

# A post-pandemic pediatric population health management strategy

A strategic framework for pediatric care now and in the future

# Table of Contents

1. Executive summary	1
2. Impact of COVID-19 on children	2
3. Unique considerations for pediatric population health	5
4. A framework for improving pediatric population health management	8
5. How Innovaccer is transforming pediatric care	11
6. Conclusion	13

# Executive Summary

Hospitals and health systems in the United States have faced many hardships since the COVID-19 pandemic began. Many intensive care units (ICUs) and emergency departments (EDs) continue to operate near or at full capacity. Hospital staff remains overworked and overstressed.

There was little media coverage of the pandemic's effect on children's hospitals and pediatric care organizations. Children's hospitals and pediatric practices endured more financial hardship than the industry as a whole. Consider these points from the [Children's Hospital Association](#):

- Revenue from patient care decreased 7% among children's hospitals in 2020, compared to a 4% increase among all U.S. hospitals.
- Children's hospitals saw a revenue shortfall of \$5 billion in 2020. Federal disaster relief from the Provider Relief Fund (PRF) offset more than \$3 billion of the loss, but there was still a significant financial impact. The industry projected similar losses during 2021.
- Children's hospitals and pediatric practices were omitted from more than two-thirds of federal relief programs for hospitals and medical providers.
- Among children's hospitals, 90% saw a significant loss of revenue in 2020 and have yet to recover.

Even though children made up a lower percentage of COVID-19 cases, according to the federal [Centers for Disease Control and Prevention \(CDC\)](#), pediatric providers still suffered from a decline in revenue.

As the pandemic progressed, pediatric providers, including children's hospitals, health systems, and clinically integrated networks, all experienced increasing financial pressure. Combine that with other trends in pediatric healthcare and it's evident that pediatric providers are going to have to change and adapt if they're to thrive in the years ahead. Some of those trends are:

- Healthcare's ongoing move to value-based care models
- A [20% decline](#) in the U.S. birth rate between 2007 and 2020
- Increased awareness of [health inequity among children](#) in the U.S.

The goal of this white paper is to provide strategies organizations can use as they embrace pediatric population health and value-based care. It discusses unique challenges in the pediatric space and proposes a five-step strategy to enhance the efficiency of pediatric population health management:

1. Create a centralized data repository
2. Activate your central data repository to create actionable programs
3. Cater to the specific needs of different patient populations
4. Enable futuristic care management strategies
5. Drive family-centered care initiatives

# Pediatric care in the COVID-19 aftermath

“Many parents put off taking their children to their pediatricians for routine medical care during the pandemic even though many chronic health conditions became more prevalent,” says Dr. Andrew Hertz, MD, medical advisor at the Innovaccer Pediatric Center of Excellence. “Those delays have affected children in ways we’ll be managing for years to come.”

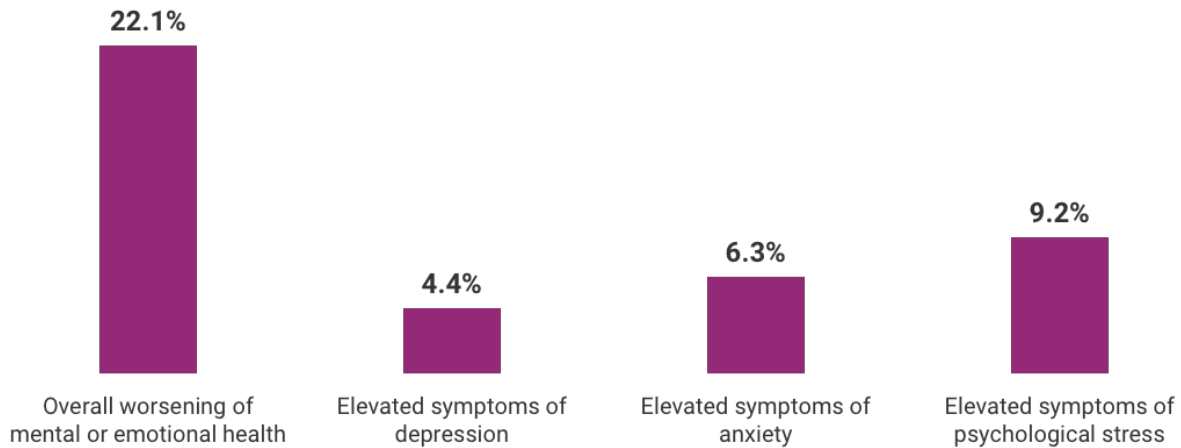
The [American Academy of Pediatrics \(AAP\)](#) says the numbers tell the real story. During the pandemic, 99.5% of pediatricians saw a decline in preventive care visits, with seven in 10 seeing a decrease of 50% or more. Eight in 10 saw a similar reduction in visits from sick children.

According to a study by the [Kaiser Family Foundation \(KFF\)](#), 31% of parents said their children’s mental health was worse in October 2020 than before the pandemic began seven months earlier.

Data from the [Centers for Disease Control and Prevention \(CDC\)](#) shows that emergency department visits for mental health issues rose by 24% for children ages 5–11 and 31% for those ages 12–17. Suicide attempts among girls ages 12–17 increased by 51% in the first months of 2020, compared to the same period in 2019.

In addition, 25% of high school students reported their emotional and cognitive health had become worse during the pandemic, and more than 20% of parents with children ages 5–12 said their children’s mental or emotional health worsened.

## Share of parents reporting worsening mental health for their children ages 5-12, October-November 2020



Source: [www.kff.org](http://www.kff.org)

Fig: [Parents reporting worsening mental health for their children](#)

“The long-term impact of COVID-19 on the health of children is just beginning to be understood. I think we’ll be seeing children with developmental issues, increased behavioral health pathology, a widening education gap, and a lack of routine wellness care,” explains Dr. Hertz. “Missed immunizations alone could raise significant health issues in the years ahead.” Pediatric care providers will need to develop programs to identify and manage these results of the pandemic.

One of the effects of the pandemic is that routine immunization has declined among American children. A study by [JAMA Pediatrics](#) showed routine immunizations declined among all age groups between September 2019 and September 2020. For example, 74% of infants who turned 7 months of age in September 2020 were up to date on their vaccinations, compared to 81% in September 2019. Only 57% of 18-month-old children were up to date on their immunizations in September 2020, a decline from 61% a year before.

COVID-19 vaccines have only added to the issue. As of the end of January 2022, only 28.1% of children between the ages 5–11 were vaccinated against COVID-19, according to the [Kaiser Family Foundation](#). No vaccine is currently available for children under 5 years old.



“In the near future, improved immunization registries, patient engagement, point-of-care reminders, and operational efficiencies will be needed to address the increased demand for routine and COVID-19 vaccines,” says Dr. Hertz. “In some cases, we can get children back on schedule, but in other cases, the opportunity could be gone for good.”

A 2021 paper published by the [National Institutes of Health](#) (NIH) showed that health equity among children increased for five of six measures between 1997 and 2018 and that health equity among children in the United States was headed in the right direction prior to the COVID-19 pandemic. The health equity gap decreased in five of the six categories, including race and education, while the gap increased with income disparity.

The COVID-19 pandemic brought more attention to many long-standing inequities, according to [another study](#) published by the NIH. For example, 45.7% of Latinx children and 29.8% of African American children who were hospitalized with COVID-19 had underlying health conditions, such as obesity or chronic lung disease. In contrast, only 14.9% of hospitalized white children had the same underlying conditions.

Pediatric population health management programs will be charged with addressing the increase of disease burden in children related to COVID-19 and assisting in reducing pediatric health inequities. It won't be easy; developed solutions must consider and support the unique nature of pediatric care delivery.

# Unique considerations for pediatric population health management

## The complex pediatric healthcare ecosystem


It may sound obvious, but yes, children aren't just small adults. Managing their population health needs must be different from adults. An estimated 40% of children have at least one chronic medical condition, according to the [CDC](#). The management of these chronic illnesses must address the unique physical, social/emotional, and mental development in a child's life. Factors to be considered include:

- Preventive care
- Children with special healthcare needs
- Children with medical complexity
- Behavioral health
- Social determinants of health (SDoH) like transportation, food, shelter, violence, safe sleeping, etc.
- Environmental health—lead, cigarette smoke, pollution, molds, etc.
- Adverse childhood experiences of child and caregivers
- Fragmented data sources
- Multi sector collaboration
- The health status of siblings and other household members that may impact the ability for a child to optimize their own health
- Safe, stable, and nurturing relationships and a stable consistent place to live
- Availability and acceptance of quality early child education
- School and recreational opportunities

## There are two patients (at least)—the child and their parent or caregiver

A recent study by [NRC Health](#) shows that parents are slightly more likely—37% for pediatric patients compared to 36% for adult patients—to prefer a specific healthcare brand for their children's medical care than for their care.

At the same time, the study showed that parents are slightly more loyal to their children's pediatric healthcare providers than their own providers. Pediatric healthcare consumers also hold providers to higher standards, with 92% of parents reporting positive sentiments for pediatric providers compared to 95% of adult consumers who report positive sentiments for their own healthcare providers.



Consumer priorities differ, depending on whether the patient is an adult or a child. The general U.S. population cited convenience factors as the top driver for provider choice. For pediatric consumers, the primary driver was quality.

Among parents, according to [NRC Health](#), 52% said “quality medical providers” was their primary motivator when they chose a provider, and 54.6% said “caring and compassionate doctors and nurses” was a key differentiator among pediatric providers.

To earn and retain pediatric patient loyalty, children’s hospitals and pediatric providers must meet a higher standard than their adult medicine counterparts.

## Child health becomes adult health

Children must be treated differently than adult patients, whether it’s preventive care or treatment for an acute or chronic medical condition. The health of adults begins long before they reach the age of majority. It begins during the prenatal period and is significantly impacted during the first years of life. Many of the chronic diseases affecting adults are impacted by their health during childhood. To optimize early brain development and the health trajectory of children, providers must recognize and address the unique challenges and opportunities for population health management for children.

“Care models for pediatric patients focus more on wellness rather than treating or preventing illness,” explains Dr. Kip Webb, MD. “I think in a paper-based world, we did the best we could with the data that was available. But in an increasingly digital world, we have an opportunity to aggregate data from a vast variety of sources. This, in turn, can enable pediatricians to deliver much greater wellness-promoting and preventive care.”

Solid numbers support Dr. Webb’s statement. Immunizations prevent the deaths of between 2 and 3 million children every year, according to [WHO](#). The most common causes of preventable death among children are diphtheria, tetanus, pertussis (whooping cough), and measles. That makes immunization a key component of pediatric care.

“Young children need comprehensive healthcare services that are aligned with their hearing, speech, vision, nutrition, and behavioral needs,” continues Dr. Webb. “Their mental and physical health often depends on the financial and social status of their families; the schools they attend; their ability to access culturally relevant, nutritious foods; the social circles that they keep; as well as the early identification of any long-term medical conditions. Understanding these factors better can only enable better care.”

A core component of pediatric care is the well-child visit. It’s at this time that preventive care is delivered, and the social, emotional, and developmental health of a child is assessed and guided. “Well-child visits are at the core of pediatric population health management,” says Dr. Hertz. “It’s during these visits that immunizations are given, and routine screening is performed to optimize the physical, social/emotional, and mental health of the child.”




## Incomplete patient mapping and insufficient data sharing

“Children present a data challenge for pediatric providers from the time they’re born,” says Dr. Webb. “Pediatric providers need complete and accurate data to help provide the information they need to care for their patients at any time.” The lack of effective health IT technology to help pediatricians obtain and properly coordinate that information can prevent them from providing comprehensive, evidence-based care, he continues. There exists a myriad of relevant data sources for pediatric population health, including the electronic health record, insurance pharmacy claims, immunization registries, environmental health reports, school records, and others.

“Pediatric patients are like adults in the sense that they may receive healthcare in a variety of locations,” explains Dr. Webb. “They might get flu shots at daycare or a retail pharmacy, have regular check-ups at community clinics, be treated in an emergency department, seen by a school nurse, and get preventive care at a pediatrician’s office. In addition, there’s a vast array of data pertaining to their mental health, school attendance and performance, and the social determinants of health. That’s why it is crucial for pediatric organizations to aggregate complete patient data in one place.”

## Cross-sector collaboration

More and more pediatric focused systems of care are collaborating with community-based organizations to improve the health of their region’s children. This may be in the physical, behavioral, social, educational, environmental, and recreational sectors. Innovative data governance and sharing opportunities are developing. This exciting cross-sector collaboration is enabling organizations to take a more holistic approach to pediatric health and well-being. Success is dependent upon many factors, one of which is the integration and activation of disparate data sources.



# A framework for improving pediatric population health management



## Create a centralized data repository

From the time they are born until they become adults, pediatric patients are subject to various tests, vaccinations, follow-up care, and other medical treatment. Their names may change. Their insurance coverage often changes, even within the same calendar year. Pediatricians can only enable targeted intervention and evidence-based treatment once they have access to complete patient data.

It's essential to the success of any pediatric population health program to aggregate data from different platforms to provide a 360-degree view of a pediatric patient's entire health journey and touchpoints. This integration requires a centralized data repository.

## Activate your central data repository to create actionable programs

After data is deposited into the central data repository, it must be activated. That means creating a single unique patient identifier and matching disparate data elements into cohesive and actionable reports. Data activation should address unique pediatric challenges, such as name changes and linking family members, to optimize the 360-degree picture. It's only through this process that the core elements of your population health management program can be realized, such as patient registries, care gap analyses, care management, and patient outreach.

"To optimize pediatric population health, doctors must have actionable information at their fingertips," says Dr. Hertz. "When such information is immediately available, providers can address care gaps, streamline screening, and optimize preventive care opportunities."

Engaging patients throughout the care process with assistance from relevant technology and well-aggregated healthcare data can help bring pediatricians closer to their patient populations. Organizations that provide comprehensive information on patient patterns and medical records during each visit will have a long-lasting impact on how they deliver care. At the same time, they will give patients and their families a better experience.

## Cater to the specific needs of different patient populations

The activated, integrated data allows the pediatric population health management team to stratify patients into appropriate pediatric work streams aimed to improve care and decrease costs. Some of these categories may include:

- Well-child care registries to address gaps in immunizations and screenings.
- Children with special healthcare needs who need care coordination between home, after-care, school, and family support members
- Pharmacy noncompliance outreach
- Acute care episode management for children with a chronic medical condition
- Children with medical complexity that would benefit from intense case management and have home monitoring/care needs
- High ED utilizers in need of education, access plans, and/or SDoH resources
- Children with behavioral health comorbidities that are driving avoidable utilization
- Others

## Enable futuristic care management strategies

Managing the complete healthcare needs of young patients is the backbone of an effective pediatric care delivery system. High-functioning care management should consider clinical and socioeconomic factors, and that can have a significant positive impact on improving population health. This is only possible with the complete 360-degree view of the patient and his or her family's needs.

One way to improve care outcomes is to educate families about their child's health. Pediatric organizations can send regular reminders to parents to update them about their child's upcoming care, medication administration, and scheduled appointments.

## Drive family-centered care initiatives

A key and unique aspect of children is, of course, that they don't live outside of a family unit. A child's medical home is secondary in importance to their physical home. A population health solution should empower the care team to consider family units, rather than just individual patients.

As possible, the entire pediatric healthcare ecosystem of the family unit should be considered for population health initiatives. Outreach should be at the family level—meaning why perform outreach twice for the same family because both of the two children are behind in their well-visits? If transportation is an issue for one child, it is for the others. One child may have a special healthcare need that impacts the ability for another child to receive behavioral health services. And especially for organizations who are at risk for both adults and children, the driving factor behind pediatric health care utilization patterns (under or overutilization) may be the health of an adult caregiver. Similarly, the driving factor behind an adult's health care utilization patterns (under or overutilization) may be the chronic health issues of a child.

Utilizing a data activation and care management platform that aggregates to the family unit enables far greater efficiencies for population health management.





## How Innovaccer is transforming pediatric care

At Innovaccer, we know comprehensive and easily accessible data about each child's healthcare and unique needs is the foundation for meeting the critical challenges that interfere with pediatric organizations and their ability to provide quality pediatric care.

Our Pediatric Population Health Management platform helps pediatric healthcare organizations provide preventive care and immunizations on schedule, manage diseases prevalent in children, reduce redundancies in health records, and help reduce unnecessary services and utilization.

The platform is built on our Data Activation Platform. It uses more than 200 automatic connectors to widely used healthcare data systems and applications to allow it to aggregate information from multiple facilities, locations, and clinicians during every stage of a child's life. That makes data easily accessible whenever needed.

## Kansas City-based pediatric provider overcomes challenges

Children's Mercy Integrated Care Solutions (CMICS), a pediatric care network based in Kansas City, Missouri, used Innovaccer's platform to meet three challenges:

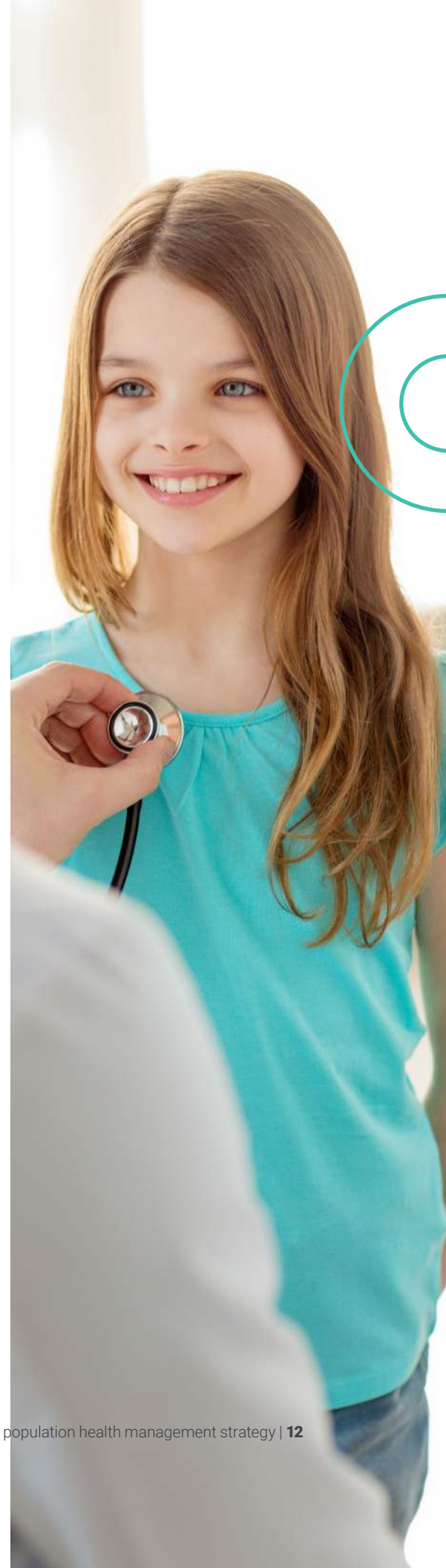
- Lack of an integrated data platform
- Decentralized care coordination
- Limited visibility of processes across the system

CMICS had a goal of delivering high-value and integrated care that would meet the healthcare Quadruple Aim of better outcomes, improved clinical experiences, improved patient experiences, and lower costs.

The pediatric care network hit roadblocks that prevented it from reaching its goal. It needed accurate, unified data available to all pediatric providers across its entire network. CMICS found that a lack of physician and patient engagement at the point of care interfered with its ability to deliver quality care and better outcomes. Finally, CMICS needed to make its pediatric care delivery system more wellness-driven to help it provide better outcomes at a lower cost.

CMICS was able to overcome the obstacles it faced using the Innovaccer<sup>®</sup> Health Cloud. The platform's integrated data generated insights that included point-of-care notices and a comprehensive care timeline. That helped CMICS identify quality care gaps and deploy tools to close those gaps and improve patient health outcomes.

Automated patient outreach helped the CMICS care network monitor its performance on customizable dashboards, which provided actionable insights that let the CMICS team see and understand referral leakage, as well as identify and improve quality, cost, and utilization metrics. In addition, a quality-improvement toolkit helped the network enhance patient-physician collaboration.



# Conclusion

We must, as an industry, work to create a pediatric healthcare care delivery system that maintains our emphasis on prevention and wellness while increasingly leveraging cross-sector collaboration and data integration to address the increase in pediatric chronic diseases. Many organizations are moving or planning to move toward a value-based approach to care delivery in the not-too-distant future, and a push from federal agencies will only intensify this shift.

Data aggregation and activation is key to any organization that embraces pediatric value-based care. By establishing a single source of easily accessible data that includes unified patient records, information on social determinants of health, and other relevant information, pediatric providers can gain the insights they need to provide quality, efficient care.

Healthcare leaders who cannot align their organizations with the shift to value-based care will risk losing thousands or millions of dollars. At the same time, care teams may feel unnecessary stress and burnout and fail to achieve quality care outcomes for children if leaders do not employ the correct strategies and technology.





Innovaccer Inc., the Health Cloud company, is a leading San Francisco-based healthcare technology company committed to accelerating innovation in healthcare. The Innovaccer® Health Cloud empowers healthcare organizations to integrate data from any source—electronic health records, clinical, claims, labs, pharmacy, genomics, social determinants of health, devices, government sources, and more—to create a 360° view of the patient that enables whole-person care. The company's portfolio of Innovation Accelerators empowers technology teams and digital innovators to rapidly develop scalable, modern applications that improve clinical, financial, and operational outcomes. More than 200,000 providers, as well as payers and life sciences organizations, have used the Innovaccer Health Cloud to unify more than 39 million patient records and generate more than \$600 million in savings across 1,000 care settings. Innovaccer is the #1 rated Data and Analytics Platform by KLAS, and the #1 rated population health technology platform by Black Book.

March 2022

For more information, please visit [innovaccer.com](https://innovaccer.com)

