

IN THE MATTER OF

*

BEFORE THE

SINAI HOSPITAL OF BALTIMORE

*

MARYLAND HEALTH

Docket No.: 24-24-CP055

*

CARE COMMISSION

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STAFF REPORT AND RECOMMENDATION

**CERTIFICATE OF ONGOING PERFORMANCE
FOR PRIMARY & ELECTIVE PERCUTANEOUS CORONARY INTERVENTION
SERVICES**

March 20, 2025

I. INTRODUCTION

A. Background

Percutaneous coronary intervention (PCI), commonly known as coronary angioplasty, is a non-surgical procedure whereby a catheter is inserted in a blood vessel and guided to the site of the narrowing of a coronary artery to relieve coronary narrowing. Primary (or emergency) PCI programs provide emergency PCI intervention in the event of a heart attack shortly after it begins. Elective (or non-primary) PCI programs provide interventions that revascularize coronary arteries that are substantially blocked but have not yet resulted in an immediate cardiac event.

For many years, only Maryland hospitals with on-site cardiac surgery services could provide PCI. However, in the 1990s, Maryland began allowing some hospitals to perform primary PCI services without cardiac surgery on-site, first as part of research trials evaluating the safety of providing primary PCI at such hospitals and, later, as a regular clinical service, based on the research findings. The Maryland Health Care Commission (MHCC or Commission) issued waivers to hospitals to exempt them from the requirement for co-location of primary PCI services with cardiac surgery. In the following decade, similar research evaluated the safety of providing elective PCI services at hospitals without on-site cardiac surgery.

The nine Maryland hospitals that obtained waivers to provide elective PCI services participated in a multi-site clinical trial, C-PORT E, a study that was approved by the Commission upon the recommendation of its Research Proposal Review Committee. This non-inferiority study provided evidence that elective PCI could be performed safely and effectively at hospitals without on-site cardiac surgery. In 2012, the Maryland legislature passed a law directing the Commission to establish a process and minimum standards for a hospital to obtain and maintain Certificates of Ongoing Performance for the provision of cardiac surgery and PCI. The legislation required the Commission to establish a Clinical Advisory Group (CAG) to advise the agency on regulations to implement the new law.

After extensive discussion with the CAG, comprised of national and regional experts, and considering the CAG's and other stakeholders' recommendations, COMAR 10.24.17, the Cardiac Surgery and PCI Services chapter (Cardiac Services Chapter) of the State Health Plan for Facilities and Services was replaced, effective August 2014. The Cardiac Services Chapter was subsequently revised in November 2015 and again in January 2019.

The Cardiac Services Chapter contains standards for evaluating the performance of established cardiac surgery and PCI services in Maryland and for determining whether a hospital should be granted a Certificate of Ongoing Performance. A Certificate of Ongoing Performance for PCI services authorizes a hospital to continue to provide PCI services, either primary or both primary and elective PCI services, for a period of time that cannot exceed five years, unless an extension is granted by the Executive Director. At the end of the period, the hospital must demonstrate that it continues to meet the requirements in the Cardiac Services Chapter in order for the Commission to renew the hospital's authorization for a Certificate of Ongoing Performance.

In between renewals for a Certificate of Ongoing Performance, if a hospital is not in compliance with certain standards, a focused review must be conducted. Staff have the authority to conduct a focused review based on reported patient safety concerns, aberrations in data identified by Commission staff, or failure to meet quality standards established in State and federal regulations.¹ A hospital that is identified as failing to meet one or more of the requirements for a Certificate of Ongoing Performance must receive a detailed list of deficiencies from Commission staff and submit a plan of correction within 30 days of receipt of the list of deficiencies.² If a hospital does not submit a plan of correction that addresses deficiencies cited or does not successfully complete a plan of correction, the hospital shall upon notice of the Executive Director of the Commission, voluntarily relinquish its authority to perform cardiac surgery or emergency or elective PCI services, as applicable.³

B. Applicant

Sinai Hospital of Baltimore

Sinai Hospital of Baltimore (Sinai) is a 399-bed acute care general hospital located in Baltimore, Maryland. The hospital has a cardiac surgery program on site which was established pursuant to a Certificate of Need which it received in 1990. Sinai filed a Certificate of Ongoing Performance application for PCI services on June 21, 2019, and was granted its initial Certificate of Ongoing Performance on December 17, 2020 for a period of four years. This is Sinai's first renewal of its Certificate of Ongoing Performance for PCI services.

Health Planning Region

Four health planning regions for adult cardiac services are defined in the Cardiac Services Chapter. The regions are defined by geographic areas. Sinai is located in the Baltimore/Upper Shore health planning region. This region includes Anne Arundel, Baltimore, Caroline, Carroll, Cecil, Harford, Howard, Kent, Queen Anne's, and Talbot counties and Baltimore City. Fourteen hospitals in this health planning region provide PCI services. Six of these hospitals provide both cardiac surgery and PCI services. Eight hospitals provide only PCI services.

C. Staff Recommendation

MHCC staff recommends that the Commission approve Sinai's application for a Certificate of Ongoing Performance to continue providing primary and elective PCI services. A description of Sinai's documentation and MHCC staff's analysis of this information follows.

II. PRODEDURAL HISTORY

Sinai applied for renewal of its Certificate of Ongoing Performance for PCI services on May 28, 2024. MHCC staff reviewed the application and requested additional information on December

¹ COMAR 10.24.17.07B(2)(a), .07C(2)(a), and .07D(2)(a).

² COMAR 10.24.17.07B(2)(c), .07C(2)(c), and .07D(2)(c).

³ COMAR 10.24.17.07B(2)(e), .07C(2)(e), and .07D(2)(e).

3, 2024 and February 4, 2025. MHCC received additional information on December 23, 2024 and February 25, 2025.

III. PROJECT CONSISTENCY WITH REVIEW CRITERIA

Data Collection

10.24.17.07C(3) and .07D(3) Each PCI program shall participate in uniform data collection and reporting. This requirement is met through participation in the ACC-NCDR registry, with submission of duplicate information to the Maryland Health Care Commission. Each elective PCI program shall also cooperate with the data collection requirements deemed necessary by the Maryland Health Care Commission to assure a complete, accurate, and fair evaluation of Maryland's PCI programs.

Sinai stated that neither MHCC staff nor the hospital identified any data collection or reporting deficiencies. The hospital abstracts and submits data quarterly to the ACC-NCDR CathPCI Registry and to MHCC.

Staff Analysis and Conclusion

Sinai has complied with the submission of ACC-NCDR CathPCI data to MHCC in accordance with the established schedule. MHCC staff concludes that Sinai complies with this standard.

Institutional Resources

10.24.17.07D(4)(a) The hospital shall demonstrate that primary PCI services will be available for all appropriate patients with acute myocardial infarction 24 hours per day, seven days per week.

Sinai provided the dates and duration of downtimes for the period between January 2020 and December 2023. This information is available in Appendix A.

Staff Analysis and Conclusion

MHCC staff reviewed the information on CCL downtimes provided in Sinai's application and noted that patient care was reported to have not been affected by downtime due to maintenance, whether planned or unexpected. Sinai has six rooms in its cardiac catheterization laboratory, and at no point in time was more than a single room unavailable for patient treatment. MHCC staff concludes that Sinai complies with this standard.

10.24.17.07D(4)(b) The hospital shall commit to providing primary PCI services as soon as possible and not to exceed 90 minutes from patient arrival at the hospital, excluding transfer cases, for at least 75 percent of appropriate patients. The hospital shall also track the door-to-balloon times for transfer cases and evaluate areas for improvement.

Sinai provided a signed statement from its president, Amy Shlossman, dated April 9, 2024, affirming that Sinai commits to providing primary PCI services as soon as possible and not to exceed 90 minutes from patient arrival at the hospital for at least 75% of cases. Additionally, Sinai provided quarterly information on its door-to-balloon (DTB) times for the period January 2020 through December 2023. Table 1 shows information reported through December 2023.

Table 1: Sinai Reported Compliance with DTB Benchmark for Non-Transfer Primary PCI Cases by Quarter, January 2020 – December 2023

Quarter	Total Primary PCI Volume	Cases with DTB <= 90 minutes	Percent of Cases with DTB <=90 Minutes
CY 2020 Q1	22	22	100.0%
CY 2020 Q2	18	18	100.0%
CY 2020 Q3	8	8	100.0%
CY 2020 Q4	22	21	95.5%
CY 2021 Q1	20	20	100.0%
CY 2021 Q2	22	21	95.5%
CY 2021 Q3	15	15	100.0%
CY 2021 Q4	17	17	100.0%
CY 2022 Q1	14	13	92.9%
CY 2022 Q2	29	28	96.6%
CY 2022 Q3	13	13	100.0%
CY 2022 Q4	14	14	100.0%
CY 2023 Q1	11	11	100.0%
CY 2023 Q2	17	16	94.1%
CY 2023 Q3	9	9	100.0%
CY 2023 Q4	17	17	100.0%

Source: Sinai application, page 4.

Sinai also stated that the hospital receives PCI transfer cases and provided quarterly information on its door-to-balloon (DTB) times for transfer patients for the period January 2020 through December 2023, as shown in Table 2. The hospital made several process changes during the review period to improve DTB times for transfer patients. Most of Sinai’s PCI transfer patients are brought to Sinai from Northwest Hospital, and Sinai deployed a care planning tool that allows providers, from both Sinai and Northwest, to manage orders, outcomes, and interventions for specific problem-driven plans of care for patients. Sinai also partnered with the Chesapeake Regional Information System for our Patients and the Maryland Institute for Emergency Medical Services Systems to implement a technology that allows EMS reports to interface automatically into Sinai’s electronic medical record system.

**Table 2: Sinai Reported Compliance with DTB Benchmark for Transfer
Primary PCI Cases by Quarter, January 2020 – December 2023**

Quarter	Total Primary PCI Volume	Cases with DTB <= 120 minutes	Percent of Cases with DTB <=120 Minutes
CY 2020 Q1	4	2	50.0%
CY 2020 Q2	2	2	100.0%
CY 2020 Q3	1	1	100.0%
CY 2020 Q4	0	0	N/A
CY 2021 Q1	4	3	75.0%
CY 2021 Q2	4	4	100.0%
CY 2021 Q3	4	2	50.0%
CY 2021 Q4	3	3	100.0%
CY 2022 Q1	3	1	33.3%
CY 2022 Q2	4	4	100.0%
CY 2022 Q3	2	2	100.0%
CY 2022 Q4	1	1	100.0%
CY 2023 Q1	3	2	66.6%
CY 2023 Q2	1	1	100.0%
CY 2023 Q3	4	4	100.0%
CY 2023 Q4	2	2	100.0%

Source: Sinai application, page 5.

Staff Analysis and Conclusion

MHCC staff analyzed the ACC-NCDR CathPCI data for non-transfer PCI cases and found that Sinai met the DTB standard in every quarter from January 2020 through December 2023. MHCC staff's analysis may differ from the information provided by the hospital because the ACC-NCDR reports exclude certain cases from this performance metric, such as when there is a non-system reason for delay, and MHCC uses a DTB metric that includes all cases.

MHCC staff also considers a hospital's performance on the DTB standard over longer periods that include multiple quarters. Over rolling eight-quarter periods Sinai complied with this standard, with between 86.7% and 90.7% of PCI cases meeting the door-to-balloon time standard over rolling eight-quarter periods, as shown below in Table 3.

Table 3: Sinai Non-Transfer Primary PCI Case Volume and Percentage of Cases With DTB Less Than or Equal to 90 Minutes, by Time Period

Time Period	Quarter			Rolling 8-Quarters		
	Total Primary PCI Volume	Cases With DTB<=90 Minutes	Percent of Cases with DTB <=90 Minutes	Total Primary PCI Volume	Cases With DTB<=90 Minutes	Percent of Cases with DTB <=90 Minutes
2020 Q1	24	23	95.8%			
2020 Q2	17	15	88.2%			
2020 Q3	13	10	76.9%			
2020 Q4	22	19	86.4%			
2021 Q1	20	19	95.0%			
2021 Q2	23	21	91.3%			
2021 Q3	17	14	82.4%			
2021 Q4	17	17	100.0%	153	138	90.2%
2022 Q1	13	11	84.6%	142	126	88.7%
2022 Q2	30	27	90.0%	155	138	89.0%
2022 Q3	15	14	93.3%	157	142	90.4%
2022 Q4	15	13	86.7%	150	136	90.7%
2023 Q1	12	11	91.7%	142	128	90.1%
2023 Q2	18	16	88.9%	137	123	89.8%
2023 Q3	9	9	100.0%	129	118	91.5%
2023 Q4	17	17	100.0%	129	118	91.5%

Source: MHCC staff analysis of ACC-NCDR CathPCI data, January 1, 2020 – Dec. 31, 2023.

With respect to transfer cases, MHCC staff also analyzed the hospital’s performance relative to a benchmark of 120 minutes for the DTB time, which is consistent with the guidelines from the American Heart Association and American College of Cardiology. That analysis is shown in Table 4.

Table 4: Sinai Non-Transfer Primary PCI Case Volume and Percentage of Cases With DTB Less Than or Equal to 120 Minutes, by Time Period

Time Period	Quarter		
	Total Transfer Primary PCI Volume	Cases With DTB<=120 Minutes	Percent of Cases with DTB <=120 Minutes
2020 Q1	5	1	20.0%
2020 Q2	3	1	33.3%
2020 Q3	1	0	0.0%
2020 Q4	1	0	0.0%
2021 Q1	4	2	50.0%
2021 Q2	4	4	100.0%
2021 Q3	6	1	16.7%
2021 Q4	6	3	50.0%
2022 Q1	5	1	20.0%
2022 Q2	5	2	40.0%
2022 Q3	5	2	40.0%
2022 Q4	2	2	100.0%
2023 Q1	4	2	50.0%
2023 Q2	3	1	33.3%
2023 Q3	6	3	50.0%
2023 Q4	4	2	50.0%

Source: MHCC analysis of ACC-NCDR CathPCI data, January 1, 2020 – Dec. 31, 2023.

MHCC staff’s analysis of the ACC-NCDR CathPCI data shows that in only 2 of 16 quarters between January 2020 and December 2023, over 75% of transfer PCI cases achieved a DTB of 120 or less in each quarter, and the percentage of transfer primary PCI patients achieving a DTB time of 120 minutes or less ranged from 0.0% to 100%. Although MHCC expects each hospital to strive to achieve a DTB time in primary PCI transfer cases of 120 minutes or less, many factors outside of a hospital’s control affect the DTB times in transfer cases. For this reason, there is not a requirement that a certain percentage of cases achieve the benchmark of 120 minutes or less each quarter. Instead, a hospital is required to track the DTB times for transfer cases and evaluate areas for improvement. Based on the hospital’s detailed description of several process changes that it has made to improve DTB times for transfer patients, MHCC staff concludes that Sinai complies with this standard.

10.24.17.07D(4)(c) The hospital shall have adequate physician, nursing, and technical staff to provide cardiac catheterization laboratory and coronary care unit services to patients with acute myocardial infarction 24 hours per day, seven days per week.

Sinai provided the number of physicians and FTEs for nurses and technicians who provide cardiac catheterization services to acute myocardial infarction patients as of May 2024, as shown below in Table 5.

Table 5: Sinai Reported CCL Physician, Nursing, and Technician Staff

Role	Number / FTEs	Cross Training (S/C/M)*
Physician	7	
Nurse (FTE)	6.4	6 - C/M 1 - C
Technician (FTE)	7.0	S/M

Source: Sinai May 2024 PCI Certificate of Ongoing Performance application, page 8

* (S) scrub, (C) circulate, (M) monitor

Staff Analysis and Conclusion

MHCC staff compared the reported staffing levels at Sinai to the staffing levels for programs at three other hospitals with similar PCI case volume. Table 6 provides comparative information on the PCI volume and staffing levels for Sinai, University of Maryland Upper Chesapeake Medical Center (UCMC), Ascension St. Agnes (St. Agnes), and TidalHealth Peninsula Regional (TidalHealth). Sinai employs nearly double the number of physicians as UCMC and St. Agnes even though its total PCI volume is only marginally higher (4.3% and 8.4% respectively) than those hospitals. Compared to St. Agnes, Sinai uses slightly fewer nurses, 6.4 FTEs compared to 8.3 FTEs at St. Agnes, but two more technicians, seven versus five. TidalHealth handles a larger volume of PCI cases than Sinai and correspondingly employs a larger number of nurses and technicians than Sinai.

Table 6: CCL Staffing for Sinai and Other Select PCI Programs

Facility	Total PCI Volume in 2023	Physicians	Nurse FTEs	Technician FTEs
Sinai	438	7	6.4	7
UCMC	404	4	12.6	7
St. Agnes	420	4	8.3	5
TidalHealth	490	9	8.2	7.9

Sources: Sinai’s staff counts from Sinai’s application, page 8, and Sinai’s PCI volume from ACC-NCDR CathPCI registry report for period ending December 31, 2023; UCMC’s February 2024 application for renewal of its Certificate of Ongoing Performance for Primary and Elective PCI Services and UCMC’s PCI volume from its ACC-NCDR CathPCI registry report for period ending December 31, 2023; St. Agnes’ January 2024 application for renewal of its Certificate of Ongoing Performance for Primary and Elective PCI Services and St. Agnes’ PCI volume from ACC-NCDR CathPCI registry report for period ending December 31, 2023; TidalHealth’s June 2024 application for renewal of its Certificate of Ongoing Performance for Primary and Elective PCI Services and TidalHealth’s PCI volume from ACC-NCDR CathPCI registry report for period ending December 31, 2023.

Based on this analysis of the number of staff reported at other hospitals with comparable PCI volumes to Sinai, MHCC staff concludes that there are adequate nursing and technical staff to provide services 24 hours per day, seven days per week. MHCC staff concludes that Sinai complies with this standard.

10.24.17.07D(4)(d) The hospital president or Chief Executive Officer, as applicable, shall provide a written commitment stating the hospital administration will support the program.

Sinai provided a signed letter of commitment from its president, Amy Shlossman, dated April 9, 2024, stating that Sinai will continue to provide PCI services in accordance with the requirements established by the Commission.

Staff Analysis and Conclusion

MHCC staff concludes that Sinai meets this standard based on the letter of commitment provided.

10.24.17.07D(4)(e) The hospital shall maintain the dedicated staff necessary for data management, reporting, and coordination with institutional quality improvement efforts.

Sinai stated that the hospital’s Cardiovascular Institute maintains 3.2 FTE positions responsible for the necessary data management, reporting, and coordination with institutional quality improvement efforts. These staff include 1.2 quality management associates, the Institute’s Lead CVI Outcomes Coordinator, and an Operations Administrator.

Staff Analysis and Conclusion

MHCC staff reviewed the information provided and notes that the hospital appears to have been submitting complete and timely information to the ACC-NCDR CathPCI and engaging in quality insurance activities to address DTB times for PCI patients and other concerns. MHCC staff concludes that Sinai complies with this standard.

10.24.17.07D(4)(f) The hospital shall identify a physician director of interventional cardiology services responsible for defining and implementing credentialing criteria for the catheterization laboratory and for overall primary PCI program management, including responsibility for equipment, personnel, physician call schedules, quality and error management, review conferences, and termination of primary PCI privileges.

Sinai stated that Dr. Charles Cummings was appointed as the CCL Medical Director on February 1, 2013, and the facility also utilizes an Associate Director of its CCL. Sinai provided a copy of Dr. Cummings' job description.

Staff Analysis and Conclusion

MHCC staff reviewed the job description provided. The responsibilities listed include improving physician compliance with performance improvement initiatives, development of clinical policies and procedures, oversight of physician scheduling, credentialing and monitoring performance improvement activities. Based on the job description provided, MHCC concludes that Sinai complies with this standard.

10.24.17.07D(4)(g) The hospital shall design and implement a formal continuing medical education program for staff, particularly the cardiac catheterization laboratory and coronary care unit.

To demonstrate compliance with this requirement, Sinai submitted transcripts for two CCL staff for the period January 1, 2020 through December 31, 2023, that are representative of the courses completed by all staff members. Sinai also submitted a draft version of a document entitled "*Sinai Cardiac Catheterization Laboratory and Cardiac Diagnostic/Cardiac Recovery (CDCR) Core Curriculum for Professional Development of Nurses and Allied Health Professions.*"

Staff Analysis and Conclusion

MHCC staff reviewed the documentation submitted and notes that the continuing medical education programming for Sinai cardiac staff includes topics appropriate for any hospital nursing or technician staff, as well as subject matter tailored to nurses and technicians providing care to PCI patients. For example, Sinai's CCL staff completed courses pertaining to wound care, patient safety in mobility, infection prevention and control, annual compliance recertification, cybersecurity awareness, and restraints, as would be appropriate for any hospital-based nurses or technicians. Critically, Sinai's CCL staff also completed courses specific to PCI patients including a mandatory annual competency course for CCL nurses, and courses that cover, intra-aortic balloon pump (IABP), arterial/venous sheath removal, and the use of Impella in the ICU/CICU. Based on staff's review of the staff transcripts and curriculum provided, MHCC staff concludes that Sinai is compliant with this standard.

10.24.17.07D(4)(h) The hospital shall have a formal, written agreement with a tertiary care center that provides for the unconditional transfer of patients for any required additional care, including emergent or elective cardiac surgery or PCI, for hospitals performing primary PCI without on-site cardiac surgery.

Staff Analysis and Conclusion

This standard does not apply to Sinai because the hospital has on-site cardiac surgery services.

10.24.17.07D(4)(i) A hospital shall maintain its agreement with a licensed specialty care ambulance service that, when clinically necessary, guarantees arrival of the air or ground ambulance within 30 minutes of a request for patient transport by hospitals performing primary PCI without on-site cardiac surgery.

Staff Analysis and Conclusion

This standard does not apply to Sinai because the hospital has on-site cardiac surgery services.

Quality

10.24.17.07C(4)(a) and .07D(5)(a) The hospital shall develop a formal, regularly scheduled (meetings at least every other month) interventional case review that requires attendance by interventionalists and other physicians, nurses, and technicians who care for primary PCI patients.

Sinai provided the dates of its interventional case review meetings as well as attendee lists, for the period from January 2020 through December 2024. Sinai Hospital's formal process for interventional case review includes regularly scheduled meetings with required attendance by physicians, nurses and technicians. The Journal Club meeting was developed in 2019, as a forum to review interventional cases and pertinent articles and research. Along with case presentations, other topics addressed at Journal Club meetings include highlighting trends in evidence-based medicine and learning opportunities from Sinai's own mortality and morbidity trends. The meeting is coordinated by the Director/Associate Director of the CCL and provides CME credit.

In 2023, Sinai modified the Journal Club meeting and established a separate meeting with just physicians for reviewing randomly selected PCI cases, which the hospital then expanded to include a review of cases that meet specific criteria (complication, code, etc.). Attendance began with just physicians, but at the end of 2023 Sinai decided to include registered nurses (RNs) and Registered Cardiovascular Invasive Specialists (RCIS) for the CCL. This meeting remains the main forum for random case reviews.

Staff Analysis and Conclusion

MHCC staff reviewed the dates and lists of attendees for the case review meetings. The meeting records indicate that appropriate staff were regularly in attendance, including interventional cardiologists, nurses, and technicians. The meetings were usually held at least every other month between January 2020 and December 2024. In one year, 2022, the hospital did need to cancel some case review meetings between February and June of 2022, but still held seven case review meetings in the calendar year. The hospital held nine case review meetings in 2020, nine

meetings in 2021, seven meetings in 2022, eight meetings in 2023, and six meetings in 2024. MHCC staff concludes that Sinai complies with this standard.

10.24.17.07C(4)(b) and .07D(5)(b) A hospital shall create a multiple care area group (emergency department, coronary care unit, and cardiac catheterization laboratory) that includes, at a minimum, the physician and nursing leadership of each care area and meets monthly to review any and all issues related to the primary PCI system, identify problem areas, and develop solutions.

Sinai provided the dates of its multiple care area group meetings, known as its STEMI Meetings, as well as lists of attendees, for the period January 2020 through December 2024. There were twelve meetings each year from 2020 through 2023, and 11 meetings in 2024.

Staff Analysis and Conclusion

MHCC staff reviewed the dates and attendees for the Cardiac Collaborative meetings and observed that physician and nurse leadership for the emergency department, CCL, and coronary care unit regularly attended these meetings. MHCC staff concludes that Sinai complies with this standard.

10.24.17.07C(4)(c) At least semi-annually, as determined by the Commission, the hospital shall conduct an external review of at least five percent of randomly selected PCI cases performed in the applicable time period as provided in Regulation .08 that includes at least three cases per physician or all cases if the interventionalist performed fewer than three cases.

Sinai provided MHCC with external review reports for the period July 2019 through December 2022. Reports for 2023 are not available from MACPAQ yet. The external reviews were completed by the Maryland Academic Consortium for Percutaneous Coronary Intervention Appropriateness and Quality (MACPAQ).

Staff Analysis and Conclusion

MHCC staff reviewed the external review reports submitted by Sinai. The volume of elective PCI cases for each time period, the number of cases reviewed, and the percentage of cases reviewed is shown in Table 7. Although only 5% of cases are required to be reviewed externally, between 11.1% and 18.7% of cases were reviewed each year between July 2019 and December 2022. Staff analyzed the ACC-NCDR CathPCI data and verified that in each six-month review period at least five percent of cases underwent the external review and that at least three cases per physician were reviewed, or all cases were reviewed, if the interventionalist performed fewer than three cases. MHCC staff concludes that Sinai complies with this standard.

Table 7: Sinai External Review Numbers by Year

Time Period	Elective PCI Cases Forwarded	Cases Reviewed	Percentage of Cases Reviewed	Meets Standard?
CY 2019 (Jul – Dec)	182	34	18.7%	Yes
CY 2020 (Jan – Jun)	150	22	14.7%	Yes
CY 2020 (Jul – Dec)	146	22	15.1%	Yes
CY 2021 (Jan – Jun)	169	21	12.4%	Yes
CY 2021 (Jul – Dec)	205	27	13.2%	Yes
CY 2022 (Jan – Jun)	179	26	14.5%	Yes
CY 2022 (Jul – Dec)	207	23	11.1%	Yes

Source: MHCC staff analysis of MACPAQ reports

10.24.17.07C(4)(d) The hospital shall evaluate the performance of each interventionalist through an internal or external review, as follows:

- (i) An annual review of at least 10 cases or 10 percent of randomly selected PCI cases, whichever is greater, performed by the interventionalist at the hospital, or all cases if the interventionalist performed fewer than 10 cases at the hospital, as provided in Regulations .08 and .09; or**
- (ii) A semi-annual review of each interventionalist conducted as part of the required semi-annual external review of the hospital’s randomly selected PCI cases, as provided in paragraph .07C(4)(c), through random selection of three cases or 10 percent of PCI cases, whichever is greater, performed by the interventionalist at the hospital during the six-month period, or all cases if the interventionalist has performed fewer than 3 cases during the relevant period, as provided in Regulation .08; or**
- (iii) A quarterly or other review period conducted in a manner approved by Commission’s Executive Director that assures that the external review of the cases performed by the interventionalist at the hospital will satisfy the annual requirement in Subparagraphs .07C(4)(d)(i).**

10.24.17.07C(4)(e) The external review of PCI cases and the performance review of an interventionalist referenced in Paragraphs .07C(4)(c) and .07C(4)(d) shall: (i) Include a review of angiographic images, medical test results, and patients’ medical records; and (ii) Be conducted by a reviewer who meets all standards established by the Commission to ensure consistent rigor among reviewers.

10.24.17.07D(5)(c) The hospital shall evaluate the performance of each interventionalist through an internal or external review, as follows:

- (i) An annual review of at least 10 cases or 10 percent of randomly selected primary PCI cases, whichever is greater, performed by the interventionalist at the hospital, or all cases if the interventionalist performed fewer than 10 cases at the hospital, as provided for in Regulations .08 and .09; or**

- (ii) *For a hospital with both primary and elective PCI programs, a semi-annual review of each interventionalist conducted as part of the required semi-annual external review of the hospital's randomly selected PCI cases, as provided in Paragraph .07C(4)(c), through random selection of five cases or 10 percent of PCI cases, whichever is greater, performed by the interventionalist at the hospital during the six-month period, or all cases if the interventionalist has performed fewer than five cases during the relevant period at the hospital, as provided for in Regulation .08; or*
- (iii) *For a hospital with both primary and elective PCI programs, a quarterly or other review period conducted in a manner approved by Commission's Executive Director that assures that the external review of the cases performed by the interventionalist at the hospital will satisfy the annual requirement in Paragraphs .07C(4)(c) and .07D(5)(c).*

10.24.17.07D(5)(d) The performance review of an interventionalist referenced in Paragraph .07D(5)(c) shall:

- (i) *Include a review of angiographic images, medical test results, and patients' medical records; and*
- (ii) *Be conducted by a reviewer who meets all standards established by the Commission to ensure consistent rigor among reviewers.*

Sinai stated that MACPAQ is the review organization providing external PCI performance reviews. Additionally, Sinai explained in its application, and further in its December 2024 supplementary submission, that there is an internal case review process wherein random PCI cases are selected to be reviewed at its bi-monthly PCI Internal Review meetings.

Staff Analysis and Conclusion

The external reviews conducted by MACPAQ meet the requirements of 10.24.17.07C(4)(e) and .07D(5)(d) because MACPAQ has been approved by MHCC as a reviewer that meets the requirements for an external review organization. The review of cases by MACPAQ includes a review of angiographic images, medical test results, and patients' medical records.

The standards for the review of individual interventionalists in COMAR 10.24.17.07C(4)(d)(ii) and .07D(5)(c)(ii) for hospitals with both primary and elective PCI programs reference a different minimum number of cases to be reviewed for each interventionalist, but both standards state that the greater of 10 cases or 10 percent of cases must be reviewed annually or an equivalent number or percentage of cases, if reviews are conducted twice or more each year.

MHCC staff analyzed the ACC-NCDR CathPCI data for the period CY 2019 to CY 2023 to determine the total number of PCI cases performed by each interventionalist and calculated the number of cases required to be reviewed each year. MHCC staff compared the results of its analysis to the number of elective PCI cases reviewed per physician reported in MACPAQ reports and the number of other cases reviewed for each physician, as reported by Sinai. For most

physicians the number of cases reviewed by MACPAQ constituted at least ten percent of the PCI cases performed by each physician. For other interventionalists, the number of cases reviewed by MACPAQ each year was less than the required ten cases, and the standard was met through a combination of internal and external case review. MHCC staff concludes that Sinai complies with the standards for review of individual interventionalists.

10.24.17.07D(5)(e) The chief executive officer of the hospital shall certify upon request by Commission staff that the hospital fully complies with each requirement for conducting and completing quality assurance activities specified in this chapter, including those regarding internal peer review of cases and external review of cases.

Sinai provided a signed statement from its president, Amy Shlossman, dated April 9, 2024, certifying that the hospital fully complies with each requirement for conducting and completing quality assurance activities specified in COMAR 10.24.17, including those regarding internal peer review of cases and external review of cases.

Staff Analysis and Conclusion

MHCC staff reviewed the statement provided and conclude that Sinai complies with this standard.

10.24.17.07C(4)(g) and .07D(5)(f) The hospital's application for a Certificate of Ongoing Performance shall demonstrate that it has taken appropriate action in response to each concern identified through its quality assurance processes.

- (i) All individually identifiable patient information submitted to the Commission for the purpose described in this subsection shall remain confidential.***
- (ii) Physician information collected through the peer review process that is submitted to the Commission for the purpose described in this subsection shall remain confidential.***

Sinai explained that it convenes three separate meetings to ensure the quality of its PCI services. These include Cardiovascular Peer Review Committee meetings, STEMI meetings, and CCL Multidisciplinary Committee (MDC) meetings.

The Cardiovascular Peer Review Committee meetings take place every other month for one hour. PCI Cases are assigned to an initial provider for review and presented to the committee. This committee then rates a provider's care as appropriate, care concern, or care inappropriate. This committee also makes recommendations to Department Chairs on how to address identified concerns. Discussions are focused on provider-specific care issues such as technique/skills, clinical judgement and decision making, clinical knowledge, communication, responsiveness, diagnosis and treatment planning, follow-up/follow-through, and policy compliance. Results of the peer review committee ratings and recommendations are sent to the Chief of Service per policy.

Sinai's STEMI meetings include staff from many departments and other staff involved in caring for STEMI patients. Individuals who attend these meetings are from the Emergency Department, CCL, Intensive Care Unit, commercial ambulance staff, pharmacy workers, representatives from transferring hospitals, quality and clinical excellence departments. Sinai explained that this committee is staffed appropriately to address any issues, plan process improvement initiatives and to ensure its effectiveness.

The MDC reviews outcomes, including registry data and other pertinent population outcomes. The focus is to align patient care along the care continuum for discrete cardiovascular patient populations. Membership includes physicians, nurses, administrators, and ad hoc support depending on applicable issues.

Sinai provided examples of improvements made to its PCI services as a result of the meetings that it convenes. Sinai noted that during the COVID-19 pandemic an initiative implemented in 2019 for improving the handling of patients with chest pain led to over-use of the activation system for patients with chest pain. The hospital changed the process to reduce false activations of the system and improve appropriate resource allocation. Another quality improvement initiative implemented was reducing unnecessary use of the ICU post-procedure for PCI patients. In 2023, the hospital trained nurses responsible for PCI patients on radial access compression devices. This change allowed for the more stable patient to recover on the unit, instead of the ICU unnecessarily. Sinai also noted that a few patients were readmitted for re-thrombosis due to lack of compliance with medications. The hospital addressed this by ensuring that patients have prescriptions before they are discharged from the hospital.

Staff Analysis and Conclusion

MHCC staff reviewed the detailed narrative provided and numerous examples of enhancements to its PCI program that stemmed from Sinai's three separate Cardiovascular Committee meetings. Considering the robust and consistent process and multiple examples of the quality assurance program achieving its desired efforts, MHCC staff concludes that Sinai complies with the standard.

Patient Outcome Measures

10.24.17.07C(5)(a). An elective PCI program shall meet all performance standards established in statute or in State regulations.

(b) A hospital shall maintain a risk-adjusted mortality rate that is consistent with high quality patient care.

(c) A hospital with a risk-adjusted mortality rate for primary PCI cases that exceeds the statewide average beyond the acceptable margin of error calculated for the hospital by the Commission is subject to a focused review. The acceptable margin of error is the 95 percent confidence interval calculated for a hospital's all-cause 30-day risk-adjusted mortality rate for primary PCI cases.

10.24.17.07D(5)(a). A primary PCI program shall meet all performance standards

established in statute or in State regulations.

(b) A hospital shall maintain a risk-adjusted mortality rate that is consistent with high quality patient care.

(c) A hospital with a risk-adjusted mortality rate for primary PCI cases that exceeds the statewide average beyond the acceptable margin of error calculated for the hospital by the Commission is subject to a focused review. The acceptable margin of error is the 95 percent confidence interval calculated for a hospital's all-cause 30-day risk-adjusted mortality rate for primary PCI cases.

Sinai's adjusted mortality rates, by rolling 12-month reporting period, for reporting periods ending between 2020 Q1 and 2024 Q2, are shown in Table 8.

Table 8: Sinai Adjusted Mortality Rates (AMR) by Rolling 12-Month Reporting Period and Performance on MHCC Standards for PCI Programs

Reporting Period	STEMI				NON-STEMI			
	Hospital AMR	95% CI	National Benchmark	Meets MHCC Standard	Hospital AMR	95% CI	National Benchmark	Meets MHCC Standard
2023q3-2024q2	1.99	[0.05, 10.70]	0.78	Yes	1.25	[0.41, 2.88]	1.99	Yes
2023q2-2024q1	2.64	[0.07, 14.21]	0.79	Yes	1.25	[0.46, 2.69]	2.00	Yes
2023q1-2023q4	2.29	[0.06, 12.30]	1.88	Yes	1.22	[0.33, 3.11]	1.99	Yes
2022q4-2023q3	2.04	[0.05, 10.99]	1.91	Yes	1.16	[0.32, 2.95]	2.02	Yes
2022q3-2023q2	0.00	[0.00, 6.95]	1.89	Yes	0.92	[0.25, 2.34]	2.02	Yes
2022q2-2023q1	1.41	[0.04, 7.63]	1.89	Yes	0.86	[0.18, 2.50]	2.05	Yes
2022q1-2022q4	1.43	[0.04, 7.70]	2.00	Yes	0.81	[0.17, 2.35]	2.14	Yes
2021q4-2022q3	1.59	[0.04, 8.60]	2.11	Yes	1.08	[0.29, 2.73]	2.20	Yes
2021q3-2022q2	1.60	[0.04, 8.69]	2.18	Yes	1.04	[0.21, 3.01]	2.26	Yes
2021q2-2022q1	0.00	[0.00, 7.79]	2.19	Yes	1.20	[0.33, 3.04]	2.25	Yes
2021q1-2021q4	0.00	[0.00, 7.98]	2.17	Yes	1.38	[0.38, 3.51]	2.23	Yes
2020q4-2021q3	0.00	[0.00, 8.33]	2.18	Yes	0.92	[0.11, 3.30]	2.23	Yes
2020q3-2021q2	3.76	[1.04, 9.29]	7.51	Yes	0.81	[0.10, 2.89]	1.18	Yes
2020q2-2021q1	5.48	[2.25, 10.82]	7.55	Yes	0.64	[0.02, 3.54]	1.21	Yes
2020q1-2020q4	4.83	[1.80, 10.10]	6.89	Yes	1.05	[0.13, 3.76]	1.13	Yes
2019q4-2020q3	5.61	[2.30, 11.07]	6.37	Yes	0.82	[0.10, 2.95]	1.06	Yes
2019q3-2020q2	5.37	[2.20, 10.64]	6.06	Yes	0.72	[0.15, 2.10]	1.00	Yes
2019q2-2020q1	5.29	[1.97, 11.09]	5.99	Yes	0.61	[0.13, 1.76]	0.95	Yes

Source: MHCC Staff compilation of results from the hospital's quarterly reports from the ACC NCDR CathPCI for PCI cases performed between April 2019 and June 2024.

Notes: A hospital's AMR meets the MHCC standard if the hospital's 95% confidence interval (CI) includes the national benchmark or indicates statistically significantly better performance than the national benchmark for STEMI or NSTEMI cases, as applicable. A hospital does not meet MHCC's standard when it performs statistically significantly worse than the national benchmark for STEMI or NSTEMI cases, as applicable. The national benchmarks are the national median risk-adjusted in-hospital mortality rate for STEMI and NSTEMI cases for each reporting period.

Reporting on STEMI cases in the ACC-NCDR CathPCI reports changed beginning in the period ending 2021q3; for this period and later, the performance metric excludes cases with cardiogenic shock

Staff Analysis and Conclusion

MHCC staff reviewed the adjusted mortality rate data by rolling 12-month periods for both STEMI and non-STEMI patients and determined that the hospital's risk-adjusted mortality rate was not statistically significantly different than the national benchmark in any reporting period. The national benchmark fell within the 95 percent confidence interval for Sinai for all 12-month reporting periods between January 2019 and June 2024.

Based on the hospital's acceptable performance on the mortality metric for STEMI and non-STEMI cases during the review period, MHCC staff concludes that Sinai complies with this standard.

Physician Resources

10.24.17.07D(7)(a) Physicians who perform primary PCI at a hospital without on-site cardiac surgery shall perform a minimum of 50 PCI procedures annually averaged over a 24-month period. A hospital without on-site cardiac surgery shall track physicians' volume on a rolling eight quarter basis and report the results to the Commission on a quarterly basis.

Staff Analysis and Conclusion

This standard does not apply to Sinai because the hospital has on-site cardiac surgery services.

10.24.17.07C (6)(b) and .07D(7)(b) Each physician who performs primary PCI at a hospital that provides primary PCI without on-site cardiac surgery who does not perform 50 PCI procedures annually averaged over a 24-month period, for reasons other than a leave of absence, will be subject to an external review of all cases in that 24-month period to evaluate the quality of care provided. The results of this evaluation shall be reported to the Commission. A hospital may be required to develop a plan of correction based on the results of the physician's evaluation.

Staff Analysis and Conclusion

This standard does not apply to Sinai because the hospital has on-site cardiac surgery services.

10.24.17.07D(7)(e) Each physician shall be board certified in interventional cardiology with an exception for those who performed interventional procedures before 1998 or completed their training before 1998 and did not seek board certification before 2003 [or physicians who completed a fellowship in interventional cardiology less than three years ago].

(f) Each physician shall obtain board certification within three years of completion of a fellowship in interventional cardiology.

Sinai provided a signed statement, dated March 20, 2024, from the hospital's medical director of the CCL confirming that each physician who performed primary PCI services at Sinai during the review period is board certified in interventional cardiology or exempt from the requirement.

Staff Analysis and Conclusion

MHCC staff reviewed the statement provided and concludes that Sinai complies with the standard.

10.24.17.07D(7)(g) An interventionalist shall complete a minimum of 30 hours of continuing medical education credits in the area of interventional cardiology during every two years of practice.

Sinai provided signed attestations from each of the interventionalists performing primary PCI at Sinai confirming that he or she completed at least 30 hours of continuing medical education credits in the area of interventional cardiology during the two years prior to signing the attestation.

Staff Analysis and Conclusion

Based on the signed attestations provided, MHCC staff concludes that Sinai complies with the standard.

10.24.17.07C(6)(h) and .07D (7)(h) Each physician who performs primary PCI agrees to participate in an on-call schedule.

Sinai provided a signed and dated statement from Sinai's medical director of the CCL stating that each physician who performs primary PCI agrees to participate in the on-call schedule. In addition to the signed statement, Sinai provided an on-call schedule for the month of June 2024.

Staff Analysis and Conclusion

Based on the signed and dated statement from Sinai and MHCC staff's review of the on-call schedules, each physician who performs primary PCI at Sinai is participating in on-call coverage. MHCC staff concludes that Sinai is compliant with the standard.

Volume

10.24.17.07C(7)(a) The target volume for an existing program with both primary and non-primary PCI services is 200 cases annually.

10.24.17.07C(7)(b) A PCI program that provides both primary and elective PCI that fails to reach the target volume of 200 cases annually may be subject to a focused review.

Sinai submitted PCI volume information by calendar year, as shown in Table 9.

Table 9: Sinai PCI Volume

Calendar Year	Total PCI Volume
2020	394
2021	484
2022	489
2023	438

Source: Sinai Application, page 19.

Staff Analysis and Conclusion

MHCC staff reviewed the volume information included in the hospital’s quarterly ACC-NCDR CathPCI report for CY 2023 and analyzed the ACC-NCDR CathPCI registry data from CY 2020 through CY 2023. Staff’s analysis of this data indicates that Sinai exceeded the target volume of 200 PCI procedures annually, during each year of the review period. MHCC staff concludes that Sinai complies with this standard.

10.24.17.07D(8)(a) For primary PCI cases, if a program falls below 36 cases for rural PCI providers and 49 cases for non-rural providers, a focused review will be triggered.

Staff Analysis and Conclusion

MHCC staff analyzed the ACC-NCDR CathPCI data to calculate the primary PCI volume for CY 2020 through CY 2023. This analysis shows primary PCI volume ranged from 87 to 119 cases each calendar year (Table 10). Because Sinai performed over 49 cases annually no focused review is required.

Table 10: Sinai Primary PCI Volume

Calendar Year	Primary PCI Volume
2020	97
2021	119
2022	99
2023	87

Source: MHCC staff analysis of ACC-NCDR CathPCI data, CY 2020 – CY 2023.

10.24.17.07D(8)(b) The target volume for each physician who performs primary PCI is 11 or more primary cases annually.

Sinai provided additional information and explanations for 11 interventionalists who performed less than 11 primary PCI annually between CY 2019 and CY 2023, in response to MHCC staff questions. In CY 2019, there were 7 interventionalists who performed less than 11 PCI cases. Sinai explained that for one interventionalist, he performed an emergency PCI procedure because another interventionalist was already treating another patient who required emergency PCI. For two other cases in CY 2019, this physician performed PCI considered non-emergency at the time, but the cases met the criteria of the ACC NCDR CathPCI registry for emergency PCI. In 2019, another interventionalist performed only three primary PCI cases because of a medical absence for cancer treatment. Three physicians provided coverage for the interventionalist on medical leave and performed emergency PCI Sinai over a period of three to six months. The hospital noted that the providers performed PCI at other Maryland hospitals.

For CY 2022, Sinai explained that two of the three interventionalists who performed less than 11 cases were affiliated with the hospital for a short period of time, less than six months in each case. The hospital noted that for the third interventionalist, it has tried to increase this physician's emergency PCI volume through schedule changes.

Staff Analysis and Conclusion

MHCC staff analyzed the ACC-NCDR CathPCI Registry data to verify the number of primary PCI cases performed by each interventional cardiologist between CY 2019 and CY 2023. MHCC staff requested explanations for each of 11 interventionalists who appeared to have performed less than 11 primary PCI cases annually during the review period. MHCC staff concluded that the explanations provided are reasonable. Therefore, staff recommends the Commission find that Sinai is in compliance with this standard.

Patient Selection

10.24.17.07C(8) The hospital shall commit to providing elective PCI services only for appropriate patients, as described in Expert Guidelines for hospitals with and without cardiac surgery on-site.

Sinai stated that internal and external review did not identify any inappropriate PCI cases.

Staff Analysis and Conclusion

MHCC staff reviewed the MACPAQ reports submitted by Sinai for the period January 2019 through December 2022 and noted that there were no cases determined to be inappropriate by two or more of the three criteria used to evaluate appropriateness. MHCC staff determines that Sinai complies with the standard.

10.24.17.07D(9) A hospital shall commit to providing primary PCI services only for suitable patients. Suitable patients are:

- (a) Patients described as appropriate for primary PCI in the Guidelines of the American College of Cardiology Foundation/American Heart Association (ACCF / AHS) for Management of Patients with Acute Myocardial Infarction or the Guidelines of the American College of Cardiology Foundation/American Heart Association / Society for Cardiovascular Angiography and Interventions (ACCF / AHA / SCAI) for Percutaneous Coronary Intervention.***
- (b) Patients with acute myocardial infarction in cardiogenic shock that the treating physician (s) believes may be harmed if transferred to a tertiary institution, either because the patient is too unstable or because the temporal delay will result in worse outcomes.***
- (c) Patients for whom the primary PCI system was not initially available who received thrombolytic therapy that subsequently failed. These cases should constitute no more***

than 10 percent of cases.

(d) Patients who experienced a return of spontaneous circulation following cardiac arrest and present at a hospital without on-site cardiac surgery for treatment, when the treating physician(s) believes that transfer to a tertiary institution may be harmful to the patient.

Sinai reported that during the review period, for whom primary PCI services were not initially available who received thrombolytic therapy, that subsequently failed.

Staff Analysis and Conclusion

MHCC staff analyzed the ACC-NCDR CathPCI data for the period 2020 through 2023 and observed that only one patient received thrombolytic therapy at Sinai, which was successful. Based on MHCC staff's review of information available in the ACC-NCDR CathPCI data and provided by Sinai, the decision to give thrombolytic therapy to this patient was not due to a lack of available PCI services. Staff also notes that the ACC-NCDR CathPCI reports for the period from CY 2020 through CY 2023 indicate that no PCI patients with acute coronary syndrome received PCI that was considered rarely appropriate. Based on MHCC's analysis of the ACC-NCDR CathPCI data and review of the ACC-NCDR CathPCI reports, MHCC staff determines that Sinai complies with the standard.

RECOMMENDATION

Based on the above analysis and the record in this review, MHCC staff recommends that the Commission find that Sinai meets the requirements for a Certificate of Ongoing Performance. Staff recommends that the Commission issue a Certificate of Ongoing Performance that permits Sinai to continue providing primary and elective percutaneous coronary intervention services for four years.

APPENDIX A

2020 Quarterly Cath Lab Downtime Due to Preventative Maintenance & Equipment Repairs

Downtime Date	Room #	Hours of Downtime	Number of Labs Down
1/7/2020	4	0	1
1/9/2020	6	115.0	1
1/20/2020	2	0	1
1/21/2020	Monitor in control room frozen	4.0	1
1/21/2020	ANNUAL PM - C-ARM, ARTIS ZEEGO	5.0	1
1/28/2020	5	2.5	1
1/28/2020	3	8.5	
1/30/2020	6	5.0	1
2/2/2020	1	0	1
2/6/2020	5	4.0	1
2/12/2020	2	8.0	1
2/12/2020	6	6.0	
2/13/2020	5	4.5	1
2/17/2020	5	4.5	1
3/2/2020	3	0.25	1
3/3/2020	1	2.0	1
3/4/2020	1	3.0	1
3/4/2020	2	2.5	
3/10/2020	4	1.0	1
3/31/2020	5	6.0	1
4/9/2020	5	10.0	1
4/23/2020	5	3.0	1
5/6/2020	1	46.0	1
5/13/2020	3	5.0	1
5/14/2020	6	3.0	1
5/21/2020	3	2.0	1
6/4/2020	2	5.25	1
6/18/2020	1	2.0	1
6/23/2020	2	6.0	1
6/30/2020	3	6.0	1
6/30/2020	2	264.0	
8/6/2020	1	5.0	1
8/6/2020	1	2.0	1
8/7/2020	6	2.5	1
8/13/2020	6	6.0	1
8/28/2020	6	3.0	1
9/21/2020	1	0	1
9/22/2020	5	6.0	1
10/14/2020	5	1.0	1
12/4/2020	1	3.0	1
12/15/2020	1	5.5	1
12/23/2020	1	6.0	1
12/23/2020	2	6.0	1
12/31/2020	3	6.0	1

2021 Quarterly Cath Lab Downtime Due to Preventative Maintenance & Equipment Repairs

Downtime Date	Room #	Hours of Downtime	Number of Labs Down
1/13/2021	3	6.0	1
1/18/2021	ANNUAL PM - C-ARM, ARTIS ZEEGO	5.0	1
1/19/2021	6	1.0	1
1/27/2021	2	2.5	1
1/29/2021	1	0	1
2/2/2021	6	384.0	1
2/26/2021	6	6.0	1
3/25/2021	5	6.0	1
3/26/2021	5	120.0	1
4/7/2021	5	0	1
4/20/2021	6	23.0	1
6/1/2021	4	0	1
6/28/2021	2	6.0	1
6/28/2021	1	6.0	
6/28/2021	3	6.0	
8/9/2021	6	6.0	1
8/20/2021	6	48.0	1
8/25/2021	1	0	1
9/27/2021	3	6.0	1
9/29/2021	5	6.0	1
10/6/2021	1	6.0	1
10/26/2021	2	6.0	1
12/1/2021	6	6.0	1
12/23/2021	2	2.0	1

2022 Quarterly Cath Lab Downtime Due to Preventative Maintenance & Equipment Repairs

Downtime Date	Room #	Hours of Downtime	Number of Labs Down
1/21/2022	ANNUAL PM - C-ARM, ARTIS ZEEGO	5.0	1
2/28/2022	6	6.0	1
3/2/2022	1	5.5	1
3/18/2022	1	6.0	1
3/25/2022	3	6.0	1
3/29/2022	5	6.0	1
3/31/2022	2	6.0	1
6/28/2022	1	6.0	1
7/27/2022	3	168	1
8/16/2022	2	21.0	1
8/30/2022	1	6.75	1
9/14/2022	1	6.0	1
9/15/2022	2	72.0	1
9/19/2022	3	6.0	1
9/28/2022	2	6.0	1
9/30/2022	5	6.0	1
10/5/2022	5	1.0	1
11/21/2022	2	0.75	1

2023 Quarterly Cath Lab Downtime Due to Preventative Maintenance & Equipment Repairs

Downtime Date	Room #	Hours of Downtime	Number of Labs Down
1/4/2023	ANNUAL PM - C-ARM, ARTIS ZEEGO	5.0	1
3/9/2023	3	312.0	1
3/29/2023	3	6.0	1
3/30/2023	2	6.0	1
4/10/2023	1	24.0	1
4/14/2023	1	6.0	1
4/24/2023	2	64.0	1
5/11/2023	3	0	1
8/2/2023	3	29.0	1
8/4/2023	1	2.0	1
8/7/2023	2	3.0	1
8/28/2023	1	2.0	1
8/31/2023	1		1
9/14/2023	1	2.0	1
10/16/2023	2	0.75	1
10/24/2023	3	0.5	1
11/30/2023	6	936.0	1
12/6/2023	2	0	1
12/12/2023	5	0	1
12/18/2023	2	6.0	1
12/20/2023	1	6.0	1
12/20/2023	3	6.0	
12/20/2023	6	6.0	