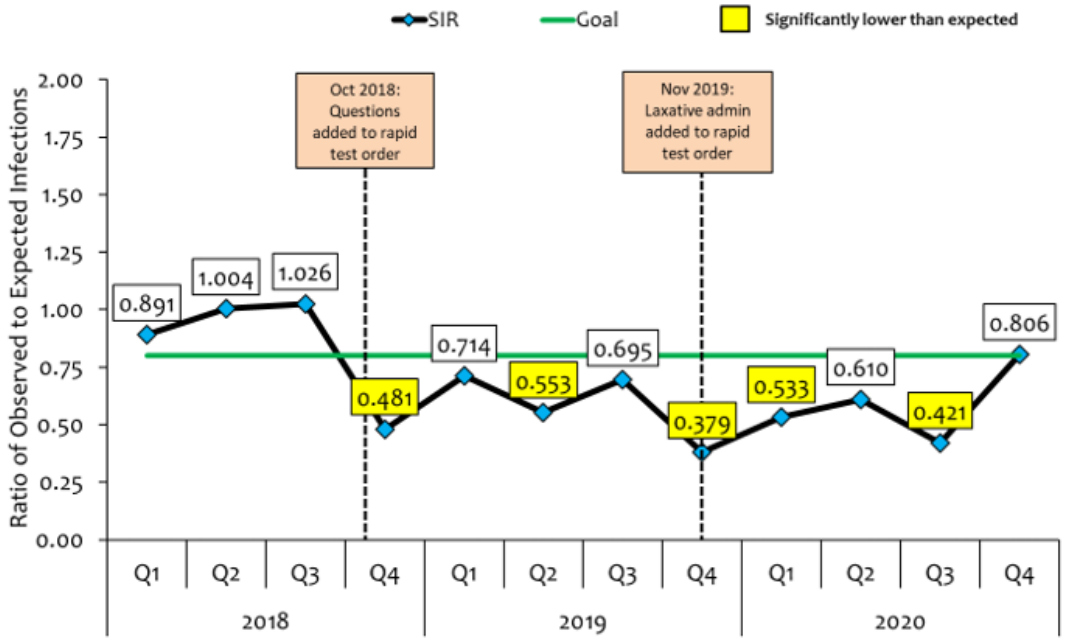
In 2020, one patient with plasmid-mediated carabapenemase production was identified. The isolate was found during the patient's admission and appropriate isolation precautions were put in place. The patient was discharged to a sub-acute rehab facility, and CDPHE worked with the facility to ensure precautions were in place there as well. The patient had no international travel. Carbapenemase OXA-48 was detected in this patient's isolate, which is rare in the US, although per CDPHE, has been detected in Colorado in recent years. Active surveillance was conducted for patients on the same unit as this patient who were still in-house. No spread of this organism was seen.

Multi-drug resistant (MDR) *Acinetobacter baumannii*
Surveillance for both inpatient and outpatient *Acinetobacter*-positive isolates is conducted weekly by IP. DH's relatively low rate of multidrug resistant *A. baumannii* has been credited to antibiotic stewardship and heightened infection control efforts in the SICU and OR (limited pulsatile lavage on colonized patients, empiric isolation, and decreased fluoroquinolone usage). A cluster of MDR *A. baumannii* has not been identified in the institution since 2018.

Clostridioides difficile
C. difficile has been a major institutional focus from 2017 through 2020. Probiotic administration for inpatients on broad spectrum antibiotics was initiated in 2017. However, a October 2020 review found insufficient evidence to continue routine co-administration of probiotics and the practice was discontinued. Environmental Services (EVS) continues to use Perisept as the default cleaning product in the hospital. Ultraviolet (UV) lighting of inpatient and ED/urgent care rooms of patients with *C. difficile* infections continued in 2020, with 93% of both room types treated with UV lights after terminal clean at discharge. The hemodialysis unit, admission-discharge unit, and OR suites are treated with a UV light once per week. Figure 10.5-2 shows the hospital-onset *C. difficile* standardized infection ratio for the prior three years.

Electronic decision support tools to reduce inappropriate testing were implemented in Epic beginning in October 2018. In order to avoid hospital-onset *C. difficile* cases among patients who report diarrhea at admission but do not stool in the subsequent day or two, IP and Epic staff collaborated to build an auto-cancel rule. If a stool specimen has not been collected within 24 hours of ordering the rapid *C. difficile* test or 48 hours for the stool PCR test, the order will be automatically discontinued. The collaborative effort began in 2020 and the rule is anticipated to go-live in February 2021.

Figure 10.5-2: Hospital-Onset *Clostridioides difficile* NHSN Standardized Infection Ratio



10.6. Collaboration with Center of Occupational Safety & Health (COSH) to Decrease Occupational Infection Related Hazards

Infection Prevention worked closely with COSH in 2020 to decrease occupational infection related hazards through the following processes:

- Review employee exposure data at Infection Prevention meetings at least semi-annually
- Education at new employee orientation and annual competency training about reporting of exposures
- Implement "swarm" events to become aware of places where the Bloodborne Pathogen Exposure (BBPE) testing protocol does not work as expected.
- Collaboration and implementation of the universal influenza vaccination program
- EMS infection control and ambulance cleanliness
- COVID-19 prevention in employees

COSH collects exposure details regarding each exposure event. The details collected allow better direction of the education opportunities. These data are presented at the Infection Prevention Committee meetings. During these discussions, input from experts and frontline staff are gathered on how to formalize interventions and better prevent these exposures in the future. Total and bloodborne pathogen exposures were lower than in previous years (Figure 10.6-1). This is likely in part due to reduced hospital and clinic census observed during the initial and secondary phase of the COVID-19 pandemic. Of note, COVID-19 exposures (whether to patients or other staff members) are not included in this table.

Figure 10.6-1: Number of Total Exposures by Year at DHHA

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total # Exposures (without COVID-19)	**ND**	**ND**	**ND**	**316**	**273**	**305**	**310**	**303**	**209**	**306**	**227**	**220**	**168**	**191**	**243**	**195**	**187**	**131**
Total # BBPE	**239**	**293**	**273**	**244**	**225**	**232**	**237**	**229**	**154**	**217**	**182**	**178**	**136**	**120**	**155**	**114**	**132**	**97**

Source: COSH
ND = No Data

Influenza Vaccination

Ultimately, DHHA has vaccinated at least 97% of all employees/contractors against seasonal influenza since the implementation of this policy. The exemption rate for those with medical contraindications or religious waivers averages 2% each year. Influenza is highly contagious and can spread rapidly through a health care facility, particularly in our at-risk inpatients. In addition, up to 25% of Healthcare Workers (HCWs) contract influenza each season. IP and COSH have successfully partnered with the other academic teaching facilities in the Denver area to assure all residents and faculty has been vaccinated.

DHHA has mandated employee influenza vaccination since the 2011-2012 influenza season. The rationale for implementing such a policy reflects our appreciation that influenza is a serious illness that results in significant patient mortality and staff each year. There are data showing:

- Decreased mortality in patients in Long Term Care Facilities
- Decreased influenza among vaccinated HCWs
- Decreased nosocomial influenza among hospitalized patients
- ~ 50% fewer sick days in workers who receive influenza vaccine

DHHA has successfully implemented, and continues to refine, an electronic tracking system that allow managers to track real time the status of their employee as well as the IP team to track and report data as needed. The developed tracking system, HANDI, has been recognized by the CDC as superior tool for mass vaccination clinics and the development team has received national awards.

COVID-19 Testing

Early in the pandemic, a staff health survey was created to assess whether a DHHA employee needed a SARS-CoV-2 test (based on a high-risk exposure or symptomatic illness). The survey underwent continual refinement, including being able to prioritize expedient lab testing for employees working an upcoming shift. Return to work criteria was developed in conjunction with the Centers for Disease Control (CDC) guidelines and COSH performed return-to-work reviews/clearances for staff. Frontline/patient-facing and first responders were among the first DHHA employees to be offered vaccination, with high uptake seen in the first several weeks and months. Infection Prevention and COSH leadership

partnered to lead the organization, staffing, scheduling, coordination, and administration of employee vaccination clinics. This partnership has continued as patients have begun to be vaccinated. IP is in the process of transitioning management of the on-campus vaccination program to dedicated staff, however it is anticipated that COSH and Infection Prevention will continue to play a role in advising and informing the overall vaccination strategy.

10.7. Collaborate Closely with Environmental Services (EVS)

Infection Prevention continues to work closely with the EVS program to focus on environmental cleaning protocols. Accomplishments in 2020 included:

- **Expanded use of Hygiena ATP surface monitoring**. The Hygiena efforts were placed on hold during COVID-19 and EVS recently (in January 2021) hired a training and education coordinator to better support staff and evaluate processes.
- **Expanded use of ultraviolet machines**. Ultraviolet light machines are used after a terminal clean of inpatient and ED/urgent care rooms where a *C. difficile* patient resided, and weekly in each operating room, the admission-discharge unit, and the hemodialysis unit. UV lighting of all COVID-19 suspect and confirmed patient rooms was performed in the initial phase of the pandemic but was discontinued in November 2020 as routine cleaning and disinfection procedures currently in place by EVS were/are appropriate for COVID-19.
- **Improved communication between EVS and clinical leadership**. Time is dedicated during monthly Infection Prevention Committee meetings for EVS to provide data regarding their use of ultraviolet lights and cleaning products. Because Infection Prevention Committee meetings have clinical representation from a variety of settings, the meeting is an ideal forum for this data to be presented.
- **Improvement to cleanliness and safety at OBHS.** In 2018, OBHS installed new safe syringe disposal containers in all bathrooms. The installation has contributed to a reduction in improperly disposed of syringes in the facility and created a safer environment for staff and patients. Additionally, OBHS and EVS continue to work together to ensure prompt communication and resolution of EVS related issues. Response of EVS personnel was markedly improved during 2018 and 2020 with intentions to continue to enhance efforts into 2021. Regular rounding by the IP team helps identify gaps and needs for support in the OBHS setting.

10.8. High-Risk Pathogen Preparedness

The 2014-2016 Ebola epidemic in West Africa was the largest in history with over 28,600 cases and over 11,300 deaths. With the first imported case into the US, DHHA's Ebola preparedness activities were put into place, and a comprehensive plan to safely care for Ebola patients was developed. The Ebola plan and preparedness work were validated by CDPHE as well as the CDC, and National Ebola Training and Education Center (NETEC). In 2015, DH was recognized by the CDC to be the Department of Health & Human Services (HHS) Region 8 Ebola & Special Pathogens Regional Treatment Center. DH was awarded $3 million dollars to continue to enhance the Ebola and other high-risk pathogen program over the next 5 years (2015 – 2020). In 2020, the funding was renewed through June 2021. In 2020, infection prevention had several achievements including:

- Completed all grant deliverables by stated deadlines.
- Conducted the majority of staff personal protective equipment (PPE) practice, drills, and simulation training.
- Supported training and education opportunities for high risk infection team (HITeam) members.
- Provided regional mentorship and education.
- Facilitated PPE clinics to Denver Health staff.
- Expanded and refined the process for asking travel history questions in the screening, admissions, and intake areas at the hospital to reflect real-world infectious disease outbreaks.
- Initiated Denver Health as a Special Pathogen Research Network (SPRN) site for investigational therapies and vaccinations for high risk pathogens beginning with ZMapp.

10.9. Optimization of High-Level Disinfection (HLD)

In addition to the goals and achievements above, it was identified standardization of high-level disinfection and cleaning of shared patient equipment as major goals in 2020.

High-level disinfection (HLD):
High-level disinfection was historically performed in up to 13 of DH's departments and clinics. Multiple quality improvement and quality assurance programs were implemented starting in 2016. In 2019, ongoing audits revealed that HLD practices were still not standardized and consistent. Therefore, the following changes were implemented:

- Investment in the Trophon system for all locations where it is appropriate including all off-site clinics and multiple on-campus locations.
- Consolidation of all OPA HLD into the Sterile Processing Department
- Creation of a dedicated OPA HLD space on the 2nd floor of Pav A, near the OR
- Hiring of three additional staff dedicated to performing HLD
- Validation of HLD competency of staff for each type of equipment
- Review and revision of HLD standard work
- Developed and deployed HLD pre-cleaning education for appropriate staff in each area
- Revision of the organizational HLD policy
- Review and revision of HLD annual competency tool
- Review and revision of HLD audit tool
- Ongoing, routine HLD audits by IP staff
- Continuation of the HLD Council for oversight of HLD throughout the organization

The HLD Council meets regularly to address specific organization needs related to HLD including staff onboarding and ongoing training, competency assessment, equipment/process training, HLD instrument/patient tracking, review of new equipment requiring HLD, review of areas performing HLD and other HLD related topics and activities as needed. HLD Council membership includes department managers, nurse educators, HLD champions, front-line staff, infection prevention, patient safety and quality and other stakeholders.

Routine HLD audits, performed by IP staff, are ongoing in each HLD area; immediate feedback and education is provided to staff as needed and complete audit reports are shared with area managers and HLD champions. HLD audit data is reviewed in detail by the HLD Council and reported quarterly at the Infection Control Committee. In 2020, sterile processing department leadership will share responsibility for completing routine department HLD audits.

10.10. Shared Medical Equipment Cleaning

Shared medical equipment – low level disinfection:
In 2018, a multi-disciplinary team participated in a LEAN Value Stream Analysis (VSA) event to identify best practices, to improve efficiency, and to increase adherence to low level disinfection of shared medical equipment. The VSA participants developed a comprehensive patient equipment cleaning guideline with designated roles, an evaluation plan for patient equipment cleaning, and standard work for all parties involved in patient equipment cleaning.

While most products can be cleaned using a hospital-approved disinfectant (purple top or bleach wipe), DHHA also invested in OneSource, an online resource that provides specific manufacturer recommended instructions for use (IFU) for most medical devices. While comprehensive, the system was found to be challenging to navigate, and it was unrealistic for front-line staff to become adept at navigating OneSource. Therefore, a risk assessment was performed. It was determined that knowledge of each equipment manufacturer's IFU was less important than having a simple cleaning schema where staff know when to clean equipment and can easily choose a readily available, effective disinfectant product. It was not practical to ask all staff to know a more complicated set of products and risk improper/inadequate disinfection. In 2019, the policy for patient equipment cleaning was finalized and it was rolled-out to staff in early 2020. During the March 2020 Joint Commission hospital survey this risk assessment was reviewed without finding by the surveyors.

10.11. Beyond Hospital-Acquired Infections. Other Accomplishments in 2020

Successful Joint Commission Hospital Survey

- Infection Prevention participated in a successful Joint Commission reaccreditation survey during the first week of March 2020. During this week, surveyors examined many different aspects of the organization including many related to or directly impacting infection prevention. One of these aspects was High Level Disinfection (HLD). The HLD practices that have been implemented were complemented multiple times by the surveyors as adhering to best practices. It was during the surveyors' visit that the first case of COVID-19 was identified in Colorado, and the anticipation of Denver Health's first case was a constant concern. Soon after the survey ended, the city and county of Denver implemented a mandatory stay-at-home order, and travel and in-person gatherings were curtailed.

SARS-CoV-2, COVID-19 IP Pandemic Response

- DHHA cared for its first COVID-19 positive patient in early March 2020.
- The IP team was the first-line phone and email resource in the early days of the pandemic response, responding to questions for information and guidance from staff around the organization. The IP team provided COVID information and guidance on a newly created Pulse subsite (for which the management was later given to PR/Marketing) so staff had access to timely and up-to-date information. The Infection Prevention team adapted and converted to 24/7 staff with flexing time to be on call overnights and on weekends.
- During the most acute portion of the PPE shortage, IP coordinated efforts to re-sterilize N95 masks in the event that supplies of new masks ran out. Infection Prevention also acted as the 24/7 on-call resource for Central Supply, approving resupply requests for N95 masks made by clinical staff. Staff rounded regularly around the hospital with dedicated time for the COVID-19 units (Pavilion B, 9A and ED medicine bay). Heather Young, the Medical Director of Infection Prevention, staffed incident command and provided infection prevention and infectious diseases expertise to manage PPE supplies, patient care, and infection prevention practices.
- A COVID-19 ID attending was developed to help manage the influx of COVID-19 related calls. A new isolation precaution was created (Specialized Respiratory), and staff were educated with tip sheets and in-person instruction on what it meant. Infection Prevention served as a resource to evaluate and vet new PPE that the logistics team was trying to acquire given the large run on the national (and global) PPE supply. IP regularly assessed whether a manufacturer's statement that a mask is a NIOSH-approved N95 was true, checking CDC databases for evidence of such an approval. In addition, samples of new or donated PPE were assessed to determine whether it could be provided to clinical staff, or, if deemed not medically appropriate, could be provided to non-clinical staff and/or patients.
- In response to the 2nd surge in cases in the fall, the IP team was included in the Incident Command (IC) Safety/Med Tech branch and provided guidance and information to the branch and IC on a variety of IP-related topics/issues. As updated and revised guidance came out of CDC, guidance for the duration of isolation and the criteria to discontinue precautions was updated. Providers were educated on when to test someone for COVID-19, when not to test someone, and how to interpret results (i.e., a repeat positive within 90 days).
- As the vaccine availability started to become a reality in the fall, the team was involved in the early discussions, with guidance from the Colorado Department of Health and Environment (CDPHE), of who to vaccinate and how a vaccination clinic or clinics would look. Infection Prevention manager Bryan Knepper subsequently devoted nearly 100% of his time to the vaccine clinic efforts, helping with clinic management, scheduling, staffing, and logistics. In addition to these accomplishments, IP partnered more closely with emergency medical services (EMS). Initiatives included ambulance cleanliness with EMS integrating rigorous cleaning process in response to COVID-19, infection prevention education in the inpatient and outpatient setting, and increased collaboration and communication for outbreaks in the community. IP will continue these interventions in 2021.

11. Antibiotic Stewardship

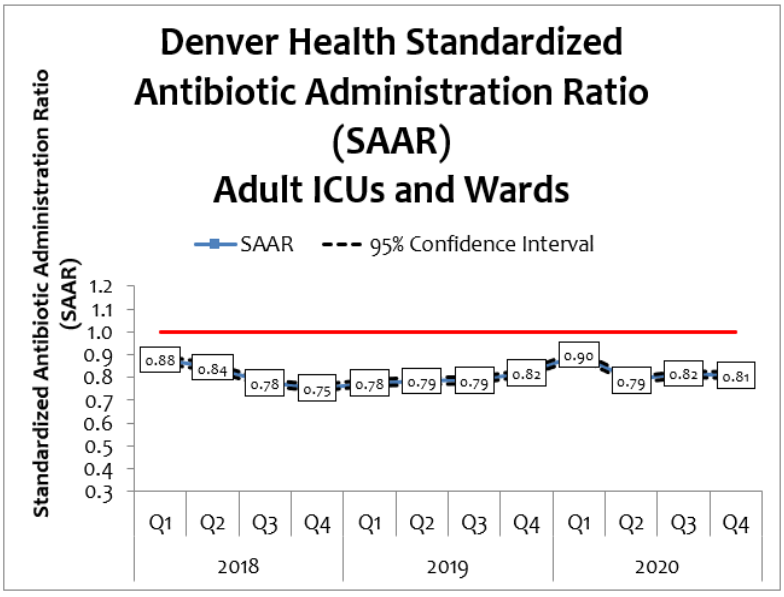
11.1. Optimizing Antibiotic Use

Denver Health's designation as an Antimicrobial Stewardship Center of Excellence by the Infectious Diseases Society of America was renewed in 2020. The AS Program maintained the following interventions and surveillance activities with goals of optimizing antibiotic use for our patients in order to maximize the chance for good clinical outcomes and prevent antibiotic resistance, *Clostridium difficile* infection, and other antibiotic-related adverse events.

- Quarterly antibiotic utilization surveillance
- Development of antibiograms and assessment of antibiotic resistance trends
- Formulary restriction and pre-authorization (via the Antibiotic Stewardship Pager) for broad-spectrum, toxic, or high-cost antibiotics
- Post-prescription review with real-time prescribing recommendations to providers
- Development, implementation, and maintenance of Clinical Care Guidelines for common infections
- Review of new FDA-approved antimicrobials for addition to the Denver Health formulary
- Maintenance and expansion of the Antibiotic Stewardship smartphone application and the Antibiotic Stewardship subsite on the Pulse
- Monthly meetings of the Antimicrobial Subcommittee of the Pharmacy and Therapeutics (P&T) Committee
- Submission of antibiotic utilization data to the CDC/NHSN Antibiotic Use (AU) module
- Feedback of individualized and aggregate antibiotic utilization data to target clinician groups
- Provide formal and informal antibiotic stewardship education for clinicians, pharmacists, and nurses
- Stewardship of infectious diseases diagnostic tests
- Continuation of a pharmacist-managed procalcitonin protocol and formal antibiotic timeout for the MICU
- Assessment of documented penicillin allergies and performance of penicillin skin tests or graded oral challenges on select patients
- Maintenance of a PGY-2 Infectious Diseases Pharmacy Residency training program

Figure 11.1-1 shows the National Healthcare Safety Network (NHSN) standardized antibiotic administration ratio (SAAR) – the ratio of observed to expected antibiotic use at Denver Health – over time for adult ICUs and wards. The SAAR has been consistently less than 1.0, representing lower observed antibiotic use than would be expected for a hospital with DHHA's characteristics. For example, in Q4 2020, the SAAR value of 0.81 can be interpreted that 19% fewer antibiotics were used at Denver Health than expected based on this national data. The pediatric SAAR data for 2020 is not shown because the data are not valid due to the transition of previously pediatric wards to adult wards during the COVID-19 pandemic.

Figure 11.1-1: DHHA SAAR 2018—2020



In 2020, the AS Program focused on three new initiatives to expand services:

- Prevent antibiotic treatment of asymptomatic bacteriuria (inpatient)
- Reduce excessive durations of antibiotic therapy in the urgent care setting (ambulatory)
- Develop a comprehensive ambulatory care antibiotic utilization surveillance tool (ambulatory)

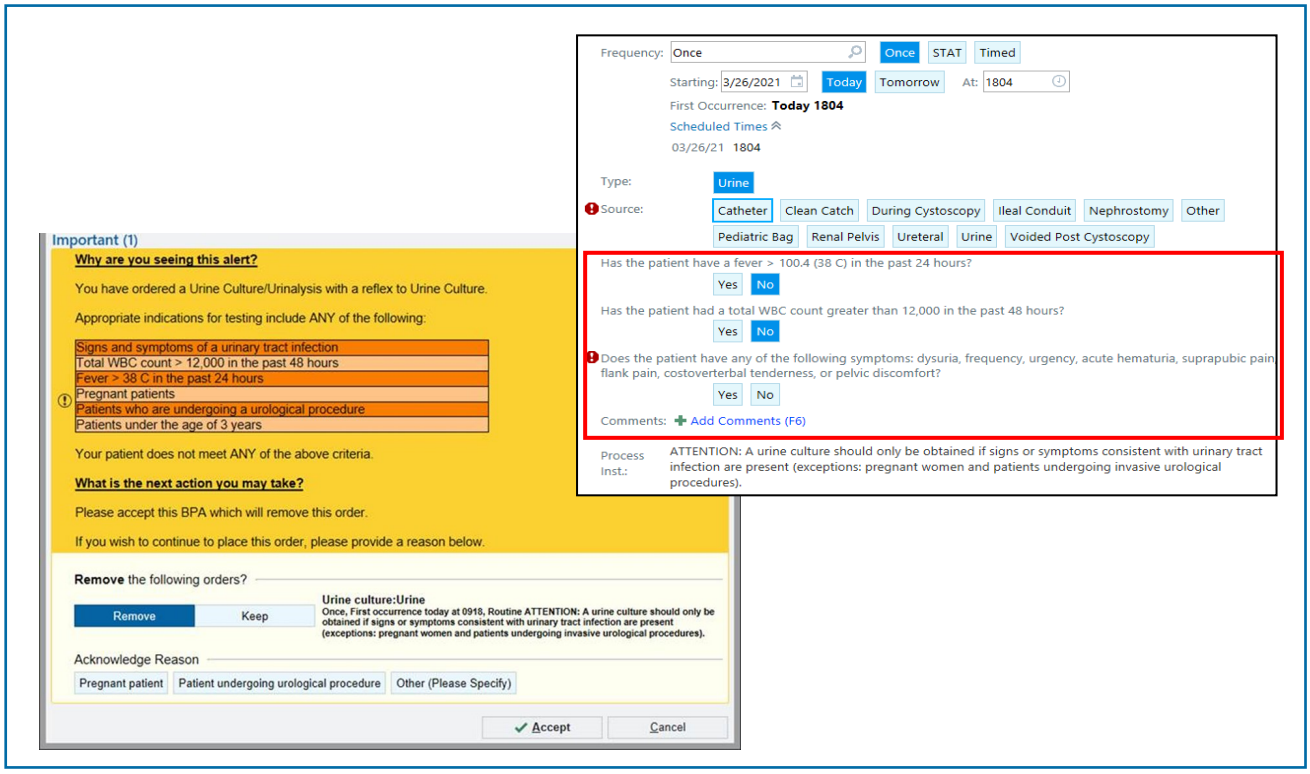
11.2. Reduce Unnecessary Urine Cultures and Prevent Antibiotic Treatment of Asymptomatic Bacteriuria

In the hospital setting, one of the most common misuses of antibiotics is the treatment of asymptomatic bacteriuria (ASB). Antibiotic treatment of asymptomatic bacteriuria does not improve clinical outcomes and is associated with antibiotic-related adverse events and the development of antibiotic resistance. Two clinical practices contribute to antibiotic overuse for ASB: (1) indiscriminate ordering of urine cultures in patients without signs or symptoms consistent with UTI (i.e., identification of ASB); and (2) prescribing antibiotics to patients with a positive urine culture in the absence of signs or symptoms consistent with UTI (i.e., the decision to treat a positive culture). AS staff worked with key stakeholder groups (e.g., Emergency Department, Hospitalists) to develop and implement a multi-faceted intervention which addressed these two key problems. This intervention aligns with IP and Target Zero initiatives to reduce catheter-associated UTIs and to improve stewardship of laboratory resources.

Appropriate urine cultures
The current approach to urine testing was evaluated and institutional guidance was developed for when to obtain a urine culture. Providers received individualized feedback on urine testing. AS and Epic staff collaborated on a clinical decision support (CDS) rule to promote more appropriate ordering of urine cultures (Figure 11.2-1). This intervention helps providers select the appropriate reflex urine test if concerned for infection and reminds providers of the correct indications for urine testing. The CDS rule was implemented throughout the second half of 2020. From September to December 2020, education on asymptomatic bacteria and the appropriate utilization of urine cultures was provided to the medical residents, surgery, emergency medicine, hospitalists, pharmacists, and nurses.

Treatment of positive urine cultures
Institutional guidance for the decision to treat a positive urine culture was developed. Clinical decision support for positive culture results was created to remind providers that antibiotics are only indicated in patients with urinary symptoms or signs of infection. Clinical pharmacists prospectively evaluated antibiotics prescribed for UTI and provided clinician-level feedback.

Figure 11.2-1: Clinical Decision Support for Appropriateness of Urine Culture



In 2021, the AS staff will evaluate the impact of the ASB stewardship interventions. Key metrics and target thresholds to determine if the program was successful include:

- Total number of cultures decreased by 20%
- Antibiotics ordered with UTI as an indication reduced by 10%
- Antibiotic days with UTI as an indication curtailed by 10%
- Overall rate of catheter-associated UTIs diminished by 20%

11.3. Reduce Excessive Durations of Antibiotic Therapy in the Urgent Care Setting

Approximately one-third of all antibiotic prescriptions in the DHHA ambulatory care system are dispensed from the adult urgent care centers. Despite availability of institutional guidance for duration of therapy for common infections, durations are often longer than recommended, especially among certain disease states such as upper respiratory tract and skin and soft tissue infections. Previous evaluations specific to DHHA showed that over 50% of antibiotics prescribed for sinusitis had a longer duration of therapy than recommended. Another evaluation showed that only 69% of antibiotics prescribed from one of the urgent care settings were concordant with Denver Health's duration of therapy guidance; the proportion of prescriptions that exceeded recommended durations of therapy were 47% for skin and soft tissue infections, 74% for upper respiratory tract infections, 79% for otitis, and 23% for lower respiratory tract infections.

A multifaceted intervention was developed to increase adherence to guideline-recommended 5-day durations of antibiotic therapy. Peer champions for the Adult Urgent Care Center and Southwest Pena Urgent Care were identified and highly engaged in this initiative. In August 2020, clinical decision support was implemented with instructions for recommended durations of therapy for common infections within antibiotic orders as well as frequency buttons for appropriate durations of therapy. Education was provided to Adult Urgent Care providers through email communication. Southwest Pena Urgent Care providers received in person education in January 2020 and an infographic was displayed in the urgent care center (Figure 11.3-1). Individualized provider feedback with peer comparison was used at both locations.

As Figures 11.3-2 and 11.3-3 show, there have been substantial increases in the proportion of antibiotic prescriptions for guideline-concordant 5-day durations of therapy. In early 2021, an Epic dashboard is being released which displays durations of therapy by urgent care location, for specific conditions, and by individual providers.

Figure 11.3-1: Southwest Pena Urgent Care Infographic

Figure 11.3-2: Antibiotic prescriptions compliant with 5-day therapy guideline

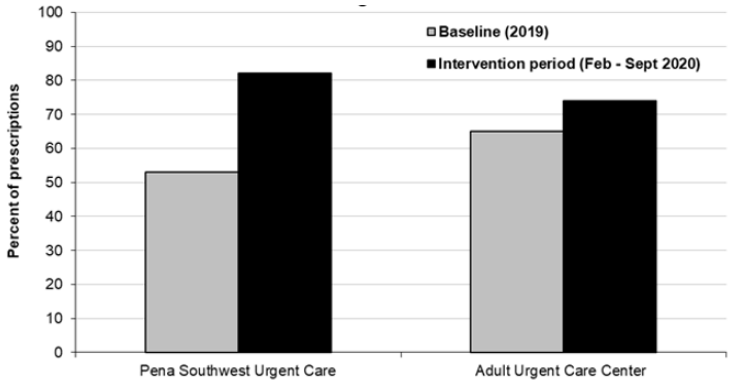
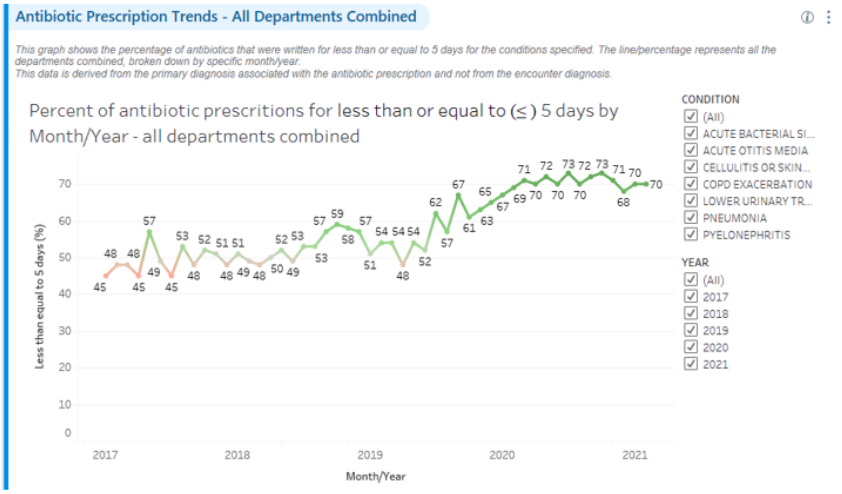


Figure 11.3-3: Antibiotic Prescription Trends, ≤ 5 days



11.4. Develop a Comprehensive Ambulatory Care Antibiotic Utilization Surveillance Tool

As of January 1, 2020, The Joint Commission requires that all institutions perform active antibiotic stewardship in the ambulatory care setting, including setting annual goals and tracking and reporting data. Longitudinal surveillance of antibiotic use helps to identify trends in outpatient antibiotic use, prioritize outpatient antibiotic stewardship interventions, measure the effectiveness of outpatient stewardship interventions, and serve as an intervention in and of itself through feedback of antibiotic use data.

The AS Program began development of a longitudinal surveillance tool in 2020. A metric called the "respiratory condition prescribing score" was created which measures the proportion of visits with a primary diagnosis of any respiratory condition where an antibiotic was used to treat respiratory tract infections (e.g., amoxicillin, amoxicillin/clavulanate, azithromycin, doxycycline, cephalexin) was prescribed. This score will ultimately be fed back to individual providers with comparison to peers with the goal of decreasing variability in prescribing, thereby driving down unnecessary prescriptions.

The Epic dashboard for urgent care durations of antibiotic therapy served as the framework for this broader ambulatory care surveillance tool. A prototype of the ambulatory care surveillance tool was reviewed by the AS team but diversion of personnel resources for the COVID-19 response delayed completion of this project. Further development of the tool will continue during 2021. The final dashboard will show data on prescribing practices for individual clinics, urgent care centers, and the emergency department as well as individual clinicians. The metrics and target goals for ambulatory care antibiotic utilization are shown in Figure 11.4-1.

Figure 11.4-1: Ambulatory Care Antibiotic Surveillance Dashboard metrics and goals

Metric	Goal
Days of antibiotic therapy per 100 visits	20% decrease
Antibiotic prescriptions per 100 visits	10% decrease
Prescriptions of broad-spectrum antibiotics per 100 visits	10% decrease
Mean duration of therapy	20% decrease
Proportion of antibiotic prescriptions for ≤ 5 days	20% increase
Standardized respiratory condition prescribing score	20% decrease

11.5. COVID-19 Response: Provide Infectious Diseases and Antibiotic Stewardship Expertise and Leadership to Assist the DHHA COVID-19 Response

The Antibiotic Stewardship Program played a critical role in Denver Health's COVID-19 response. The team managed the DHHA COVID-19 Treatment Guidance policy, a living document that includes standardized inpatient and outpatient treatment recommendations, summaries of new and existing therapeutic agents for COVID-19, and ongoing clinical trials at DHHA. AS staff evaluated therapeutics that received FDA emergency use authorization or full approval, including corticosteroids, remdesivir, convalescent plasma, hydroxychloroquine, tocilizumab, bamlanivimab, and ivermectin. The AS team collaborated with stakeholders to determine each therapeutics potential role at DHHA. AS staff promoted antibiotic stewardship in patients with COVID-19 via review of patients receiving antibacterial or antifungal agents and/or antibiotic stewardship rounds with the COVID-19 attending. The team also assisted with the coordination of vaccine distribution via the Safety branch of Incident Command.

11.6. Antibiotic Stewardship Program Academic Achievements

- Through a Denver Health pilot grant, a multifaceted intervention was developed that led to a substantial reduction in excessive durations of antibiotic therapy for children with acute otitis media (principal investigator: Holly Frost, mentor: Tim Jenkins)
- Peer-reviewed publications from the AS Program:
  - ◊ Frost HM, Becker LF, Knepper BC, Shihadeh KC, Jenkins TC. Antibiotic prescribing patterns for acute otitis media for children 2 years and older. J Pediatrics 2020; 220:109-115. PMCID: PMC7249267
  - ◊ Jenkins TC and Tamma PD. Thinking beyond the "core" antibiotic stewardship interventions: shifting the onus for appropriate antibiotic use from stewardship teams to prescribing clinicians. Clin Infect Dis 2020 Jul 15 [Epub ahead of print]. PMID: 32667974
  - ◊ Vazquez Deida AA, Shihadeh KC, Preslaski CR, Young HL, Wyles DL, Jenkins TC. Use of a standardized dalbavancin approach to facilitate earlier hospital discharge for vulnerable patients receiving prolonged inpatient antibiotic therapy. Open Forum Infect Dis 2020; 7(8):ofaa293. PMID: 32793767
  - ◊ Hurley H, Sikka M, Jenkins T, Villacorta Cari E, Thornton A. Outpatient antimicrobial treatment for people who inject drugs. Infect Dis Clin N Am 2020; 34:525-38.
  - ◊ Frost HM, Munsiff SS, Lou Y, Jenkins TC. Simplifying outpatient antibiotic stewardship. Infect Control Hosp Epidemiol 2021 Feb 1 [Epub ahead of print]. PMID: 33517928
- Oral or poster presentations from the AS Program:
  - ◊ Cooper M, Shihadeh KC, Jenkins TC. Extended-Spectrum Beta-Lactamase-Producing Enterobacterales:
  - ◊ Epidemiology and Treatment Patterns. Poster presentation at Virtual Vizient Annual Meeting, December 2020.
  - ◊ Shihadeh KC, Vazquez Deida A, Hussain C, Neumeier A, Jenkins TC. Utility of Tracheal Aspirates in Guiding Antibiotic Use in Mechanically Ventilated Patients with COVID-19. Poster presentation at Virtual ID Week, October 2020.
  - ◊ Kernan B, Shihadeh KC, Jenkins TC. Evaluation of Antibiotic Overuse for Asymptomatic Bacteriuria in a Hospital with Low Baseline Antibiotic Use. Poster presentation at Virtual ID Week, October 2020.
  - ◊ Vazquez Deida AA, Shihadeh KC, Knepper B, Aragon D, Jenkins TC. Evaluation of Factors Influencing Antibiotic Therapy Duration for Common Ambulatory Infections in an Integrated Healthcare System. Oral abstract presentation at Virtual ID Week, October 2020.
- A comprehensive review was performed of the epidemiology and treatment patterns of extended-spectrum beta-lactamase-producing Enterobacterales

12.1. Appendix A: Glossary of Terms and Abbreviations

A-B

A1c…..Glycated Hemoglobin
ACLS….. Advanced Cardiovascular Life Support
ACS.....Ambulatory Care Services
AIDET…..Acknowledge, Introduce, Duration, Explanation, Thank you
AQA…..Ambulatory Quality and Accountability
AHRQ…..Agency for Healthcare Research and Quality
ALTO…..Alternatives to Opioids
AMI…..Acute Myocardial Infarction
API……Application Programming Interface
APMs…..Advanced Alternative Payment Models
APR-DRG…..All Patients Refined Diagnosis Related Groups
ARRA…..The American Recovery and Reinvestment act
ASB…..Asymptomatic Bacteriuria
BBPE…..Blood borne Pathogen Exposure
BMI…..Body Mass Index
BNP……Brain Natriuretic Peptide
BPA…..Best Practice Advisory

C

CABG…..Coronary Artery Bypass Graft
CAUTI…..Catheter-Associated Urinary Tract Infection
CDPHE…..Colorado Department of Health and Environment
CDC…..Centers for Disease Control and Prevention
CDI…..*Clostridioides difficile* infection
CDI…..Clinical Documentation Integrity
C. difficile…..*Clostridioides difficile* infection
CDS…..Clinical Decision Support
CDIs……Clinical Documentation Integrity Specialist
CE…..Continuing Education
CGM…..Continuous Glucose Monitoring
CIIS…..Colorado Immunization Information System
CLABSI…..Central Line-Associated Blood Stream Infection
CMS……Centers for Medicare and Medicaid Services
COMM…..Community
COPD…..Chronic Obstructive Pulmonary Disease
COSH…..Center for Occupational Safety and Health
COT…..Chronic Opioid Therapy
CPOE…..Computerized Provider Order Entry
CQO…..Chief Quality Officer
CQM……Clinical Quality Measure
CRE…..Carbapenamase-producing enterobacteriaceae
CT……Computed Tomography
CVD……Cardiovascular Disease
CY…..Calendar Year

D

DHGMEC…..Denver Health Graduate Medical Education Committee
DHHA….Denver Health and Hospital Authority
DI…..Deterioration Index
DKA…..Diabetic Ketoacidosis
DPSQ…..Department of Patient Safety and Quality
DRG…..Diagnosis Related Group

E-F

EC…..Eligible Clinician
eCQM…..Electronic Clinical Quality Measure
ED…..Emergency Department
EH…..Eligible Hospitals
eHH…..Electronic Hand Hygiene
EHR….. Electronic Health Record
EMS…..Emergency Medical Services
EOC…..Environment of Care
EP…..Eligible Provider
ERAS…..Enhanced Recovery After Surgery
ESBL…..Extended Spectrum Beta Lactamases
EVS…..Environmental Services
FDA…..Food and Drug and Administration
FFS…..Fee for Service
FFY…..Federal Fiscal Year
FQHC…..Federally Qualified Healthcare Center

G-H

GI……Gastrointestinal
HAC……Hospital-Acquired Conditions
HAI…..Healthcare-Associated Infection
HANDI…..Tracking tool for Mass Vaccination Clinics
HAPI…..Healthcare-Acquired Pressure Injury
HBIPS…..Hospital-Based Inpatient Psychiatric Services
HCAHPS…..Hospital Consumer Assessment of Healthcare Providers and Systems
HCC……Hierarchical Condition Category
HCPF…..Health Care Policy and Financing
HCW…..Healthcare Workers
HEDIS…..Hospital Effectiveness Data and Information Set
HF…..Heart Failure
HH…..Hand Hygiene
HIM…..Health Information Management
HIT…..Health Information Technology
HITeam…..High Risk Infection Team
HLD…..High Level Disinfection
HQIP…..Hospital Quality Incentive Payment Program
HR…..Human Resources
HTC…..Hospital Transition Clinic
HTN…..Hypertension

I-L

IC…..Infection Control
ICU…..Intensive Care Unit
ID…...Infectious Disease
IFU…..Instructions for Use
Inpt…..Inpatient
INR…..International Normalized Ratio
IP…..Inpatient
IP…..Infection Prevention
IPs…..Infection Preventionist
IPC…..Intermittent Pneumatic Compression
IPFQR…..Inpatient Psychiatric Facility Quality Reporting
IPF…..Inpatient Psychiatric Facility
IQR…..Hospital Inpatient Quality Reporting
IQR…..Interquartile Range
IR…..Interventional Radiology
IV…..Intravenous
Kg…..Kilogram
LLT…..Local Leadership Team
LOS…..Length of Stay
LOSI…..Length of Stay Index

M

MDR…..Multi-Drug Resistant
MDRO…..Multi-Drug Resistant Organisms
MICU…..Medical Intensive Care Unit
MIPS…..Merit-Based Incentive Payment Systems
MRI…..Magnetic Resonance Imaging
MRSA…..Methicillin-Resistant *Staphylococcus aureus*
MSPB…...Medicare Spending Per Beneficiary
MU…..Meaningful Use

N

N/A…..Not Applicable
NCQA…..National Committee for Quality Insurance
NDNQI…..National Database of Nursing Quality Indicators
NEC…..Necrotizing enterocolitis
NETEC…...National Ebola Training and Education Center
NHSN…..National Healthcare Safety Network
NICU…...Neonatal Intensive Care Unit
NPO…..nil per os
N-STEMI…..Non-ST-Elevation Myocardial Infarction

O

OB/GYN…..Obstetrics and Gynecology
OBH…..Office of Behavioral Health
OBHS…..Outpatient Behavioral Health Services
O/E…..Observed to Expected Ratio
OMFS…..Oral and Maxiofacial Surgery
OP…..Outpatient
OPPE…..Ongoing Professional Performance Evaluation
OPPS…..Outpatient Prospective Payment System
OQR…..Hospital Outpatient Quality Reporting
OR…..Operating Room

P

PC…..Perinatal Care Conditions
PCU…..Progressive Care Unit
PCMH…..Patient Centered Medical Home
PCR…..Polymerase Chain Reaction
PCSP…..Patient Centered Specialty Practice
PDMP…..Prescription Drug Monitoring Program
PEDUC…..Pediatric Emergency Department and Urgent Care
PFS…...Physician Fee Schedule
PI…..Promoting Interoperability
PI…..Performance Improvement
PICU…...Pediatric Intensive Care Unit
PFAC…..Patient Family Advisory Council
PN…..Pneumonia
POA…..Present on Admission
PRBC…..Packed Red Blood Cells
PPE…..Personal Protective Equipment
PSCA…..Patient Safety Care Attendant
PSI…..Patient Safety Indicators
PSI 03…..Pressure Ulcer rate
PSI 06…..Iatrogenic Pneumothorax rate
PSI 08…..In-Hospital Fall with Hip Fracture rate
PSI 09…..Perioperative Hemorrhage or Hematoma rate
PSI 10…..Postoperative Acute Kidney Injury Requiring Dialysis rate
PSI 11…..Postoperative Respiratory Rate
PSI 12…..Perioperative Pulmonary Embolism or Deep Vein Thrombosis rate
PSI 13…..Post Operative Sepsis rate
PSI 14…..Postoperative Wound Dehiscence rate
PSI 15…..Unrecognized Abdominopelvic Accidental Puncture/Laceration rate
P&T…...Pharmacy and Therapeutics Committee

Q

Q&A…...Quality and Accountability
QI…..Quality Improvement
QIC…..Quality Improvement Committee
QPP…..Quality Payment Program

R

RAF…..Risk Adjustment Factor
RBC…..Red Blood Cells
ROM…..Risk of Mortality
ROSC…..Return of Spontaneous Circulation
RRT…..Rapid Response Team

S

SAAR…...Standardized Antibiotic Administration Ratio
SEP…..Severe Sepsis/Septic Shock
SES…..Socio Economic Status
SI…..Safety Intelligence
SIR…..Standardized Infection Ratio
SL…..Service Line
SOI…..Severity of Illness
SPM…..Sterile Processing Management
SSI…..Surgical Site Infection

T-U

TBD…..To Be Determined
TBI…..Traumatic Brain Injury
THA/TKA…..Elective Primary Total Hip or Knee Arthroplasty
TIN…..Tax Identification Number
TJC…..The Joint Commission
TOC…..Transitions of Care
TQIP…...Trauma Quality Improvement Program
US…..United States
UV…..Ultraviolet Light
UTI…..Urinary Tract Infection

V-Z

VAP…..Ventilator Associated Pneumonia
VBP…...Value-Based Purchasing
VLBW…..Very Low Birth Weight
VOC…..Voice of the Customer
VON…..Vermont Oxford Network
VRE…..Vancomycin-resistant enterococci
VRSA…..Vancomycin-resistant *Staphylococcus aureus*
VSA…...Lean Value Stream Analysis
VTE…..Venous Thromboembolism
WCC…..Well-Child Check
WHO…..World Health Organization
WPMC…..Winter Park Medical Center
WQ…..Work Queue

12.2 Appendix B: CONTACT INFORMATION AND ACKNOWLEDGEMENTS

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