MEETING SUMMARY

National Collaborative on Childhood Obesity Research (NCCOR) Member Meeting

Wednesday, June 15, 2022 | 2:00–4:30 p.m. ET

PARTICIPANTS (n=46)

CDC: H. Blanck, D. Ederer, J. Fulton, H. Hamner, D. Harris, E. Kraus, A. Kumar, S. Onufrak, S. Park, Y. Park, K. Reddy, J. Seymour, S. Sliwa, E. Stowe, H. Zaganjor, P. Zhang, L. Zhao	**USDA:** D. Chester, M. Ehmke, J. Guthrie, L. Rahavi, S. Toossi
NIH: K. Clevenger, L. Donze, K. Gibbs, R. Kuczmarski, L. Nebeling, M. Shams-White, S. Vorkoper	**Coordinating Center (CC):** E. Callahan, L. Canady, V. Do, R. Grimsland, K. Hilyard, T. Phillips, A. Sharfman, M. Van Orman, S. Xiong, A. Yaroch
Guest Speakers (in order of appearance) - Deb Galuska, PhD, MPH, *Centers for Disease Control and Prevention* - James McClain, PhD, MPH, *National Institutes of Health* - George Hobor, PhD, *Robert Wood Johnson Foundation* - Melanie Abley, PhD, *United States Department of Agriculture* - Susan Woolford, MD, MPH, *Susan B. Meister Child Health Evaluation and Research Center, University of Michigan* - Corinna Koebnick, PhD, MSc, *Division of Behavioral Research, Kaiser Permanente* - Louise Baur, MD, *World Obesity Federation; University of Sydney; Australian National Health & Medical Research Council Centre of Research Excellence in the Early Prevention of Obesity in Childhood*	

Welcome, Introduction, NCCOR Updates – *Karen Hilyard, NCCOR Coordinating Center*

K. Hilyard welcomed participants, reviewed the agenda, highlighted the primary purpose of the meeting—to explore potential opportunities to modernize data systems to get a better picture of childhood obesity in the United States—and shared NCCOR updates, including three new items:

- Create Thriving, Activity-Friendly Communities: a set of ready-made materials to facilitate conversations with local leaders and decision makers about improving built environments in communities. Resources include tips for talking about the economic benefits of activity-friendly communities, a fact sheet about making the business case for activity-friendly places, a customizable presentation, and recent research articles and other relevant resources.
- A commentary/position paper from the Active Travel to School (ATS) Surveillance Initiative workgroup, "Improving active travel to school and its surveillance: an overlooked opportunity in health promotion and chronic disease prevention," offering insights into strengthening surveillance

and data collection of ATS behavior as well as ATS environmental, policy, and program supports. This builds on the workgroup's literature review of existing active travel to school surveillance systems and white paper summarizing an NCCOR workshop on this topic held in October 2020.

- Key Informant Interviews to Inform Nutrition and Physical Activity Efforts in Child Care Settings During the COVID-19 Pandemic: published June 2022 in *Frontiers in Public Health*.

Panel Discussion: Data Modernization Efforts Within Our Agencies
Moderator: *Karen Hilyard, NCCOR Coordinating Center*

Representatives from the four NCCOR member entities shared examples of data modernization in organizations.

Deb Galuska, PhD, MPH, Centers for Disease Control and Prevention
D. Galuska summarized the goal of data modernization as getting the right data to the right people at the right time so that the data can be used for action. This requires putting the appropriate people, processes, and technology in place. Four problems for which CDC's Division of Nutrition, Physical Activity, and Obesity have used data modernization to develop a solution include:

- Need to understand clinical actions related to the screening and treatment of obesity; need to identify comorbidities linked with obesity—solution was compiling electronic medical record data to examine: the associations between BMI and risk for COVID-19 related hospitalization, ICU admission, invasive mechanical ventilation, and death; longitudinal trends in BMI before and during the COVID-19 pandemic among children and adolescents; and underlying medical conditions and severe illness among adults hospitalized with COVID-19. An automated tool called growthcleanr was used to clean longitudinal weight and height data from electronic health records (EHRs) and flag implausible values.
- Lack of local data on obesity and what populations are most affected; inability to link actions in the clinical setting with actions in the community; and limited information on the natural history of obesity—the Clinical and Community Data Initiative (CODI) uses modern technology to link individual-level data across clinical and community sectors. As an example, clinical systems capture data on an individual child and CODI enables those data to be linked with community data about the child's neighborhood safety and access to healthy food and physical activity opportunities. This layering of data provides insight into chronic conditions and social determinants of health (SDOH) associated with obesity as well as opportunities and can help researchers evaluate the impact of services, policies, and programs. Individual privacy is preserved while linking records through a process called data hashing.
- Lack of local data on physical activity (PA); limited data on environmental supports for PA at local levels; and difficulty linking local PA behaviors with environmental/policy data—the Division's PA data modernization initiative identifies and assesses use of secondary data for PA surveillance (movement data from location-based app services, built environment data from imagery such as Google Street View, and policy data from digital law on Complete Street policies, land use and zoning, etc.). A long-term goal is to conduct policy surveillance via machine learning processes.

- Lack of easily accessible data on diet and physical activity for funded program recipients to recipients to inform their decision makers about program successes and needs to their decision makers—an interactive database houses ~60 national and state-level health and behavior indicators and environmental and policy supports for fruit/vegetable intake, sugary drink intake, and more. Enhancements to this database are under consideration.

James McClain, PhD, MPH, National Institutes of Health
J. McClain provided an overview of the NIH All of Us research program—which aims to enroll one million participants—and its protocol. The program includes a rich diversity of participants and data, although the sample is not nationally representative and not all participants have all data types.

- The program's mission is to accelerate health research and medical breakthroughs to enable individualized prevention, treatment, and care for everyone living in the United States. It engages people and communities who have been left out of medical research in the past; combines biological factors and social determinants on a large, inclusive scale; follows participants over time, and makes its rich biomedical data resources accessible to researchers. Participants consent to use of their EHR data; answer surveys about lifestyle behaviors, health care access and use, and medical history; undergo a collection of physical measurements, provide biological specimens (some via in-home collection kits sent by mail, which enable whole genome sequencing and genotyping arrays and pairing of genomic data and phenotypic data—ancestry and trait data are provided back to participants); and share data from wearables and digital apps. A pilot program within All of Us aims to establish methods for collecting longitudinal data via wearable sensors and expand wearables access and data sharing for populations underrepresented in biomedical research (UBR).
- Health care provider organizations and direct volunteers support participant enrollment, and dozens of partners nationwide support data collection and participant engagement. Since May 2018, more than half a million participants have enrolled (as of June 2022), about 80% of which are UBR. The pandemic resulted in a need to expand remote enrollment protocols and data collection modalities.
- Nearly 20,000 program participants have legacy pediatric EHR data including diagnoses, prescriptions, visits, procedures, and measurements gathered since 1980. An increase in pediatric obesity diagnosis has occurred over time, correlated with BMI measurements recorded in participants' adult EHRs and physical measurements taken at enrollment in All of Us.
- At the All of Us Research Hub, researchers can learn about data sources and methodologies and register for de-identified data access. The public can access databrowser.researchallofus.org to find summary statistics from the program's growing database.

George Hobor, PhD, Robert Wood Johnson Foundation
G. Hobor described RWJF's strategies and goals for data availability and analysis and shared examples of programming for each.

- Data raises awareness about local issues and generates demand for solutions, such as through the Foundation's County Health Rankings program that ranks counties based on a series of health outcomes and health behaviors.

- Data enables informed decision-making that increases the analytic foundation and effectiveness of nonprofit and public sector action. RWJF's [Data Across Sectors for Health](#) program and [All In](#) program facilitate data sharing and help drive decision-making about programs and interventions.
- Data supports research and evaluation. RWJF's [Health Data for Action](#) program equips researchers with data to help them better answer important questions. A new initiative provided recommendations to transform public health data systems to address shortcomings that were revealed in current surveillance and response systems during the pandemic.
- Integrated data systems are characterized by linkage of data at the individual level, collection of data in a systematic and consistent way, and an intersection of partners sharing data across domains (education, workforce, social services, health, housing). Several examples of integrated data systems exist in various states across the country.
- Themes informing future data programming include the need to collect the right data (e.g., racial categories; disaggregated data and metrics of racism and intersectionality; and collecting priority metrics for community based organization's and community partners). Data sharing remains a challenge, due to outdated technology, incomplete implementation of standards, and lack of clarity about data privacy laws. Progress is slow and research findings are not usually available in a timely manner relative to researcher and practitioner needs but building workforce capacity could help.

Melanie Abley, PhD, United States Department of Agriculture
M. Abley shared examples of USDA's data modernization efforts overall and in its Food and Nutrition Service (FNS), Economic Research Service (ERS), and National Institute of Food and Agriculture (NIFA).

- Data modernization supports USDA's data strategy and promotes scientific integrity (e.g., fostering trust and open science). USDA's changing data culture is marked by increasing staff data skills for stewardship and analytics, support for increased use of artificial intelligence (with safeguards), development of data stewardship (standards, quality metrics, and documentation), and increase in data sharing and interoperability among USDA and stakeholders.
- At the department level, USDA has created a shared enterprise data analytics platform and toolkit infrastructure. Priorities within this infrastructure are to establish a single, common data warehouse; enable standard toolsets for data ingestion and visualization and data science; launch a common data cataloguing tool; and expand a single, common open data platform. Achieving these priorities will help bring together data from disparate toolsets, provide transparency into the full suite of data available at USDA, and make these data publicly available. Examples of integrated data systems across USDA include [FoodData Central](#), [Ag Data Commons](#), and [SCINet.](#)
- FNS conducts applied research and analysis to inform and evaluate food and nutrition assistance programs, including program integrity, reach, and effectiveness. Few studies have focused on program disparities, but additional data are being studied to assess equity in program access, benefits provision, and outcomes. Some states don't provide data on race and ethnicity or program accessibility, and some types of data collection are not allowed for certain programs. Secondary analyses on existing data and new data collection methods may provide additional metrics.

- ERS' Consumer Food Data System integrates data from government, commercial, and academic sources on food markets, food choices, food safety, food security, and nutrition assistance programs. The Food Environment Atlas has 200+ indicators of a community's ability to access healthy food and its success in doing so. Food security statistics are available through data collected in the Current Population Survey, and ERS also has researcher-focused guides for food security measurement. The Purchase to Plate suite of resources includes a dataset linking purchased products in commercial datasets to USDA food codes to generate estimates of nutrients and USDA food pattern components. The National Household Food Acquisition and Purchase Survey has comprehensive data on household food purchases and acquisitions during 2012–2013.
- NIFA is using a Letter of Cooperative Agreement to help advance implementation of the Cooperative Extension's National Framework for Health Equity and Well-Being. This work has implications for what data are collected relevant to health equity and well-being across the National Cooperative Extension system. NIFA's Agriculture Food and Research Initiative had a competitive grants program that provided funding for research, education, and extension projects directed to obesity prevention from 2011–2017, which produced 550+ publications. NIFA's Data Gateway provides publicly available information on NIFA's funded projects.

Discussion with Panelists

K. Hilyard: Considering how surveillance was interrupted in the pandemic, what role can NCCOR play?
- J. McClain: NCCOR members with expertise in surveillance methodology and approaches could contribute to proposals to leverage data that is not publicly available or support innovative approaches to data curation, layering, and linkage.
- D. Galuska: NCCOR could identify sources of non-surveillance and/or non-government data that were leveraged for decision making during the pandemic, such as EHR and mobility data.

K. Hilyard: What data modernization strategies/projects discussed today are particularly applicable for your work and how could you use it?
- H. Hamner: The data collection and linkage efforts underway are incredible, but it can be hard to communicate to potential end users about how it works and its potential value for their work. How can NCCOR help translate these resources so people can understand and act on them? In other words, how do we make non-data scientists understand the importance of the data science?
- D. Galuska: We are designing research studies with end users in mind—assessing their needs up front and designing the study to collect and communicate data in a way that meets their needs.
- M. Abley: USDA is planning sessions with stakeholders to learn how to better tailor its messages.

J. Fulton: What have partners expressed as key needs in terms of data modernization?
- J. McClain: The deeper we go into EHRs, informatics, phenotyping, etc., the clearer it becomes that the necessary information is not always available. Additional data linking supports are needed to bring in private sector data, for example, to paint a more complete picture and answer more complex questions.

A. Kumar: How are data being collected for RWJF's Integrated Data Systems?

- G. Hobor: Methods vary by place and whether the system is at the city or state level. These systems take varied forms and may be difficult to link to each other. Programs don't always think about how they could better connect their data to other initiatives as they are planning. NCCOR could consider data system linking possibilities that could benefit its mission.

K. Hilyard: Do your organizations offer training in how to use data modernization tools and systems?

- D. Galuska: CDC is developing toolkits that will share lessons learned from the CODI projects.
- J. McClain: All of Us has a research onboarding and training support portfolio and demonstration projects. NCCOR could contribute potential methodologies and sample analyses in shared workspaces or other environments that advance opportunities for the broader research community to think differently about problems they are researching.
- H. Blanck: growthcleanr for cleaning EHRs for children and adult BMI are available on GitHub.
- M. Abley: Here are examples of USDA data training webinars about how to find and use ERS data.

K. Hilyard: Has there been pushback from public or advocacy organizations that worry about privacy?

- J. McClain: It's difficult to communicate to prospective All Of Us participants about the value and potential risks of the study in a way that does not discourage their participation. The wide diversity of patients calls for different communication strategies; it would be helpful to evaluate the effectiveness of various messages and methods.
- G. Hobor: New governance models are emerging such as data trusts and data unions. A key concept in the latter is individual compensation for the data they provide about themselves.

K. Hilyard: To what extent are your organizations working with private IT companies (e.g., Google, Amazon) and their data modernization innovations?

- J. McClain: NIH is moving to cloud-based portfolios of resources, assets, etc., leveraging the best resources possible from both those companies as well as learnings from researchers who are advancing privacy in that space. Large-scale research implementation has advanced progress to adopt stronger federalized standards for privacy, security, and compliance of data systems.
- G. Hobor: These companies offer analytics and storage, for example, it would be helpful if they offered data sharing. Smaller IT companies have partnered with academia on projects that examined social media data to analyze sentiment on mask mandates and suggest strategies to improve uptake/acceptance, for example; more collaboration like this could be done.
- D. Galuska: These companies can be partners in answering questions instead of merely providers of data; the government does not have to be the recipient of the data from these companies.
- M. Ehmke: Amazon Mechanical Turk (MTurk) is an Amazon service many economists (academic mainly) are using to study purchasing practices and implement some information experiments.

Panel: Data Modernization Related to Childhood Obesity
Moderator: Karen Hilyard, *NCCOR Coordinating Center*

[Disparities in Weight Change in Youth During the COVID-19 Related Lockdown](#)

S. Woolford and C. Koebnick presented their collaborative research effort on disparities in weight change among youth during the COVID-19 related lockdown.

- *Background:* Growth charts at the University of Michigan suggested that youth were gaining weight during the pandemic at faster than usual rates, so researchers collaborated with colleagues at Kaiser Permanente in order to access a diverse sample to examine this observation.
- *Methods:* Kaiser Permanente's Southern California electronic medical record (EMR) database was used to compare three weight-related outcomes (distance from median BMI for sex and age, weight adjusted for height, and percent overweight or obese) among 160,472 youth aged 5–17 years before and during the COVID-19 pandemic (March 2019–January 2020 and March 2020–January 2021, respectively; participants had to have at least one BMI measure during each time period). The final sample was demographically similar to the source population before exclusions, and a majority were Hispanic youth.
  - Data were analyzed in three age strata (5–11, 12–15, and 16–17 years).
  - Models were adjusted for sex, neighborhood, education, and income.
  - Outcomes were examined by race/ethnicity, presence of neighborhood parks, and participation in state-subsidized health insurance.
  - A virtual data warehouse allowed for standardization of data across several of Kaiser's Health Maintenance Organization research networks. Census data were linked using geocoding and participant addresses, which provided information about neighborhoods, education, income, and parks.
- *Findings (initial results published August 2021 in [JAMA](#)):* 5–11 year-olds were most significantly impacted, having a 1.57 kg/m^2 excess increase in BMI (5.07 lbs) between the two time periods. For ages 12–15 the excess increase was 0.91 kg/m^2 (5.10 lbs); for 16–17 year-olds, 0.48 kg/m^2 (2.26 lbs).
  - Findings on disparities in weight changes are under review, but indicate that disparities were strongest among ages 5–11. White and Asian children gained 4.2 lbs of excess weight compared to 5.8 and 6.0 pounds of excess weight for Hispanic and Black children, respectively. Children on Medicaid gained more weight than children with private insurance, as did children living in neighborhoods without parks or with one park (vs. two or more parks).
  - A summary of additive effects indicates that when comparing an overweight male who has access to two parks and is not on Medicaid, a White male with these characteristics had a 0.84 kg/m^2 increase in BMI and a Hispanic or Black male with the same characteristics had a 1.41 kg/^{2} increase.
- *Discussion:* Limitations included lack of an unexposed control group in 2020; exclusion of children without appointments; use of Medicaid as proxy for SES; and number of parks in neighborhood as proxy for access to parks and playgrounds. Overall results indicate significant excess weight gain during the pandemic period, especially in 5–11-year-olds. Going forward, additional factors can be examined such as neighborhood deprivation, food insecurity, lifestyle habits, and family-level data. Some of this information is available in EMRs.

Q&A with Drs. Woolford and Koebnick

D. Ederer: How were neighborhoods defined and number of parks quantified for each neighborhood?
- C. Koebnick: We used participant addresses to do geocoding and merged that with census data at the block level. Our GIS software includes a layering package called ESRI that we used to get data on parks. It only provides the number of parks by census block, not the size of the parks.

M. Ehmke: Were you able to access information about employment changes during the pandemic for participants' parents?
- C. Koebnick: Those data are not in the EMR in a way that is easily accessible or standardized. This information may be documented in a progress note but this would require natural language processing to extract. We did start asking questions in fall 2021 about SDOH and food insecurity during the past 12 months, so we could examine those associations going forward.
- S. Woolford: Patients complete SDOH questionnaires in the clinic, which provide tangential information about parental employment.

K. Hilyard: How can government agencies and CBOs work with health care systems to access and share privately-owned EHR data?
- C. Koebnick: Certain grant and contract mechanisms allow for this kind of collaboration. Kaiser has done this, for example, by providing the First Five LA initiative a comparison cohort for its intervention. Health care systems may choose to do the analysis in-house if they are not able to share large datasets with other entities.

K. Hilyard: How much of a factor do you believe nutrition may have been for kids who were eating primarily at home vs. eating at least one meal a day at school during the rest of the year?
- S. Woolford: Nutrition likely played an important role given that school meals are a key source of healthy food for lower-income children. We would like to measure changes in children's dietary intake that occurred during the pandemic. Even with the return to school, those changes may persist if children set up preferences for the foods consumed when they were out of school. Low-income children didn't have opportunities to eat at school.

Data Modernization Experiences from the World Obesity Federation (WOF) and TOPCHILD Study
L. Baur shared lessons from data use at WOF and in the Early Prevention of Obesity in Childhood (EPOCH) Collaboration and the Transforming Obesity Prevention for Children (TOPCHILD) Study.

- WOF engages in global advocacy, convenes stakeholders, educates and builds capacity, and generates evidence and data to drive global efforts to reduce, prevent, and treat obesity.
- Examples of resources include the World Obesity Atlas and Global Obesity Observatory, which leverage country- and region-specific data from multiple sources on prevalence, risk factors, comorbidities, relevant policies, and more. Data have been used to compile country scorecards, regional atlases, and economic analyses.

- The [2019 Atlas of Childhood Obesity](#) provides recent estimates of infant, child, and adolescent obesity prevalence in 191 countries. Prior to the pandemic, an estimated 160% increase was predicted for the number of 5–19-year-olds (globally) with obesity by 2030; most countries predicted to have the highest number of those children with obesity are low- or middle-income countries.
- Lessons learned include: there is value in consolidating a range of data sources in one common platform that is easy to use, readily updated, and publicly available; these data summaries are especially useful for policy makers.
- [EPOCH](#) was initially four Australasian trials that aimed to prevent obesity by 2 years of age; researchers agreed to share and combine data from these trials to enable a prospective individual participant data (IPD) prospective meta-analysis (PMA)[1]. An IPD meta-analysis involves central collection of raw data for each participant in the original trials, sourced directly from each study's researchers; this is the gold-standard for meta-analyses and allows more complex analyses.
- Two-year results from ~2,200 dyads found that compared to usual care, early intervention led to modestly reduced BMI z-scores, prolonged breastfeeding, and reduced TV viewing time.[2] Positive initial effects on BMI z-scores at age 2 were not apparent by ages 3.5 and 5 years.[3]
- [TOPCHILD](#) brings together all completed, planned, and ongoing trials on early childhood obesity prevention to identify which behavioral intervention components are most effective and for whom. Forty-nine trials including ~40,000 participants have joined TOPCHILD and agreed to share data.
- Behavioral interventions are often complex and use multiple strategies. Several taxonomies and ontologies are available to understand interventions and their discrete components to examine which components are driving intervention effectiveness. New generation methods for data sharing and analysis provide richer insights but require an experienced core team who can manage the researcher collaboration and the intricacies of processes needed to establish protocols, statistical analyses plans, data interpretation, and publication and dissemination.

Q&A with Dr. Baur

K. Hilyard: How can national governments make the case for prioritizing global childhood obesity alongside domestic childhood obesity?
- L. Baur: Collaborative grant opportunities may exist for regions to work together to share data, resources, and ideas, perhaps through establishing centers for research excellence. It takes time to develop trusted relationships and establish the infrastructure for this kind of collaboration.

M. Ehmke: How have they been able to link with general hospital and health system data from their studies in NZ and Australia to government data?

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[1] Studies are identified as eligible for inclusion in the meta-analysis, and hypotheses and analysis strategies are specified before the results of the studies or cohorts related to the PMA research question are known.
[2] Askie et al. *Pediatric Obesity*. 2020:e12618.
[3] Seidler AL et al. *Pediatr Obesity* 2022.

- L. Baur: For the Healthy Beginnings Trial, one of the included studies within the EPOCH Collaboration prospective meta-analysis obtained prospective consent from parents to access routinely collected administrative data on health care expenditure. Because universal health coverage exists in Australia, plus subsidized access to many drug therapies, data on health care utilization (e.g., hospitalization, doctor visits) were available for analysis with consent. Several publications are available and show, for example, increased health care costs in children ages 2–4 who had obesity.[4,5,6] The other studies did not have such consent and hence no data.

Wrap-up

K. Hilyard reviewed dates for upcoming NCCOR member calls and meetings (below) and invited participants to contact NCCOR (nccor@fhi360.org) with information about any significant childhood obesity-related projects that they would like to share with the NCCOR membership on a member call or with a more public audience on a Connect & Explore webinar.

2022 Member Calls	2022 Member Meetings
July 20 | August 17 | October 19	September 15

[4] Hayes et al. Obesity (Silver Spring). 2016 Aug;24(8):1752-8. doi: 10.1002/oby.21544. PMID: 27380909.
[5] Hayes et al. Journal of Paediatrics and Child Health. 2019 Jul;55(7):802-808. doi: 10.1002/oby.21544.
[6] Brown et al. Australian and New Zealand Journal of Public Health. 2017 Jun;41(3):323-324. doi: 10.1111/1753-6405.12628.