PEDIATRIC CONCERNS

Implementing heart failure criteria

By Rachelle Musselman, BSN, RN, Jorde Spitler, BSN, RN, Daniel Lantis, BSN, RN, Joseph E. Ross, MD, and Thomas A. Taghon, DO, MHA

When a condition is ill defined and documented by a provider, it renders the CDI specialist, and later the coder, unable to capture the severity of a patient. Unfortunately, this leads to an inaccurate reflection of the quality scores, rankings/reputation, and revenue. Furthermore, it leads to unmeasurable data of pediatric conditions across the nation. One condition that intrigued our CDI team was pediatric heart failure (HF).

Heart disease is not uncommon among children of all ages, and it can significantly affect their health, causing increased severity of illness, risk of mortality, and expected hospital length of stay. Cardiac dysfunction can be a primary condition, stemming from a cardiac condition that will have an adverse effect on growth, development, and multiple body systems.

There are also situations where non-cardiac conditions can have a detrimental effect on the heart and cause a secondary cardiac dysfunction. Examples of this include sepsis, respiratory disorders, anemia, metabolic diseases, and renal failure. CDI professionals recognize that cardiac dysfunction often does not show the true severity of the patient regarding coding.

The Dayton Children's CDI team began recognizing the need for pediatric HF criteria. The team tracked reviews that contained clinical indicators suggesting a possible diagnosis of HF. Then, we collaborated with our cardiologist, diving deep into research and looking at the most recent ICD-10-CM recommendations to further assist in developing standard definitions that would help us accurately portray HF.

Joseph Ross, MD, division chief cardiologist, agreed that we needed set criteria and recognized that putting such a definition in place would be the best-practice.

"As a pediatric cardiologist, I've always been hesitant to state my patient has HF," says Ross. "After discussing this issue with our CDI team, I realized that documenting HF did not indicate that I failed my patient. Rather, documenting HF accurately portrays the severity of a heart disease and justifies the resources used to treat that specific patient. I then realized the need for organizational criteria for pediatric HF."

In short, by knowing how pediatric HF is defined and coded, the true severity of the patient's condition will be captured. Our aim is to improve our patients' safety through clear communication and provide accurate data for disease tracking/trending nationwide. We also hope to positively affect our hospital's quality scores and reimbursement.

Definition/criteria

Pediatric HF is a clinical syndrome in which the patient's heart is unable to maintain a cardiac output necessary to maintain normal oxygen supply to body tissues. According to a *2019 article from UpToDate*, the etiology stems "from structural or functional cardiac disorders that impair the ability of the ventricle(s) to fill with and/or eject blood." We used a modified version of the criteria in *The Ross Classification for Heart Failure in Children After 25 Years: A Review and an Age-Stratified Revision*, which helped provide direction regarding acuity. The framework was then broken down to three types for simplicity as seen in the chart on p. 24.

Congenital heart disease, cardiomyopathies, myocarditis, and respiratory disorders are just a handful of the conditions that can predispose a patient to HF. HF etiology in infants and children may evolve from ventricular dysfunction (low output), pressure overload (low output), or volume overload (high output). Low output/ventricular dysfunction can result from cardiomyopathies, myocarditis, arrhythmias, drugs, and sepsis. Low output failure can also occur from pressure overload (left- or right-sided), commonly seen in critical coarctation of the aorta, pulmonary stenosis, and persistent newborn pulmonary hypertension. Lastly, high-output failure due to volume overload can result from left-to-right shunting such as vascular septal defect, valvular insufficiency, or non-cardiac causes such as fluid overload (renal failure).

Compensated chronic HF (systolic and/or diastolic)	Acute on chronic HF (systolic and/or diastolic)	Decompensated (acute) HF (systolic and/or diastolic)
Clinical indicators: ■ On baseline medications (Lasix® [furosemide], spironolactone, sildenafil, digoxin, carvedilol) ■ Stable findings on imaging and diagnostics (ECHO, chest x-ray, EKG, etc.) ■ No limitations or symptoms, or ■ Infants: Mild tachypnea or diaphoresis and feeding ■ Children: Mild dyspnea on exertion ■ Gaining appropriate weight/feeding well	Clinical indicators: ■ Medication changes (increase dosage, possible IV dose), or ■ Slight changes on imaging and diagnostics (echo, chest x-ray, EKG, etc.), or ■ Infants: Growth failure and moderate to marked tachypnea or diaphoresis with feeding ■ Children: Moderate to marked dyspnea on exertion ■ Trend biomarkers (BNP, NT-proBNP, Troponin, etc.)	Clinical indicators: ■ IV medications ■ Moderate changes on imaging and diagnostics (ECHO, chest x-ray, EKG, etc.) ■ Symptoms at rest such as tachypnea, retractions, grunting, or diaphoresis ■ Significant changes in biomarkers (BNP, NT-proBNP, Troponin, etc.)

Conclusion

As CDI specialists, we all work together to help accurately portray our patients' stories, and Dayton Children's Hospital eagerly shares our criteria for HF with the CDI community. Ross supported CDI and affirmed an acceptable definition that is now being implemented in our hospital. We owe him much gratitude and appreciation for his expertise, invaluable time, and efforts to be able to conclude this project.

Now, with a clear definition of HF, our CDI team will begin to spread the criteria within the organization. The individual CDI specialists will have the criteria to assist in formulating a query, thus helping our team paint an accurate picture of inpatient admissions. Dayton Children's will benefit from improved case-mix index, quality scores/reputation, and revenue to keep its doors open in a changing healthcare environment. The criteria will serve as a best-practice communication tool among the care team. The language regarding HF will be clear and concise for easy communication in the EHR.

There is so much value in provider documentation, and as CDI specialists, we depend on their expertise to promote change. The Dayton Children's Hospital CDI efforts around pediatric HF represent the power of collaboration between CDI specialists and providers. The outcomes of documentation improvement at a hospital are vast, and providers are heavily dependent on the help of CDI professionals.

References and further reading

- Kantor, P. F., Lougheed, J., Dancea, A., McGillion, M., Barbosa, N., Chan, C., . . . Wong, K. (2013). *Presentation, Diagnosis, and Medical Management of Heart Failure in Children: Canadian Cardiovascular Society Guidelines*. Canadian Journal of Cardiology, 29(12), 1535-1552. doi:10.1016/j.cjca.2013.08.008
- Ross, R. D. (2012). *The Ross Classification for Heart Failure in Children After 25 Years: A Review and an Age-Stratified Revision*. Pediatric Cardiology, 33(8), 1295-1300. doi:https://doi.org/10.1007/s00246-012-0306-8
- Singh, R. K., Singh, T., Triedman, J. K., & Armsby, C.. (2019). Heart failure in children: Etiology, clinical manifestations, and diagnosis. Retrieved July 31, 2019, from *https://www.uptodate.com/contents/heart-failure-in-children-etiology-clinical-manifestations-and-diagnosis*

Editor's note: Contact Musselman at *musselmanr@childrensdayton.org*. Recently, an ACDIS CDI workgroup on pediatric HF convened. If your organization has developed any HF definitions for children, please send them to *ACDIS Editor Linnea Archibald* and *Associate Editorial Director Melissa Varnavas*.