National Institute of Child Health and Human Development

CONGRESSIONAL JUSTIFICATION
FY 2023

Department of Health and Human Services
National Institutes of Health

NIH *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

Healthy pregnancies. Healthy children. Healthy and optimal lives.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of Child Health and Human Development (NICHD)

FY 2023 Budget Table of Contents

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Director's Overview

Director: Diana W. Bianchi, M.D.

The public health crisis driven by the coronavirus (COVID-19) pandemic has intensely highlighted the crucial role of biomedical research to improve human health. By March 2022, the pandemic caused more than 78 million confirmed cases and over 950,000 associated deaths in the United States, with more than five times these figures globally. The mission of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) – to "*lead research and training to understand human development, improve reproductive health, enhance the lives of children and adolescents, and optimize abilities for all*" – has never been more imperative. The NICHD supports a strong foundation of scientific expertise, a carefully developed research infrastructure, and creative, highly dedicated, scientific research communities. Because NICHD had previously laid the groundwork, NIH's rapid pandemic response was able to include children, pregnant women, and people with disabilities in its research efforts.

To study the impact of COVID-19 infection and vaccination on pregnant women rigorously but rapidly, several NICHD-supported research networks and large medical centers pivoted to respond. Their results showed that COVID-19 vaccines are highly effective in producing antibodies in pregnant women, and that antibodies produced after vaccination are present in breast milk and travel across the placenta, indicating that vaccination during pregnancy confers immunity to newborns. Another study found no serious adverse events from the COVID-19 vaccine in breastfeeding women or their children. Data from these studies have reassured pregnant women and their families about the safety of vaccine use. NICHD also supports a trial of therapeutics for COVID-19 in pregnancy and this work is ongoing. Through the Researching COVID to Enhance Recovery (RECOVER) effort, scientists, clinicians, patients, and caregivers are coming together to improve our understanding, treatment, and prevention of the long-term effects of COVID-19. NICHD will study pediatric, pregnant and postpartum people who are among those experiencing "long COVID."

NICHD has also brought its specialized expertise and existing research infrastructure to identify how to prevent and treat COVID-19 in children. Children and youth continue to face the potential for frequent exposure to COVID-19, and many have not yet been vaccinated. Although early in the pandemic it was assumed that children did not get ill from COVID-19, cases among children increased rapidly as the delta variant of SARS-CoV-2 moved across the country. During the Omicron variant predominance beginning in late December 2021, U.S. infants and children aged 0–4 years were hospitalized at approximately five times the rate of the previous peak during Delta variant predominance. Moreover, a post-infection immune response, known as multi-system inflammatory syndrome in children (MIS-C), can create deadly consequences; over 7.400 cases and 63 deaths due to MIS-C have been reported. Researchers quickly mobilized efforts to diagnose MIS-C and distinguish it from other related childhood conditions such as Kawasaki disease.

In response to this need, NICHD launched a program to help researchers identify children at high risk for developing MIS-C. This project, called Predicting Viral-Associated Inflammatory

Disease Severity in Children with Laboratory Diagnostics and Artificial Intelligence (PreVAIL kIds), is part of NIH's Rapid Acceleration of Diagnostics (RADx®) Radical (RADx-rad) program. Scientists will evaluate genes and biomarkers in children with COVID-19 and examine host-virus interaction and immune response. NICHD co-leads (with the National Heart, Lung, and Blood Institute) the Collaboration to Assess Risk and Identify Long-term Outcomes for Children with COVID (CARING for Children with COVID), which is studying why some children are at greater risk for infection than others, why symptoms vary among children who are infected, and how to identify children at risk for more severe illness.

Community-engaged projects in the PreVAIL kIds program plan to enroll over 600,000 students and at least 75,000 staff, parents, and community members across a diverse range of public, charter, tribal, early education, and special education schools.

NICHD is also leading the Return to School Diagnostic Testing Initiative (Return to School), as part of the RADx Underserved Populations (RADx-UP) program, to develop, evaluate, and implement strategies for safely returning children and staff to in-person school settings, especially in underserved and vulnerable communities. Several projects include children with medical complexities and/or intellectual and developmental disabilities who may have difficulties using mitigation measures such as wearing masks or social distancing. NICHD-supported researchers in St. Louis, Missouri showed that weekly COVID-19 testing helped reduce transmission in schools for children with intellectual and developmental disabilities.

The trans-NIH Pediatric Research Consortium (N–PeRC), established in 2018 to better coordinate pediatric research activities across multiple Institutes and Centers (ICs), rapidly formed a COVID-19 working group that facilitated supplemental funding for pediatric studies. Studies included assessing potential learning loss as a result of COVID-19 restrictions and school closures in children with and without a higher risk of reading difficulties. Complementing research on the direct impact of COVID-19, NICHD is also studying the impact of pandemic-related behaviors – including increased screen time and mask wearing – on child development.

Although many researchers have focused on prevention and treatment of the most serious COVID-19 symptoms, secondary effects of COVID-19 have also been reported and deserve study. For example, NICHD is supporting several projects in response to reports of women experiencing menstrual changes after receiving COVID-19 vaccines. The COVID-19 pandemic and its mitigation strategies also have significant psychosocial, behavioral, socioeconomic, and health impacts. NICHD-supported scientists recently confirmed that compared to the pre-pandemic period, unhealthy behaviors that increase obesity risk increased in children 7-12 years old. Sedentary behavior, screen time, and food intake increased, while physical activity declined and children adopted a later sleep schedule. In collaboration with other NIH ICs, NICHD is supporting research on community interventions to address the adverse psychosocial and

behavioral effects of COVID-19, especially in racial and ethnic minorities, economically disadvantaged families, and individuals with disabilities. Examples include a research project on interventions to improve mental health and school success for urban eighth graders, and several studies on parent adjustment and child psychosocial development during the pandemic.

To enhance the Institute's ability to address the challenges posed by the pandemic, NICHD developed and implemented new ways of supporting research. For Return-to-School research as part of the NIH-wide RADx -UP initiative, NICHD used Other Transaction Authority (OTA) to provide greater speed and funding flexibility. Our administrative staff, program officials, and intramural researchers adopted workplace flexibilities. Virtual meeting environments contributed to reductions in costs and opened up access to conferences for a larger number of individuals. Many scientists were able to watch research conferences on their own schedule while balancing work and family needs. Moving to a virtual model also increased our access to experts from both domestic and international institutions.

Even during a global pandemic, NICHD has continued to focus on other long-standing yet urgent public health needs. Understanding and reducing pregnancy-related deaths and complications continues to be a high priority. NICHD is particularly concerned about racial and ethnic disparities in maternal morbidity and mortality. Recently, a detailed analysis by NICHD-supported population health researchers showed that racial disparities in maternal mortality were concentrated among a few specific causes of death – cardiovascular conditions, blood pressure disorders, hemorrhage (severe bleeding), and blood vessel blockages. The NIH's IMPROVE Initiative (Implementing a Maternal health and PRegnancy Outcomes Vision for Everyone) will focus on these leading causes of maternal mortality. NICHD continues to lead the implementation plan from the HHS Task Force on Research Specific to Pregnant Women and Lactating Women, to develop a sound research evidence base for safe and effective medication use during pregnancy and lactation. The newly funded Maternal and Pediatric Precision in Therapeutics Hub will serve as a research service center to extend pharmacologic knowledge and expertise across the scientific communities in both maternal and pediatric therapeutics.

Nearly 10 percent of babies in the United States are born preterm, and many of these infants are at high risk for deadly cardiovascular, intestinal, and respiratory complications. NICHD-supported researchers are working to predict preterm labor, prevent early delivery, and develop treatments for conditions that affect preterm infants. For example, clinicians and mathematicians are developing a new monitoring strategy using the pulse oximeter, which provides heart rate and oxygen saturation data. Another group of researchers found that women who took higher doses of the supplement docosohexanoic acid (DHA, commonly found in fish oil) in the last half of pregnancy had a lower rate of preterm birth than women who took the standard dose. Women with the lowest DHA levels had the greatest reduction in early preterm birth, suggesting that screening DHA levels in early to mid pregnancy could be helpful. NICHD intramural scientists, in conjunction with Wayne State University, are investigating the role of infection in preterm birth risk. They studied the maternal-fetal immunobiology of Ureaplasma infection during pregnancy and identified a strategy to treat this condition with the antibiotic clarithromycin.

NICHD's work in reproductive health continued to expand in 2021. For the millions of women who experience the painful symptoms of endometriosis, effective and non-invasive diagnostic

and treatment approaches are urgently needed. NICHD is supporting a range of studies to improve understanding of the mechanisms of endometriosis, so that researchers can develop ways to address the disease directly rather than simply treating its symptoms. Research on male and female infertility addresses both biological processes and environmental and social risk factors. One prospective study of male infertility is designed to evaluate the impact of sleep patterns, substance use, and other health behaviors.

NICHD has expanded efforts to address long-standing concerns about equity, diversity, and health disparities in research and medicine. In 2021, NICHD launched the STrategies to enRich Inclusion and achieVe Equity (STRIVE) initiative to reinforce equity, diversity, and inclusion (EDI) within NICHD's workforce, foster EDI in the broader scientific workforce and among trainees, and work to eliminate, through research, the root causes of health disparities. The project aims to gather insight from trainees, experienced scientists, and institutions to help NICHD enhance equity, diversity, inclusion, and accessibility in all its work. STRIVE is designed to complement NIH's UNITE Initiative, which aims to address structural racism in NIH-supported research efforts and the greater scientific communities.

NICHD continues to develop and expand a range of programs and mechanisms to address emerging scientific opportunities and public health challenges. For example, NICHD supported a long-term effort to understand the critical role of the placenta for maternal and fetal health. Abnormalities of placental development and function underlie many major pathologies of pregnancy, including spontaneous preterm birth, fetal growth restriction, and preeclampsia. Researchers conducted studies that utilize innovative methods and technologies to better detect and prevent placental abnormalities, and ultimately help scientists devise methods to prevent preterm birth and improve maternal health. NICHD spearheaded the Advancing Clinical Trials in Neonatal Opioid Withdrawal Syndrome (ACT NOW) initiative to inform the clinical care of infants who are exposed to opioids in the womb, working with the NIH Helping to End Addiction Long-term (HEAL) initiative. Other studies to address the opioid epidemic include research on the safety, efficacy, pharmacokinetics, and pharmacogenomics of naltrexone for pregnant women with opioid use disorder, evaluating comprehensive mother-infant outcomes throughout the pregnancy and first year after birth. NICHD's partnership with the Department of Defense (DoD) yielded a new database to establish the number of people in the United States living with limb loss and provide insight on their challenges and needs. Finally, NICHD remains committed to supporting Early Stage Investigators (ESIs) on grant awards as described in the NIH Policy Supporting the Next Generation Researchers Initiative.

Fact Sheet

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Healthy pregnancies. Healthy children. Healthy and optimal lives.

NICHD's mission is to lead research and training to understand human development, improve reproductive health, enhance the lives of children and adolescents, and optimize abilities for all.
http://nichd.nih.gov

Key populations: Children, Pregnant Women, People with Disabilities

Director:
Diana W. Bianchi, M.D.

HISTORY

- **1962** — NICHD founded
- **1990** — National Center for Medical Rehabilitation Research (NCMRR)
- **2002** — Best Pharmaceuticals for Children Act (BPCA)
- **2007** — Renamed: *Eunice Kennedy Shriver* NICHD
- **2020** — New Mission and Vision
- **2022** — NICHD 60 YEARS OF INNOVATION

ADDRESSING COVID-19 in CHILDREN, PREGNANT WOMEN, and UNDERSERVED COMMUNITIES

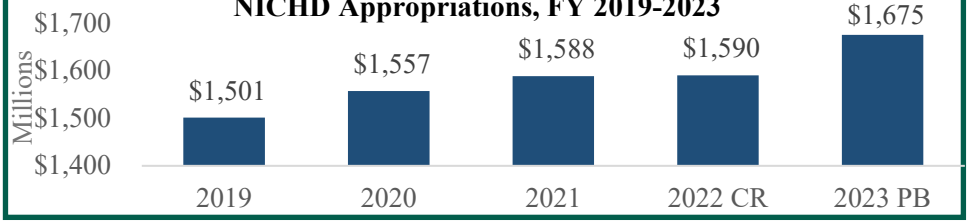
KEY RESULTS: WHAT WE'VE FOUND

- **COVID-19 infection:**
  - increases risk of pregnancy complications, preterm birth, and maternal death
  - does not affect female fertility, but can temporarily affect male fertility
- **COVID-19 vaccines:**
  - can confer immunity from pregnant women to their newborns through the placenta
  - can pass antibodies from lactating women to their infants through breastmilk
  - do not reduce chances of conception
  - may slightly lengthen the menstrual cycle, but effects are temporary and not clinically significant
- **COVID-19 weekly testing:**
  - helped reduce transmission in schools for children with disabilities

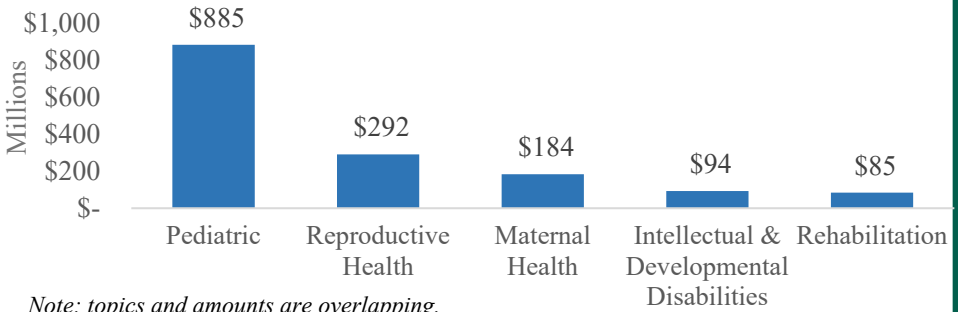
CURRENT RESEARCH: WHAT WE'RE DOING NOW

- **Maternal Health**
  - Analyzing medical records of 24,500 women to assess pregnancy outcomes related to COVID-19
  - Following up to 1,500 pregnant patients with COVID-19 and their offspring for 4 years
  - Tracking impact of infection among 16,000 women in 7 countries
  - Developing potential treatments for SARS-CoV-2
- **Children and Communities**
  - Assessing impact of pandemic-related changes, including remote learning and wearing masks, on child development
  - RADx-UP Return to School Diagnostic Testing: developing and implementing COVID-19 testing to keep children and staff safe in school, especially in underserved and vulnerable communities
  - CARING for Children with COVID: identifying risk factors for Multisystem Inflammatory Syndrome in Children (MIS-C), a severe condition resulting from SARS-CoV-2 infection

NICHD Appropriations, FY 2019-2023

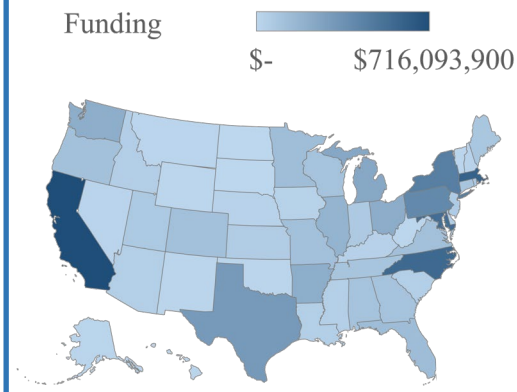


NICHD Funding by Research Area, FY 2021



Note: topics and amounts are overlapping.

NICHD Funding by State, FY 2016-2021



In the past decade, NICHD has supported research in all 50 states, also involving at least 137 countries across the globe.

NIH *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

NICHD 60 YEARS OF INNOVATION

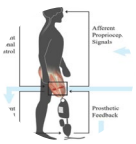
Healthy pregnancies. Healthy children. Healthy and optimal lives.

RECENT ACCOMPLISHMENTS

CURRENT ACTIVITIES

Four million newborns are screened each year, so treatment can begin before permanent problems occur. New or improved screening tests detect lysosomal storage disorders, spinal muscular atrophy, propionic acidemia, and cystic fibrosis.	**Human Development**	NICHD leads the birth defects portion of the Gabriella Miller Kids First Pediatric Research Program at NIH, to help researchers uncover new insights into the biology of structural birth defects and share these data.
Simvastatin, a drug used for abnormally high levels of fats in the blood, regulated the effects of estrogen in cell and animal studies, which could be a potential treatment for uterine fibroids.	**Reproductive Health**	The Centers to Advance Research in Endometriosis support basic, translational, and/or clinical studies of endometriosis, a chronic painful condition affecting 1 in 10 women of reproductive age.
Researchers developed a new imaging technique to track maternal blood flow to the placenta. This technology could help diagnose several common complications in early pregnancy.	**Maternal Health**	The Study of Pregnancy and Neonatal Health will analyze data from more than 7,000 pregnant women and partners to examine maternal risk factors and genomic associations, and to determine optimal delivery time.
A study of over 200 children showed that brain volumes and cognitive scores decreased in children with more severe type 1 diabetes, showing that the brain is a target of diabetes complications in children and adolescents.	**Child Health**	The Maternal and Pediatric Precision in Therapeutics (MPRINT) Program supports therapeutics-focused research in obstetrics, lactation, and pediatrics while enhancing inclusion of people with disabilities.
Early interventions can help children with autism spectrum disorder (ASD). Researchers have developed smartphone apps, wearable devices, and other ways to assess children to enable a more accurate or earlier diagnosis.	**Optimizing Abilities for All**	Supported by NICHD's National Center for Medical Rehabilitation Research (NCMRR), the Medical Rehabilitation Research Resource (MR3) Network builds infrastructure, focusing on tissue engineering, pediatric rehabilitation, technology development, and neuromodulation.

RESEARCH HIGHLIGHTS, FY 2020-2021





- A biomedical interface connects computers in a prosthetic limb to neurons in two existing muscles that work together as a pair, allowing an amputee to feel the device's position and movement.
- A digital microfluidic platform utilizes tiny sample volumes from newborns and pediatric patients to diagnose multiple disorders, including jaundice and iodine deficiency.
- Due to physiological differences between children and adults, using an adult medicine in a child without proper dosing info can be dangerous or ineffective. NICHD research led to 6 FDA pediatric labeling changes.
- Mutations in the PNLDC1 gene appear to be associated with non-obstructive azoospermia, a form of male infertility where men are unable to produce sperm.

NEW AND FUTURE INITIATIVES




- Through the NIH-wide IMPROVE initiative, identifying factors that contribute to disparities in maternal mortality
- Including individuals with Down syndrome in clinical trials and basic science studies
- Gathering and sharing population health data and tools, such as studies using health and vital records to identify health disparities
- Establishing a national limb loss and preservation registry
- Studying how neurobehavioral factors, feeding practices, and early life food exposures affect diet and growth in children
- Examining the impact of digital media and online learning on child development

Major Changes in the Fiscal Year 2023 President's Budget Request

Major changes by budget mechanism and/or budget activity detail are briefly described below. Note that there may be overlap between budget mechanisms and activity detail and these highlights will not sum to the total change for the FY 2023 President's Budget for NICHD, which is an increase of $84.6 million or 5.3 percent above the FY 2022 Continuing Resolution (CR) level, for a total of $1,674.9 million. The FY 2023 President's Budget reflects the Administration's fiscal policy goals for the Federal Government. Within that framework, NICHD will pursue its highest research priorities through strategic investments and careful stewardship of appropriated funds.

Research Project Grants (RPGs) (+$49.0 million, total $968.0 million):
NICHD will support a total of 1,837 Research Project Grant (RPG) awards in FY 2023, excluding SBIR/STTR awards. Non-competing RPGs will decrease by 6 awards to an estimated level of 1,317 awards, while the amount to support the costs associated with the commitments of these prior year competing awards will increase by $16.1 million compared to the FY 2022 CR level. Competing RPGs will increase by 59 grants compared to the FY 2022 CR level of 461 awards, and the amount to support the costs associated with new competing awards will increase by $30.3 million compared to the FY 2022 CR level. In addition, awards under the Small Business Research programs will increase by four awards and $2.5 million compared to the FY 2022 CR level.

Research Centers (+$3.6 million, total $77.2 million):
NICHD will support a total of 54 Research Centers awards in FY 2023, the same as the FY 2022 CR level.

Other Research (+$6.1 million, total $113.3 million):
NICHD will support a total of 382 awards in the Other Research areas in FY 2023, an increase of 4 awards compared with the FY 2022 CR level of 378 awards. NICHD will continue to support Career awards and clinical trial networks within these funding amounts.

Research and Development Contracts (+$8.0 million, total $147.6 million):
NICHD will support a total of 132 contract awards in FY 2023, 2 more than the FY 2022 CR level. Additional funds will support research into AIDS, COVID impacts in children, Department of Health and Human Services initiatives, and the implementation of the NICHD Strategic Plan.

Intramural Research (+$9.2 million, total $231.1 million):
NICHD will increase support for the Intramural Research program by $9.2 million compared to the FY 2022 CR level, maintaining support for research and innovation at the Clinical Center and increasing support for cybersecurity efforts and existing staff and trainees.

Research Management and Support (+$7.6 million, total $96.5 million):
NICHD will increase support for the Research Management and Support program by $7.6 million compared to the FY 2022 CR level, increasing support for cybersecurity efforts,

clinical trials management, and automating business practices, as well as maintaining support for staffing levels.

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Budget Mechanism*
(Dollars in Thousands)

Mechanism	FY 2021 Final		FY 2022 CR		FY 2023 President's Budget		FY 2023 +/- FY 2022	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Research Projects:								
Noncompeting	1,276	$619,082	1,323	$653,510	1,317	$669,628	-6	$16,118
Administrative Supplements	*(86)*	$22,273	*(75)*	$18,060	*(75)*	$18,100	0	$40
Competing:								
Renewal	36	$35,558	33	$30,825	37	$35,469	4	$4,644
New	472	$197,121	427	$170,854	482	$196,525	55	$25,670
Supplements	1	$255	1	$221	1	$254	0	$33
Subtotal, Competing	**509**	**$232,934**	**461**	**$201,900**	**520**	**$232,248**	**59**	**$30,348**
Subtotal, RPGs	1,785	$874,289	1,784	$873,470	1,837	$919,976	53	$46,506
SBIR/STTR	69	$47,009	67	$45,568	71	$48,039	4	$2,471
Research Project Grants	1,854	$921,297	1,851	$919,038	1,908	$968,015	57	$48,977
Research Centers								
Specialized/Comprehensive	47	$69,046	50	$67,439	50	$71,327	0	$3,888
Clinical Research	0	$0	0	$0	0	$0	0	$0
Biotechnology	4	$4,916	4	$5,602	4	$5,602	0	$0
Comparative Medicine	0	$513	0	$513	0	$263	0	-$250
Research Centers in Minority Institutions	0	$0	0	$0	0	$0	0	$0
Research Centers	**51**	**$74,476**	**54**	**$73,554**	**54**	**$77,192**	**0**	**$3,638**
Other Research:								
Research Careers	219	$41,903	223	$41,847	225	$43,246	2	$1,399
Cancer Education	0	$0	0	$0	0	$0	0	$0
Cooperative Clinical Research	36	$18,313	40	$15,551	43	$24,075	3	$8,524
Biomedical Research Support	0	$0	0	$0	0	$0	0	$0
Minority Biomedical Research Support	0	$0	0	$0	0	$0	0	$0
Other	111	$54,236	115	$49,879	114	$46,011	-1	-$3,868
Other Research	**366**	**$114,452**	**378**	**$107,277**	**382**	**$113,332**	**4**	**$6,055**
Total Research Grants	2,271	$1,110,224	2,283	$1,099,869	2,344	$1,158,539	61	$58,670
Ruth L Kirschstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	290	$14,143	287	$14,339	294	$15,002	7	$663
Institutional Awards	433	$25,285	416	$25,682	416	$26,171	0	$489
Total Research Training	**723**	**$39,428**	**703**	**$40,021**	**710**	**$41,173**	**7**	**$1,152**
Research & Develop. Contracts	127	$138,189	130	$139,569	132	$147,560	2	$7,991
SBIR/STTR (non-add)	*(0)*	*($525)*	*(0)*	*($525)*	*(0)*	*($541)*	*(0)*	*($16)*
Intramural Research	297	$221,959	297	$221,959	297	$231,142	0	$9,183
Res. Management & Support	238	$78,396	294	$88,919	305	$96,527	11	$7,608
SBIR Admin. (non-add)	*(0)*	*($380)*	*(0)*	*($387)*	*(0)*	*($399)*	*(0)*	*($12)*
Construction		$0		$0		$0		$0
Buildings and Facilities		$0		$0		$0		$0
Total, NICHD	**535**	**$1,588,197**	**591**	**$1,590,337**	**602**	**$1,674,941**	**11**	**$84,604**

* All items in italics and brackets are non-add entries

EUNICE KENNEDY SHRIVER NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

For carrying out section 301 and title IV of the PHS Act with respect to child health and human development, $1,674,941,000.

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Summary of Changes
(Dollars in Thousands)

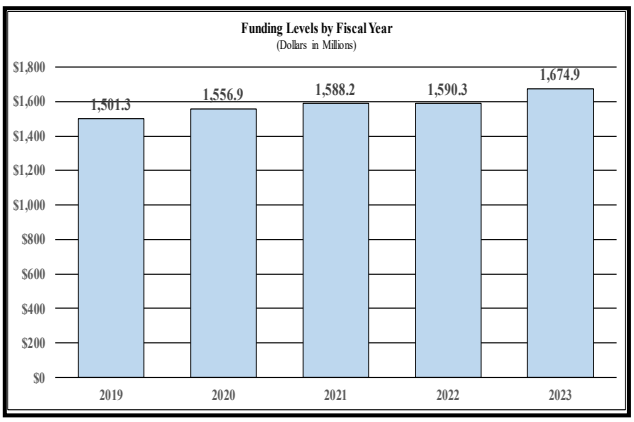
FY 2022 CR	$1,590,337
FY 2023 President's Budget	$1,674,941
Net change	$84,604

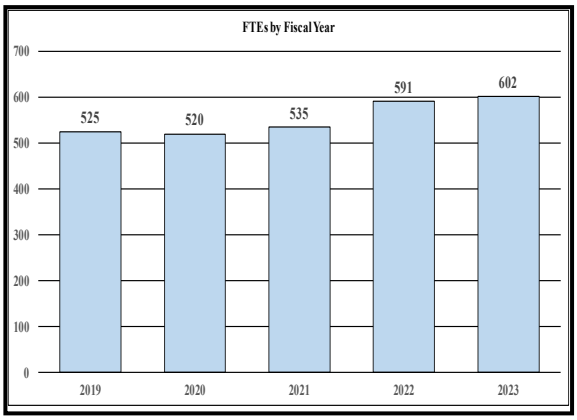
CHANGES	FY 2022 CR		FY 2023 President's Budget		Built-In Change from FY 2022 CR	
	FTEs	Budget Authority	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:						
1. Intramural Research:						
a. Annualization of January 2022 pay increase & benefits		$73,613		$76,313		$488
b. January FY 2023 pay increase & benefits		$73,613		$76,313		$2,494
c. Paid days adjustment		$73,613		$76,313		-$280
d. Differences attributable to change in FTE		$73,613		$76,313		$0
e. Payment for centrally furnished services		$38,431		$39,199		$3,426
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$109,915		$115,629		$2,372
Subtotal						$8,501
2. Research Management and Support:						
a. Annualization of January 2022 pay increase & benefits		$48,133		$53,705		$319
b. January FY 2023 pay increase & benefits		$48,133		$53,705		$1,627
c. Paid days adjustment		$48,133		$53,705		-$183
d. Differences attributable to change in FTE		$48,133		$53,705		$3,684
e. Payment for centrally furnished services		$8,742		$8,917		$1,483
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$32,044		$33,905		$674
Subtotal						$7,603
Subtotal, Built-in						$16,104

CHANGES	FY 2022 CR		FY 2023 President's Budget		Program Change from FY 2022 CR	
	No.	Amount	No.	Amount	No.	Amount
B. Program:						
1. Research Project Grants:						
a. Noncompeting	1,323	$671,570	1,317	$687,728	-6	$16,158
b. Competing	461	$201,900	520	$232,248	59	$30,348
c. SBIR/STTR	67	$45,568	71	$48,039	4	$2,471
Subtotal, RPGs	1,851	$919,038	1,908	$968,015	57	$48,977
2. Research Centers	54	$73,554	54	$77,192	0	$3,638
3. Other Research	378	$107,277	382	$113,332	4	$6,055
4. Research Training	703	$40,021	710	$41,173	7	$1,152
5. Research and development contracts	130	$139,569	132	$147,560	2	$7,991
Subtotal, Extramural		$1,279,459		$1,347,272		$67,813
6. Intramural Research	297	$221,959	297	$231,142	0	$682
7. Research Management and Support	294	$88,919	305	$96,527	11	$5
8. Construction		$0		$0		$0
9. Buildings and Facilities		$0		$0		$0
Subtotal, Program	591	$1,590,337	602	$1,674,941	11	$68,500
Total built-in and program changes						$84,604

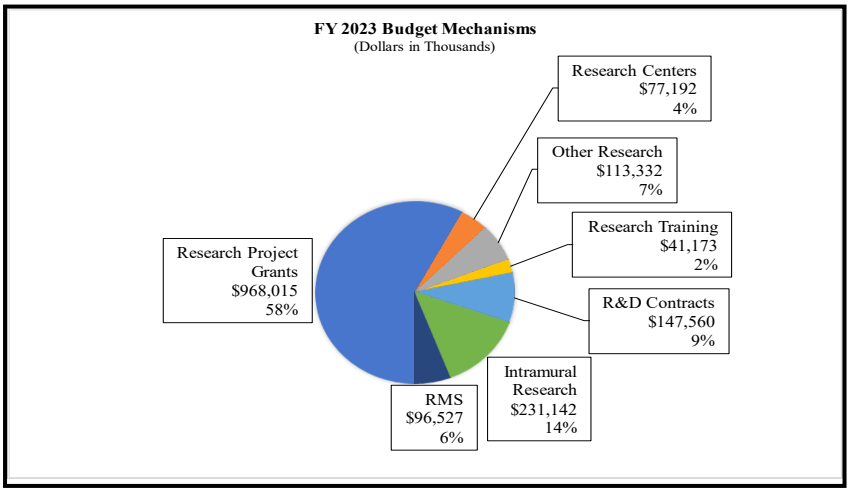
Budget Graphs for Fiscal Year 2023

History of Budget Authority and FTEs:





Distribution by Mechanism:



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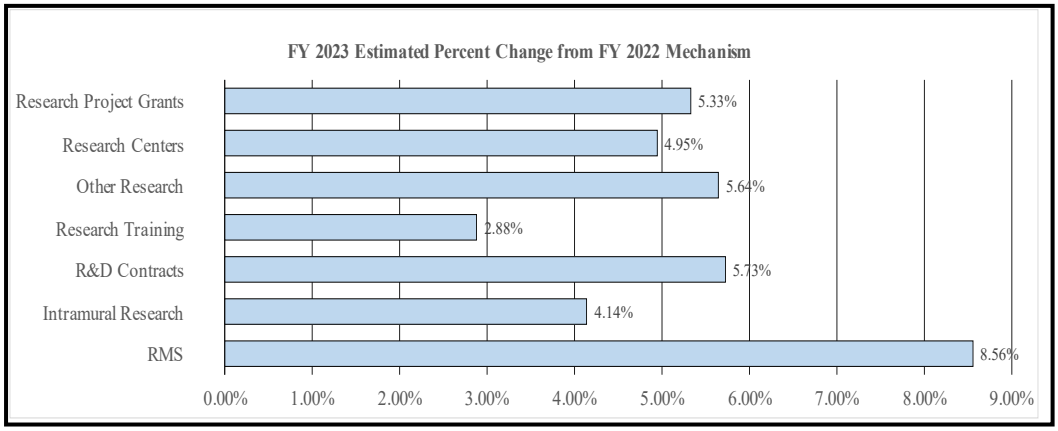
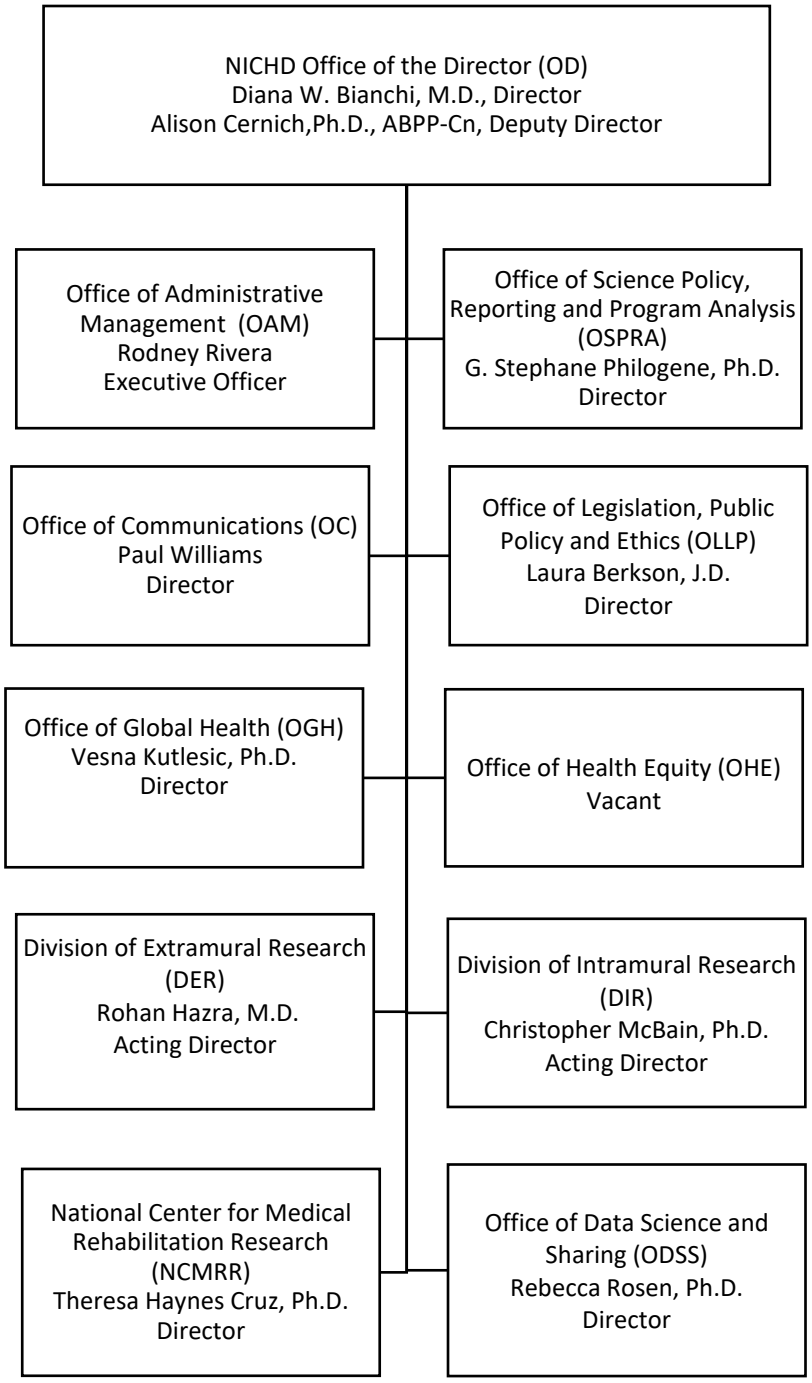


National Institutes of Health

Organization Chart

Eunice Kennedy Shriver National Institute of Child Health and Human Development



NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Budget Authority by Activity*
(Dollars in Thousands)

	FY 2021 Final		FY 2022 CR		FY 2023 President's Budget		FY 2023 +/- FY 2022 Enacted	
Extramural Research	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**
Detail								
Reproductive Health, Pregnancy, and Perinatology		$408,404		$405,746		$445,029		$39,283
Child Health		$420,729		$417,991		$439,464		$21,473
Intellectual and Developmental Disabilities		$136,429		$135,541		$137,640		$2,099
Demography and Behavior		$226,122		$224,650		$228,129		$3,479
Rehabilitation		$96,157		$95,531		$97,010		$1,479
Subtotal, Extramural		**$1,287,842**		**$1,279,459**		**$1,347,272**		**$67,813**
Intramural Research	**297**	**$221,959**	**297**	**$221,959**	**297**	**$231,142**	**0**	**$9,183**
Research Management & Support	**238**	**$78,396**	**294**	**$88,919**	**305**	**$96,527**	**11**	**$7,608**
TOTAL	**535**	**$1,588,197**	**591**	**$1,590,337**	**602**	**$1,674,941**	**11**	**$84,604**

* Includes FTEs whose payroll obligations are supported by the NIH Common Fund

Justification of Budget Request

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Authorizing Legislation: Section 301 and Title IV of the Public Health Service Act, as amended.

Budget Authority (BA):

	FY 2021 Final	FY 2022 CR Level	FY 2023 President's Budget	FY 2023 +/- FY 2022
BA	$1,588,197,000	$1,590,337,000	$1,674,941,000	+$84,604,000
FTE	535	591	602	11

Program funds are allocated as follows: Competitive Grants/Cooperative Agreements; Contracts; Direct Federal/Intramural and Other.

Overall Budget Policy: The FY 2023 President's Budget request for NICHD is $1,674.9 million, an increase of $84.6 million compared with the FY 2022 CR level. Within this level, funds are directed toward research to improve maternal health, reduce the risks associated with preterm birth, and address long-term consequences of the pandemic. This includes $30.0 million for the IMPROVE program, $15.0 million to augment research on the effects of SARS-CoV-2 infection in children and $3.0 million for research on mitigating the effects of SARS-CoV-2 on pregnancy, lactation, and post-partum health.

Program Descriptions and Accomplishments

Reproductive Health, Pregnancy, and Perinatology: The NICHD program in reproductive health, pregnancy, and perinatology supports basic, clinical, and translational research on gynecologic and andrologic disorders; contraception; fertility and infertility; pregnancy; and newborn care. NICHD manages a broad research portfolio to understand, treat, and prevent common, painful, and costly gynecologic health conditions, including endometriosis, uterine fibroids, Polycystic Ovary Syndrome (PCOS), chronic pelvic pain, and pelvic floor disorders. For example, one research team is assessing how the gut microbiome may contribute to PCOS symptoms. Over the past several years, new scientific opportunities emerged and NICHD support for this research has expanded. Researchers recently analyzed health records of women with and without fibroids, and learned how specific genes may influence the risk of, or protect against, developing fibroids. Another team of scientists examined human endometriosis tissue samples and mouse models to determine whether reduced levels of the enzyme ALDH2 could lead to inflammation associated with endometriosis. Their results suggest that increased ALDH2 activity could reduce chronic pain associated with endometriosis.

As NIH's leader in pregnancy and maternal health research, NICHD quickly moved to study COVID-19 in a diverse group of pregnant patients. Among pregnant women enrolled in the

study, almost half were asymptomatic; of the remaining participants, over one-quarter were mildly affected and 12 percent had severe or critical cases. Women with severe or critical disease were more likely to be older, have higher body-mass index, and have underlying medical comorbidities such as asthma, chronic hypertension, and pregestational diabetes. Women with severe-critical COVID-19 were more likely to have adverse perinatal outcomes, especially blood clots, cesarean delivery, and preterm birth. A panel of experts convened by NICHD offered guidance for the best methods to define and evaluate placental SARS-CoV-2 infection, to help streamline research on infection during pregnancy and ultimately optimize clinical care.

NICHD supports studies on clinical treatments to reduce the risk of pregnancy complications for both pregnant women and their offspring. For example, researchers conducted a small study in which they developed a prototype device that could potentially diagnose pregnancy complications by monitoring the oxygen level of the anterior placenta, which is attached to the front wall of the uterus. The researchers devised mathematical methods to study the passage of light through the skin, abdominal wall, and uterine tissue to reach the placenta and calculate its oxygen levels. While the device cannot monitor oxygen in women with a posterior placenta, which is attached to the back wall of the uterus, the anterior placenta is associated with a higher rate of complications. Other studies conducted as part of the NICHD's Human Placenta Project, are assessing new methods to identify components in maternal blood, such as proteins, lipids, or RNA, that reflect the health and function of the placenta. In a clinical trial, researchers supported by NICHD and the Bill & Melinda Gates Foundation will assess whether a single oral dose of the antibiotic azithromycin during labor reduces the risk of maternal and infant bacterial infection and death in seven low- and middle-income countries.

Millions of couples across the United States have difficulty conceiving and establishing a healthy pregnancy, yet only limited information is available to understand the causes of infertility, minimize risk factors, and improve treatment options. Researchers recently found that mutations in the *PNLDC1* gene appear to be associated with non-obstructive azoospermia, a form of male infertility in which men are unable to produce sperm. With support from NICHD, researchers recently analyzed publicly available human and mouse RNA datasets and detected over 1100 genes that were identified for the first time as potentially specific to the reproductive tract. Further analysis showed that 51 of those genes were specific to the male reproductive tract but lacked a published mouse knock-out model that removes the function of those genes. The researchers generated mouse models for six of those genes, and three were associated with infertility in the mice. NICHD research on contraception addresses a range of goals, including using advances in genetics to identify novel contraceptive leads, understanding the effectiveness of existing methods, and identifying new strategies for improving contraception use. Moreover, NICHD is researching several new multipurpose contraception methods that, in addition to their contraceptive properties, can help protect against sexually transmitted infections.

Perinatal research supported by NICHD continues to yield important advances, including protection against disorders that threaten survival and development in newborns. Researchers used lab-grown placental stem cells taken from pregnancies with or without preeclampsia to show that cells from placentas with preeclampsia were slower to mature and less effective in exchanging oxygen, nutrients, and wastes between mother and fetus.

Budget Policy: The FY 2023 President's Budget request for this program is $445.0 million, an increase of $39.3 million or 9.7 percent compared with the FY 2022 CR level. This increase includes $30.0 million requested to support the IMPROVE initiative to mitigate preventable maternal mortality, decrease severe maternal morbidity, and promote health equity and $3.0 million to support research on mitigating the effects of COVID-19 on pregnancies, lactation, and post-partum health, with a focus on individuals from racial and ethnic minority groups. The NICHD plans to continue emphasizing maternal health, elimination of disparities in maternal morbidity and mortality, breastfeeding and lactation, gynecologic and andrologic conditions, and prevention of preterm birth and advancement of the health of the newborn.

Multipurpose Contraception

More than 40 percent of pregnancies in the U.S. are unintended. Many existing contraceptive methods are difficult to access, are not always effective, can have side effects, and are cumbersome to use. Safe, effective, and reversible options are particularly limited for men. NICHD prioritized development of new and improved contraception, including methods that combine pregnancy prevention with prevention of sexually transmitted infection. NICHD-funded researchers are developing a new contraceptive technology that uses antibodies mixed into a thin film applied to the vagina that can prevent pregnancy and simultaneously protect against HIV and herpes infection. Through intramural and extramural support, NICHD supported extensive research in hormonal and non-hormonal male contraceptive development, with several options currently undergoing clinical trials. A key component of this research is to make sure that new methods are acceptable to potential users, and studies on acceptability are built into the research plan from the beginning. NICHD recently released Contraceptive Infertility Target Database (CITDBase), a publicly available and searchable database of fertility-based genes and proteins to aid researchers worldwide in identifying new drug targets to drive forward the development of further contraceptive options to improve global reproductive health.

Child Health: Research on child health explores biological processes that control development, translational research from the bench to the bedside, social science research, and clinical studies in pediatric pharmacology, infectious diseases, nutrition, endocrinology, trauma and critical illness, and other aspects of child health and pediatric medicine.

The COVID-19 pandemic also affects many aspects of child health and development for children who remain uninfected. Beyond educational changes, children were affected by pandemic-related changes in family and social interaction (e.g., less time with peers and grandparents), nutrition, and others. Scientists are also assessing the impact of these changes on child development, such as factors that shape adolescent mental health during the pandemic.

NICHD's basic research portfolio on developmental biology supports a better understanding of typical development, as well as mechanisms that underlie causes of structural and functional birth defects. NICHD is working with the National Human Genome Research Institute and other NIH ICs to expand the Genotype-Tissue Expression (GTEx) databank to include pediatric tissues. This new resource will help scientists understand how gene expression is regulated from birth to adulthood, and to prevent and treat birth defects.

Pediatric clinical researchers recognize that children are not small adults – often, children react differently than adults to both disease and treatment. Children's growing bodies and changing metabolism affect how the body processes and reacts to medications. Activities under the Best Pharmaceuticals for Children Act (BPCA) include identifying off-patent drugs in need of further study of dosing, safety, and efficacy for children, prioritizing needs in pediatric therapeutics, and sponsoring clinical studies of prioritized drugs. Current BPCA clinical trials are focused on

medications such as remdesivir to treat COVID-19, antibiotics, antiepileptics, and other essential medications. Over the course of the program, BPCA has led to more than 150 drugs/therapeutics and 50 conditions/indications prioritized for further study. It has also produced 15 label changes to improve pediatric labeling (dosage, safety, and/or efficacy information).

NICHD continues to set a high priority on research to reduce the risk of sudden infant death syndrome (SIDS) and other sleep-related causes of infant death. The Safe to Sleep© campaign, led by the NICHD, will work with the District of Columbia (DC)'s Office of the Chief Medical Examiner, the Thrive by Five DC initiative, and other DC groups to understand information or service gaps related to safe infant sleep and determine how those gaps contribute to deaths and risks for families in the District. The collaboration, known as the DC Safe Sleep Education and Outreach Project, will then develop and implement an outreach and awareness campaign to inform local parents and caregivers about how they can bridge these gaps.

Breastfeeding, Lactation and Breast Milk Research

Breastfeeding provides an infant with essential nutrients for optimal growth, health, and development. NICHD conducts and supports research on breastfeeding and breast milk, seeking to understand the aspects of breastfeeding and breast milk that lead to optimal health for mothers and infants. NICHD is supporting a comprehensive genetic and genomic analysis of the molecular and cellular composition of breast milk, the effect of maternal genetics on this composition, and the impact of host-microbiome interactions in milk on the infant gut microbiome. This research will help scientists understand the genetic and genomic basis of variation in milk composition, and assess the effects of maternal nutritional status and milk composition on the infant gut microbiome and infant growth. Another NICHD study is examining how specific human milk oligosaccharides, unique to mother's milk, shape early brain and cognitive development. NICHD is also supporting a study to investigate a new, individualized approach to human milk fortification, leveraging technology from the dairy industry to analyze human milk composition. Finally, NICHD's maternal and pediatric pharmacology programs are emphasizing studies on how medication taken by lactating women is, or is not, transmitted through breast milk to their infants. The groundbreaking CUDDLE study is enrolling women who are already taking specific medications as part of their routine medical care. Ten off-patent drugs will be studied, including medications used to treat bacterial infections, depression and anxiety, high blood pressure, diabetes, and chronic pain.

Unfortunately, child maltreatment continues to be a common cause of injury. NICHD supports research to highlight risk factors and test new prevention methods. Researchers showed that a program providing new parents with home visits from a nurse was associated with fewer child protective services investigations and fewer emergency department visits through age five. NICHD's research in pediatric critical care and emergency care continues to advance medical practice. A nationwide evaluation funded by both NICHD and the Health Resources and Services Administration verified that adopting national standards reduces pediatric deaths in emergency departments, supporting the implementation of these standards of readiness across the country.

Budget Policy: The FY 2023 President's Budget request for this program is $439.5 million, an increase of $21.5 million or 5.1 percent compared with the FY 2022 CR level. The request includes $15.0 million to expand studies on the effects of the COVID-19 pandemic on children. In addition, NICHD plans to place a high priority on pediatric pharmacology, adolescent health promotion, pediatric critical care research, and childhood injury through the implementation of the NICHD Strategic Plan.

Demography and Behavior: The program in demography and behavior incorporates NICHD's strong portfolio on behavioral and social influences on health. Key priorities for this research

area include childhood obesity; studies of family and population dynamics; neurobiology underlying child learning and learning disabilities; adolescent health behavior, including the transition to adulthood; and the effects of technology use in children. During the pandemic, concerns about vaccine hesitancy, adherence to medical recommendations, infection control behaviors, and the impact of pandemic-related lifestyle changes have taken on a special urgency.

NICHD-supported population health researchers have been studying the epidemiology of the pandemic, especially in relation to demographic change and COVID-19 related health disparities. Scientists supported by NICHD and the National Institute on Aging examined racial and ethnic differences in the likelihood of work-related exposure to COVID-19. They also incorporated occupational standing, defined as the proportion of workers within each occupation with at least some college education, into the analysis. The results indicated that, contrary to expectation, White frontline workers were often overrepresented in high-risk jobs. However, in contrast to Whites and several Asian groups, Latino and Black frontline workers were overrepresented in lower standing occupations overall and in lower standing occupations associated with high risk, and thus may be less likely to have adequate COVID-19 protections.

Obesity and overweight increase the risk for a large number of lifelong chronic conditions, including diabetes and cardiovascular diseases. The high rates of childhood obesity in the U.S. are especially disturbing because eating and physical activity habits, once formed in childhood, can be very difficult to change. A recent NICHD-funded study compared the effect of two diet-related interventions on weight loss in adolescents with intellectual disability. One of these interventions, a program that categorizes foods by energy content and can be effectively delivered remotely, proved more successful with this population that may have difficulty using conventional nutrition-related educational materials. Working with other federal agencies through the federal initiative the National Collaborative on Childhood Obesity Research, NICHD promotes evidence-based efforts to curb childhood obesity.

Screen time in young children was already higher than recommended, and has increased since the pandemic.

Studies on children's mobile device use have often relied on asking parents how often their children use mobile devices. NICHD researchers measured children's mobile device use by implementing a new tracking technique using software embedded within the device. When comparing the parent's estimates with the children's actual use, the researchers found that parent reports were inaccurate more often than than they were on target. Interestingly, parent reports were inaccurate in both directions; a little over one-third of parents underestimated the children's usage, and nearly the same number overestimated the usage. NICHD researchers started several multi-year studies in the spring of 2021 concerning children's digital use, with an emphasis on how mobile media use affects a child's cognitive function and whether device use displaces parent-child interaction and other positive activities. In another new study of digital media, researchers are investigating how digital media may alter the mechanisms of word learning and subsequently impact the foundation on which a child's vocabulary is built. Another team of scientists are focused on digital media and adolescent development. These researchers are aiming to identify strategies parents can use to effectively manage adolescents'

use of social media sites and examine the effects of these parenting strategies on adolescents' positive or negative social media experiences.

Budget Policy: The FY 2023 President's Budget request for this program is $228.1 million, an increase of $3.5 million or 1.5 percent compared with the FY 2022 CR level. NICHD plans to capitalize on the advances made possible by the population research centers and expand population health research related to health disparities, particularly social determinants of health related to maternal and child health and development. Additional research on the impact of digital media on child development, especially in light of pandemic-related changes, is urgently needed.

Intellectual and Developmental Disabilities: Research on intellectual and developmental disabilities (IDDs) has been fundamental to the NICHD since the founding of the Institute. At that time, IDDs were widely thought to be permanent and untreatable, and only a few visionaries imagined a future where people with IDDs were widely included in society and had the chance to maximize their talents. Now, science has shown the importance of early intervention and the potential for even more effective ways to improve the lives of individuals with IDDs. NICHD's IDD research program is designed to discover new ways to prevent and ameliorate both common and rare disorders, including Down syndrome (DS), Fragile X syndrome (FXS), Rett syndrome, and muscular dystrophy; inborn errors of metabolism; autism spectrum disorders (ASD); congenital conditions currently or potentially detectable through newborn screening; and IDDs that have no identified cause or are not associated with a specific syndrome.

NICHD's IDD portfolio includes a broad array of investigator-initiated research and incorporates large-scale innovative projects. NICHD researchers recently assessed the association of FXS with a wide range of medical conditions. The results confirmed that FXS involves many co-occurring conditions. Scientists found, using a mouse model of Rett syndrome, that intensive early behavioral training beginning in the presymptomatic period can dramatically improve specific motor and memory skills, and significantly delay the onset of symptoms. These results provide a rationale for genetic screening of newborns for Rett syndrome.

NICHD's *Eunice Kennedy Shriver* Intellectual and Developmental Disabilities Research Centers offer a wide range of research services to scientists, including informatics and biostatistics; genomic, proteomic, and metabolomics facilities; cellular neuroimaging and optogenetic services; and animal and human behavioral testing. The Autism Centers of Excellence (ACE) program, sponsored by multiple NIH ICs, supports large-scale multidisciplinary studies to identify causes and potential treatments for ASDs. A broad array of investigator-initiated projects complements the ACEs to support rigorous research in detection and screening, early intervention, and supporting child development for individuals with ASDs. Based on eye movements, researchers developed an app that was successful at distinguishing toddlers diagnosed with ASD from typically developing toddlers. The findings suggest that the app could one day screen infants and toddlers for ASD and refer them for intervention as early as possible, when chances for treatment success are greatest.

NICHD continues to lead research on DS and associated conditions. NIH-funded researchers recently developed a test to evaluate the expressive language skills of people with DS. Language

delays are common in people with DS, and this test provides a more effective way to evaluate prospective language interventions. NIH has highlighted the urgent need for research on COVID-19 in individuals with DS in conjunction with the INCLUDE (INvestigation of Co-occuring conditions across the Lifespan to Understand Down syndromE) Project.

Intellectual and developmental disability often co-exist with cardiovascular, metabolic, and other disorders. However, people with disabilities are frequently excluded from clinical research studies about the conditions that affect them. A strong priority for NICHD is promoting the inclusion of individuals with IDDs in clinical research. Through the INCLUDE program and the Down Syndrome Registry (DS-Connect™), expanded opportunities for individuals with Down syndrome to participate in research are now available. Lessons from the success of these programs are ready to be applied to other conditions associated with IDD. Increasing the workforce of researchers working with IDD populations is a key goal for the overall INCLUDE effort.

NICHD support for IDD research extends from fundamental basic neuroscience to clinical and behavioral studies. Some of the most powerful studies are in the area of translational research, where fundamental discoveries are explored in depth to help develop potential new treatments. For example, a team of NICHD-supported scientists used gene editing to remove small sections of faulty genes in patients with Duchenne muscular dystrophy (DMD), first testing their methods in mice with gene alterations like those that cause DMD. Gene editing methods work in human cells to repair the faulty genes by strategies known as exon skipping and reframing. The scientists found that one method that can reframe the faulty gene worked better than another method that can skip an exon. A third method that does both worked best of all.

Budget Policy: The FY 2023 President's Budget Request for this program is $137.6 million, an increase of $2.1 million or 1.5 percent compared with the FY 2022 CR level. NICHD plans to continue to emphasize the inclusion of IDD populations in broader clinical research and to study the impact of COVID-19 on the IDD population. The transition to adult medical care for the IDD population will also receive special attention within this program. This will include care for reproductive health, as well as chronic conditions.

Rehabilitation: The NICHD's National Center for Medical Rehabilitation Research (NCMRR) fosters research and research training to enhance the health, productivity, independence, and quality of life of people with physical disabilities. NCMRR takes a collaborative approach to advance a broad range of research and research training, including efforts to understand the body's own mechanisms of recovery and adaptation. Additional research areas include devices and technology development, rehabilitation diagnostics and interventions, health services research, and environmental factors related to treatment settings and conditions.

Over two million people in the United States are estimated to have lost a limb through trauma, disease, or other medical conditions. Since conventional prosthetic limbs do not provide replacement sensory feedback to the nervous system, people with amputation cannot feel the position, speed, or rotation of their prosthetic devices without looking at them, making it difficult to control movement. NCMRR-supported researchers have developed an agonist-antagonist myoneural interface (AMI), a modified procedure for amputations below the knee, which maintains the natural agonist-antagonist muscle pairing and provides sensory feedback to the nervous system, as found in an intact limb. With two existing muscles that have been surgically

connected to work as a pair, electrodes allow the AMI to communicate with small computers in the prosthetic limb interface, thereby allowing the person to feel the device's position and movement. In a small clinical study, subjects with AMI below-knee amputation demonstrated improved motor control and range of motion with less pain and fewer phantom limb sensations compared with patients who had undergone traditional amputation techniques. These biomedical technologies enable people with limb loss to sense the movement of their prosthetic devices, leading to a better quality of life. Moreover, NCMRR collaborates with other NIH ICs, other agencies within HHS, the Department of Defense and the Veterans Administration to create and recommend common data elements (CDEs) for lower limb loss research, which will allow researchers to share, compare, and replicate findings; generalize results; and integrate data across studies more easily. The use of CDEs in limb loss research is beneficial because it can optimize investment, accelerate and improve knowledge about individuals with lower limb loss, and advance a culture of scientific collaboration.

Budget Policy: The FY 2023 President's Budget Request for this program is $97.0 million, an increase of $1.5 million or 1.5 percent compared with the FY 2022 CR level. NICHD plans to continue supporting a broad range of rehabilitation research in accordance with the updated NIH Rehabilitation Research Plan.

Intramural Research: The basic science expertise from NICHD's intramural laboratories has been used to advance COVID-19 related research. One such study sheds light on the importance of certain modifications made by the host cell to the SARS-CoV-2 spike protein, which the virus uses to enter human cells. These modifications, known as S-acylation, appear to be critical for the virus' ability to infect cells. The findings suggest that blocking S-acylation could serve as a potential strategy for developing COVID-19 treatments. In another study, researchers evaluated how SARS-CoV-2 uses its RNA replicase, an enzyme that allows the virus to replicate its genome and make copies of itself once inside a cell. Researchers found that the RNA replicase requires two iron-sulfur clusters to function optimally. Identifying this characteristic of the RNA replicase enables researchers to exploit a weakness in the virus. The experimental drug TEMPOL can degrade iron-sulfur clusters, and previous research from these scientists has shown the drug may be effective in other diseases that involve iron-sulfur clusters. In cell culture experiments with live SARS-CoV-2 virus, the study team found that TEMPOL can inhibit viral replication.

NICHD intramural researchers explored the function of specific glutamate receptors in interneuron development. Work from the team shows that these receptors help regulate the abundance of certain interneuron subtypes and help establish diverse programs important for neuronal functions. Moreover, the researchers found that several genes relevant to the development of psychiatric illness are mis-expressed when one particular gene, called Grin1, is deleted. Such findings are critical for understanding the development of psychiatric disorders, especially among youth. In another laboratory, intramural researchers identified and mapped a diverse spectrum of motor neurons along the spinal cord. These neurons, which send and receive messages throughout the body, include a subset that is especially susceptible to neurodegenerative diseases. The results offer insight into how these neurons control movement, how they contribute to the functioning of organ systems, and why some are disproportionally affected by neurodegenerative diseases.

Budget Policy: The FY 2023 President's Budget Request for NICHD intramural research is $231.1 million, an increase of $9.2 million or 4.1 percent compared with the FY 2022 CR level. NICHD's intramural research efforts will continue to support basic sciences with implications across the NICHD mission areas, as well as new cybersecurity initiatives.

Research Management and Support: Research Management and Support (RMS) activities include administrative and technical functions that support and enhance the effectiveness of NICHD's research investments. Included among these functions are public communications; budget, contracts, and grants management; peer review; reporting; program evaluation; public policy; and information technology. To support responsible stewardship of valuable resources, NICHD will continue to support systematic evaluations of NICHD's scientific and administrative programs, helping to identify ways to ensure program effectiveness.

Budget Policy: The FY 2023 President's Budget Request for this program is $96.5 million, an increase of $7.6 million or 8.6 percent compared with the FY 2022 CR level. Priorities for RMS will emphasize information technology development and cybersecurity, along with efforts to maintain excellent stewardship of federal resources as outlined in the NICHD Strategic Plan 2020.

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2014	$1,339,360,000		$1,330,459,000	$1,282,595,000
Rescission				$0
2015	$1,283,487,000			$1,286,571,000
Rescission				$0
2016	$1,318,061,000	$1,305,586,000	$1,345,355,000	$1,339,802,000
Rescission				$0
2017 [1]	$1,338,348,000	$1,373,408,000	$1,395,811,000	$1,380,295,000
Rescission				$0
2018	$1,032,029,000	$1,401,727,000	$1,426,092,000	$1,452,006,000
Rescission				$0
2019	$1,339,592,000	$1,469,346,000	$1,507,251,000	$1,506,458,000
Rescission				$0
2020	$1,296,732,000	$1,580,084,000	$1,587,278,000	$1,556,879,000
Rescission				$0
2021	$1,416,366,000	$1,582,269,000	$1,657,606,000	$1,590,337,000
Rescission				$0
2022	$1,942,117,000	$1,689,786,000	$1,678,970,000	$1,590,337,000
Rescission				$0
2023	$1,674,941,000			

[1] Budget Estimate to Congress includes mandatory financing.

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2022 Amount Authorized	FY 2022 CR	2023 Amount Authorized	FY 2023 President's Budget
Research and Investigation	Section 301	42§241	Indefinite	$1,590,337,000	Indefinite	$1,674,941,000
National Institute of Child Health and Human Development	Section 401(a)	42§281	Indefinite		Indefinite	
Total, Budget Authority				$1,590,337,000		$1,674,941,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Amounts Available for Obligation[1]
(Dollars in Thousands)

Source of Funding	FY 2021 Final	FY 2022 CR	FY 2023 President's Budget
Appropriation	$1,590,337	$1,590,337	$1,674,941
Mandatory Appropriation: (non-add)			
Type 1 Diabetes	*($0)*	*($0)*	*($0)*
Other Mandatory financing	*($0)*	*($0)*	*($0)*
Secretary's Transfer	-$4,775	$0	$0
Subtotal, adjusted appropriation	$1,585,562	$1,590,337	$1,674,941
OAR HIV/AIDS Transfers	$2,635	$0	$0
Subtotal, adjusted budget authority	$1,588,197	$1,590,337	$1,674,941
Unobligated balance, start of year	$0	$0	$0
Unobligated balance, end of year (carryover)	$0	$0	$0
Subtotal, adjusted budget authority	**$1,588,197**	**$1,590,337**	**$1,674,941**
Unobligated balance lapsing	-$72	$0	$0
Total obligations	$1,588,125	$1,590,337	$1,674,941

[1] Excludes the following amounts (in thousands) for reimbursable activities carried out by this account:
FY 2021 - $32,904 FY 2022 - $35,000 FY 2023 - $36,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Budget Authority by Object Class[1]
(Dollars in Thousands)

		FY 2022 CR	FY 2023 President's Budget	FY 2023 +/- FY 2022
Total compensable workyears:				
	Full-time equivalent	591	602	11
	Full-time equivalent of overtime and holiday hours	0	0	0
	Average ES salary	$213	$219	$6
	Average GM/GS grade	12.7	12.7	0.0
	Average GM/GS salary	$122	$127	$5
	Average salary, Commissioned Corps (42 U.S.C. 207)	$137	$142	$6
	Average salary of ungraded positions	$147	$153	$6
	OBJECT CLASSES	**FY 2022 CR**	**FY 2023 President's Budget**	**FY 2023 +/- FY 2022**
	Personnel Compensation			
11.1	Full-Time Permanent	$45,907	$50,539	$4,632
11.3	Other Than Full-Time Permanent	$28,589	$29,658	$1,070
11.5	Other Personnel Compensation	$2,799	$2,903	$105
11.7	Military Personnel	$167	$173	$6
11.8	Special Personnel Services Payments	$14,506	$15,049	$543
11.9	**Subtotal Personnel Compensation**	**$91,967**	**$98,323**	**$6,356**
12.1	Civilian Personnel Benefits	$29,629	$31,540	$1,911
12.2	Military Personnel Benefits	$150	$155	$6
13.0	Benefits to Former Personnel	$0	$0	$0
	Subtotal Pay Costs	**$121,746**	**$130,018**	**$8,272**
21.0	Travel & Transportation of Persons	$210	$365	$155
22.0	Transportation of Things	$239	$244	$5
23.1	Rental Payments to GSA	$0	$0	$0
23.2	Rental Payments to Others	$0	$0	$0
23.3	Communications, Utilities & Misc. Charges	$483	$490	$6
24.0	Printing & Reproduction	$0	$0	$0
25.1	Consulting Services	$66,932	$68,266	$1,334
25.2	Other Services	$41,575	$43,141	$1,566
25.3	Purchase of Goods and Services from Government Accounts	$116,264	$123,394	$7,130
25.4	Operation & Maintenance of Facilities	$115	$115	$0
25.5	R&D Contracts	$98,744	$104,172	$5,428
25.6	Medical Care	$1,331	$1,386	$55
25.7	Operation & Maintenance of Equipment	$4,343	$4,433	$90
25.8	Subsistence & Support of Persons	$0	$0	$0
25.0	**Subtotal Other Contractual Services**	**$329,304**	**$344,906**	**$15,602**
26.0	Supplies & Materials	$9,278	$10,208	$929
31.0	Equipment	$6,177	$6,879	$702
32.0	Land and Structures	$884	$903	$19
33.0	Investments & Loans	$0	$0	$0
41.0	Grants, Subsidies & Contributions	$1,121,996	$1,180,909	$58,913
42.0	Insurance Claims & Indemnities	$0	$0	$0
43.0	Interest & Dividends	$20	$20	$0
44.0	Refunds	$0	$0	$0
	Subtotal Non-Pay Costs	**$1,468,591**	**$1,544,923**	**$76,332**
	Total Budget Authority by Object Class	**$1,590,337**	**$1,674,941**	**$84,604**

[1] Includes FTEs whose payroll obligations are supported by the NIH Common Fund.

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Salaries and Expenses
(Dollars in Thousands)

Object Classes	FY 2022 CR	FY 2023 President's Budget	FY 2023 +/- FY 2022
Personnel Compensation			
Full-Time Permanent (11.1)	$45,907	$50,539	$4,632
Other Than Full-Time Permanent (11.3)	$28,589	$29,658	$1,070
Other Personnel Compensation (11.5)	$2,799	$2,903	$105
Military Personnel (11.7)	$167	$173	$6
Special Personnel Services Payments (11.8)	$14,506	$15,049	$543
Subtotal, Personnel Compensation (11.9)	**$91,967**	**$98,323**	**$6,356**
Civilian Personnel Benefits (12.1)	$29,629	$31,540	$1,911
Military Personnel Benefits (12.2)	$150	$155	$6
Benefits to Former Personnel (13.0)	$0	$0	$0
Subtotal Pay Costs	**$121,746**	**$130,018**	**$8,272**
Travel & Transportation of Persons (21.0)	$210	$365	$155
Transportation of Things (22.0)	$239	$244	$5
Rental Payments to Others (23.2)	$0	$0	$0
Communications, Utilities & Misc. Charges (23.3)	$483	$490	$6
Printing & Reproduction (24.0)	$0	$0	$0
Other Contractual Services			
Consultant Services (25.1)	$66,932	$68,266	$1,334
Other Services (25.2)	$41,575	$43,141	$1,566
Purchase of Goods and Services from Government Accounts (25.3)	$72,421	$77,345	$4,924
Operation & Maintenance of Facilities (25.4)	$115	$115	$0
Operation & Maintenance of Equipment (25.7)	$4,343	$4,433	$90
Subsistence & Support of Persons (25.8)	$0	$0	$0
Subtotal Other Contractual Services	**$185,386**	**$193,300**	**$7,914**
Supplies & Materials (26.0)	$9,278	$10,208	$929
Subtotal Non-Pay Costs	**$195,597**	**$204,606**	**$9,009**
Total Administrative Costs	**$317,343**	**$334,624**	**$17,281**

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Detail of Full-Time Equivalent Employment (FTE)

Office	FY 2021 Final			FY 2022 CR			FY 2023 President's Budget		
	Civilian	Military	Total	Civilian	Military	Total	Civilian	Military	Total
Office of the Director									
Direct:	94		94	132		132	136		136
Reimbursable:	12		12	13		13	13		13
Total:	106		106	145		145	149		149
Division of Extramural Research									
Direct:	123	1	124	140	1	141	147	1	148
Total:	123	1	124	140	1	141	147	1	148
National Center for Medical Rehabilitation Research									
Direct:	8		8	8		8	8		8
Total:	8		8	8		8	8		8
Division of Intramural Programs									
Direct:	294		294	293		293	293		293
Reimbursable:	3		3	4		4	4		4
Total:	297		297	297		297	297		297
Total	534	1	535	590	1	591	601	1	602
Includes FTEs whose payroll obligations are supported by the NIH Common Fund.									
FTEs supported by funds from Cooperative Research and Development Agreements.	0	0	0	0	0	0	0	0	0

FISCAL YEAR	Average GS Grade
2019	12.5
2020	12.5
2021	12.6
2022	12.7
2023	12.7

NATIONAL INSTITUTES OF HEALTH
National Institute of Child Health and Human Development

Detail of Positions[1]

GRADE	FY 2021 Final	FY 2022 CR	FY 2023 President's Budget
Total, ES Positions	1	1	1
Total, ES Salary	$194,139	$213,359	$219,012
General Schedule			
GM/GS-15	57	69	68
GM/GS-14	78	84	84
GM/GS-13	92	106	108
GS-12	73	97	98
GS-11	16	28	28
GS-10	2	2	2
GS-9	8	17	20
GS-8	12	12	12
GS-7	11	14	14
GS-6	2	2	2
GS-5	1	1	1
GS-4	0	0	0
GS-3	1	1	1
GS-2	0	0	0
GS-1	0	0	0
Subtotal	353	433	438
Commissioned Corps (42 U.S.C. 207)			
Assistant Surgeon General	0	0	0
Director Grade	0	0	0
Senior Grade	1	1	1
Full Grade	0	0	0
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	1	1	1
Ungraded	176	181	183
Total permanent positions	354	434	439
Total positions, end of year	531	616	623
Total full-time equivalent (FTE) employment, end of year	535	591	602
Average ES salary	$194,139	$213,359	$219,012
Average GM/GS grade	12.6	12.7	12.7
Average GM/GS salary	$118,307	$121,502	$126,564

[1] Includes FTEs whose payroll obligations are supported by the NIH Common Fund.