Title

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The National Academies of Sciences, Engineering and Medicine Recommendations on Medicaid Parity and Future of Pediatric Subspecialty Workforce

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ABSTRACT

Medicaid supports 41% of all births in the US and nearly 347,580 admissions to neonatal intensive care units in 2022. Medicaid reimbursement is critical to child health inclusive of departments of Pediatrics and children's hospitals. Low Medicaid reimbursement is one of the causes for low pediatric subspecialist salaries and has led to workforce challenges. The National Academies of Science, Engineering and Medicine (NASEM) recently suggested increased Medicaid reimbursement as a strategy to sustain pediatric subspecialist workforce. This review article briefly outlines the importance of Medicaid reimbursement to Neonatal-Perinatal Medicine and its role in providing coverage for preterm births. We also highlight the recommendations of NASEM pertaining to reimbursement that are relevant to neonatal care and its impact on providers, patients and families. It is imperative that neonatologists join the rest of pediatric subspecialists in lending their support to demonstrate unity in ensuring success in the implementation of the NASEM recommendations.

The National Academies of Sciences, Engineering and Medicine (NASEM) recently released a report on stabilizing the future of pediatric workforce.[1] One of the cornerstones of this report is enhancing Medicaid reimbursement for pediatric services (figure 1). In a recent issue of the Journal, Drs. Shah and Lou highlighted the importance of advocacy in optimizing Medicaid services to benefit newborn care. [2] In the same issue, Drs. Miller and Hudak emphasized that Medicaid covered 42% of all births in the US in 2019 with high state-to-state variability in coverage and reimbursement.[3] Recently, the American Board of Pediatrics (ABP) Foundation sponsored a supplement addressing the future of pediatric subspecialty (including neonatology) workforce and emphasized the role of public insurance in neonatal services. [4] In this manuscript, we review the magnitude of impact of Medicaid on neonatal services, especially for preterm infants, importance of Medicaid reimbursement on professional and hospital revenue, and outline relevant aspects of the NASEM report including suggested changes to Medicaid that may impact Neonatologists and future pediatric subspecialist workforce and in turn patients and families.

Epidemiology and trends in US births and neonatal care 2016-22

To fully understand the impact of Medicaid reimbursement for neonatal services, we analyzed trends in births and NICU admissions by gestational age, maternal age, and maternal race and ethnicity covered by Medicaid using the Centers for Disease Control and Prevention (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER) Natality database for annual totals from years 2016 to 2022. [5] In this analysis, the source of payment for delivery was characterized as Medicaid, private Insurance or other/unknown. Gestational age by obstetric/clinical estimate was categorized using the CDC's weekly groupings of 20-27, 28-31, 32-33, 34-36 and 37+ gestational weeks.

The percent of annual births to mothers with Medicaid decreased from 42.3% in 2016 to 41% in 2022 (figure 2A) along with a decrease in the rate of total births (figure 2B). Although the total births and births covered by Medicaid in the US are decreasing, the percent of all births requiring a NICU admission

(i.e., NICU admit rate-figure 2C) is increasing year-by-year (figure 2D) and is higher with Medicaid insured infants compared to those supported by private insurance (figure 2E). In addition, NICU admits with lower gestational ages have higher rates of Medicaid as the source of payment: 55% of NICU babies born less than 27 weeks are covered by Medicaid; 53% of NICU babies are born between 28-31 weeks are covered by Medicaid; 51% of neonates born between 32-33 weeks are covered by Medicaid, and 49% of NICU babies born between 34-36 weeks and term are covered by Medicaid. The decrease in Medicaid births between 2016 to 2022 was limited to younger maternal age (<30 years at delivery). Between 2016 to 2022, among mothers 30-34 years of age, Medicaid births increased by 18%, and between 35-39 years increased by 24%. [6] Higher maternal age at delivery is associated with higher NICU admissions (figure 2D). [6] Hospital stays for infants supported by Medicaid tend to be longer than commercial health plans.[7] Average length of stay in the NICU was 25 ± 2% longer for neonates covered by Medicaid compared to private insurance in an analysis using data from 2019-2023. The length of stay has increased by 7.2% for Medicaid and 12.5% for private insurance during this 5-year span (Online supplemental figure; Data from the Vizient® Clinical Data Base used with permission from Vizient, Inc. All rights reserved). These trends are likely to continue and contribute to a higher Medicaid payor mix in the NICU.

In addition, there are ethnic/racial differences across types of coverage, with more than half of Black, Hispanic, Native Hawaiian/other Pacific islander, and American Indian/Alaska native children covered by Medicaid and CHIP. [8] Among 2022 US births, percent covered by Medicaid varied widely by race and ethnicity - 37.1% among White, 23.1% Asians, 58.2% Native Hawaiian or other Pacific Islander, 63.5% Black and 64.2% American Indian or Alaskan and 58.1% of births among Hispanic ethnicity were supported by Medicaid (Figure 3). Given the substantial percentage of births among underrepresented minority populations supported by Medicaid, there is the potential for larger adverse and discriminatory effect upon reimbursement for care and compensation for pediatric care providers caring for neonates born to underrepresented minority women.

The number of NICU admissions that are preterm and born to mothers on Medicaid is the largest cohort of NICU admissions, therefore Medicaid reimbursement has a profound impact on NICU operational finances and in turn the revenue for providing optimal care necessary for babies/children at Children's hospitals/health systems and pediatric departments.[9]

Medicaid Eligibility

There is wide variation in Medicaid eligibility levels for children between states. These variations impact reimbursement to neonatologists with some states faring better than others. While access to neonatal care is for the most part available, disparities in post-NICU discharge access to pediatric specialist services between states exist related to provider availability and Medicaid acceptance.

Comparison between Medicaid and Medicare fee schedules similarly find some variation across states, with generally Medicaid rates below Medicare. [10] However, it is difficult to provide a direct comparison as many daily global CPT codes utilized in Neonatology for critical and intensive care are not covered by Medicare.

Current models of Medicaid Reimbursement for NICU services

States make distinct types of Medicaid payments to hospitals for NICU services. [11] This is usually a significant source of revenue to sustain children's services in both free-standing children's hospitals and "children's hospital-within-hospital" institutions. These payments are typically in two broad categories – base payment for services and supplemental payments. The high percentage of Medicaid patients in the NICU benefits hospitals by making them eligible for supplemental Medicaid payments. However, the system for supplemental Medicaid payments is complex, not entirely dependent on NICU alone, but related to total Medicaid supported services provided by the health care institution.

Base payments for NICU physician services can be either through a fee-for-service (FFS) model (either through individual billing, a per diem rate or a diagnosis related group-DRG model), or a managed-care

model. Both models have significant state-to-state variability. [3] A review of 2011 hospital claims data suggested that FFS payments for inpatient services among states ranged from 49 to 169% of national average base Medicaid payment. [12] [11] In many cases, Medicaid FFS payments are below hospital costs for providing NICU care and are below Medicare payment rates for comparable services in the post-neonatal age groups. States can supplement low FFS payments by using upper payment limits (UPL), disproportionate share hospital (DSH) payments and similar incentives to cover Medicaid shortfall. Managed Medicaid hospital payments are usually similar to FFS payments with considerable variability between states. States are typically prohibited from making supplemental payments for pediatric hospital services provided in a managed care delivery system. Section 1115 demonstrations and waiver authorities in section 1915 of the Social Security Act are vehicles states can use to assess new or existing ways to deliver and pay for health care services in Medicaid and the Children's Health Insurance Program (CHIP). A few states received waivers under Section 1115 of the Social Security Act in order to make supplemental payments when they expanded managed care Medicaid. CMS has also initiated increased direct rate payments for quality improvement activities and value-based care. These complex Federal and State rules for waivers and various supplemental payments for hospital payments for NICU services are complicated. Public hospitals and academic institutions that serve high percentage of Medicaid patients in their NICUs could benefit from a simplified Medicaid process that provides adequate revenue to cover the cost of care. In 2020, for Medicaid, hospitals received a payment of only 88 cents for every dollar spent even after including all the supplemental sources of revenue. [13] Sixty two percent of hospitals in 2020 received Medicaid payments that were less than the cost incurred to provide care. [13]

Reforming Medicaid payment not just to providers but also to hospitals for NICU services is critical to sustain children's health services in hospitals and limit the current trend of pediatric bed closures. [14, 15]

Although individual institutional practices vary, the medical center usually supports all the staff, advance practice providers and medical, quality assurance and transport directors who play a critical role in provider reimbursement, in addition to all the equipment and supplies required.

Medicaid reimbursement and pediatric subspecialist salaries and role of neonatology

In 2021 (the last full year with available data), 36% of all children (0-18 years) were supported by Medicaid or Children's Health Insurance Program (CHIP).[16] However, among children with special needs, 44% were covered by Medicaid, including 8% who have both Medicaid and private insurance.[17] Reduced reimbursement from Medicaid is an important contributor towards low salaries earned by pediatric subspecialists (figure 4) and has led to lower enrollment in fellowships – especially, outpatient-based, "cognitive", non-procedural specialties with low fill rates in the October 2023 National Residency Matching Program (NRMP, table 1). [18] [19] Supply-demand mismatch in these specialties is likely to result in a much needed increase in salaries. However, without a revision in CPT coding (with pediatric-specific codes with higher wRVU assignment) and Medicaid reimbursement, there will be no increase in productivity to match higher salaries to these pediatric subspecialties placing a burden on the Departments of Pediatrics and Institutions. Unlike most pediatric specialties where productivity (work relative value unit – wRVU benchmarks) and salaries are both lower than their adult counterparts, neonatology benchmarks for productivity are 175% of adult critical care while academic salaries are 79% of this specialty (figure 4). The additional contribution margin generated by Neonatology is usually needed to support some of the divisions listed in table 1. However, this places undue stress on academic neonatologists to produce high wRVUs. [20] [21] In most pediatric departments, revenue generated by Neonatology division cross-subsidizes some pediatric subspecialties. Increased Medicaid reimbursement to these specialties may limit their financial dependence of neonatology divisional revenue.

Access to pediatric subspecialty care is a challenge. American Board of Pediatrics (ABP) has published distance to the nearest individual pediatric subspeciality by state. [22] Improved reimbursement can potentially increase the number of subspecialists enhancing access on behalf of patients within NICUs and for post-discharge complex care required by many of the NICU graduates.

NASEM Recommendations Impacting Neonatal-Perinatal Medicine

The NASEM report reviewed the pediatric subspecialty shortage (full report at www.nationalacademies.org/pediatric-subspecialties) and outlined immediate steps needed to sustain the future of pediatric subspecialist workforce.[1] Although the main focus of this report is outpatient and non-procedural pediatric subspecialties [23], several of these recommendations impact Neonatal-Perinatal medicine and are shown in figure 1. In this manuscript, we focus on enhancing reimbursement for pediatric services.

The NASEM report recommended enhanced reimbursement through higher and appropriate work-relative value units (wRVU) assignment truly reflecting the time and complexity of caring for pediatric patients and their families. Medicaid reimbursement at or above Medicare levels and increased payment for pediatric services was recommended. In addition, better reimbursement for telehealth, e-consults and across-state line services are needed to serve rural populations living in pediatric subspecialty deserts was recommended.

Impact of NASEM recommendations on reimbursement on pediatric and neonatal care

Augmentation of Medicaid reimbursement to values meeting or exceeding Medicare rates will be critical in maintaining financial stability of Children's Hospitals and Pediatric Departments. This will result in a major boost in revenues generated by NICUs. Neonatology division is usually one of the revenue generating divisions in Departments of Pediatrics and these funds when in surplus are necessary to support other divisions in the department. This is justifiable, as NICUs cannot function optimally in the

absence of the different subspecialists to provide robust, multi-disciplinary and state of the art care to high-risk infants. However, if the measures recommended by NASEM are implemented without any change in revenue generation, more support to outpatient focused divisions will need to come from intensive care units and procedural divisional revenue generation. It is imperative that neonatologists join the rest of pediatric subspecialists workforce in making themselves heard and in lending their support to demonstrate unity in ensuring success in the implementation of the NASEM recommendations. This is not only for our outpatient pediatric subspecialists but affects all including Neonatology, most importantly the patients and families that we collectively serve.

Impact of NASEM recommendations on patients and families

Access to subspecialty care is threatened by lack of pediatric subspecialists, burnout among pediatricians and time-intensive care necessary for complex pediatric patients such as NICU graduates. Families are dissatisfied with long wait times and long travel distances to specialist appointments. Improved Medicaid reimbursement is likely to enhance timeliness of care and provider availability by increasing pediatric subspecialist salaries and enticing providers and health systems to accept Medicaid patients. Increased Medicaid reimbursement is critical to the sustainability of a high-quality pediatric subspecialist workforce that is family-centered, timely, effective, efficient and equitable, while always being family- and patient-centric.

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Figure legends

Figure 1. Infographic of recommendations from the National Academy of Sciences, Engineering, and Medicine 2023: the future pediatric physician workforce: Meeting the needs of infants, children, and

adolescents. The Association of Medical School Pediatric Department Chairs (AMSPDC) created the Pediatrics 2025 – workforce initiative with a goal to increase the number of diversity of high-quality students who enter pediatric training as well as improve the supply and distribution of pediatric subspecialists with the goal of meeting the health and wellness needs of the wide diversity of children, adolescents and young adults in the US. The National Academy recommended working with ACGME, ABP, Association of Pediatric Program Directors (APPD) and American Osteopathic Board of Pediatrics (AOBP) to adjust education and training of pediatric residents and fellows. Recommendations for clinical guidelines from AAP and Council of Pediatric Subspecialists (CoPS) to enhance clinical care coordination between primary care provider, pediatric subspecialist and mental health provider were included. Additional funding for research through National Institutes of Health (NIH), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) to enhance pediatric scientist development program was recommended. Additional congressional funding for loan repayment focused on pediatric specialties and enhancing diversity of the workforce by supporting underrepresented minorities in medicine (URiM) and economically disadvantaged trainees was recommended. Finally, enhanced reimbursement through enhanced work- relative value unit (wRVU) assignment for pediatric tasks, Medicaid reimbursement at or above Medicare levels and increased payment for pediatric services was recommended. For more information access the full report at www.nationalacademies.org/pediatric-subspecialties

Figure 2 A. Percent of US Births. The proportion of births covered by Medicaid (marked by circles) decrease 1.3 percentage points while the proportion of births covered by private insurance (marked by squares) increase by 1.7 percentage points from 2016-2022. Births covered by private insurance make up a greater proportion of total births than those covered by Medicaid, and the difference increased during the study period. Other source of payment categories (i.e., self-pay, other, unknown) are not visualized.

B. Total Annual US Births. Count of births covered by Medicaid (marked by circles) and private insurance (marked by squares) from 2016-2022 show a declining trend for both payer categories, with notable dips in 2020. Births covered by Medicaid decline 10% and births covered by private insurance decline 4% from 2016-2022.

C. NICU Admit Rates (% of all Births). The proportion of births covered by Medicaid with a NICU admission (marked by circles) is consistently higher than the proportion of births covered by private insurance with a NICU admission (marked by squares). The Medicaid NICU admission rate increased 1 percentage point and the private insurance NICU admission rate increased 0.6 percentage points from 2016-2022.

D. Changes in total births, NICU admits by insurance and maternal age (% change from 2016 to 2022). The percent change in Medicaid births (open circles, solid line) and private insurance births (solid squares, solid line) between 2016 to 2022 shows decreases at maternal age <30 years and increases > 30 years. Medicaid NICU admits (grey circles, dashed line) have markedly increased at maternal age > 30 years compared to private insurance NICU admits (grey squares, dashed line).

E. Percent Medicaid by Birth/Admit and Gestational Age Categories. The proportion of births covered by Medicaid across various NICU admission and preterm birth categories compared to total births (marked by white circles) illustrate disproportionate adverse outcomes among births covered by Medicaid. The Medicaid rate of adverse outcomes including preterm birth <37 weeks (marked by an x), NICU admission (marked by a +), NICU admission <28 weeks (marked by black circles) and NICU admission <34 weeks (marked by gray circles) have trended down in recent years at a slower rate than total births. The numbers shown at the end of each curve represent percent change from 2016 to 2022. Data derived from Centers for Disease Control and Prevention (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER) Natality database.

Figure 3. Percentage of births in US in 2022 covered by Medicaid, private insurance and other (self-pay, unknown, not stated and other) based on race and ethnicity. Data derived from CDC Wide-ranging Online Data for Epidemiologic Research (WONDER) Natality database.

Figure 4. Productivity (wRVU) benchmarks are latest values from clinical practice solutions center (CPSC) adjusted for Centers for Medicare and Medicaid (CMS) 2021 revision. Salary benchmarks are latest values from Association of American Medical Colleges (AAMC) adjusted for inflation utilized by the funds flow methodology at UC Davis Health. Data are shown as percentage of adult productivity and compensation (at the assistant professor rank) values. *compared to adult general medicine as there are no corresponding adult counterparts; †compared to adult critical care. Neonatology productivity is considerably higher than adult critical care although compensation is low. Non-medical specialties such as anesthesia and surgery have compensation benchmarks at or above adult levels despite lower wRVU productivity.

Pediatrics 2025: AMSPDC workforce initiative

Biennial report on Primary and specialty pediatric workforce including URiM clinician

MONITORING

EDUCATION & TRAINING

Adjust curricula for residency and fellowship to prepare a workforce that can address evolving physical and mental health needs of the pediatric population

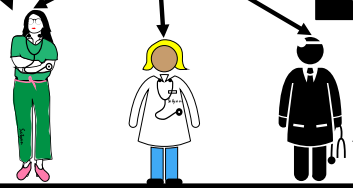
Guidelines for testing, management, referral, co-management and follow-up roles

Pediatric specialty loan repayment program to $ 30M; Focus on high-priority medical specialties and URiM and economically disadvantaged providers

LOAN REPAYMENT

Reform GME and CHGME funding

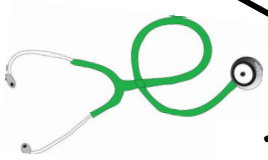
WORKFORCE DIVERSITY



wRVU assignment that accurately reflects time and resource use for pediatric subspecialist care

Two-year fellowship option if career focus on clinical care

PEDIATRIC WORKFORCE



Pediatric subspecialist

Primary care provider (PCP)

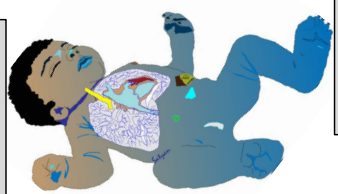
Mental health provide

Integrated health

REIMB

RESEARCH

Pediatric scientist development program and career development grants (↑individual K awards to reflect current salaries

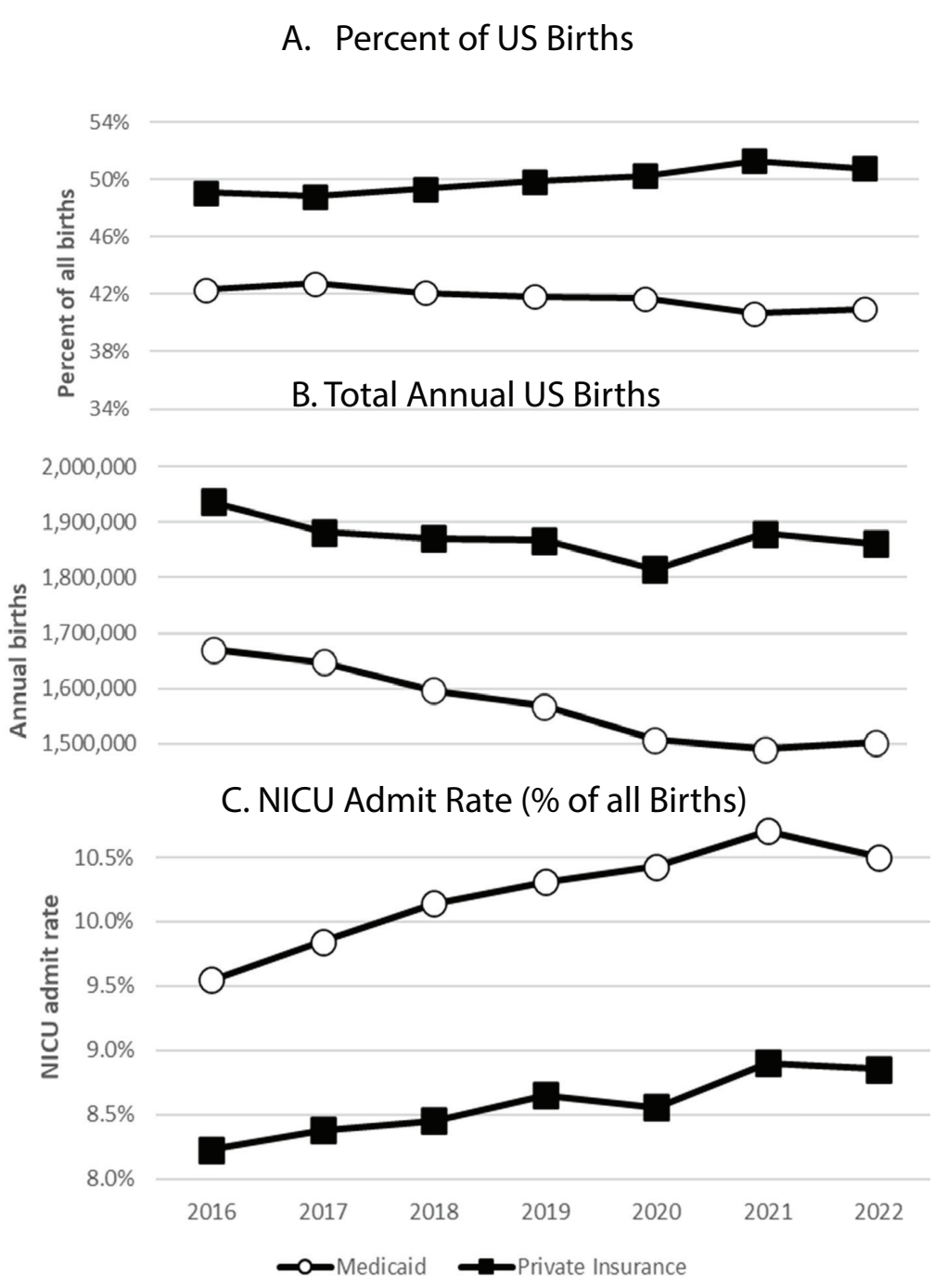


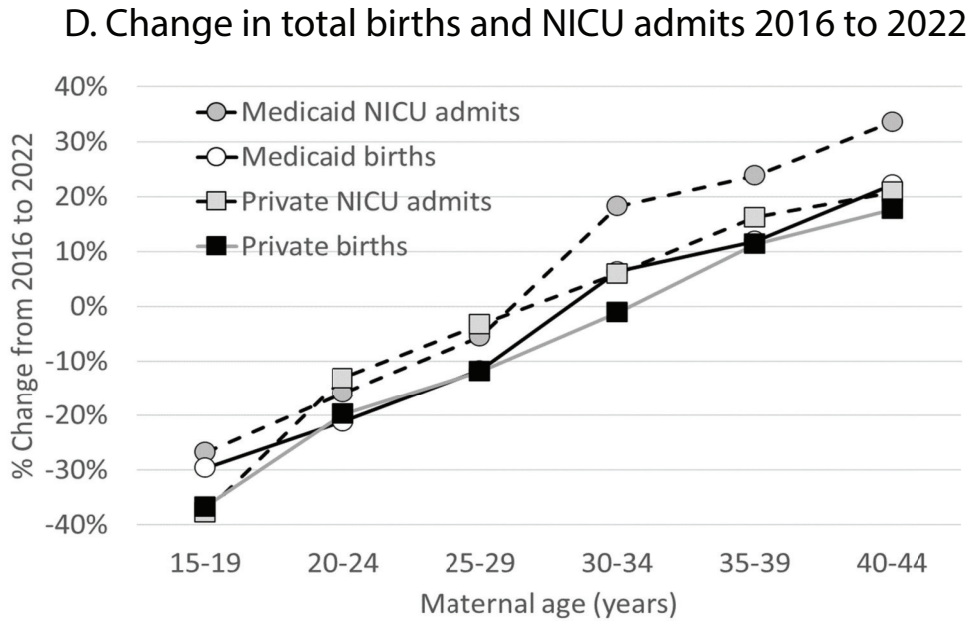
Adequate reimbursement of evidence-based care delivery models

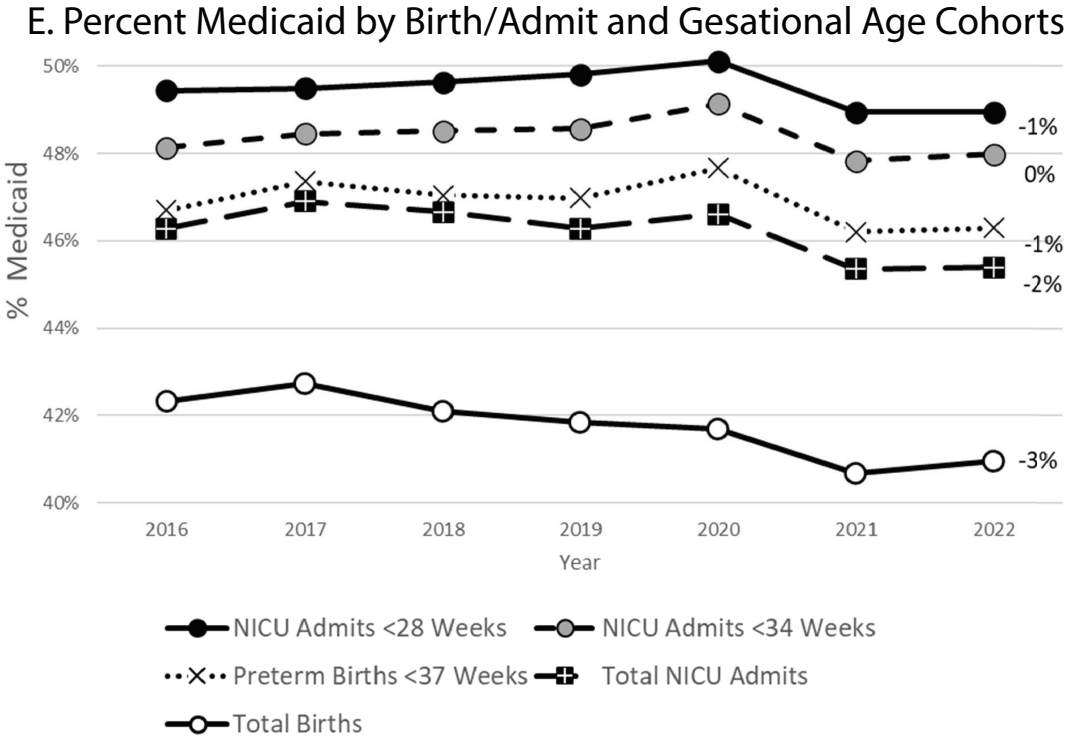
↑ payment for pediatric services

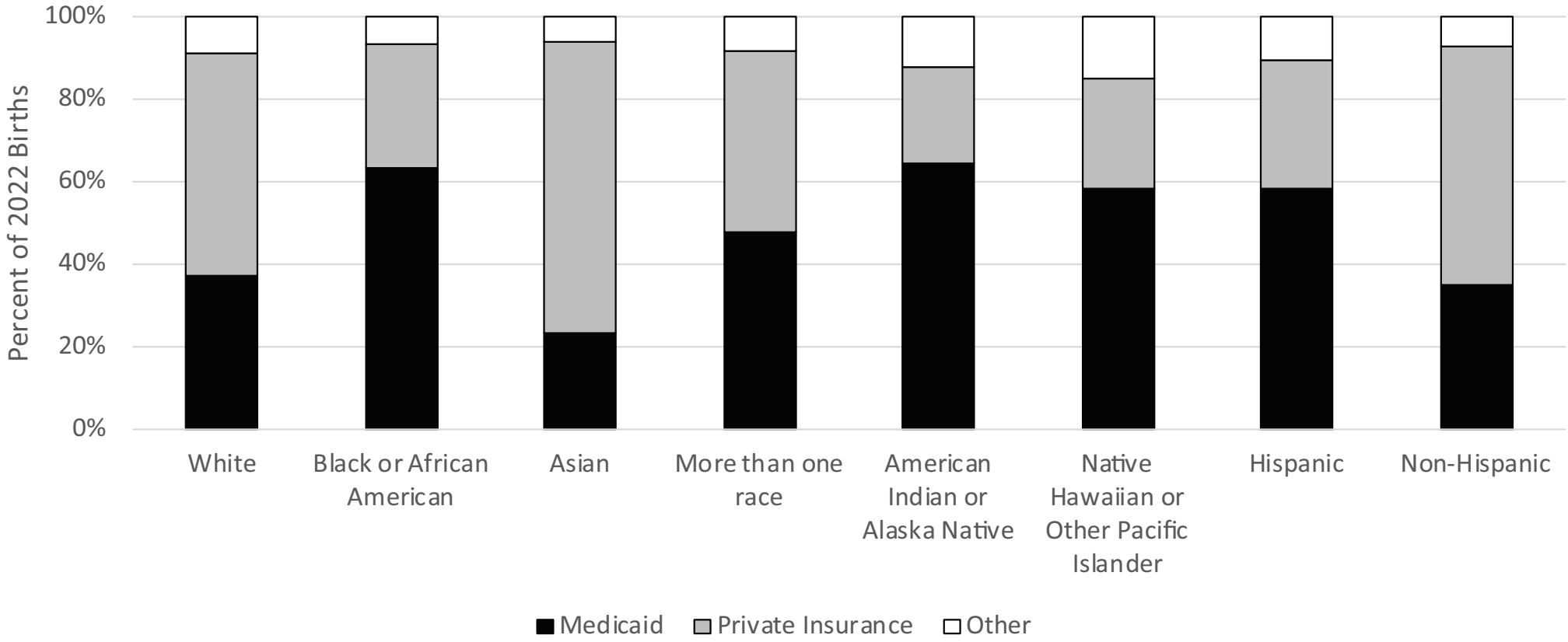
CLINICAL CARE

Heal


A. Percent of US Births
Percent of all births
54%
50%
46%
42%
38%
34%
B. Total Annual US Births
Annual births
2,000,000
1,900,000
1,800,000
1,700,000
1,600,000
1,500,000
C. NICU Admit Rate (% of all Births)
NICU admit rate
10.5%
10.0%
9.5%
9.0%
8.5%
8.0%
2016
2017
2018
2019
2020
2021
2022
Medicaid
Private Insurance


D. Change in total births and NICU admits 2016 to 2022
% Change from 2016 to 2022
40%
30%
20%
10%
0%
-10%
-20%
-30%
-40%
Medicaid NICU admits
Medicaid births
Private NICU admits
Private births
15-19
20-24
25-29
30-34
35-39
40-44
Maternal age (years)


E. Percent Medicaid by Birth/Admit and Gesational Age Cohorts
% Medicaid
50%
48%
46%
44%
42%
40%
-1%
0%
-1%
-2%
-3%
2016
2017
2018
2019
2020
2021
2022
Year
NICU Admits <28 Weeks
NICU Admits <34 Weeks
Preterm Births <37 Weeks
Total NICU Admits
Total Births


100%
80%
60%
40%
20%
0%
Percent of 2022 Births
White
Black or African American
Asian
More than one race
American Indian or Alaska Native
Native Hawaiian or Other Pacific Islander
Hispanic
Non-Hispanic
Medicaid
Private Insurance
Other

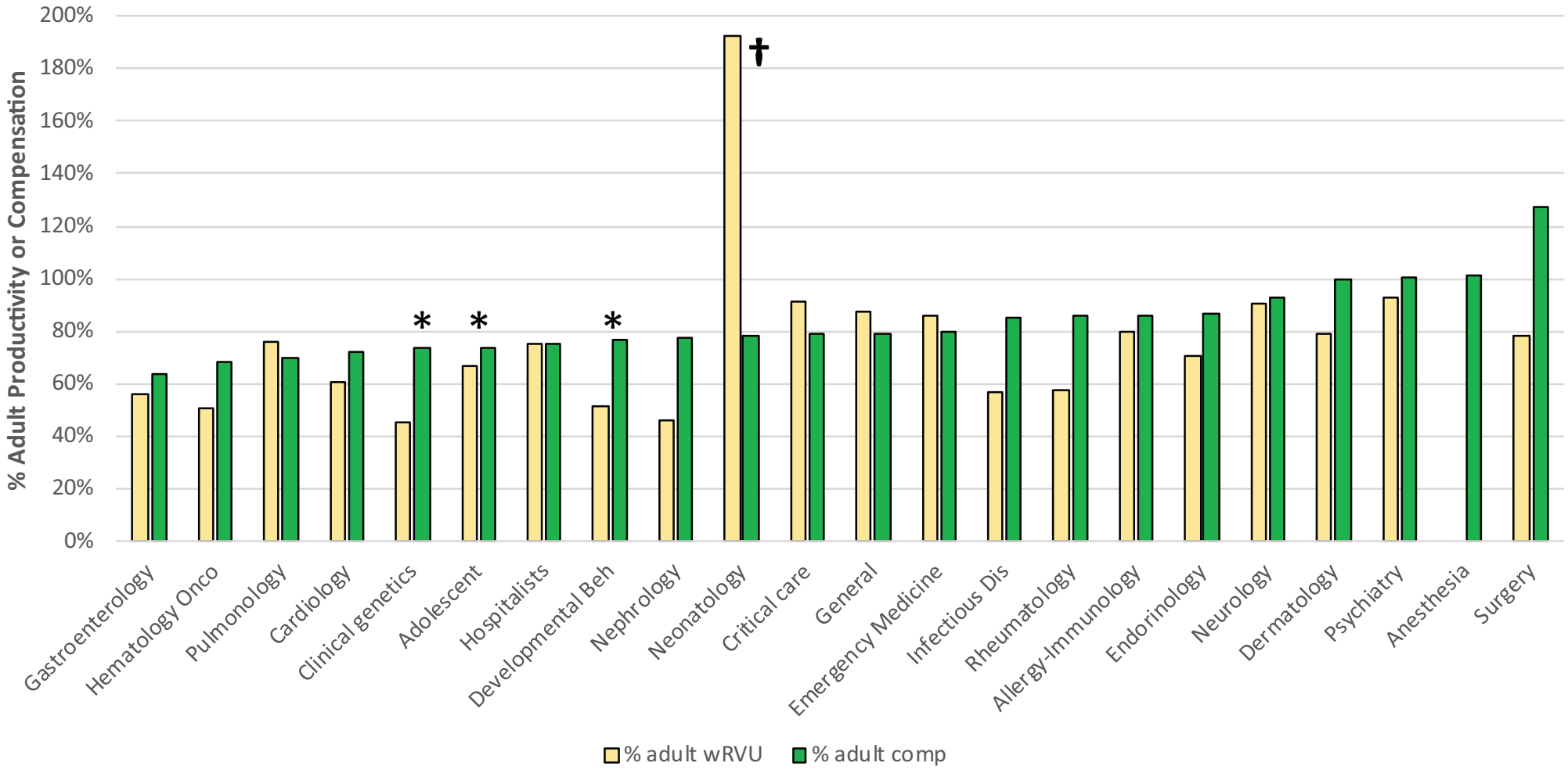

% Adult Productivity or Compensation
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
*
*
*
†
Gastroenterology
Hematology Onco
Pulmonology
Cardiology
Clinical genetics
Adolescent
Hospitalists
Developmental Beh
Nephrology
Neonatology
Critical care
General
Emergency Medicine
Infectious Dis
Rheumatology
Allergy-Immunology
Endorinology
Neurology
Dermatology
Psychiatry
Anesthesia
Surgery
% adult wRVU
% adult comp

Table 1. List of cognitive, non-procedural, non-ICU pediatric specialties with high unfilled fellowship rates in National Residency Matching Program (NRMP) 2023-24. (the "READING" specialties)

Specialty	% unfilled positions
Rheumatology	38.5%
Endocrinology	40%
Adolescent Medicine	20.6%
Child **a**buse	47.6%
Developmental-behavioral pediatrics	44.9%
Infectious diseases	51.9%
Nephrology	46.6%
Genetics	55.8% (data from 2022)

Note: The percent of unfilled positions for Neonatal Perinatal Medicine in NRMP was 2.8% (2021-22), 6.9% (2022-23) and 11.3% (2023-24)