

Industry Perspective

The Next Transformation in Congenital Heart Care *is Digital.*



Children's hospitals have transformed congenital heart care through decades of clinical innovation. Yet as cardiovascular data expands across imaging, catheterization, electrophysiology, registries, and the electronic medical record, a new challenge has emerged: connecting information across the continuum of care.

The next era of innovation lies in transforming documentation into connected clinical intelligence. And the next transformation is digital – creating a data foundation that ensures every study, procedure and clinical insight contributes to a single evolving cardiovascular story.

Cardiology should be treated as its own clinical enterprise – distinct in its workflows, tools, and integrations. The same principle applies to cardiovascular analytics. Generic enterprise platforms often fail to accommodate the depth and specificity required in cardiovascular medicine. To support this high-performing specialty, organizations need analytics solutions designed to transform complex data into meaningful, actionable insight.

Pediatric Cardiology Has Outgrown Traditional Documentation

For decades, pediatric cardiovascular programs have invested in world-class imaging, cath labs, surgical innovation, and multidisciplinary care teams. These investments have transformed congenital heart disease from a condition once associated with limited survival into one managed across an entire lifetime.

Yet while clinical care has evolved, the digital infrastructure supporting that care often has not.

Today's pediatric heart programs generate an extraordinary volume of information across fetal echocardiography, pediatric echocardiography, catheterization, electrophysiology, CT, MRI, registries, and the electronic medical record. Much of that information remains fragmented across modality-specific applications, legacy databases, and disconnected documentation workflows.

The result is an environment where physicians spend valuable time searching for information rather than building upon it, quality teams manually abstract registry data, researchers struggle to assemble cohorts, and hospital leaders lack a unified view of program performance.

The challenge facing children's hospitals is no longer simply improving documentation.

It is creating a cardiovascular data foundation that transforms every clinical encounter into reusable intelligence.

The future of pediatric cardiovascular informatics will be defined less by how information is documented and more by how effectively clinical data can be connected, structured, and transformed into intelligence.

Why Congenital Catheterization Leads the Transformation

Many children's hospitals begin their journey toward a modern pediatric cardiovascular data platform in the cath lab.

This is not because interventional cardiology is the only workflow in need of modernization. Rather, the cath lab represents one of the most information-rich and clinically complex environments in pediatric cardiology, and for decades, programs have had little choice but to rely on legacy reporting systems that became the standard simply because they were the only available option.

A single procedure may combine hemodynamic measurements, angiography, fluoroscopy, echo guidance, advanced imaging, implantable devices, complex anatomical findings, diagrams, physiological calculations, registry data, and procedural documentation, all requiring collaboration and coordination among physicians, nurses, technologists, and the broader team.

Historically, much of this information has been captured across disconnected systems, manually copied and pasted into reports, and archived as static documents. While those reports satisfy documentation requirements, much of their clinical value becomes difficult to reuse for quality improvement, research, or operational decision-making.

Leading pediatric heart programs are beginning to recognize that every catheterization procedure represents far more than a completed report. It is an opportunity to create structured clinical intelligence that informs future care, supports registries, enables analytics, and preserves institutional knowledge.

For that reason, invasive cardiology has become a natural starting point for broader digital transformation. The workflows developed within the cath lab often establish the structured data foundation that can ultimately extend across fetal imaging, echocardiography, EP, CT, MRI, and adult congenital care.

At ASCEND, this vision is built upon four foundational principles that redefine what a congenital cath solution should deliver.

Hemodynamic Intelligence

Congenital intervention relies on sophisticated physiological assessment. Rather than treating hemodynamic calculations as separate manual tasks, ASCEND embeds a transparent, configurable calculation framework directly within the reporting workflow. Support for multiple accepted methodologies, institution-specific preferences, and clinician validation helps ensure that complex calculations become both efficient and clinically trustworthy.

Visual Intelligence

The Mullins Atlas has long been the visual language of congenital heart disease. ASCEND brings that language into the digital era by recreating every diagram as modern SVG graphics with advanced annotation capabilities. Clinicians can document anatomy, devices, repairs, palliations, and embedded hemodynamic data in far greater detail, while carrying diagrams forward into future multimodality reports. The result is a living visual record that evolves alongside the patient and improves communication across specialties, teams, and generations of care.

Structured Clinical Intelligence

Every documented observation has the potential to become reusable data. By capturing discrete clinical information at the point of care, organizations create a comprehensive cardiovascular record, registry participation, quality initiatives, operational analytics, and future AI-enabled applications without requiring redundant documentation or manual abstraction.

Legacy Data Continuity

Transformation should never require abandoning decades of institutional knowledge. Historical congenital cath data represents an invaluable clinical and research asset. By preserving, normalizing, and integrating legacy datasets alongside newly captured information, pediatric heart programs can maintain continuity, perform meaningful analyses, and ensure that historical experience continues to inform future care.

Together, these principles shift the role of the congenital cath lab from a place where reports are produced to the foundation upon which a longitudinal pediatric cardiovascular intelligence platform can be built.

A Connected Pediatric Cardiovascular Platform

Platform Vision

One Child. One Record. Every Modality.

The future of pediatric cardiovascular informatics is not defined by individual applications. It is defined by how effectively information flows across the entire cardiovascular ecosystem.

A child born with congenital heart disease begins a lifelong cardiovascular journey that often starts before birth and continues well into adulthood. Care may include fetal echocardiography, pediatric echocardiography, congenital cardiac catheterization, EP procedures, advanced imaging, and decades of adult congenital follow-up. Advances in imaging, catheter-based therapies, hybrid interventions, and surgical techniques have dramatically improved outcomes, making lifelong continuity of care an achievable expectation for today's patients.

As patients transition across this continuum, their cardiovascular information must move with them. However, many organizations continue to rely on disconnected systems where fetal, pediatric, procedural, and adult congenital data are captured separately. This fragmentation limits the ability to understand the patient's complete cardiovascular history, including anatomy, interventions, physiology, and outcomes over time.

ASCEND was designed around a different philosophy: every cardiovascular encounter should contribute to a single, structured longitudinal record that grows with the patient throughout their lifetime. Rather than creating another collection of disconnected point solutions, ASCEND unifies data across major pediatric cardiology subspecialties on a common structured reporting foundation, enabling information captured in one workflow to inform the next.

This connected approach delivers consistent, clinically intelligent documentation across the congenital heart disease continuum while transforming every report into a reusable cardiovascular data asset that supports patient care, quality initiatives, research, analytics, and future innovation.

ASCEND supports a comprehensive pediatric cardiovascular ecosystem, including:

- Fetal Echocardiography
- Pediatric Echocardiography
- Adult Congenital Echocardiography
- Congenital Cardiac Catheterization & Electrophysiology
- Cardiac CT
- Cardiac MRI

Looking Beyond Documentation

When documentation becomes structured data, every completed report delivers value far beyond the clinical note. It becomes a reusable asset that supports patient care, quality initiatives, operational insight, research, and future innovation.

The opportunity for children's hospitals is no longer simply to modernize reporting. It is to establish the digital foundation that will support the next generation of pediatric cardiovascular care.

Children's hospitals have already transformed congenital heart care through decades of clinical innovation. The next transformation is digital.

The question is no longer whether pediatric cardiovascular programs need connected, structured clinical data. It is which organizations will lead the transformation and how quickly they will move beyond legacy systems to build the foundation for the future.

The hospitals that make this investment today will be best positioned to accelerate research, strengthen quality initiatives, responsibly adopt AI, and deliver more connected, data-driven cardiovascular care for generations of patients.

The future of pediatric cardiovascular care will be shaped not only by clinical innovation, but by the quality, connectivity, and intelligence of the data that powers it.

Building the Future Together

ASCEND Cardiovascular partners with leading children's hospitals to modernize congenital cardiovascular documentation and create a connected data foundation spanning fetal imaging, echocardiography, catheterization, electrophysiology, CT, MRI, and adult congenital care. By transforming documentation into structured clinical intelligence, ASCEND helps organizations strengthen patient care, advance research, improve operational performance, and prepare for the next generation of AI-enabled cardiovascular medicine.

ASCEND Cardiovascular is the leader in cardiovascular structured reporting and workflow solutions. Engineered specifically for cardiology, ASCEND provides enterprise-ready solutions that seamlessly integrate multi-modality structured reporting, web-based image visualization, clinical telepresence, and analytics to empower healthcare teams and improve patient outcomes. Learn more at www.ascendcv.com or follow us on [LinkedIn](#).