



Medicaid and the Children's Health Insurance Program: an overview for the pediatric radiologist

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Abstract

In terms of number of beneficiaries, Medicaid is the single largest health insurance program in the US. Along with the Children's Health Insurance Program (CHIP), Medicaid covers nearly half of all births and provides health insurance to nearly half of the children in the country. This article provides a broad introduction to Medicaid and CHIP for the pediatric radiologist with a special focus on topics relevant to pediatric imaging and population health. This includes an overview of Medicaid's structure and eligibility criteria and how it differs from Medicare. The paper examines the means-tested programs within the context of pediatric radiology, reviewing pertinent topics such as the rise of Medicaid managed care plans, Medicaid expansion, the effects of Medicaid on child health, and COVID-19. Beyond the basics of benefits coverage, pediatric radiologists should understand how Medicaid and CHIP financing and reimbursement affect the ability of pediatric practices, radiology groups, and hospitals to provide services for children in a sustainable manner. The paper concludes with an analysis of future opportunities for Medicaid and CHIP.

Keywords Medicaid · Children's Health Insurance Program (CHIP) · Reimbursement · Health insurance

Introduction

Medicaid and the Children's Health Insurance Program (CHIP) are pillars of health care in the United States (US), particularly for children. In terms of number of beneficiaries, Medicaid is

the single largest health insurance program in the US, and along with CHIP provides coverage to nearly half of the children in the country [1, 2]. Medicaid and CHIP are “means-tested” programs, with eligibility based on financial need, providing health insurance coverage to vulnerable populations [3]. This includes children living in poverty or foster care and those with special medical needs, among others. Despite eligibility requirements, the programs have a broad reach, paying for nearly half of all US births [4]. In October 2022, Medicaid and CHIP jointly covered over 91 million lives, almost half of which were children, at an annualized cost of over \$600 billion [5, 6].

Pediatric radiologists, as providers of pediatric care, have an inherent interest in programs designed to improve children's health. Given the substantial role of Medicaid and CHIP in providing health care coverage to their patient population, a general understanding of the programs is relevant. This includes an appreciation for the impact of Medicaid and CHIP reimbursement.

Medicare, Medicaid, and CHIP

Medicare and Medicaid were established in 1965 with Titles XVIII and XIX of the Social Security Amendments, respectively. While Medicare and Medicaid both provide health care coverage, there are fundamental differences between the programs (Fig. 1). Medicare is a federal

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entitlement program whose main activity is providing health insurance to those 65 years of age and older, covering approximately 60 million people [7].

Medicaid is jointly financed by federal and state governments, where the federal government provides states with matching funds to operate state-specific Medicaid programs. These matching funds are not capped, meaning they contain no maximum levels. States, within federal guidelines, have broad latitude to administer and tailor the programs. As a result, the US does not have a single Medicaid program, but rather a patchwork of programs that reflect state-level modifications.

The legislation creating CHIP was passed in 1997 to assist children from families whose incomes exceeded Medicaid limits but were nonetheless unable to afford health insurance coverage. CHIP eligibility was intended to start where Medicaid left off; thus, many children who lose access to Medicaid due to a modest increase in their family’s income may still be eligible for coverage with CHIP. The program has been successful in decreasing the pediatric uninsured rate. Between 1996 and 2008, the rate declined from 14 to 9.5%, while the adult uninsured rate climbed [8].

While CHIP and Medicaid are both joint federal-state programs with the federal government providing funds to states, the CHIP contributions are block grants and require periodic renewal. In 2022, with the Consolidated Appropriations Act, 2023, Congress extended funding for CHIP into 2029 [9].

States have a choice of two mechanisms to operate CHIP. They can use CHIP funds to expand Medicaid or alternatively create a separate CHIP pathway. As of 2020, most states had separate CHIP initiatives for at least some children in their state, though nationally 60% of children who receive care financed by CHIP do so under the umbrella of

Medicaid [8]. Since there are meaningful operational differences between CHIP and Medicaid, utilizing the separate CHIP pathway differs functionally from CHIP-funded Medicaid expansion (Fig. 2).

Medicaid: four programs in one

At a foundational level, Medicaid consists of four programs. The first covers health care services for low-income families, including children and their parents. This program is open to children and adults who meet state-determined income eligibility requirements. Unlike other health insurance programs, there is no specific enrollment period, and applicants can apply and, if eligible, enroll at any time. There are no premiums or cost sharing requirements for children on Medicaid [8]. At the core of Medicaid’s coverage for children is the Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefit, which requires states to provide enrollees under 21 years of age with comprehensive services to prevent, detect, and treat health conditions. EPSDT covers medically necessary diagnostic services, including imaging exams. Maternity care for low-income individuals is also an important aspect of Medicaid, with federal minimum standards for coverage, including mandated postpartum coverage [10]. The second program covers low-income seniors aged 65 years or older who are primarily covered through Medicare. These individuals receive additional health insurance from Medicaid and are known as “dual eligible.” The third program supports low-income disabled individuals, and the fourth program finances nursing home care. Medicaid is largely characterized by these four programs, but because each state’s Medicaid program is customized, numerous variations exist.

Fig. 1 Programmatic differences between Medicaid and Medicare











	MEDICAID	MEDICARE
Beneficiaries 	Anyone who meets income eligibility requirements, regardless of age	Age 65 years and older, regardless of income Under 65 with certain disabilities Under 65 on dialysis
Funding 	Jointly financed by federal and state governments	Paid for by federal government through two US Treasury-held trust fund accounts, funded with payroll taxes, enrollee premiums, and payments authorized by Congress
Administration 	Administered by individual states according to federal requirements; monitored by federal agency, Centers for Medicare & Medicaid Services (CMS)	Administered by federal agency CMS
Out-of-pocket Costs 	Generally, no out-of-pocket cost, sometimes a nominal co-pay	Deductibles for hospital and other costs, small monthly premiums for non-hospital coverage
Benefits coverage 	Varies by state Federally mandated: hospital, physician, lab, X-ray, home health services; Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit (<21 years) Optional: prescription drugs, case management, physical therapy, occupational therapy	Uniform across states Hospital services (Part A) Medical care (Part B) Prescription drugs (Part D)

Fig. 2 Programmatic differences between Medicaid and CHIP

	MEDICAID	CHIP
Beneficiaries 	Adults and children <ul style="list-style-type: none"> • Low-income individuals, families, pregnant women, elderly, disabled • May have other insurance coverage 	Children <ul style="list-style-type: none"> • Children from low-income households who exceed Medicaid eligibility thresholds • Must be otherwise uninsured
Funding 	Federal and state Federal matching funds guaranteed, with no pre-set limits	Federal and state Federal match rate higher than Medicaid, but funds are capped
Administration 	Administered by individual states according to federal requirements; monitored by federal agency, Centers for Medicare & Medicaid Services (CMS)	Administered by individual states CHIP allocations can be used towards separate CHIP programs, Medicaid expansion, or a combination
Out-of-pocket Costs 	Generally, no out-of-pocket cost , sometimes a nominal co-pay	States can require premiums and co-pays
Benefits coverage 	Varies by state Federal rules mandate coverage of hospital, physician, lab, X-ray, home health services; Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit (<21 years of age)	Varies by state <ul style="list-style-type: none"> • Certain benefits not required in separate CHIP programs • All states must provide well-baby and well-child care, dental coverage, behavioral health care, and vaccines.

Coverage options for children

There are four main pathways through which children in the US receive health insurance coverage (Fig. 3) [11]. First, children who are the dependents of parents or guardians with employer-sponsored insurance are often covered through these private health plans. Second, children can gain coverage through publicly funded insurance programs, primarily Medicaid and CHIP. Third, they can be covered through direct purchase of private health plans or subsidized private plans obtained through the marketplace created by the 2010 Affordable Care Act (ACA). Finally, nearly 2 million children of military families receive coverage through TRICARE, the Department of Defense insurance program [12].

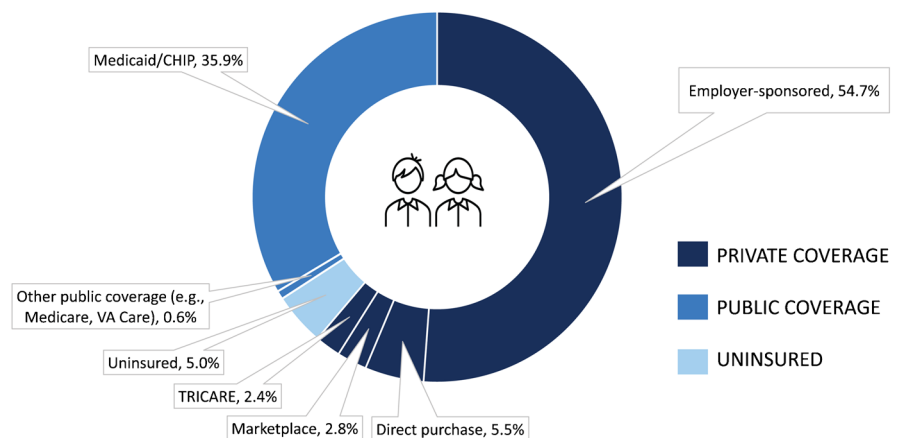
Despite these coverage options, roughly 4 million children were uninsured in 2021 [11]. In 2022, the pediatric uninsured rate was 3.7%, improved from 5% in 2021 and

6.4% in 2020 [11, 13]. This improvement in part reflects broadening public coverage, including through Medicaid and CHIP [8]. Over one million children gained coverage between 2020 and 2022 [13]. While the national uninsured rate in children has improved, there is state-level variability. For instance, in 2019, Texas had a pediatric uninsured rate of 13%, ten times that of Massachusetts’ uninsured rate of 1.3% [14]. This variability is further evidence of the heterogeneity across state Medicaid programs.

Medicaid reimbursement

Since a relatively high fraction of children are covered by Medicaid and CHIP, adequate reimbursement rates are crucial for the sustainability of many pediatric practices and children’s hospitals. Medicaid generally reimburses at

Fig. 3 Health insurance coverage for US children in 2021 [11]



Percentages add to greater than 100 since types of coverage are not necessarily exclusive and people may be covered by more than one type of insurance during a year.

a lower rate than Medicare, which reimburses at a lower rate than private insurance, but comparisons are complex because of state-to-state variation in Medicaid reimbursement rates and because information about Medicaid managed care rates is not readily available [15]. Medicaid-to-Medicare reimbursement ratios range from 0.37 for Rhode Island to 1.18 in Delaware, though nationally Medicaid reimburses about 72% of what Medicare pays for office visits, primary care, and other procedures [16].

Given the high fraction of children covered by Medicaid and CHIP, children's hospitals are often more dependent on Medicaid and CHIP payments than adult or general hospitals. Although children's hospitals represent less than 5% of all hospitals, they account for one-third of all pediatric discharges and roughly half of hospital discharges of children with medical complexity and highest illness severity [17]. Since Medicaid often reimburses children's hospitals less than the cost of care provided (reported at approximately 80%), the median Medicaid financial loss of a children's hospital in 2009 was \$42 million [17, 18]. That 2016 study showed that freestanding children's hospitals suffer greater financial losses than other hospital types for their care of pediatric Medicaid patients [17]. A recent critical shortage of pediatric hospital beds nationally was in part related to lower reimbursement for pediatric care, including Medicaid and CHIP rates [19].

Children's hospitals often serve large regional areas and offer specialized care that may not be widely available. As a result, they care for a greater fraction of out-of-state Medicaid patients compared to other types of hospitals [20]. This can have financial consequences for children's hospitals since states have flexibility in how they reimburse out-of-state care, which can be less than their in-state rates. Providing care for out-of-state Medicaid patients may also be burdensome for physicians since they must be enrolled with the Medicaid program in the patient's state of residence.

Another challenge faced by freestanding children's hospitals concerns financing of pediatric medical education. The traditional graduate medical education (GME) financial support system is based on Medicare patient volume, which is typically low in children's hospitals. While Medicaid payments may help support education, much of the funds for the training of residents and fellows at freestanding children's hospitals comes from the Children's Hospitals Graduate Medical Education (CHGME) program, for which Congress must appropriate funds annually [21]. Recent analysis shows a sizeable discrepancy between per-resident support provided by CHGME (\$79,813) and support by Medicare GME (\$156,128) in fiscal year 2022 [22].

A potential consequence of relatively low Medicaid and CHIP reimbursement and inequitable GME funding is limited hospital resources, which may translate to fewer resources directed towards pediatric radiology equipment

and personnel. Additionally, for radiologists in private practice, there are also concerns about lower revenue generation compared to adult-focused radiologists. This is a result of pediatric radiologists often reading a higher fraction of exams that reimburse at a lower rate, such as plain radiographs and ultrasound, compared to adult radiologists, as well as the higher fraction of Medicaid and CHIP patients in pediatrics compared to the adults.

In general, compensation for physicians caring for adult patients is greater than the compensation for pediatric-focused physicians [23]. These imbalances in lifetime earnings may contribute to imbalances in the workforce and thus impact patient access to care [24]. The lifetime earning potential of a subspecialty is associated with demand in fellowship rates and correlates with access to care metrics [24]. A projection is that medical students may not choose pediatric-focused specialties due to concerns about low compensation [23]. Pediatric subspecialists who leave their practices frequently cite dissatisfaction with compensation as a factor [23].

Despite a growing need, there has been declining interest in pediatric radiology. Since 2013, the number of fellows in pediatric radiology has declined, which is even more concerning given that many pediatric radiologists are close to retirement age [25]. One of the most common reasons for low interest in pediatric radiology is perceived lower compensation relative to other radiology sub-specialties [25].

In addition to generally lower reimbursement rates compared to Medicare and commercial health insurance, the bureaucracy associated with Medicaid creates challenges for physicians. This bureaucracy may result in increased denials and incomplete payments. As a result, physicians' willingness to participate in Medicaid is impacted not just by the payment rate but also by the difficulty obtaining payment. It was estimated that physicians lose 18% of their Medicaid revenue from billing difficulties, compared to 4.7% for Medicare and 2.4% for commercial insurers [26].

Access to care

Although Medicaid and CHIP reduced the uninsured population in children, there are residual difficulties with access to care [27]. Simply having insurance coverage does not guarantee sufficient access to care. For example, new Medicaid patients are accepted by pediatric physicians at a lower rate than those that are privately insured [28]. Compared to those with private health insurance, Medicaid patients often have less choice of physicians, longer wait times for appointments, and fewer office visits with more emergency department encounters [29–31]. Those covered by Medicaid and CHIP are less able to access care compared to groups with private health insurance coverage, which may exacerbate inequities in the health care system since there is a

disproportionate dependence on Medicaid and CHIP for Black and Latino children [32, 33].

Another challenge for patients with Medicaid is moving out of state. Medicaid programs are state specific, meaning that if a beneficiary moves from one state to another, their insurance does not travel with them [34]. They must apply for Medicaid coverage in their new state, potentially causing a gap in coverage. And given the heterogeneity in Medicaid and CHIP between states, they are not guaranteed the same degree of coverage.

The rise of MCOs

States typically reimburse physicians for services provided to Medicaid enrollees through either fee-for-service or managed care arrangements [35]. Under fee-for-service, states directly reimburse physicians. For states that utilize managed care organizations (MCOs), the state contracts with one or more private health insurance plans to administer benefits and pay claims on the state's behalf. The state generally reimburses the MCO on a per member per month basis and the MCO assumes financial risk as well as responsibility for member enrollment, utilization management, and care coordination.

Over the past two decades, states have transitioned towards Medicaid managed care. In 1995, 15% of all Medicaid enrollees were enrolled in an MCO [36]. By 2020, that number increased to more than 70% [37]. Relevant to pediatric radiologists, 37 states cover 75% or more of their children through an MCO [38]. State Medicaid programs increasingly favor MCOs because they provide predictability over Medicaid spending and limit the state's financial risk. Ideally, the MCOs also improve care; however, whether this objective is achieved is unclear [38, 39]. To date, studies of managed care have not found consistent evidence to support claims of reduced spending, improved care coordination, or better outcomes for the Medicaid population [39, 40]. There is also concern about limited public information and transparency about plan performance, which may impact enrollees' ability to assess various plans [38].

Medicaid expansion

The ACA substantially expanded Medicaid by broadening eligibility to nearly all adults with incomes up to 138% of the Federal Poverty Level. However, a Supreme Court ruling in 2012 determined Medicaid expansion to be voluntary rather than compulsory for states. As a result of this ruling, the heterogeneity of Medicaid programs across states increased. As of 2022, 40 states (including

the District of Columbia) opted to expand their Medicaid program [41]. It is estimated that Medicaid expansion broadened health insurance coverage to over 16 million individuals [42].

As of November 2022, 11 states have not expanded Medicaid [41]. One issue in non-expansion states is a "coverage gap," where individuals are uninsured because their income is above the state Medicaid income eligibility level but below the level where they qualify for federal assistance with marketplace premium tax credits [43]. Eligibility for these credits, which are used to offset the cost of insurance premiums, is based on income level. The ACA was based on an understanding that all states would expand Medicaid, with the marketplace tax credits starting where Medicaid expansion left off. Thus, in states that did not expand Medicaid, it is possible to have an income that is too high to qualify for the state's Medicaid program, but too low to qualify for federal assistance.

Regarding families, although children in low-income families were often eligible for coverage through Medicaid and CHIP prior to the ACA, many of these children were not enrolled. The increased coverage for adults under expansion of Medicaid had a "welcome mat" effect, whereby children of newly eligible adults had a disproportionately greater increase in enrollment than children of those adults remaining ineligible for Medicaid post-expansion [44].

To support Medicaid expansion, the ACA provided states with an enhanced federal matching rate, known as the Federal Medical Assistance Percentage (FMAP). For expansion states, the federal government covered new enrollees with complete federal funding (100%) from 2014 through 2016. This funding was then reduced to 95% in 2017 and 90% since 2020 [45, 46]. Despite the FMAP, budgetary concerns are the main reason given by states for not expanding Medicaid coverage [47]. A study analyzing state budget data concluded there was no significant increase in spending associated with Medicaid expansion [47]. Furthermore, studies found no decrease in spending in other programs such as education and transportation in expansion states [47, 48]. This is believed to be the result of savings from a reduction in the states' uninsured rate balancing out the increased spending on Medicaid [47].

Child health under Medicaid and CHIP

Improving access to care through health insurance coverage is beneficial to children and families. As noted previously, patients with Medicaid or CHIP can have greater difficulty accessing care compared to privately insured patients, but when compared with uninsured children, children enrolled in Medicaid and CHIP are more likely to have a usual source of

care and to access routine services, including well-child visits, eye exams, and dental exams [49]. Children insured through Medicaid and CHIP are also significantly less likely to delay medical care or not get needed prescription medications due to cost [49]. State Medicaid expansion was associated with increased coverage of children with cancer, and in children with cancer, a lack of health insurance is associated with worse outcomes [50, 51]. In addition, in studies focused on the adult population, access to care from state Medicaid expansion has been associated with improved health outcomes [52–54].

Pediatric Medicaid coverage also improves overall *population* health. Childhood Medicaid coverage leads to improvements in adult health outcomes with fewer health limitations and chronic conditions [55, 56]. Early coverage with Medicaid reduces rates of chronic health problems as adults, including reducing hospitalizations from diabetes and obesity, and increases the high school graduation rate [57]. Expansion of public health coverage in the 1990s to pregnant women and children was associated with improved infant and child mortality rates [58]. Medicaid coverage improves performance in school and increases employment, benefiting the tax base. In this way, coverage can be seen as a positive return on investment financially [59]. In addition to the health benefits, Medicaid coverage also protects families from financial burdens, lowering the risk of bankruptcy [59].

Improving reimbursement rates can improve access to care and support better health. States with higher Medicaid reimbursement rates have seen positive outcomes on access to care. For example, physicians in states that reimburse at rates above the median Medicaid/Medicare ratio accepted new Medicaid patients at a greater rate compared to physicians in states that pay below the median [60]. Additionally, the Patient Protection and Affordable Care Act (ACA) of 2010 and the related Health Care and Education Reconciliation Act of 2010 (also known as the ACA) elevated Medicaid rates to Medicare rates for primary care services for 2013 and 2014. This was associated with increased access to care for children [23]. Pediatrician participation in Medicaid improved with increased Medicaid rates [28]. Access to prenatal care improves with increased Medicaid reimbursement [61]. Increasing Medicaid reimbursement to commercial rates would improve access to care and address disparities [62]. A study on musculoskeletal radiology demonstrated substantial state by state variation in Medicaid reimbursement and that improvements in reimbursement rates likely improve access to radiological care [32].

Medicaid and COVID-19

The coronavirus disease 2019 (COVID-19) pandemic has been a public health disaster. In addition to over 1 million deaths in the US, many individuals and families

suffered a loss of employment and/or income and subsequent employer-sponsored health insurance, both of which increased the eligibility pool for Medicaid [2]. In response to COVID-19, the federal government provided enhanced federal Medicaid funds in the amount of a 6.2% increase in the FMAP. The additional funds were provided on the stipulation that states could not disenroll individuals during the public health emergency, referred to as a “continuous coverage requirement.” Under this policy, Medicaid and CHIP enrollment has grown by millions [63].

New applicants are required to confirm income and asset levels for eligibility to enroll in Medicaid. However, before the continuous coverage requirement, beneficiaries were required to periodically reconfirm their eligibility to maintain Medicaid coverage. Those who failed to meet requirements, for instance due to income fluctuations, lost coverage, with many then re-applying when circumstances changed. This constant exiting and re-entering Medicaid, known as “churning,” is associated with health care access challenges and poor health outcomes [64–66]. An estimated 25% of Medicaid beneficiaries change coverage each year, resulting in gaps in health care coverage [67]. A recent analysis demonstrated that 65% of those that lose Medicaid/CHIP coverage are at least temporarily uninsured in the following year [68]. Many individuals and families lose Medicaid coverage because of clerical errors or confusing, burdensome paperwork. A study showed that most of those cut from Tennessee’s Medicaid program between 2016 and 2019 were eligible for coverage [69].

The continuous coverage requirement limited states from conducting redeterminations and disenrolling individuals, regardless of their eligibility status during the public health emergency [64–66, 70]. This protected many from inappropriate disenrollment. In late 2022, Congress set March 31, 2023, as the end of the continuous coverage requirement, with states able to start requiring re-applications for beneficiaries on April 1 as they wind down the program in 2023 [71]. It is estimated that as many as 5–7 million children are likely to lose coverage after the requirement ends [2, 72]. The Department of Health and Human Services report estimates that more than half of the children disenrolled from Medicaid will actually be eligible for the program [72]. To help offset pediatric disenrollment, the Consolidated Appropriations Act, 2023, established a requirement for 12 months of continuous eligibility for all children under age 19 in both Medicaid and CHIP, starting January 1, 2024 [9].

Opportunities for the future

Looking to the future, the Centers for Medicare and Medicaid Service (CMS) and Medicaid/CHIP leaders wrote that their current focus is on coverage and access; equity;

innovation; and whole-person care [1]. As evidence of this commitment, and relevant to pediatric caregivers, CMS announced plans to help support increased state oversight of MCO plans [73]. In August 2022, CMS unveiled a new Medicaid benefit for children with complex medical problems [74]. There is also an opportunity to improve the reporting of performance metrics across the states, which may be used to support quality improvement efforts. In August 2022, CMS proposed to advance the use of nationally standardized quality measures in Medicaid and CHIP [75]. Funding for the Pediatric Quality Measures Program, which supports evidence-based pediatric quality measures, was extended into 2029 by the Consolidated Appropriations Act, 2023. Furthermore, CMS proposes to revise CHIP enrollment, addressing issues like required “lock-out periods” without coverage due to non-payment prior to re-enrollment [76]. With two thirds of children on Medicaid and CHIP beneficiaries of color, improving health equity is an ongoing focus of Medicaid and CHIP, with many state Medicaid programs taking up initiatives to address racial health disparities and address social determinants of health [77, 78].

Many organizations, including the American Academy of Pediatrics, believe that as part of a commitment to national health, a goal of continuous and adequate coverage for all children starting at birth is appropriate [79]. Before an infant or child is discharged from the hospital, health care coverage should be established. Some health systems are moving towards this. Starting in 2023, Oregon permits children who qualify for Medicaid at birth to maintain this coverage until they turn 6, independent of changes in family income [80].

Since improving Medicaid and CHIP payment rates relative to commercial rates will support broader access to care and reduce disparities, some believe that a part of the commitment to coverage should include satisfactory reimbursement rates that ensure access to primary care physicians and specialists [58]. CMS stated that they are interested in ways to ensure they are “paying the right provider the right amount” [1].

In large measure, due to Medicaid and CHIP, the US has made substantial strides in improving access to health care for its children. Despite this, children remain at risk of falling through the cracks of a complex patchwork of programs. Compared to senior citizens in Medicare, children in Medicaid and CHIP are more vulnerable to gaps in coverage and limited access to care. Medicaid’s physician reimbursement is more variable, more burdensome, and generally a fraction of Medicare’s rate. The US government guarantees stable, affordable coverage for every older American though not to its children. Looking forward, there is an opportunity to expand coverage to all children, simplify a complex mixture of programs, and ensure adequate reimbursement to promote population health.

Declarations

Conflicts of interest None

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