

Cardiac Conditions

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Executive Summary: The purpose of this report was to examine Cardiac Conditions among deliveries in Virginia, drawing on data collected from 2020 to 2024 sourced primarily from the VHHA maternal health dashboard as well as the MMRT report. The analysis shows a rising rate of cardiac conditions among deliveries experiencing severe maternal morbidity (SMM) between 2023 and 2024. Additionally, these findings highlight significant disparities in the rate of severe maternal morbidity among deliveries with cardiac conditions among racial groups, with Black Non-Hispanic populations experiencing higher rates than their White Non-Hispanic counterparts. Findings highlight that the rate of preterm births among deliveries with cardiac conditions has increased from 2023 to 2024. The most common cardiac complication among deliveries that also experienced SMM was arrhythmias. The rate of preterm births among those with cardiac conditions is highest among Black non-Hispanic and deliveries with payer Medicaid. The findings of this report illuminate variability among Cardiac conditions that suggest targeted intervention that focus to implementation strategies.

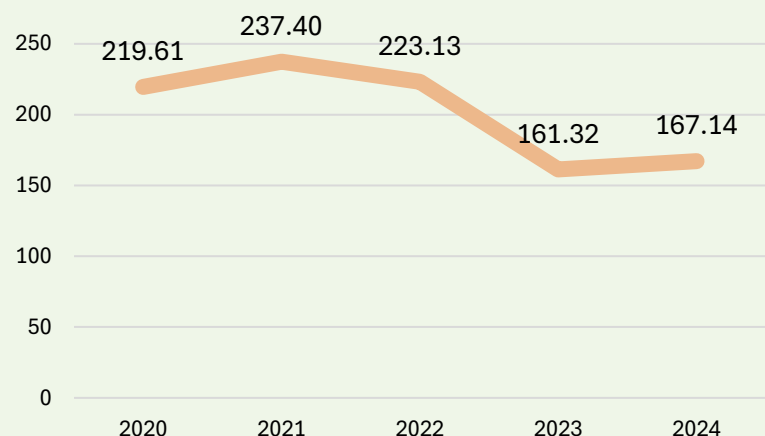
Background

- ACOG defines cardiac conditions in pregnancy broadly as disorders of the heart and blood vessels impacting maternal health.¹
- Up to 23% of women experience heart failure or arrhythmia-related complications during pregnancy, most commonly in the third trimester or postpartum.²
- Cardiac related causes of death accounted for the largest proportion of natural deaths at 42.9%.⁴

Methods

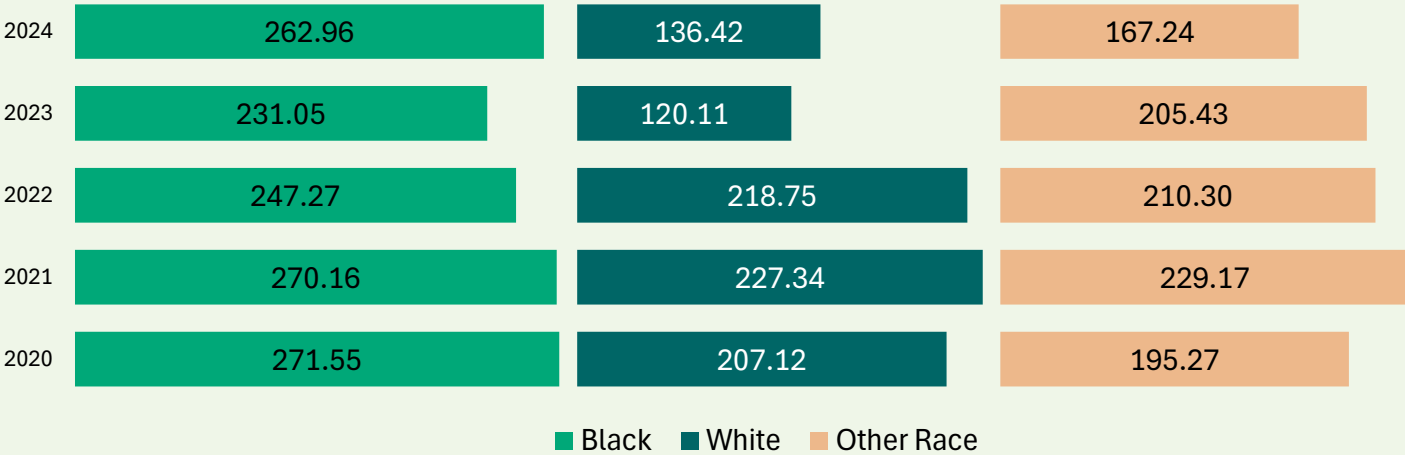
The primary data source used in this report is the VHHA Maternal Health Dashboard⁵. This database expresses inpatient delivery records within private hospitals across the state of Virginia. The hospitals submit data within the guidelines of the 1993 Patient Level Database System Act.³ The data for this report is reflected in the timeframe of 2020 to 2024. Additionally, data from the Maternal Mortality Team Report (MMRT) was utilized to express pregnancy related deaths due to cardiac conditions in 2022.

Cardiac Conditions among deliveries with SMM 2020 to 2024 per 1,000



The rate of SMM among deliveries with cardiac conditions is highest among Black non-Hispanic deliveries.

Rate of SMM among deliveries with Cardiac Conditions from 2020 to 2024 stratified by race per 10,000



In Virginia, the rate of SMM among deliveries with cardiac conditions is increasing. Cardiac conditions were defined following the definition from the Alliance for Innovation in Maternal Health Care (AIM)⁸. As shown by the figure on the previous page from 2023 to 2024, the overall rate of SMM among deliveries with cardiac conditions per 1,000 increased from 161.32 to 167.14.

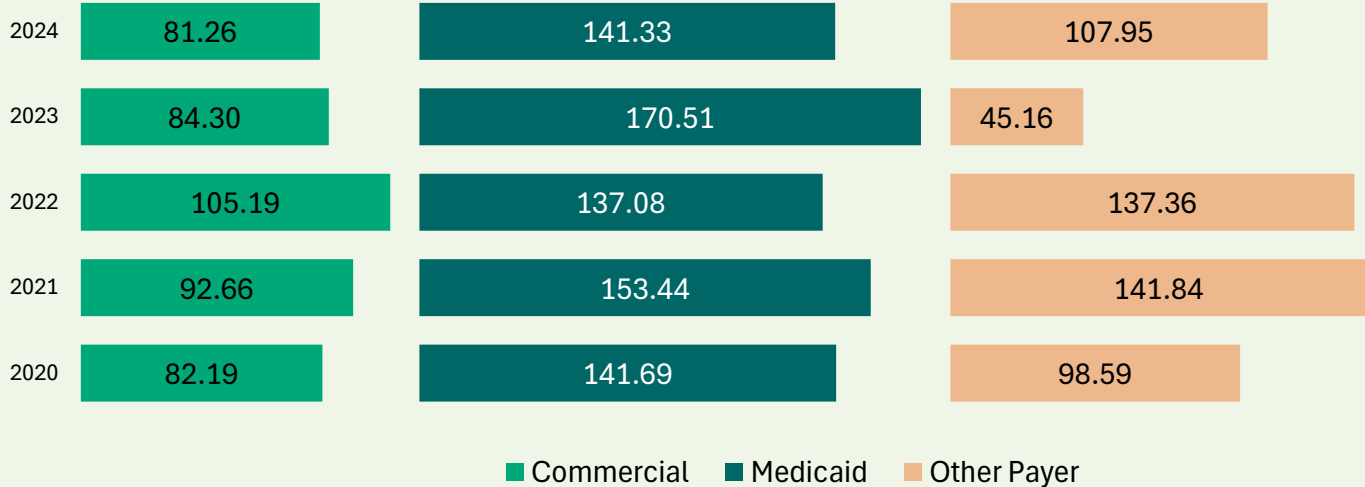
The data illuminated differences among deliveries stratified by race, identifying higher rates of SMM among deliveries with cardiac

conditions, among Black Non-Hispanic deliveries. When stratifying by race, the rate of SMM among deliveries with cardiac conditions among Black Non-Hispanic deliveries was 262.96 per 1,000 deliveries compared to 167.24 that of their Other race counterparts.

Variation in SMM among deliveries with cardiac conditions is evident when deliveries are stratified by payer type. The below figure shows that the rate of SMM among deliveries with cardiac conditions is highest among deliveries with payer Medicaid with a rate of 141.33 in 2024.

The rate of SMM among deliveries with cardiac conditions is highest among deliveries with payer Medicaid.

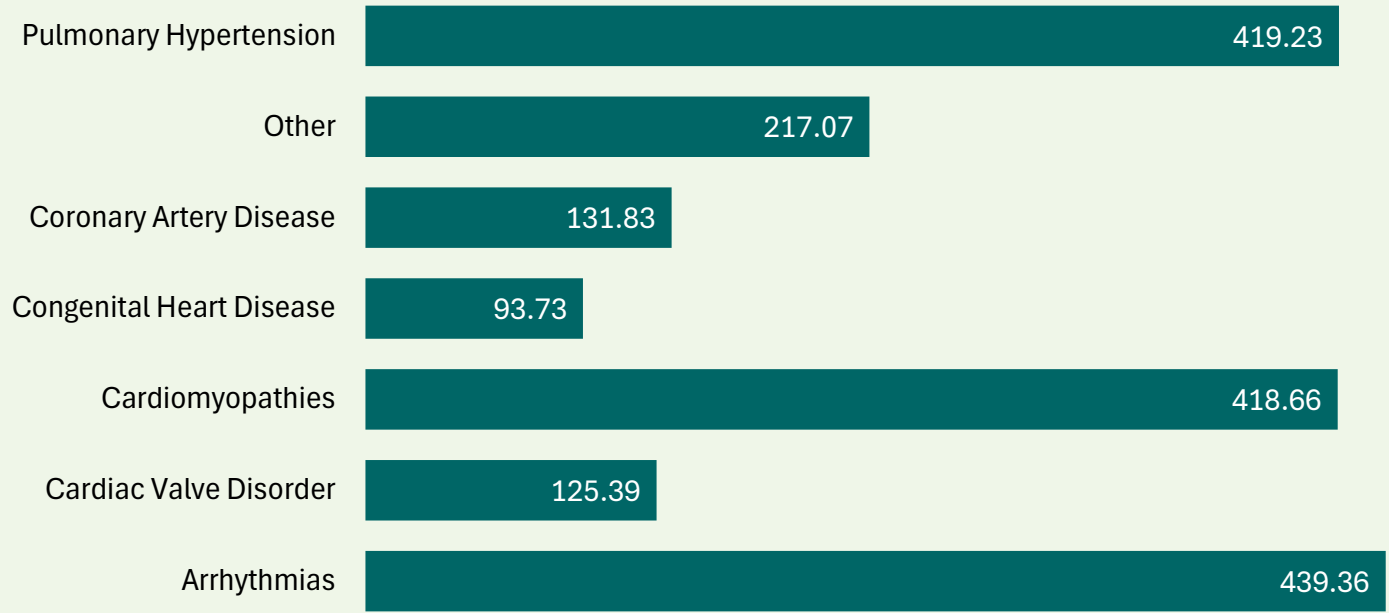
Rate of SMM among deliveries with Cardiac Conditions from 2020 to 2024 stratified by payer per 10,000



Cardiac Conditions

Among deliveries with cardiac conditions, arrhythmias were the most common diagnosis among those who experienced SMM.

Submeasures of Cardiac Conditions among deliveries with SMM per 1,000 deliveries

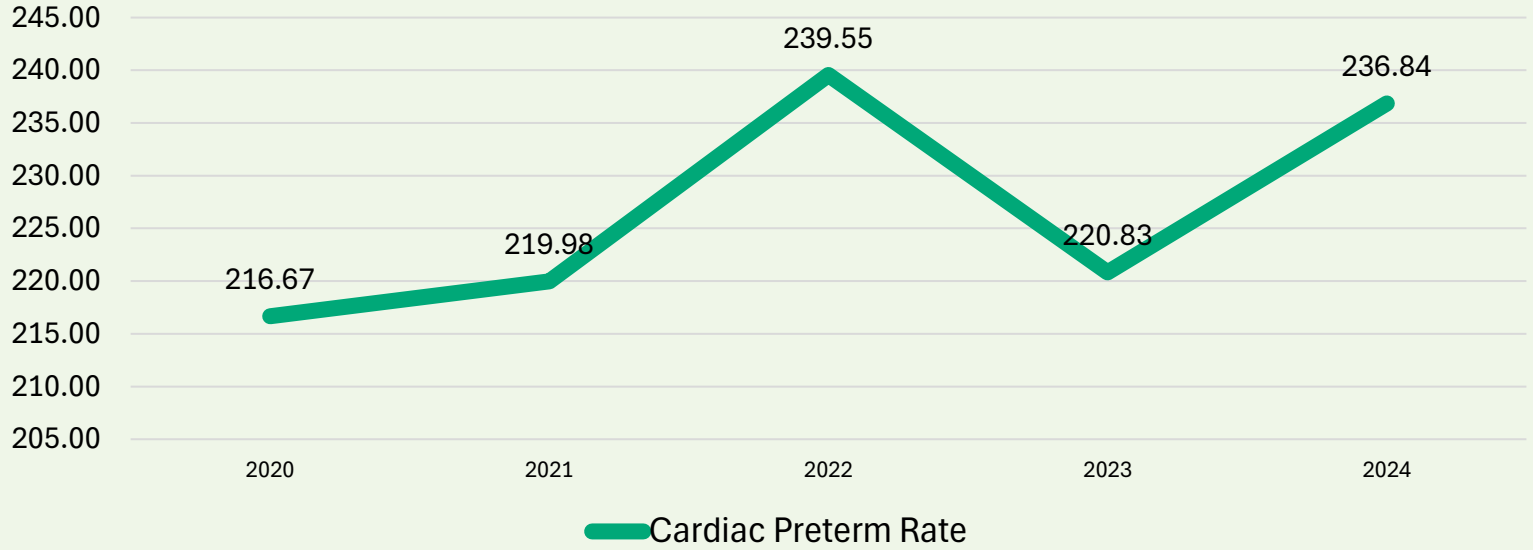


Cardiac conditions are defined as issues affecting the heart that can cause serious complications during pregnancy. These conditions are classified as pulmonary hypertension, coronary artery disease, congenital heart disease, cardiomyopathies, cardiac valve disorder, or arrhythmias as defined by the AIM definition of cardiac conditions⁷. There is great variability among the leading causes of cardiac conditions among those that also experienced SMM. Arrhythmias are the leading condition for

cardiac conditions that also experienced SMM per 1k deliveries from 2020 to 2024 with a rate of 439.36. Followed closely by pulmonary hypertension with a rate of 419.23 per 1k deliveries. In Virginia, the rate of preterm births among deliveries with cardiac conditions has increased among the general population from 2020 to 2024. From 2020 to 2024 the rate of preterm births among deliveries with cardiac conditions has increased from 220.83 to 236.84.

The rate of preterm births among deliveries with cardiac conditions has increased from 2023 to 2024 as shown below.

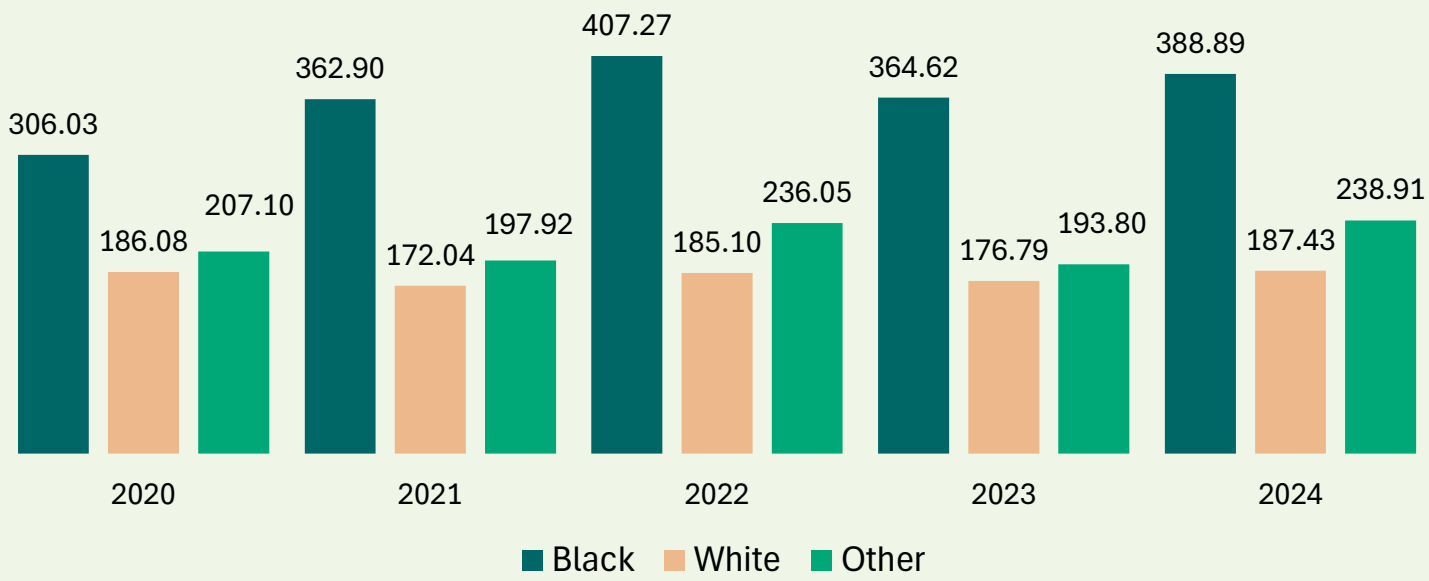
Preterm Birth Rate among deliveries with Cardiac Conditions 2020 to 2024 per 1,000



Cardiac Conditions

The rate of preterm births among deliveries with cardiac conditions is highest among Black non-Hispanic deliveries.

Rate of Preterm births among deliveries with Cardiac Conditions from 2020 to 2024 stratified by race per 1,000 deliveries



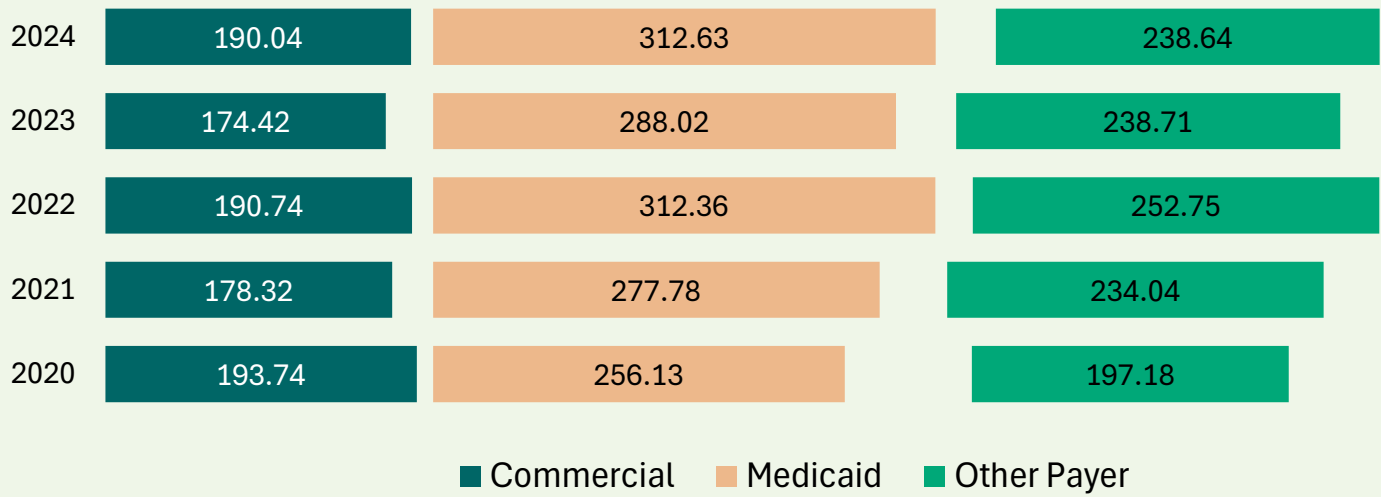
In Virginia, rates of preterm births among deliveries with cardiac conditions are higher among Black non-Hispanic and Medicaid populations. When stratifying by race, rates of preterm births among deliveries with cardiac conditions are highest among black non-Hispanic deliveries, with a rate of 388.89 per 1k deliveries. This is followed by Other race deliveries with a rate of 238.91 per 1k deliveries.

In Virginia, the rate of preterm births among deliveries among deliveries with cardiac conditions shows much variability by payer. The rate of preterm births is highest among those with payer Medicaid from 288.02 in 2023 to 312.63 in 2024 per 1k deliveries, there is an increased trend observed. This is followed by those with Other payer with a rate of 238.64 in 2024 per 1k deliveries. These data highlight the need for additional tailored intervention among this population.

Additionally, it is important to note the increase in rate of preterm births among this population.

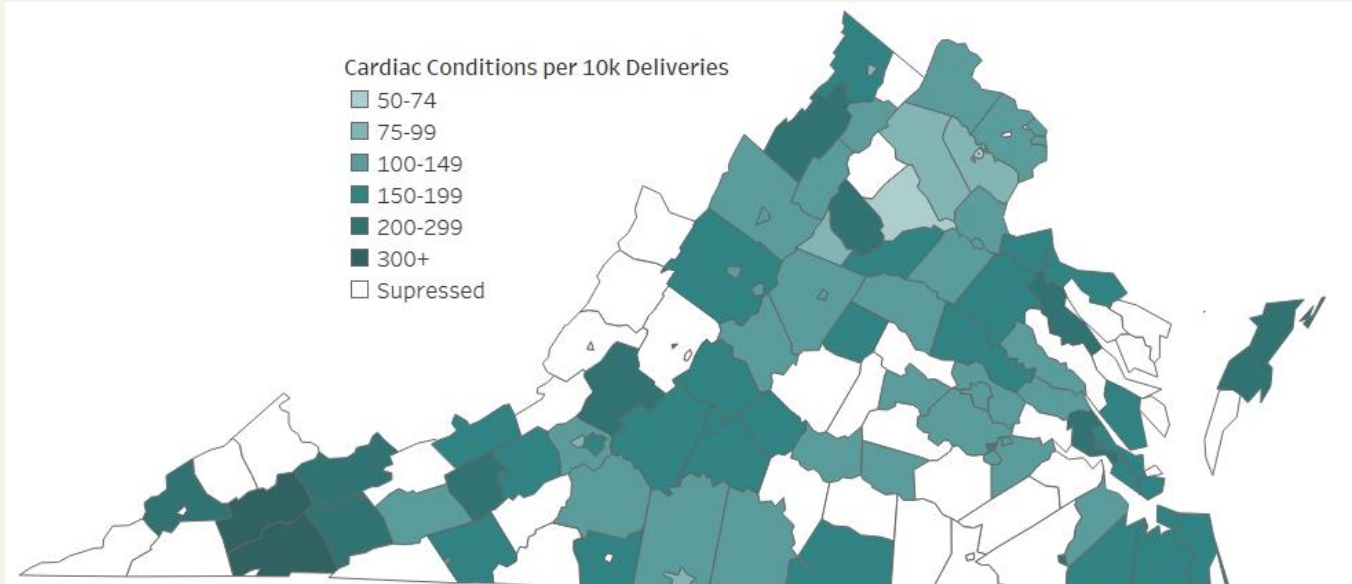
The rate of preterm births among deliveries with cardiac conditions is highest among deliveries with payer Medicaid.

Rate of Preterm births among deliveries with Cardiac Conditions from 2020 to 2024 stratified by Payer per 1k deliveries

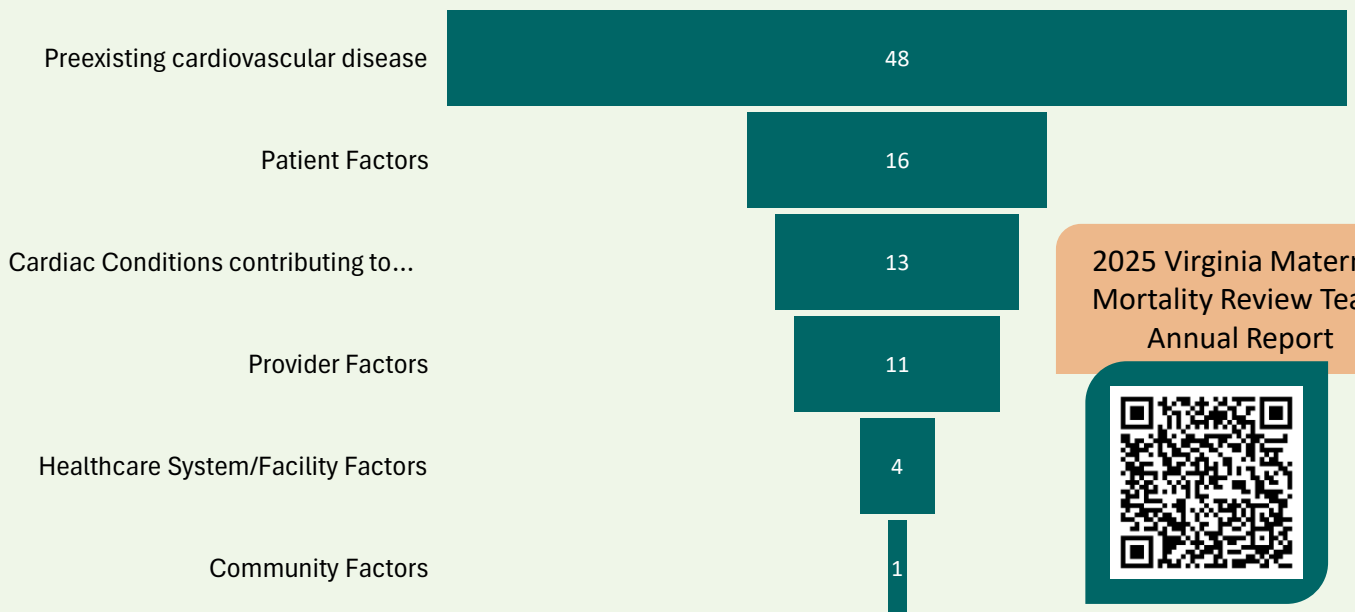


MMRT Recommendations

Cardiac Conditions have a lower prevalence in Northern and Central Virginia as shown by the figure below. Deliveries with Cardiac Conditions based on maternal residence, 2020-2024.



MMRT report findings 2020-2023



2025 Virginia Maternal Mortality Review Team Annual Report



Among deaths reviewed by the Maternal Mortality Review Team (MMRT) in which the cause of death was classified as a cardiac condition or the decedent had a pre-existing cardiovascular disease, several contributing factors were identified. These contributing factors spanned multiple areas, including community factors, patient-related factors, healthcare system and facility factors, and provider-level factors. The most commonly identified community level factor was that services were inaccessible; among

patient factors, the most commonly identified factor was chronic medical conditions that were acquired and obesity. Additionally, the most common identified factor among healthcare system/facilities was inadequately trained personnel and policies contributed to delay or inadequate treatment. Lastly, the most common identified factor among provider level factors was inadequate assessment of risk. These factors illuminate various areas of need for targeted intervention.

Discussion

In Virginia, deliveries stratified by cardiac conditions demonstrate much variability, with a continued rise in SMM among this population. The rate of SMM increased from 161.31 per 1,000 deliveries in 2023 to 167.14 in 2024, indicating a growing burden of cardiac conditions among deliveries. Although rates overall of cardiac conditions among deliveries with SMM are increasing, the data illustrated important trends when stratified by race, payer and submeasures of cardiac conditions. These data indicate that SMM rates among deliveries complicated by cardiac conditions are highest among black non-Hispanic deliveries and those with payer Medicaid. Additionally, highest rates of SMM among deliveries with cardiac conditions is seen with arrhythmias. When stratifying preterm births among deliveries with cardiac conditions, rates have increased from 2020 to 2024. In addition, when analyzing preterm births among deliveries with cardiac conditions stratified by race and payer, increased rates reported are shown among Black non-Hispanic deliveries and deliveries with Medicaid payer. Among SMM deliveries with cardiac conditions, rates have increased from 2023 to 2024 indicating a positive association. This data suggest a need for targeted intervention that focuses to implement strategies to address these disparities.

Recommendations/focus for QI

A VNPC Quality Improvement Project for Cardiac Conditions is Coming in 2026!

In preparation for the Cardiac Conditions QI project, the VNPC is:

- Engaging project faculty to discuss key objectives, data collection, implementation, and evaluation
- Similar to SMILE and EBDC-SUD, the Cardiac Conditions project will operate as a statewide collaborative to seek better understanding and outcomes for pregnant and postpartum women with Cardiac Conditions.
- The Cardiac Conditions project will be based on the Alliance for Innovation in Maternal Health (AIM) patient safety bundle for Cardiac Conditions
 - For more information on the AIM patient safety bundle →



References

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2. Mehta, L. S., Warnes, C. A., Bradley, E., Burton, T., Economy, K., Mehran, R., Safdar, B., Sharma, G., Wood, M., Valente, A. M., & Santos Volgman, A. (2020). Cardiovascular Considerations in Caring for Pregnant Patients: A Scientific Statement From the American Heart Association. *Circulation*, 141(23). <https://doi.org/10.1161/cir.0000000000000772>
3. Virginia Law Library. “§ 32.1-276.6. Patient Level Data System Continued; Reporting Requirements.” <https://law.lis.virginia.gov/vacode/title32.1/chapter7.2/section32.1-276.6/>
4. Virginia Maternal Mortality Review Team. (2025). VA MMRT Annual Report. VDH Office of Chief Medical Examiner.
5. Virginia Hospital and Healthcare Association. (2024). Maternal Health Dashboard.
6. AIM. *Cardiac Conditions in Obstetric Care Patient Safety Bundle Core Data Collection Plan*. Jan. 2024.