THE NATIONAL CHILDREN'S STUDY ARCHIVE

STUDY DESCRIPTION AND GUIDE

JULY 2017

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1 INTRODUCTION AND OVERVIEW

The National Children's Study (NCS or Study) was conceived to be a nationally representative longitudinal cohort study of 100,000 children from before birth through age 21. The goal of the NCS was to collect information that ultimately would lead to improvements in the health, development, and well-being of children. The primary aim of the NCS was to investigate the effects of environmental exposures (chemical, biological, physical, and psychosocial) as well as gene-environment interactions on pregnancy outcomes, child health and development, and precursors of adult disease.

The NCS as initially planned consisted of two distinct but related studies; the NCS Vanguard (Pilot) Study and the NCS Main Study. The Vanguard Study, which would precede the Main Study, was developed to test study procedures that were being considered for inclusion in the Main Study. The Vanguard Study was launched in January 2009 and ultimately collected data on approximately 6,000 families. In December 2014, the National Institutes of Health (NIH) decided not to launch the Main Study and stopped data collection for the Vanguard Study.

This document is designed to provide a general description of the Study for researchers who wish to use the data collected in the NCS Vanguard Study. Many methods and instruments were developed and tested. The Vanguard Study enrolled nearly 6,000 children and their parents, mostly mothers. The data collected may be used to address a number of research questions. More detailed data user manuals will accompany the release of specific datasets. A glossary of frequently used terms can be found in Appendix 9.

The NCS Vanguard Study data and corresponding documentation are available at https://ncsarchive.s-3.net.

History of the National Children's Study

In 1999, the President's Task Force on Health Risks and Safety Risks to Children concluded that a large study to understand the association between environmental exposures and children's health was essential. Following the recommendation of the task force, the U.S. Congress passed the Children's Health Act of 2000, which directed the National Institute of Child Health and Human Development (NICHD) to conduct a national longitudinal study of environmental influences on children's health and development. The National Institute of Environmental Health Sciences (NIEHS), the Centers for Disease Control and Prevention (CDC), and the U.S. Environmental Protection Agency (EPA) joined the NICHD in planning what would be called the National Children's Study.

The intent of the NCS was to examine the effects of the environment, broadly defined, in the context of genetic influences by assessing a nationally representative probability sample of approximately 100,000 children from the prenatal or preconception period through 21 years of age. The Vanguard Study was conceived as a pilot that would begin a few years ahead of, and later operate concurrent with, the Main Study.

The purpose of the Vanguard Study was to test study procedures for use in the Main Study. The Vanguard Study was launched in January 2009 in seven locations around the country. Due to

lower than expected accrual, 30 new locations were added to the Vanguard Study in November 2010 to test additional recruitment strategies. In October 2012, three more locations were added to evaluate one more recruitment strategy. The 40 site Vanguard Study sample was not nationally representative.

Over the course of the 5-year Vanguard Study, many changes were made to its operations, including changes in recruitment methods, data collection protocols, and information management systems. As a result, different data collection protocols were administered at various time points in the Vanguard Study, resulting in different information collected from different participants. These changes were purposeful, as the goal of the Vanguard Study was to test various procedures to determine which procedures would be used in the Main Study. Operational changes during the course of the Vanguard Study resulted in only a subset of the variables being collected from any particular participant.

Efforts to oversee the NCS included a number of reviews, including two reviews by the National Academy of Sciences (NAS). The first review in 2008 addressed the research plan for the Main Study. The purpose of the second review in 2014 was to evaluate proposed revisions to the Main Study design. This second review raised questions regarding the feasibility of the proposed re-design that resulted in the NIH Director appointing a Working Group of the Advisory Committee to the Director (ACDWG) to evaluate the NCS. On December 12, 2014 the ACDWG recommended that the Vanguard Study be discontinued and that the Main Study should not be launched. The NIH Director accepted these recommendations and indicated that the data from the Vanguard Study would be made available for use by interested investigators.

For further information, a PubMed list of publications related to or referencing the NCS is available at: http://www.ncbi.nlm.nih.gov/pubmed/?term=%22National+Children%27s+Study%22. These publications include both primary NCS publications based upon centrally collected NCS data, as well as publications derived from a variety of sources which may focus on the NCS or simply reference the NCS. A list of NCS publications will be available at the NCS Archive and through the NCS pages on the NICHD website.

Proposed Sample Design for the Main Study

The original sample design developed for the NCS Main Study was a national, multistage, area probability sample. A primary sampling unit (PSU) was defined as a single county or no more than four geographically contiguous counties. Targeting to recruit 250 births per PSU per year for 4 years, for an overall sample of 100,000 births, the final sample consisted of 110 PSUs.[1,2]

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[1] Montaquila, J.M., Brick, J. M. and Curtin, L.R. (2010) Statistical and practical issues in the design of a national probability sample of births for the Vanguard Study of the National Children's Study. Statistics in Medicine, 29(13), 1368-1376.

[2] Westat. (2002) Sampling strategies for the proposed National Children's Study. Report prepared for the National Institute of Child Health and Development.

Within each sampled PSU, the second stage sampling units (secondary sampling units or SSUs) were area segments consisting of Census Blocks or geographically defined neighborhoods. Area segments were stratified to ensure proportional representation of geographic, demographic, and socioeconomic subpopulations. The final sample of women and their births was to consist of all births to women residing in sampled area segments at the time of birth during a 4-year recruitment period.

Vanguard Study (Pilot) Implementation Phases and Recruitment

The NCS Vanguard Study consisted of four phases: the Initial Vanguard Study, the Alternate Recruitment Substudy, Provider Based Sampling, and Post-Recruitment Follow-up. The first three phases were defined by the recruitment strategy that was employed. The last phase continued data collection for all enrolled participants and did not recruit new participants (see Figure 1). The Study took place in 40 PSUs, also known as study locations, in the United States. A study location generally corresponds to a single county or, for less populated geographic areas, a group of contiguous counties.

The initial phase of the Vanguard Study, referred to as the **Initial Vanguard Study (IVS**), was launched in 2009 in seven study locations. In the IVS, participants were recruited through a household-based recruitment strategy in which participant eligibility was defined, in part, by geographic residence. Data collectors canvassed neighborhoods to locate and enroll women who were pregnant or at high risk of becoming pregnant.

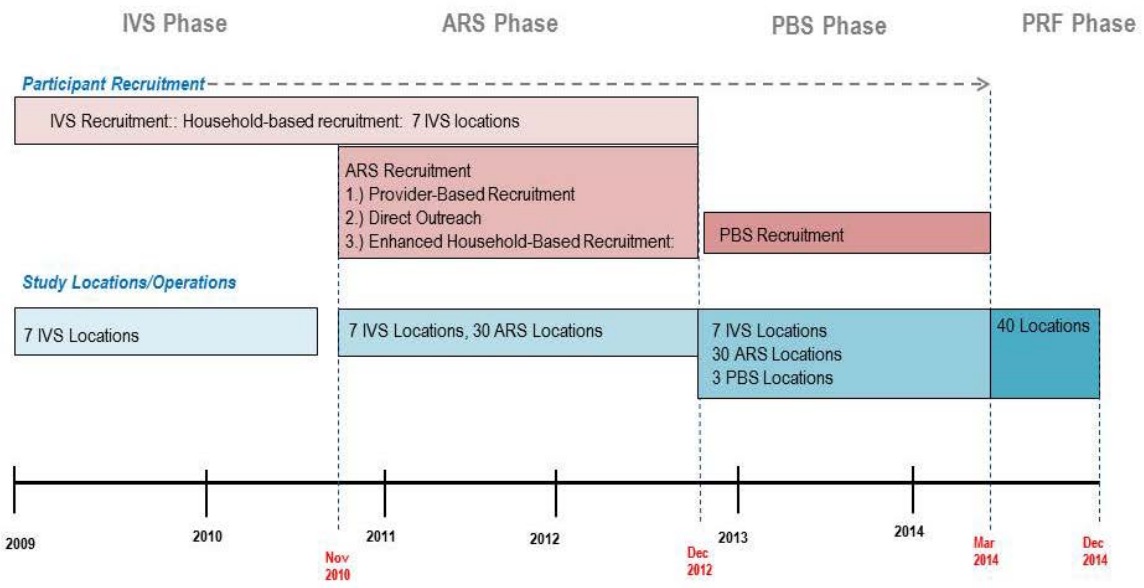
In May 2010, an evaluation of the first year's recruitment progress revealed that the household-based recruitment strategy enrolled fewer participants than had been expected. As a result, in November 2010, the NCS launched the **Alternate Recruitment Substudy (ARS**) as the second phase of the Vanguard Study. The purpose of the ARS was to systematically study the effectiveness of three different recruitment strategies that might prove more efficient than the initial household based strategy. Each of these strategies was tested in 10 study locations, adding 30 more locations to the Vanguard Study. The three strategies were as follows:

Provider-Based Recruitment (PBR): Contact with potential participants was made through health care providers such as obstetricians, gynecologists, pediatricians and midwives.

Direct Outreach (DO): Staff at the local/regional study locations used public outreach campaigns to inform communities about the study. Potential participants initiated contact with the study staff if they were interested in joining the study.

Enhanced Household-Based Recruitment (EHBR): As in the IVS, recruitment continued through household based sampling; however, additional enhancements such as increased community and provider outreach were added so that household members had an increased chance of being aware of the study when they were approached.

Figure 1: Phases of the Vanguard Study



Key:
IVS = Initial Vanguard Study; **ARS** = Alternate Recruitment Substudy; **PBS** = Provider Based Sampling; **PRF** = Post-Recruitment Follow-Up

Overall, the Provider-Based Recruitment strategy proved most efficient. The NCS halted recruitment of women under the three ARS strategies in February 2012 (thus enrollment of newborns ended in December 2012) and launched another substudy in June 2012 called the **Provider-Based Sampling (PBS**) Substudy. The PBS Substudy improved upon the PBR recruitment strategy and enhanced it with a refined sampling strategy.

For a more detailed description of each study phase, please see Appendix 1.

Upon completion of newborn accrual in March, 2014, the Vanguard Study continued to follow-up the 40 study locations with all enrolled participants who were eligible for a Study Visit. This phase was known as the **Post Recruitment Follow-Up (PRF)** and ended in December 2014 when the Study was stopped**.**

Sampling Modification

For the Vanguard Study, study locations were all selected from the pool of 110 originally sampled PSUs. There was variability in how SSUs were defined and selected across different recruitment strategies. IVS and the three ARS strategies all used the originally planned, geography-based design. A minor modification was implemented in DO in that additional SSUs were opened up for recruitment of women for participation in less intense data collection. PBS used a multilevel probability sampling approach in which the SSUs were replaced by samples of prenatal provider locations and a convenience sample of birth hospitals. Within each provider and hospital sample, a probabilistic sampling approach was employed to select participants. Table 1 provides a comparison of the three different levels of sampling units by recruitment strategy.

Table 1: Comparison of Sampling Frame Characteristics by Recruitment Strategy

Recruitment Strategy	Number of PSUs	Primary Sampling Unit	Secondary Sampling Unit	Tertiary Sampling Unit
Initial Vanguard Study	7	Counties	Census Blocks or neighborhoods	NA
Provider-Based Recruitment	10	Counties	Census Blocks or neighborhoods	NA
Enhanced Household Based Recruitment	10	Counties	Census Blocks or neighborhoods	NA
Direct Outreach	10	Counties	Areas adjacent to sampled segments	Census Blocks or neighborhoods
Provider Based Sampling	3	Counties	Prenatal Care providers or birthing hospitals	Patients seen at sampled providers (SSUs)

Where Was the Study Conducted?

Study operations (recruitment, data collection, etc.) in the 40 Vanguard Study locations were initially managed by 37 universities who were under contract to the NCS; the NCS referred to these as Study Centers. Some Study Centers managed operations in multiple study locations. In 2012, in an effort to streamline operations, management of the 40 locations was transferred to four Regional Operations Centers (ROCs). Each ROC managed data collection and study logistics for 10 locations in one of four regions in the U.S.

Distribution of the 40 locations across the four regions and recruitment strategies is listed in Appendix 2.

2 STUDY POPULATION

Eligibility Criteria

The NCS Vanguard Study enrolled women during preconception and pregnancy. The Vanguard Study also enrolled fathers of the children, and later, diverse types of parental partners for the children enrolled in the study. Children were enrolled at birth.

The Vanguard Study enrolled participants who met the following inclusion criteria:

- Non-pregnant women between 18–49 years of age with a probability of becoming pregnant
- Pregnant women at or above the local age of majority[3]
- Children born to enrolled women
- Biological and social fathers or parental partners as identified by enrolled women
- Adult guardians who had legal responsibility to authorize needed care for enrolled children
- Adults who were primary caregivers of enrolled children

The Vanguard Study had the following exclusion criteria:

- Women self-reported to be infertile
- Adults who were unable to grant informed consent
- Prisoners as defined in 45 CFR § 46.303[c]

Participants included English and non-English speaking participants. Births included singleton, multiple births, and siblings born during the recruitment period. All participants completed IRB approved consent forms.

Recruitment

Each recruitment strategy tested during the Vanguard Study differed with regard to the number of women contacted compared to the number enrolled. Overall, the Provider-Based Recruitment strategy proved most efficient with about three women contacted for each woman enrolled and the highest proportion of women who were enrolled during pregnancy (Table 2).

[3] *During the Initial Vanguard Study only*: pregnant women aged younger than 18, residing in a selected IVS geographic segment at the time of enrollment, who were considered to be emancipated minors per the laws of their jurisdictions or minor pregnant women who obtained parental consent for participation

Table 2: NCS Vanguard Study Recruitment Summary

	Initial Household Based	Enhanced Household	Direct Outreach	Provider Based	Provider Based Sampling	Totals
Recruitment period (ending with last baby enrolled)	Jan 2009 – Dec 2012	Nov 2010 - Dec 2012	Nov 2010 - Dec 2012	Nov 2010 - Dec 2012	Dec 2012 – Mar 2014	
Number of locations	7	10	10	10	3	40
Women identified for contact	35,726	27,840	19,347	3,717	3,256	**89,886**
Completed Pregnancy Screener	30,960	21,399	17,194	2,998	1,453	**74,004**
Women eligible for enrollment	3,164	2,482	2,781	1,470	1,268	**11,165**
Women Enrolled*	1,996	1,647	2,256	1,172	850	**7,921**
Enrolled mothers	1,297	1,022	1,370	998	733	**5,420**
New born children Enrolled	1,409	1,039	1,395	1,021	744	**5,608**
Fathers enrolled	722	71	132	71	13	**1,009**

***** The Initial Vanguard Study and Alternate Recruitment Strategies enrolled both women who were pregnant or trying to become pregnant, whereas the Provider Based Sampling substudy enrolled only pregnant women.

All recruitment strategies except for Provider Based Sampling allowed for women to be enrolled at pre-conception. In general, the provider based methods (Provider Based Recruitment and Provider Based Sampling) tended to recruit women at later stages of pregnancy than the other enumeration and follow up strategies. The distribution of women by stage of pregnancy at consent is described in Table 3 below.

Table 3: Distribution of enrolled women by entry point to the study and percent who remained non-pregnant by end of recruitment

Study Entry Point	Initial Vanguard	Enhanced Household	Direct Outreach	Provider Based Recruitment	Provider Based Sampling
Pre-conception	47%	47%	49%	10%	NA
Pregnant	53%	51%	51%	88%	62%
At birth	-	<1%	<1%	<1%	38%
Total	100%	100%	100%	100%	100%
Percent of enrolled women who remained non-pregnant by the end of recruitment period and thus became dis-enrolled from the study					
	15%	27%	31%	8%	NA

In the ARS, the distribution of women's entry point to the study varied by recruitment strategy. Close to 90% of women joined the study during their pregnancy in the provider based (PB) recruitment strategy while the percentages are much lower, about 50% for both Enhanced Household (EH) and Direct Outreach (DO) strategies. Close to 50% women enrolled pre-conception for these household based and volunteer based recruitment strategies as compared to the 10% for the Provider Based recruitment strategy. The last row of Table 3 displays the percent of enrolled women who remained non-pregnant when the recruitment period ended in February 2012. Perhaps because the IVS had a longer follow-up time period than the other strategies, fewer women (15%) remained non-pregnant than in the EH or DO (27% and 31%, respectively).

Retention

Of 6,229 total pregnant enrolled women, 5,420 (87%) remained in the study at the delivery of their babies (Table 4). Of these mothers who remained enrolled, 4,831 (89%) were further retained by the time the Vanguard Study ended in December 2014. Thus the Vanguard Study had an overall retention rate of 78% from the time of enrollment up to the time the Study closed, with 1 to 6 years of follow-up depending on the time of recruitment. Among the enrolled mothers, an overall withdrawal rate was 5%, and another 5% were lost to follow-up (participants who moved between contact attempts and could not be located). Baby retention parallels mother's retention.

Table 4: NCS Vanguard Study Summary on the Final Status of Women

	IVS		ARS						PBS		**Vanguard Study Total**	
Participants	**Household-Based**		**Enhanced Household**		**Direct Outreach**		**Provider-Based**		**PBS**			
	n	%	n	%	n	%	n	%	n	%	n	%
Enrolled pregnant women	1,592		1,162		1,556		1,069		850		**6,229**	
Enrolled mothers	1,297		1,022		1,370		998		734		**5,420**	***87%***
Final Status												
Retained	1,113	86%	908	89%	1,293	94%	841	84%	676	92%	**4,831**	89%
Withdrawn	83	6%	38	4%	37	3%	81	8%	24	3%	**263**	5%
Lost to Follow-up	40	3%	71	7%	35	3%	73	7%	31	4%	**250**	5%
Other	61	5%	5	0%	5	0%	3	0%	3	0%	**76**	1%

Demographics

The different recruitment strategies were not designed to recruit a particular demographic, and because of the different demographics of their locations, they each enrolled a slightly different demographic distribution of women. For example, provider based recruitment enrolled higher numbers of young, unmarried women with less education than the other recruitment strategies, making it more representative of the national population. Table 5 below describes the population of enrolled mothers in the NCS Vanguard Study.

Table 5: Distribution of NCS Mothers by Race, Age and Education for each of the recruitment strategies: Initial Vanguard Study(IVS), Enhanced Household (EH), Direct Outreach (DO), Provider Based Recruitment (PBR) and Provider Based Sampling (PBS)

NCS Mother's characteristics at child's birth	Recruitment Strategy for PSU										Total	
	IVS		EH		DO		PBR		PBS			
	N	%	N	%	N	%	N	%	N	%	N	%
Total	1297	*100*	1022	*100*	1370	*100*	998	*100*	733	*100*	5420	*100*
Race/Ethnicity												
Unknown	12		12		2		14		8		48	
Hispanic	176	*14*	256	*25*	97	*7*	145	*15*	295	*40*	969	*18*
Non-Hispanic White	790	*61*	580	*57*	1045	*76*	566	*57*	253	*35*	3234	*60*
Non-Hispanic Black	61	*5*	109	*11*	150	*11*	215	*22*	103	*14*	638	*12*
Non-Hispanic Other	258	*20*	65	*6*	76	*6*	58	*6*	74	*10*	531	*10*
Age												
Unknown	0		1		2		13		0		16	
Under 25 years old	236	*18*	285	*28*	233	*17*	307	*31*	210	*29*	1271	*24*
25-34 years old	812	*63*	578	*57*	902	*66*	514	*52*	414	*56*	3220	*60*
35 or older	249	*19*	158	*15*	233	*17*	164	*17*	109	*15*	913	*17*
Education												
Unknown	76		6		7		3		1		93	
Less than High school	212	*17*	163	*16*	76	*6*	215	*22*	143	*20*	809	*15*
High school/Some college	679	*56*	552	*54*	472	*35*	501	*50*	391	*53*	2595	*49*
College or higher	330	*27*	301	*30*	815	*60*	279	*28*	198	*27*	1923	*36*
Marital Status												
Unknown	44		6		7		6		0		63	
Married	987	*79*	620	*61*	1117	*82*	518	*52*	329	*45*	3571	*67*
Not married	266	*21*	396	*39*	246	*18*	474	*48*	404	*55*	1786	*33*

3 DATA COLLECTION AND STUDY CONTENT

How Were Data Collected?

The NCS Vanguard Study collected a wide array of participant data, including basic information on health status, child development and behavior, and environmental exposures (including social and familial context, characteristics of the physical environment, and chemical exposures). Biospecimens were also collected from a subset of mothers, fathers, and children. In general, the following types of data were collected:

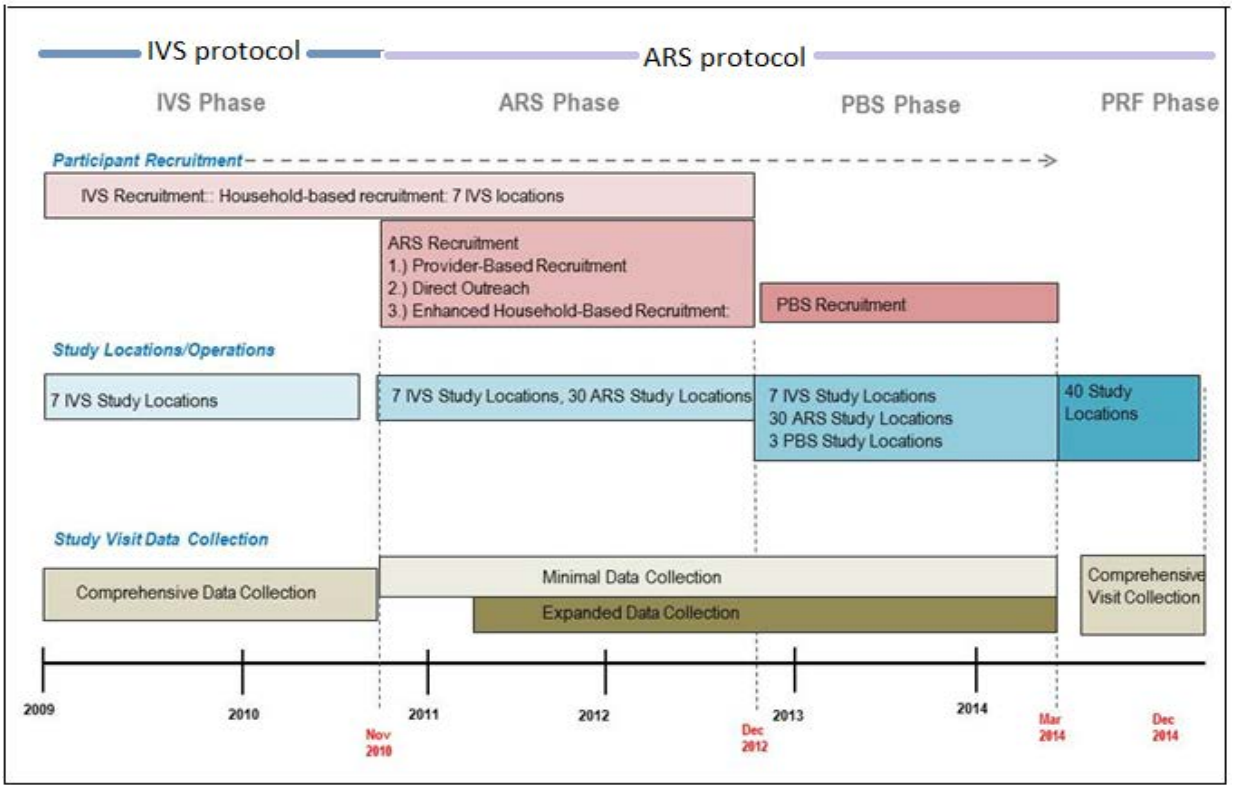
- Questionnaire/Instrument data including in person (CAPI, computer-assisted personal interviewing), phone (CATI, computer-assisted telephone interviewing) and self-administered questionnaires (SAQ)
- Direct assessments (e.g., physical measures such as height and weight, blood pressure, circumferences and skinfold thickness)
- Environmental samples, e.g., air, water, and dust from participants homes
- Biospecimens, e.g., blood, urine, saliva
- Operational data e.g., recruitment strategy, geographic data

Importantly, because the Vanguard Study was conducted to test the utility of various recruitment strategies and data collection methodologies, not all participants were asked to provide all assessments. Accordingly, not all possible data and specimens are available for a given participant.

When Were Data Collected?

The different phases of the Vanguard Study corresponded to different plans for study visit assessments. The IVS began with a uniform study visit schedule and all enrolled participants underwent the same set of study assessments. When the ARS began, the study protocol changed initially to one of minimal data collection. During this time, fewer assessments were administered and there was a pause in collection of biospecimens and environmental samples. As the ARS proceeded, additional study visit assessments and biospecimen and environmental sample collections were introduced in some locations (or, in the case of the IVS locations, re-introduced). Once recruitment ended, all enrolled participants were followed with a more comprehensive data collection protocol, the Post Recruitment Follow-up (PRF) Phase. Figure 2 displays the two main data collection protocols, referred to as IVS protocol and ARS protocol, as they related to the Vanguard Study phases.

Figure 2: Data Collection Phases of the Vanguard Study



Key:
IVS = Initial Vanguard Study; **ARS** = Alternate Recruitment Substudy; **PBS** = Provider-Based Sampling; **PRF** = Post Recruitment Follow-Up

What Topics, Types of Data, and Variables Were Collected?

The initial purpose of the Vanguard Study was to test the protocol and eventually to become part of the Main Study. As such, the data collection protocol for the IVS was extensive, covering all content areas comprehensively. With the addition of 33 more locations during the ARS and PBS, the Vanguard Study objective changed to become a test bed for Main Study design and enrollees would not be part of the Main Study's sample, so data collection shifted to a minimal approach covering selected content areas, with later introduction of expanded data collection in some locations. During the Post Recruitment Follow-up period, data collection expanded once again for later visits for all participants in all locations.

A brief description of the kinds of data collected is below. A complete list of the study visit assessments and corresponding visit schedules is provided in Appendix 4 Close to 60 interview instruments and 80 additional data collection forms were used to collect participant data. Procedures used for collection of data and samples are detailed in the NCS Manuals of Procedures (MOPs) and Standard Operating Procedures (SOPs), which can be requested on the Registered Website area of the NCS Archive.

Questionnaire Data: Participants completed phone and in-person interviews as well as self-administered questionnaires (SAQs) on a variety of topics, including but not limited to

reproductive and pregnancy history, medical conditions and history, health behaviors, mental health, occupation, hobbies, environmental exposures, and social support.

Neuro-psychosocial and Cognitive Assessments: Multiple neuro-psychosocial assessments were administered to both children and caregivers. These included direct and indirect measures to assess maternal mental health, infant sensory processing, child social and emotional development, and cognitive constructs such as language development, memory and executive function. Children were also screened for autism and developmental delay. Proprietary instruments are indicated as such in the Research Tools section of the registered website.

Physical Measures and Anthropometric Data: Physical assessments were conducted on children, mothers and fathers. Assessments included basic anthropometric measures (such as weight, height, ulnar length, circumferences of the head, mid-upper arm, waist, and thigh, triceps and subscapular skinfold thickness, blood pressure, visual acuity, and assessment of motor skills.

Biospecimens: Biological samples were either self-collected by participants or collected by NCS staff in the home, clinic, and birth settings. Samples collected included placenta, blood (from venipuncture, umbilical cord, and/or heelprick), meconium, vaginal swab, urine, saliva, hair, nails, and breast milk. Data collectors and field staff transported, processed, and shipped samples to a central repository.

Environmental Samples: Environmental samples were collected during in-home visits and included dust, air, and water. Study staff also performed observations of the internal and external structure of participant residences. Field staff shipped samples to a central repository.

How Were Data Captured?

Throughout the course of the Vanguard Study, data were captured and stored in different ways. IVS data collection began using a centralized electronic case management and data capture system. As the Study progressed to the ARS protocol, the centralized model was replaced with a decentralized model where many different information management systems were tested, with variable success in capturing the data. After testing and evaluating these systems, the NCS chose four systems to evaluate for data capture, subsequently reduced to three. Each ROC was assigned one of these systems. During some periods data were captured on paper before entry into one of the three systems.

How Were Data Processed?

Each data file has a detailed processing document accompanying it in the Researcher Portal of the NCS Archive. Most of the processing was in the form of linking and assembly of data sets that may have multiple sources or instruments. All files have been reassigned with unique participant identifiers that reduce the possibility of duplication of records, and increase the ability to link files.

Automated data edits in the computer assisted interviewing software (CAI) were minimal. Except for critical data items, no systematic attempts were made to collect missing or inconsistent responses. Therefore there may be longitudinal or other inconsistencies in the data as presented.

A limited amount of quality assurance was performed locally and centrally for critical data items. For variables with data edits, flags were created to preserve original response. Recoded data or derived data elements are indicated as such in the variable label. No imputation was performed. Detailed data processing and coding information is available in the Researcher Portal area of the NCS Archive.

Summary Measures for Scales

A number of proprietary instruments were administered to collect information on cognitive function and development. The response data from these instruments were processed to compute summary scores according to the algorithms provided by the instrument authors. Due to the copyright requirements, some of these instrument data files contain only the summary scores and not individual item responses.

4 DATA AVAILABLE FOR USE

Available Data Sets

The data collected in the NCS Vanguard Study from the initial recruitment efforts up to the 42-month visit has been released. Information on accessing the data is provided in Section 5. Figure 3 describes major types of data by the Vanguard Study phase and the time period covered by the data. Data collected from the IVS, ARS, and PBS substudies are available. Data files that serve as master files that contain demographic and critical data items on all enrolled participants throughout the Vanguard Study as well as the biologic and environmental samples are available. Separate data files are available for women, fathers, and children. A participant linkage data file allows linkage between mother and child, father and child, and alternate caregiver to the child.

Figure 3: Data Types Available by Vanguard Study Phase, Participants, and Time Covered

Data Types Available in the NCS Archive by Vanguard Study Phase, Participants, and Time Covered

Operational Data | Data collector observations and measurements

Interview Data | Samples housed in repository

Participants covered	Time period of data coverage						
	2009	Jan-Sept 2010	Oct-Dec 2010	2011	2012	2013	2014
IVS participants	**IVS Operational data**						
	IVS Interview data						
	IVS self-administered questionnaire data						
	Biospecimen & environmental sample collection forms data						
	Physical Measures data						
	Recruitment & Enrollment data (covers participants who were enrolled after September 2010)						
ARS participants			*ARS Recruitment*				
			ARS Retention				
PBS providers and participants						*PBS Provider*	
						PBS Sample Frame	
						PBS Recruitment	
All VS participants			*ARS interview data (also covers IVS and PBS participants)*				
			ARS self-administered questionnaire data & proprietary data collection instrument data				
			ARS data collector observations and measurements				
	VS Fathers						
	VS Child Study Visit						
	VS Participant Linkage File						
	VS Participant Demographics						
	VS biospecimen and environmental samples (from Sample Repository)						

Key: VS=Vanguard Study; IVS=Initial Vanguard; ARS Alternate Recruitment Substudy; PBS=Provider Based Sampling

For the data release in July 2017, the following data files are available in the Researcher Portal:

Table 6a: Number of IVS Data Files by Data Collection Type and Participant Type

Data Collection Category	Woman	Child	Father	Other	Total
Prenatal Interview*	6		1		7
Postnatal Interview*	3	3			6
Physical Measures	1	1	1		3
Fetal and Neonatal Assessments	3	1			4
Self-Administered Questionnaires	8	5	1	1	15
Biospecimen Collection forms	5	7	2		14
Environmental Sample forms				14	14
Master Operational Dataset	1	1	1		3
Special Analysis Datasets	1		1		2
Total	28	18	7	15	68

Table 6b: Number of ARS Data Files by Data Collection Type and Participant Type

Data Collection Category	Woman	Child	Father	Other	Total
Screening interview	3				3
Prenatal Interview*	5		1		6
Postnatal Interview* (up to 42 month visit)	8	10			18
Psychosocial and Cognitive Assessments		8			8
Physical Measures		1			1
Self-Administered Questionnaires	3				3
Master Operational Dataset	2	1	1	2	6
Demographic Dataset**	1				1
Biospecimen Lab Results Dataset**	4				4
Environmental Lab Results Dataset**	11				11
Total					61

*Interview specific to each study visit
**Dataset spans over all data collection phases including IVS, ARS, and PBS
Note: The above data files are created at the participant level with the exception of the sample dataset. Additional data files from "interviews" exist that are constructed at the event or entity level when reported in a repeating and detailed manner.

The above data files with detailed participant level data are available to approved researchers. Operational Data files constructed separately for mother, father, and child are available as downloadable files to all registered users. These data files describe participation information for mothers, fathers, and children in various data collection events in order to support the computation of completion and response rates of the visit and each component. The data files will help researchers determine the sample sizes available at various study visit events and data collection activities.

Data Quality and Considerations

Since the Vanguard Study was intended to be a platform for testing the feasibility and acceptability of different recruitment strategies and data collection methodologies, it should be thought of as a collection of sub-studies rather than one uniform data collection effort. Multiple transitions, coupled with differing recruitment strategies and instrument versioning, have resulted in datasets of varying complexity and completeness.

Due to the pilot nature of the Study, there are multiple reasons for missing data, beyond what is normally expected in a survey or a longitudinal study database.

These include:

- Changes in the study protocol as a result of the evolving nature of the NCS pilot, resulting in non-uniform data for all participants.
- Some participants completed study visits by phone instead of in-person visits. Therefore, biospecimens, environmental samples, and physical measures were not collected at these visits.
- Not all participants were asked to provide all assessments. Accordingly, not all possible data and specimens are available for a given participant.
- Differences in data information management systems led to variability in data capture, transmission and consistency.
- Within the ARS phase of the Study, different study locations collected different amounts of data. Some locations collected more information. Approximately 22 locations collected expanded data and 18 locations collected minimal data. As part of the expanded protocol, biospecimens, physical measures and environmental samples were collected.

Major points to consider when using the Vanguard Study Data include:

- No sample weights are available since the Vanguard Study sample was not representative of the general population.
- Contradictions in the data may occur in responses given by respondents at different visits on data items expected to be static over time.

5 PROCEDURES FOR ACCESSING DATA AND SAMPLES

Overview

The NCS Vanguard Data and Sample Archive and Access System or "NCS Archive" comprises three components:

- NCS webpages on the NICHD public website,
- A Registered Website, and
- A secure Researcher Portal.

At the public website, potential data users can review limited Study information. Users may register to obtain additional Study information, download available data files, and submit proposals to request access to more study data and stored materials.

Figure 4 "Access Requirements for NCS Vanguard Data and Sample Archive and Access System" illustrates the type of resources available and the procedures needed to gain access to them at the three different levels of the NCS Archive (Public Website, Registered Website, and Researcher Portal).

All data requests will be reviewed by a NICHD Data Access Committee to determine that the proposed research use is scientifically and ethically appropriate and consistent with the informed consent. Criteria for sample request approval include sample availability and technical suitability with demonstration of adequate funding, facilities, and expertise to perform the proposed research. Descriptions of approved proposals are viewable by registered website users.

If a request is approved, the researcher will be given access to a secure virtual workstation in the Researcher Portal and support will be provided by the Archive to make available the requested data. The NCS Archive staff can help bring in laboratory result data or extant data as needed. The researcher will be able to work with NCS data in the secure environment using provided statistical software (SAS and R). Once the analysis is complete and prior to release of any information from the Researcher Portal, a data reviewer will help assure that any information to be transferred from the Researcher Portal to the researcher meets disclosure standards. More information on the disclosure standards is provided in Section 6 of the NCS Study Description and Guide.

There is no cost to researchers to use the NCS Archive data. Handling and shipping costs may apply for biological or environmental sample requests.

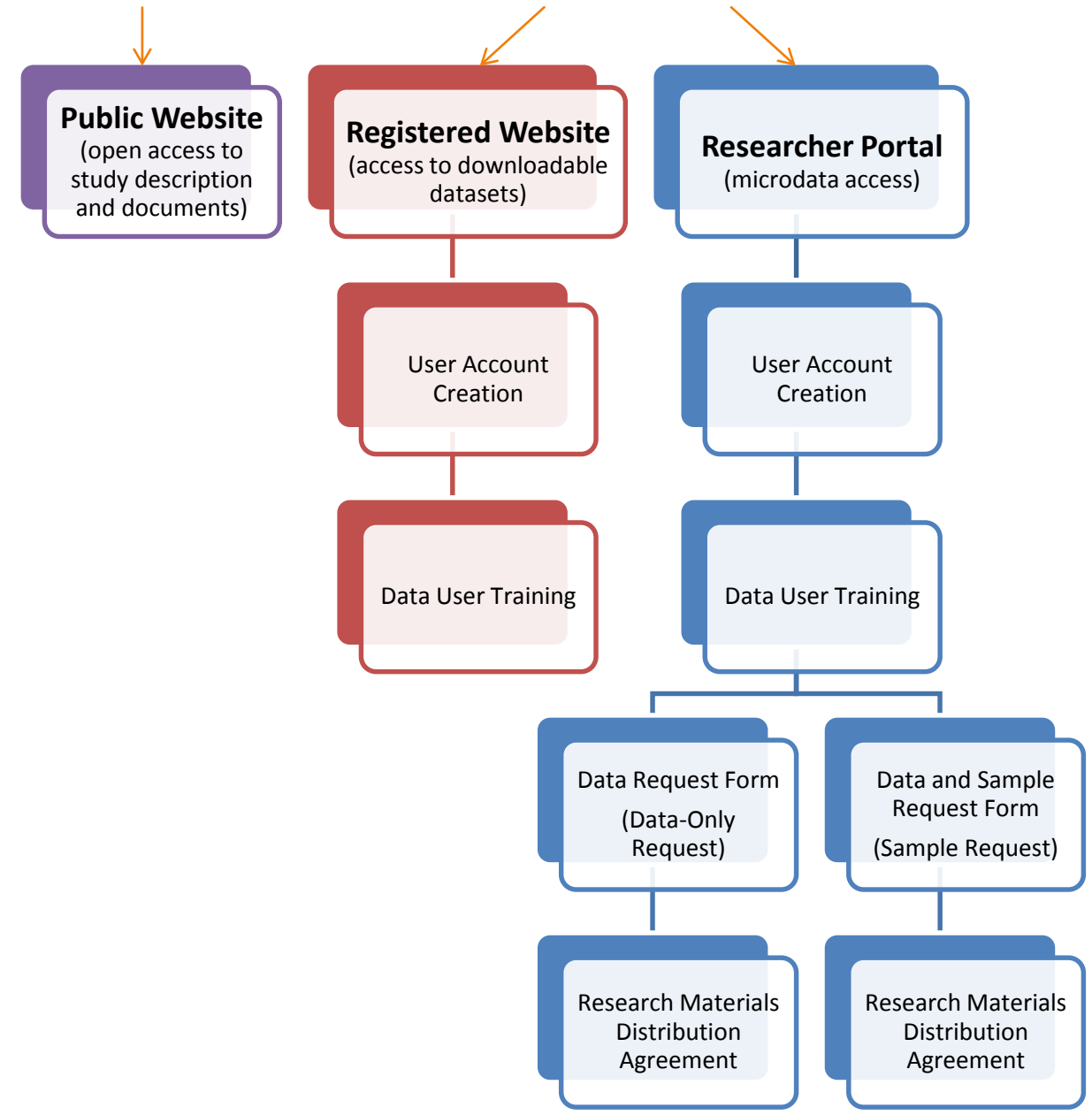


Figure 4: Access Requirements for NCS Vanguard Data and Sample Archive and Access System

Access to the public website does not require any information from the user. To access the downloadable files and other information on the Registered Website, a user must create a user account and complete data user training. To gain access to microdata via the Researcher Portal, the user must create an account and complete data user training at the Registered Website, and then complete the Data Request form and Research Materials Distribution Agreement found there. Sample requests must follow a similar process, starting with a user account, Data User Training, and completion of a Data and Sample Request form and Research Materials Distribution Agreement.

Overview of How to Register and Request NCS Vanguard Data

1. Go to the Registered Website at NCSArchive.s-3.net and

    - Create an account
    - Complete your profile
    - Accept the data user agreement

2. Develop a Research Plan using the ***Archive tools***:

    - Downloadable Operational Datasets
    - Protocol Browser
    - Variable Locator
    - Instrument and Dataset Inventory
    - Participant Explorer
    - Sample Explorer

3. Complete and submit a ***Data Request*** or a ***Data and Sample Request*** form which includes:

    - Title of Research Plan
    - Requesting investigator information
    - Investigator's institution information
    - Request Details- including a Research Plan (rationale, main hypothesis, and proposed research aims)

4. Complete the NCS Data User Training

5. Receive notification of approval or disapproval of the request at the email address specified in the request

Preparing and Submitting Data and Sample Requests

This section provides a detailed description of the process by which to request data and samples from the NCS Archive.

Researchers may submit requests for data alone ("data-only requests") or submit requests for both data and biological and/or environmental samples ("sample requests").

Data and samples are provided free of charge to qualified investigators, with the exception of the cost of sample selection and sample shipment from the repository. Samples are not provided unless funds are available to perform the research.

Requests are made through the NCS Archive at https://NCSArchive.s-3.net.

STEP 1 – REGISTER AND SEARCH

The researcher may use the registered website portion of the NCS Archive to research the available datasets and variables using the Archive's Protocol Browser, Variable Locator, Instrument and Dataset Inventory, and Participant Explorer tools found in the "Research Tools" tab. Sample inventory information is available under the Sample Inventory tab and using the Sample Explorer tool. To initiate a request, use the "Submit Data Request" function under the "Research Requests" tab. Assistance is available under the "Help" tab, where there is also a "Contact Us" function. The researcher must be logged in as a registered user to submit a request. Users who experience difficulty with Archive navigation or functions may request help by email at mailto:NCSArchive.s-3.net.

STEP 2 – PREPARE AND SUBMIT REQUEST

Data-only requests must use the NCS Vanguard Data Request Form found at the "Submit Data Request" function under the "Research Requests" tab. Submission and review for data-only requests is straight-forward. Note that a "Save for Later" function button at the bottom of the form allows it to be completed over more than one session prior to its actual submission. A PDF version of the form is available if needed. See the accessibility page if assistance is needed to access PDF files.

The researcher is prompted to supply

- A descriptive identifier for the proposed project
- Information about the requesting investigator
- Information about the investigator's institution
- Data security plans
- Information on other approved users for whom access is requested
- Research plan
- Subject characteristics
- Scientific background and rationale
- Documentation of IRB review and approval or waiver for the proposed research
- Documentation of funding availability

Other relevant materials (investigator CV or biosketch, letters of support, etc.) may also be attached to the request.

The requestor is encouraged to submit the research study plan, investigator information, funding status information, and documentation of IRB review or waiver as early in the request process as possible.

Submitted requests will be screened by NCS Archive staff, who may request additional information or clarification. After initial screening, data-only requests will be placed in a queue for review by the NICHD. NCS Archive staff will notify the requestor of the review outcome. For approved requests, a Research Materials Distribution Agreement (RMDA) will be generated for investigator and institutional signatures. Once the researcher uploads the signed RMDA, NCS Archive staff will arrange for the researcher to obtain secure Researcher Portal access to the NCS data requested (and in the case of sample requests, the NCS repository then prepares and ships any requested samples).

Sample requests require use of the National Children's Study Vanguard Data and Sample Request Form. Applicants must agree to use the material for non-profit research purposes only. Samples are provided initially blinded to their participant linkage. Researchers must provide back to the NCS Archive the results of their laboratory analyses of the samples in order to receive the linkage key.

In addition to the same information required for data-only requests, the researcher is asked to provide the following additional information for sample requests:

- Shipping account information
- Laboratory contact information
- Number and type of samples requested
- Minimum and optimum volume or mass
- Additional requirements such as anticoagulant type, additives, preservatives, etc.
- Analytes or parameters to be tested
- Type of assays/platforms to be used
- Sample size and power
- Covariates

The NCS Archive staff will conduct a preliminary search for suitable samples based upon the information provided in the request. Researchers should be as specific as possible in describing their sample selection criteria. Abbreviations and acronyms in sample specifications should be avoided. Discussions between the researcher and NCS Archive and/or NICHD staff may be necessary to determine how best to fulfill sample requests.

Manuals of procedures and details regarding NCS Vanguard data and sample collection, transport, processing, and storage procedures are available to registered users in through the "Procedures" section under the "Data and Documentation" tab of the registered website portion of the NCS Archive. Efforts to assure data and sample quality were ongoing throughout the NCS Vanguard pilot and the NCS Archive development. NCS Archive staff and NICHD staff have special knowledge of sample characteristics and historical information about NCS repository samples, and can apply that knowledge to help best fulfill the investigator's request.

Requests that are inactive for 12 months will be automatically closed.

STEP 3 – FINALIZE REQUEST

For data-only requests, the request is finalized when all required documentation is submitted for NICHD review.

For sample requests, if a sample search successfully identifies sufficient numbers and types of potential samples, the samples are temporarily reserved while the request is reviewed to determine its impact on the repository inventory.

Applicants who need to submit a funding application for their proposal may request samples to be reserved for up to 12 months or until a funding decision is obtained, whichever comes first. The decision to reserve samples will consider the impact of the request on the repository inventory and in the case of scarce samples may prompt additional expedited NICHD review. It is the applicant's responsibility to provide the NCS Archive with any updates to their project's funding status during the reservation period. If no update is received within 12 months, the request will be closed and the reservation cancelled.

Review of Data and Sample Requests

An overview of the request submission and review process is shown in the Workflow for NCS Data and Sample Requests figure.

There are two options for review:

1. For requests with existing funding, the NCS Archive coordinates the scientific review of the proposed research plan. This approach is used in the case of data-only requests and for sample requests when the applicant has existing funding to perform the proposed research.

2. For requests seeking funding, a funding group performs the scientific review of the proposed research plan. This approach is used when the researcher needs to submit an application to fund the proposed project. Documentation of the funder's scientific review is required when funding is obtained.

For either option:

- Investigators must have funding and adequate facilities and expertise to perform the proposed research.
- Requests for samples will undergo rigorous review. In some cases pilot testing may be required.
- Adequate justification will be required for use of scarce samples; samples associated with active cohorts; requests for substantial proportions of a remaining sample type; final aliquots or stock DNA/RNA vials; and matched sample sets (mother-infant pairs, serial samples, environmental-biological sample pairs, etc.). As part of the review process, alternative recommendations will be made if another sample type may be appropriate for the proposed research.

- Evidence of sufficient validation of any proposed assays may be required. In the case of proposed assay validation studies, a pilot study using a subset of the requested samples may be required.

Regardless of which review approach is taken, the review must include:

- Consideration of ethical and regulatory issues, including whether the proposed research is consistent with terms of the informed consent and compliant with applicable regulations for human subject research protection and privacy protection
- Availability and technical suitability of any samples requested for the proposed research
- Significance and appropriateness of the proposed research
- Design of the proposed research
- Qualifications of investigator(s) to do the research

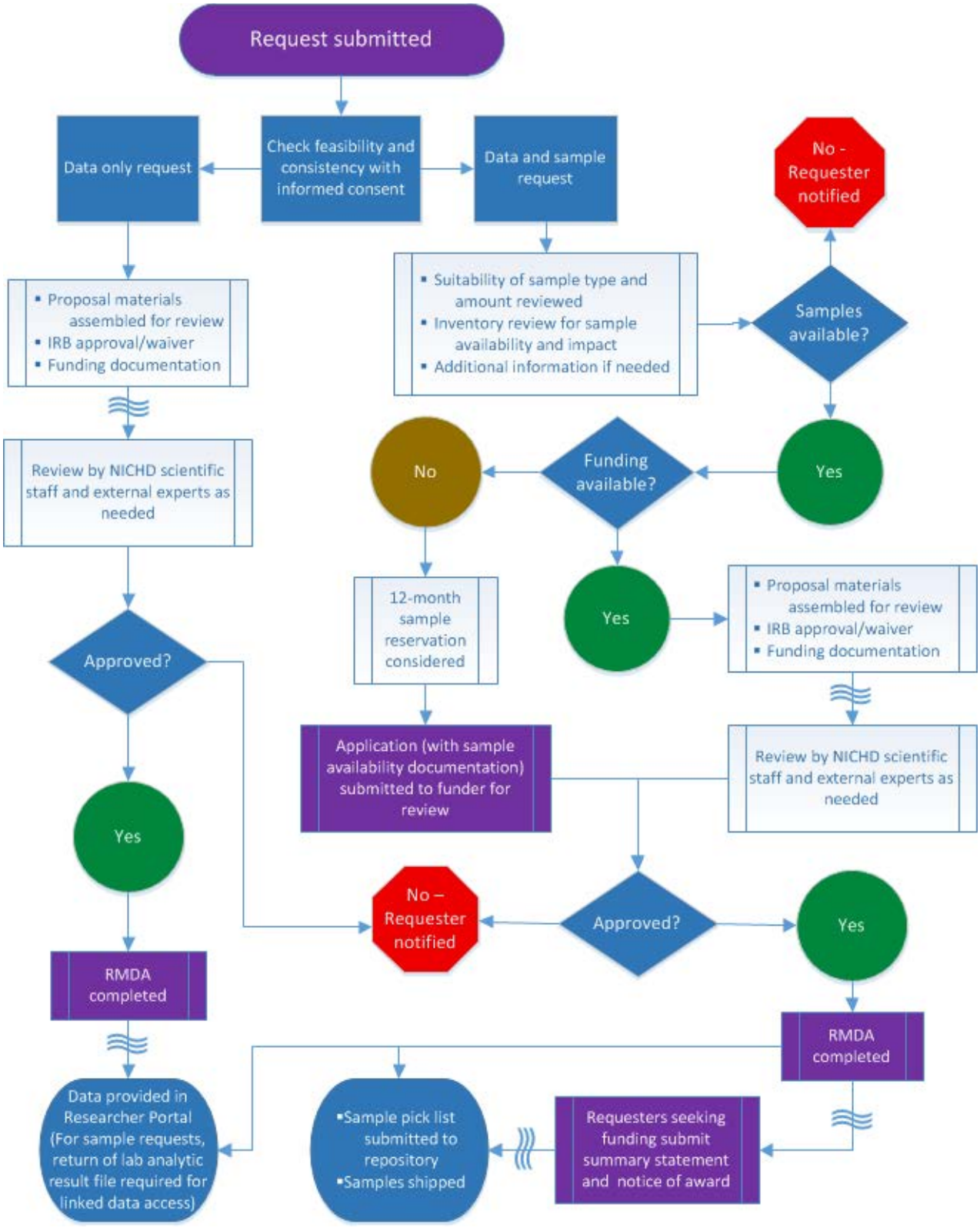


Figure 5: Workflow for NCS Data and Sample Requests

In the figure above, “IRB” denotes “Institutional Review Board”, “RMDA” denotes “Research Material Distribution Agreement”, investigator actions are indicated by figures in purple, and the wave symbol indicates internal review.

Initial Review

NCS Archive staff and NICHD staff first review ethical and regulatory considerations and the appropriateness of the requested data and (if requested) samples. A search for any samples requested is initiated simultaneously. The research plan is reviewed to determine whether it is consistent with the NCS informed consent. Investigators are notified immediately if the requested data or sample type is not available, or if the research plan is not acceptable, and further processing of the request is terminated.

If potentially suitable samples are identified in response to a sample request, their availability and the potential impact on the repository inventory is reviewed by NCS Archive staff, and a technical review is conducted by NICHD staff to determine if the selected samples (including volume, concentration, etc.) are suitable for the proposed research.

If a sample search identifies samples that are acceptable to the requestor, the NCS Archive staff creates an availability report which incorporates information regarding existing numbers of aliquots and sample volumes. The availability report is used to determine the potential impact that fulfillment of the request may have on the NCS repository inventory.

Scientific Review - Requests with Existing Funding

If the researcher does not need to seek additional funding for the proposed research, the request undergoes a review coordinated by the NCS Archive staff. The NCS Archive staff and NICHD staff review submitted materials for:

- Completeness of the request, including IRB review and funding availability:
    - Missing or incomplete documentation will generate an email request to the investigator.
    - Likewise, investigators will be prompted for missing information if the submitted research plan is determined to be incomplete, before it is sent forward for scientific review.
- Suitability of any requested material types, amounts, and assay methods (if samples are requested)
- Appropriateness of sample quantity (if samples are requested):
    - The requestor is required to document the rationale for the number of samples requested.
    - NCS Archive staff will review sample size and power calculations for the proposed statistical analysis approach. Alternative analytic approaches may be suggested, if appropriate.

This review is designed to ensure that all required documentation has been submitted, that the proposed research is technically feasible, and that the sample size is adequate to answer the research questions.

Upon completion of the preliminary review, three NICHD data access committee staff scientists with appropriate expertise are assigned to conduct a formal review of the request. Other NIH staff or external scientific experts may be recruited if needed. The materials submitted by the researcher are compiled under a Voting Tab on a restricted area on the NCS Archive. Reviewers are notified by email and securely log in to the NCS Archive voting area to complete their review of the submitted materials and any additional materials prepared by the NCS Archive staff. Reviewers vote electronically.

All scientific reviews consider these specific evaluation criteria:

- Scientific merit: Is the research plan well designed and likely to provide meaningful results?
- Significance: Does the project address an important problem? Will it improve scientific knowledge, technical capability, and/or clinical practice?
- Does the proposed research warrant the use of any requested biological or environmental samples?
- Should the request be reviewed by external experts? Reviewers are asked to identify external experts if appropriate.
- Approach: Is the overall strategy, methodology, and analytic plan well-reasoned and appropriate?
- Are any samples requested suitable for the proposed research?
- Is statistical power adequate to meet the stated aims?
- For sample requests, is the sample-associated data needed to achieve the stated goals available?
- Investigator qualifications: Are the investigators qualified to perform the proposed research?
- Environment: As needed, are adequate institutional support, equipment and other physical resources available to the investigators?

Reviews may result in approval, denial, or deferral. The requestor is notified of the decision. A summary of the review will be provided to the requestor if the request is denied or deferred.

Scientific Review - Requests Seeking Funding

If the researcher needs to obtain funding to perform the proposed research, the request undergoes the initial ethical, suitability and availability review described under "**Initial Review**" above. In the case of requests to reserve samples, documentation will be provided that the samples will be held in reserve for the proposed research for up to 12 months. The decision to reserve samples will consider the impact of the request on the repository inventory and in the case of scarce samples may prompt additional expedited NICHD review. When a funding application is successful, the researcher will be asked to provide documentation indicating that funding was

obtained and that a scientific review covering the elements described under "**Review of Data and Sample Requests"** above. NICHD staff will determine if the documentation adequately addresses the elements of the scientific review or if a second scientific review is needed.

Research Material Distribution Agreement (RMDA)

When a request is approved, the investigator will be instructed to complete a Research Material Distribution Agreement (RMDA) generated by the system. The RMDA will be downloaded from the NCS Archive, completed, signed, scanned, and uploaded by the requestor as a final attachment in PDF format to the application. The NICHD Contracting Officer Representative for the NCS Archive and/or NCS Repository signs the RMDA as the NICHD representative.

Required Submission of Laboratory Results Dataset

In order to receive the linkage key to connect blinded samples with individual participant data, investigators who request and receive samples for their research project must submit results of their laboratory analyses to the NCS Archive. The results dataset should be sent via email to mailto:NCSArchive@s-3.net and must include project identifiers, name and contact information for the testing laboratory, and a brief synopsis of the method and testing performed. Investigators are responsible for sending a codebook that includes valid result ranges and full test names. The data can be in CSV or ASCII format. At minimum, the dataset should include for each record the following variables: Sample ID, testing date, test(s), result(s), and units of measurement. Data files will be made available for future approved NCS Archive research projects.

Biological and Environmental Samples

A variety of biological and environmental samples were collected as part of the NCS Vanguard. Standard operating procedures were developed and followed to minimize variability in specimen handling through standardized collection, local transport, and shipping in combination with central processing, aliquoting, and storage. Complete manuals of procedures and other details are available in the "Procedures" section under the "Data and Documentation" tab of the registered website portion of the NCS Archive.

The materials collected comprise the following primary sample types:

- Biological Samples: Blood, urine, vaginal secretions, umbilical cord blood, umbilical cord tissue, placenta, meconium, breast milk, saliva, hair, and nails
- Environmental Samples: Air, dust, and water

Some types of primary samples were processed to produce a variety of derivative sample types. The inventory of approximately 250,000 items as of July 2017 comprises the following primary and derivative sample types:

Biological Samples	Environmental Samples
Blood + 1% ascorbic acid	Air filter
Blood + RPMI/DMSO	Dust, bulk, processed
Breast milk	Dust, vacuum, allergens
Breast milk + PCA	Dust, wipe
Buffy coat	Formula, infant
Buffy coat, mixed (RBC)	Water
DNA, 200ng/µl	
Hair	
Meconium	
Membrane, placental	
Nails	
Placenta, FFPE, slides and tissue blocks	
Plasma	
RBC	
RNA, 25ng/µl	
Saliva	
Serum	
Serum + MPA	
Umbilical cord	
Urine	
Urine + sulfamic acid	
Vaginal slide	
Vaginal swab	
Whole blood	
Whole blood spot, dried, filter paper adsorbed	

Abbreviations: RPMI=Roswell Park Memorial Institute growth medium; DMSO=dimethyl sulfoxide; PCA=perchloric acid; RBC=red blood cell; DNA=deoxyribonucleic acid; FFPE=formalin-fixed paraffin-embedded; RNA=ribonucleic acid; MPA=metaphosphoric acid.

NCS biological and environmental sample procedures were designed to minimize preanalytical variability through standardized collection, local transport, short-term storage, and shipping followed by centralized processing, aliquoting, and long-term storage. In general, samples in the NCS collection are pristine, with frozen samples subject to no more than a single freeze-thaw cycle at the time of central processing.

Detailed sample characterization information (format, storage condition, etc.) is provided in the Appendix 11 table "Characterization Information for NCS Repository Samples with Inventory Counts of 10 or Greater as of July 2017".

6 PUBLICATION GUIDELINES

Appropriate Acknowledgement of NCS Data

Approved data users should include the following language in the acknowledgment or in the text of their manuscript:

"This Manuscript was prepared using National Children's Study Research Materials obtained from the NCS Vanguard Data and Sample Archive and Access System and does not necessarily reflect the opinions or views of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development or the National Institutes of Health."

Manuscripts and abstracts resulting from an approved Research Plan/Data Request should not use the name of the National Children's Study in the title of the manuscript/abstract unless the title clearly denotes the source of the Research Materials as being from the NCS Vanguard Data and Sample Archive and Access System (e.g., "...An investigation using the National Children's Study").

Data Publication Guidelines

- Access to personally identifiable information (PII) is not permitted.
- Absolutely no individual level data should be published or made publicly available
- No attempts at re-identification shall be made.

Anyone presenting NCS data should adhere to the following principles:

- All presented count data is of $N \geq 10$ (this refers to both data presented and data derivable from a presented table). If an $N < 10$ is presented or derivable, aggregation of cells or the presentation of percentages (without an N) are acceptable fixes.
- Derived counts refer to tables where multiple rows and columns are presented allowing a careful reader to infer a smaller count.
- Names of geographic areas smaller than the primary sampling unit are not mentioned.
- Any maps of geographic areas provided do not depict secondary sampling units (or smaller).
- Employers, hospitals, providers, or industries are not named as residing in sampled areas.
- Potential or enrolled participant demographics or health status are not described at the individual level.

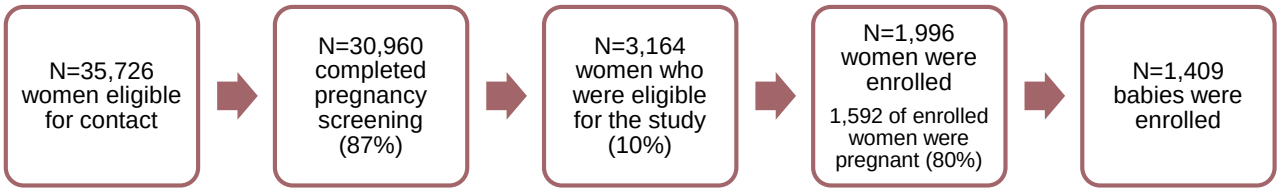
APPENDIX 1: DESCRIPTIONS OF EACH STUDY PHASE

INITIAL VANGUARD STUDY

Overview of IVS

The initial phase of the Vanguard Study (IVS) was conducted in seven locations to assess a household-based sampling design to recruit a nationally representative sample of children. This method involved conducting enumeration in households within sample segments in study locations. See Figure 1 for the recruitment flow chart. Active, field-based recruitment began in January 2009 and ended in September 2010. Passive recruitment continued through February 2012.

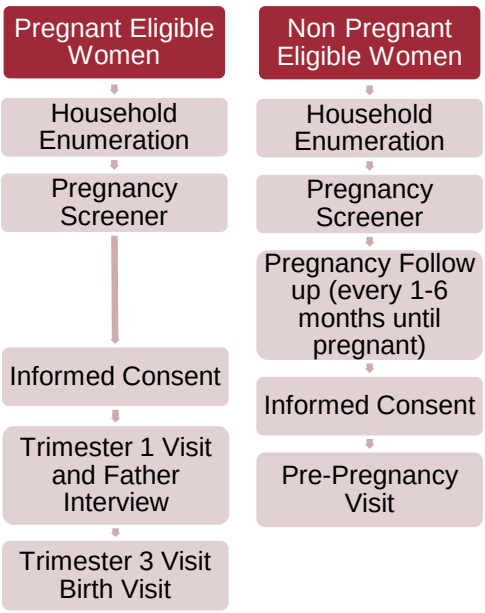
Figure 1. IVS Recruitment Flow Chart



IVS Recruitment

Eligibility Criteria: To be eligible for the pregnancy screening, women had to be 18 or state age of majority or pregnant. Another criterion was residence in defined areas in the county.

Figure 2. IVS Flow of Recruitment and Study Events



Screening and Consent: Data collectors visited the households in person to create a roster of people in each household and screen for eligibility, using the Enumeration Instrument. If there was no response, data collectors made additional attempts at the household to identify eligible women. Data collectors then administered the pregnancy screener interview to each eligible woman. Women who were pregnant were administered informed consent. Eligible, non-pregnant women were followed up by telephone after 1- 6 months to be screened again.

IVS Data Collection

For post-birth events, IVS participants joined the Alternative Recruitment Substudy (ARS) cohort and protocol in late 2010. Many children in the IVS were enrolled in the study two years prior to the children enrolled in the ARS cohorts. As a result, the IVS children tended to be older than those in the ARS cohorts.

Conclusion

See Figure 3 for a list of IVS Study Locations. All IVS Study Locations conducted expanded data collection, including anthropometry measures, biospecimens, and environmental specimens. Study Locations indicated with a † symbol began enrollment in January 2009, while the remaining five began in April 2009.

Figure 3. IVS Study Locations

Study Location	Area[1]
Brookings, SD	Rural
Duplin, NC†	Rural
Montgomery, PA	Suburban
NYC (Queens), NY†	Urban
Orange County, CA	Urban
Salt Lake, UT	Urban
Waukesha, WI	Suburban

Evaluation of recruitment data collected during 2009 revealed that the enrollment of women and babies was occurring at a rate lower than expected. These results projected that enrollment based on household sample design could take longer to complete and cost more than anticipated. A reevaluation of assumptions and design then followed, and the NCS designed and piloted three alternate recruitment strategies.

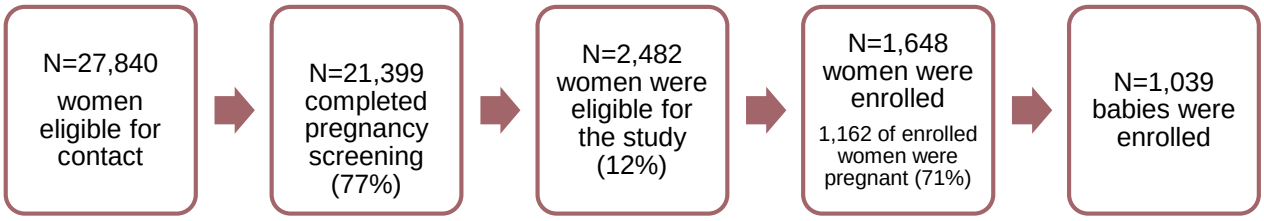
[1] 2013 NCHS Urban-Rural Classification: 1=Urban; 2, 3, 4=Suburban; 5, 6=Rural

ENHANCED HOUSEHOLD-BASED RECRUITMENT (EHBR)

Overview of EHBR Substudy

EHBR involved data collectors going door to door and writing down a roster of people in each household and screening women for eligibility.This approach was similar to the approach used by the Initial Vanguard Study (IVS). This group served to validate any initial findings related to eligibility and enrollment rates. Recruitment of women took place from November 2010 – February 2012.

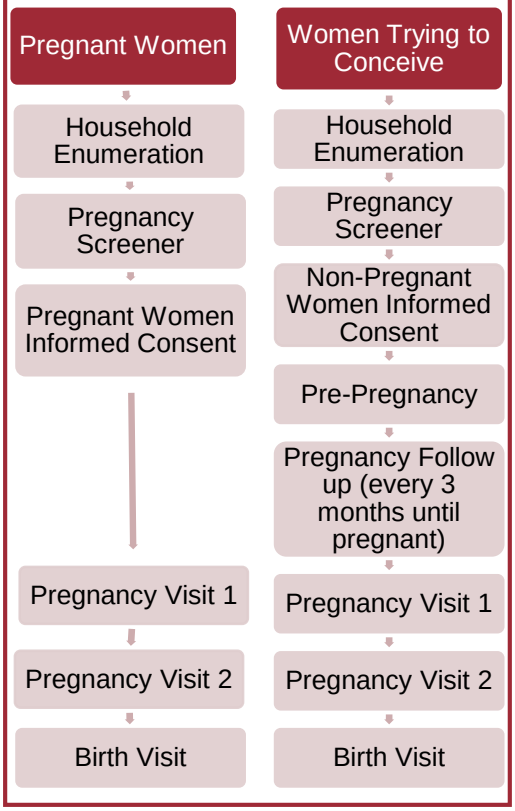
Figure 1. EHBR Recruitment Flow Chart



EHBR Recruitment

Eligibility Criteria: To be eligible, women were either pregnant or non-pregnant women trying to conceive. The second criteria was geographic eligibility; residence in defined areas in the county.

Figure 2. EHBR Flow of Recruitment and Study Events



Screening and Consent: Data collectors first mailed introductory letters to eligible households in the sampled geographic areas. Then, they visited the households in person to create a roster of people in each household and screen for eligibility, using the Enumeration Instrument. If there was no response, data collectors made additional attempts at the household to identify eligible women. Data collectors administered the pregnancy screener interview to each eligible woman. Eligible women who were pregnant or trying to conceive were administered informed consent. Non-pregnant women (both those trying to conceive and those who weren't trying to conceive) were followed up by telephone after 3 months to check on their pregnancy status.

Conclusion

The major drawback of the EHBR design was the cost. The enhanced communication strategy did not bolster enrollment. The substudy confirmed the initial IVS findings in that it was costly, inefficient, and yielded fewer pregnant women proportionally than expected.

See Figure 3 for a list of EHBR Study Locations. Those with an asterisk were selected to conduct expanded data collection, including anthropometry measures, biospecimens, and environmental specimens.

Figure 3. EHBR Study Locations

Study Location	Area[1]
Baker, FL*	Suburban
Cumberland, ME*	Suburban
Cuyahoga, OH*	Urban
Grant, WA	Rural
Honolulu, HI	Suburban
Pinal, AZ	Suburban
Polk, IA*	Suburban
San Diego, CA	Urban
St. Louis, MO*	Suburban
Valencia, NM	Suburban

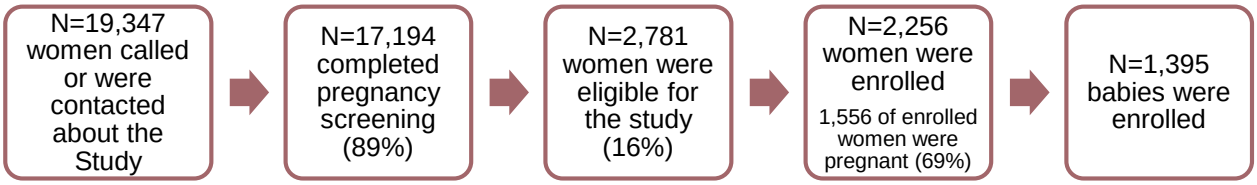
[1] 2013 NCHS Urban-Rural Classification: 1=Urban; 2, 3, 4=Suburban; 5, 6=Rural

Direct Outreach (DO)

Overview of DO Substudy

DO enrolled participants using mailings, media campaigns, outreach events, and other strategies to inform the public about the Study and recruit participants. Interested women called the study phone line and were screened for eligibility (i.e., age and living in defined areas in the county). Recruitment took place from November 2010 – February 2012.

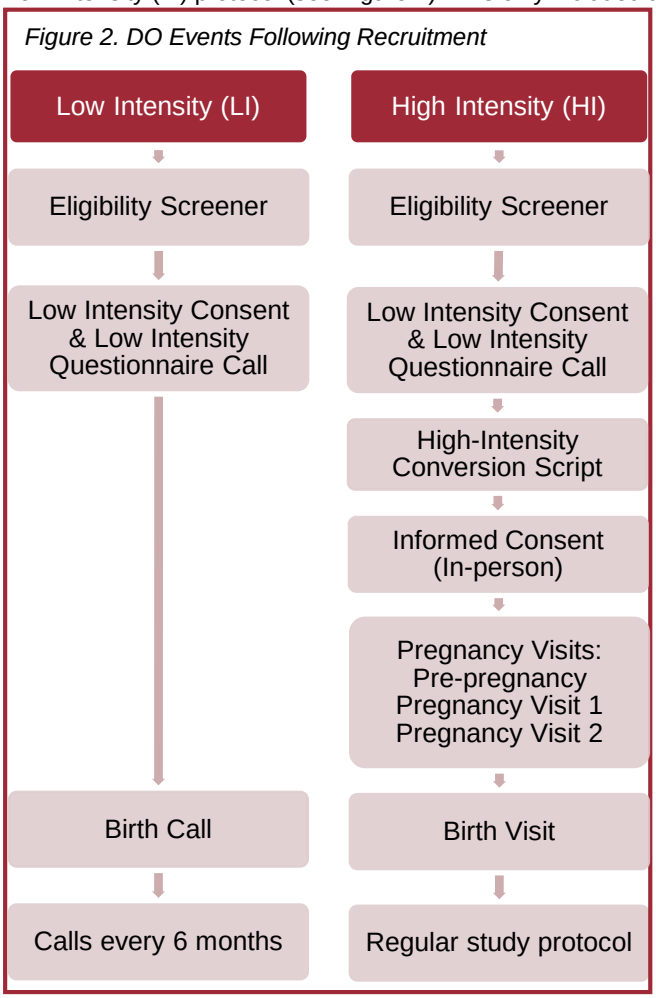
Figure 1. DO Recruitment Flow Chart



DO Recruitment

DO was able to recruit and follow a high percentage of eligible participants, but also had to screen out a large number of ineligible participants. Both community and targeted household outreach and engagement activities were necessary to successfully enroll women, which proved to be expensive. All participants in DO Study Locations started out in the Low Intensity (LI) protocol (see Figure 2). This only included telephone interviews every 6 months post-birth. From the pool of LI participants, a select group was invited to participate in the Hi-Intensity (HI) protocol based on residence in defined areas in the county. The HI Protocol followed the standard NCS protocol. The proportion of HI to LI participants at each DO location was approximately 1:3. During the Post Recruitment Phase, all LI participants were asked to join the standard NCS protocol or were withdrawn from the Study. See Figure 2 for a flow chart of DO events after recruitment.

Figure 2. DO Events Following Recruitment



Conclusion

DO was implemented differently across Study Locations. It also differed in the level of the community's engagement and was more effective in rural areas than urban locations. Engagement and implementation were difficult in large cities, since larger areas had to be covered to reach the same number of eligible women. It was determined that varying the intensity of data collection did not influence participant response rate.

See Figure 3 for a list of DO Study Locations. Those with an asterisk were selected to conduct expanded data collection, including anthropometry measures, biospecimens, and environmental specimens on the HI participants.

Figure 3. DO Study Locations

Study Location	Area[1]
Cook, IL	Urban
Los Angeles, CA	Urban
Montgomery, MD	Suburban
Orleans, LA	Urban
Ramsey, MN	Urban
Baldwin, GA*	Rural
Cache, UT*	Rural
Davidson, TN*	Urban
Douglas, CO*	Suburban
Westmoreland, PA*	Suburban

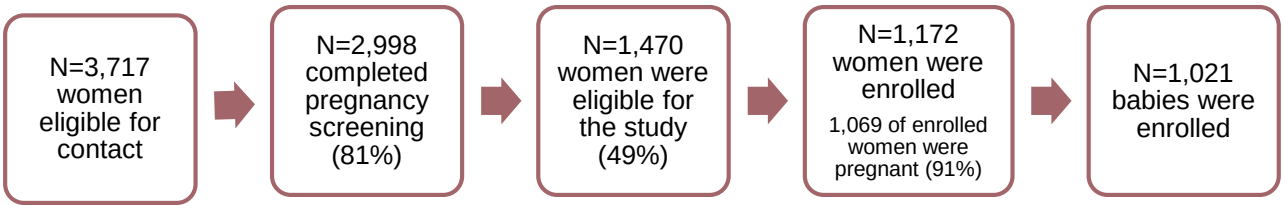
[1] 2013 NCHS Urban-Rural Classification: 1=Urban; 2, 3, 4=Suburban; 5, 6=Rural

PROVIDER BASED RECRUITMENT (PBR)

Overview of PBR Substudy

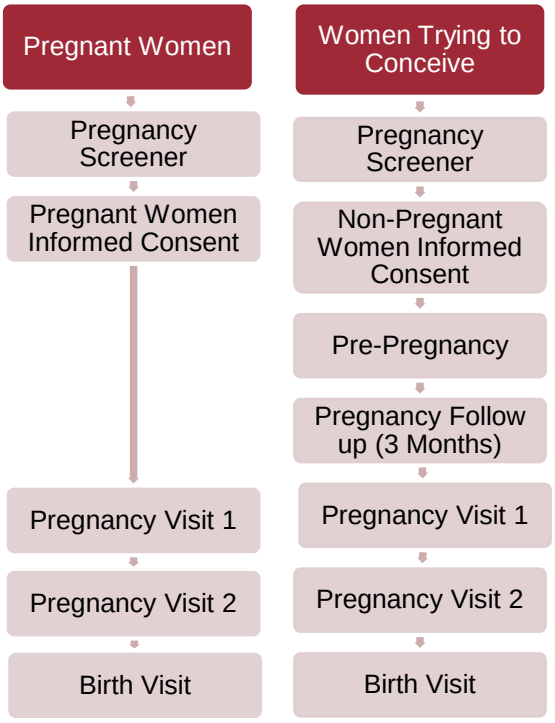
The Provider-Based Recruitment (PBR) strategy involved partnering with local healthcare provider offices to screen and enroll eligible women. Contact was initiated and mediated through health care providers to identify and enroll eligible women who resided in defined areas in the county. Recruitment took place from November 2010 – February 2012.

Figure 1. PBR Recruitment Flow Chart



PBR Recruitment

Figure 2. PBR Flow of Recruitment and Study Events



Eligibility Criteria: Eligibility for women was determined by age (child-bearing years) and residence in defined areas in the county. An Address-Lookup Tool was utilized to determine geographic eligibility.

Screening and Consent: At 10 Study Locations eligible women were approached and screened at local health care provider offices; obstetricians, namely walk-in clinics, public health nurses, midwives, pediatricians, etc. In many offices, the healthcare provider introduced the study to eligible women, and in others local NCS staff introduced the study with eligible women at the provider office. Non-pregnant women (both those trying to conceive and those who weren't trying to conceive) were followed up by telephone after 3 months to check on their pregnancy status.

Conclusion

This recruitment strategy, among the three Alternate Recruitment Strategies, was evaluated to be a successful recruitment model, as it generated a similar enrollment to other recruitment methods with far fewer women screened. It was the most effective and efficient; enrolling 1 woman for every 3 women screened. This strategy was expanded, refined and later tested in the three Provider-Based Sampling sites.

One limitation of the PBR design was that only women seeking prenatal care were included in the sample. The women recruited in PBR were often enrolled later in their pregnancies compared to the other recruitment strategies tested.

See Figure 3 for a list of PBR Study Locations. Those with an asterisk were selected to conduct expanded data collection, including anthropometry measures, biospecimens, and environmental specimens.

Figure 3. PBR Study Locations

Site	Area[1]
Benton, AR	Suburban
Bexar, TX	Urban
Durham, NC*	Suburban
Hinds, MS*	Suburban
Lamar, TX*	Rural
New Haven, CT	Suburban
Providence, RI	Urban
Sacramento, CA	Urban
Schuylkill, PA*	Rural
Wayne, MI*	Urban

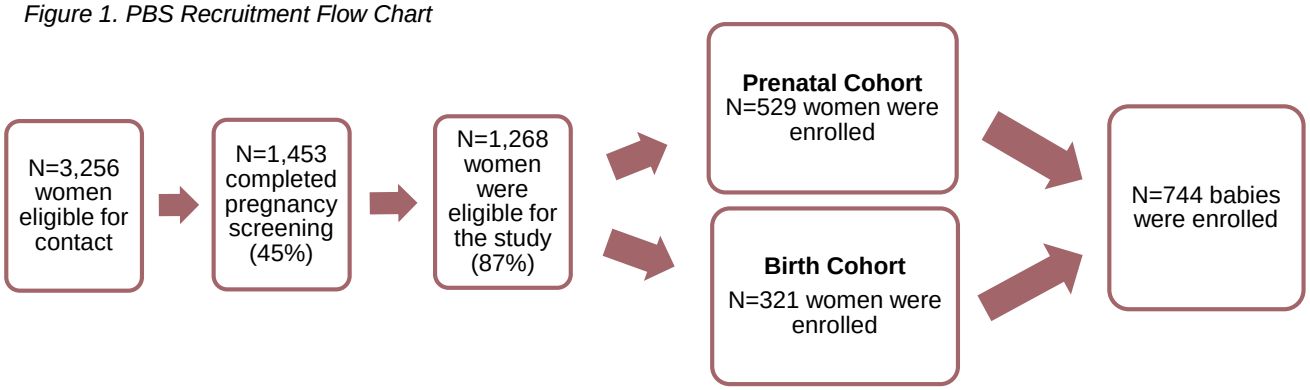
[1] 2013 NCHS Urban-Rural Classification: 1=Urban; 2, 3, 4=Suburban; 5, 6=Rural

PROVIDER BASED SAMPLING (PBS)

Overview of PBS Substudy

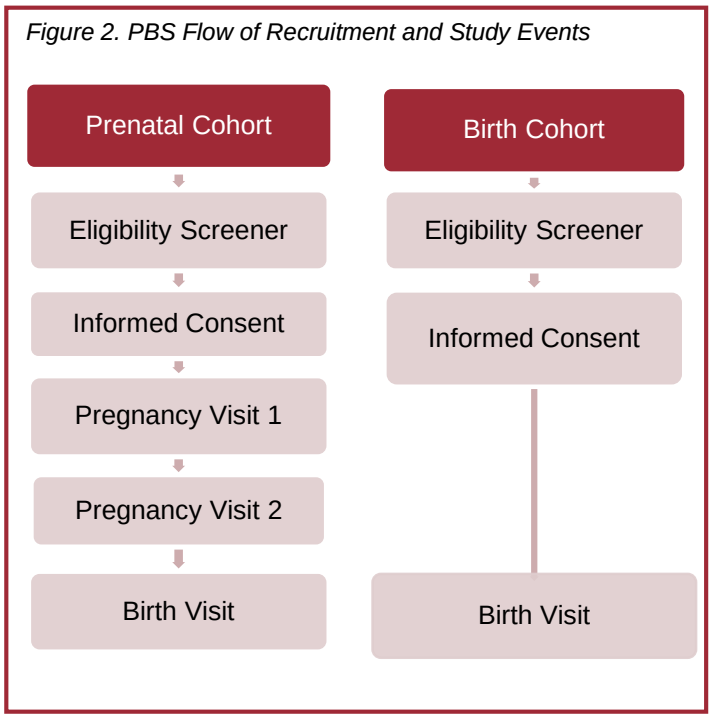
Based on the success of the Provider-Based Recruitment strategy, a new recruitment substudy called Provider-Based Sampling (PBS) was implemented in three study locations. PBS employed two separate but related strategies for recruiting women into the NCS: (1) recruited a probability sample of women from a probability sample of prenatal care providers within a geographic area; and (2) recruited a probability sample women in hospitals within the same geographic area who had recently given birth. Recruitment of women for the prenatal cohort took place from November 2012 - July 2013, and the birth cohort took place from March - July 2013.

Figure 1. PBS Recruitment Flow Chart



PBS Recruitment

Figure 2. PBS Flow of Recruitment and Study Events



Prenatal Recruitment: The prenatal cohort sample was designed to contain 15-20 sampled provider locations in each of the three PBS Study Locations for a total of 50 provider locations.

Birth Cohort Recruitment: The NCS added a birth cohort in March 2013. The birth cohort recruited pregnant participants at birth hospitals, with the goal to enroll 125 women across 3 selected hospitals in each Study Location.

Conclusion

After the child was born, PBS participants followed the NCS standard protocol; however, no sample collections (i.e., biological specimens, environmental samples, and physical measures) were collected post-birth in this cohort. The goal of the PBS was to recruit and track 250 births per each study location, and two of the three locations were successful. See Figure 3 for a list of PBS Study Locations and their Character-istics.

Figure 3. PBS Study Locations

Study Location	Area[1]
Jefferson County, KY	Urban
Harris County, TX	Urban
Worcester County, MA	Suburban

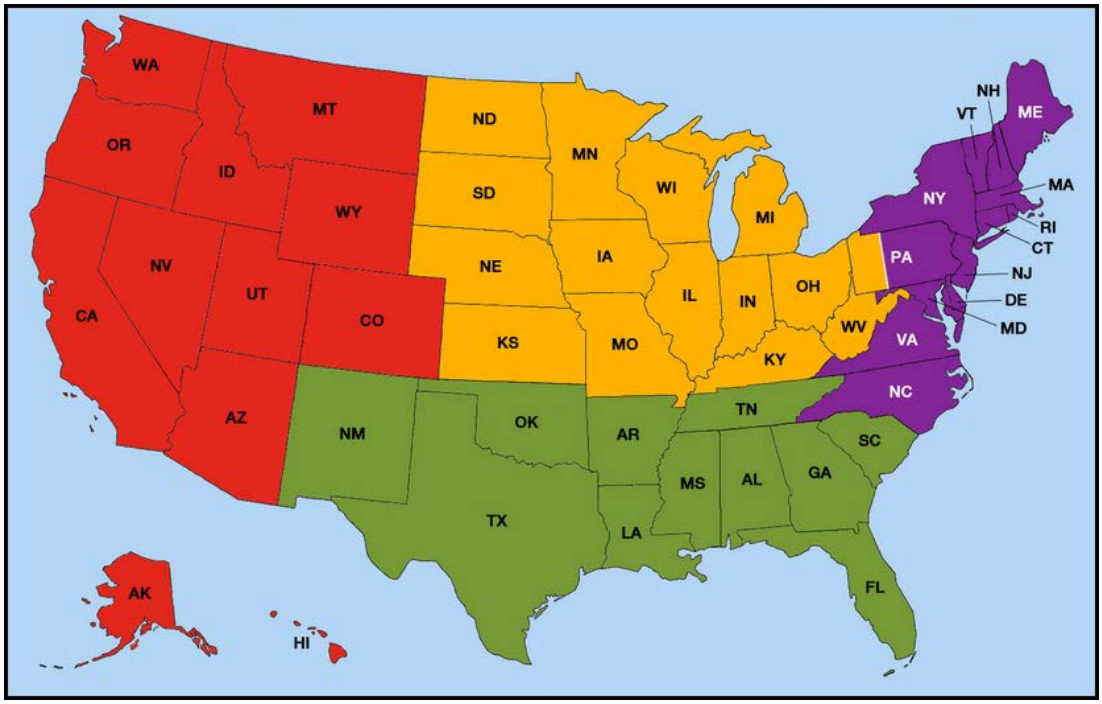
[1] 2013 NCHS Urban-Rural Classification: 1=Urban; 2, 3, 4=Suburban; 5, 6=Rural

APPENDIX 2. LIST OF STUDY LOCATIONS, ROCS AND RECRUITMENT STRATEGIES

ROC	Study Location	Initial Contracting University/Study Center	Recruitment Strategy
CENTRAL	Polk County, IA	University of Iowa	ARS - EHBR
	Cook County, IL	Northwestern University	ARS – DO
	Jefferson County, KY	University of Louisville	PBS
	Wayne County, MI	Michigan State University	ARS - PBR
	Ramsey County, MN	University of Minnesota	ARS – DO
	St. Louis City, MO	St. Louis University	ARS - EHBR
	Cuyahoga County, OH	Case Western University	ARS - EHBR
	Westmoreland County, PA	University of Pittsburgh	ARS – DO
	Brookings County, SD; Yellow Medicine County, MN; Pipestone County, MN; Lincoln County, MN	South Dakota State University	IVS
	Waukesha County, WI	University of Wisconsin	IVS
EAST	New Haven County, CT	Yale University	ARS - PBR
	Worcester County, MA	University of Massachusetts	PBS
	Montgomery County, MD	Johns Hopkins University	ARS – DO
	Cumberland County, ME	Maine Medical Center	ARS - EHBR
	Duplin County, NC	University of North Carolina at Chapel Hill	IVS
	Durham County, NC	University of North Carolina at Chapel Hill	ARS- PBR
	New York City (Queens), NY	Mt. Sinai University	IVS
	Montgomery County, PA	Children's Hospital of Philadelphia (CHOP)	IVS
	Schuylkill County, PA	Children's Hospital of Philadelphia (CHOP)	ARS- PBR
	Providence County, RI	Brown University	ARS-PBR

ROC	Study Location	Initial Contracting University/Study Center	Recruitment Strategy
SOUTH	Benton County, AR	Arkansas Children's Hospital	ARS- PBR
	Baker County, FL	University of Miami	ARS - EHBR
	Baldwin County, GA	Emory University	ARS – DO
	New Orleans, LA	Tulane University	ARS – DO
	Hinds County, MS	University of Mississippi	ARS- PBR
	Valencia County, NM	University of New Mexico	ARS - EHBR
	Davidson County, TN	Vanderbilt University	ARS – DO
	Bexar County, TX	University of Texas Health Science Center – San Antonio	ARS- PBR
	Harris County, TX	Baylor College of Medicine	PBS
	Lamar County, TX	University of Texas Southwestern - Dallas	ARS- PBR
WEST	Pinal County, AZ	University of Arizona	ARS - EHBR
	Los Angeles County, CA	University of California – Los Angeles	ARS – DO
	Orange County, CA	University of California – Irvine	IVS
	Sacramento County, CA	University of California – Davis	ARS- PBR
	San Diego County, CA	University of California – Irvine	ARS - EHBR
	Douglas County, CO	University of Colorado	ARS – DO
	Honolulu County, HI	University of Hawaii	ARS - EHBR
	Cache County, UT	University of Utah	ARS – DO
	Salt Lake County, UT	University of Utah	IVS
	Grant County, WA	University of Washington	ARS - EHBR

APPENDIX 3. FOUR REGIONAL OPERATION CENTERS (ROCS), 31 STATES AND 43 COUNTIES



West ROC
South ROC
East ROC
Central ROC

APPENDIX 4: NCS VANGUARD STUDY DATA COLLECTION ACTIVITIES BY DOMAIN AND STUDY PHASE

The following tables display the Vanguard Study data collection activities by domain and Study cohort. The NCS grouped data collection activities into domain areas as follows: biospecimens, environmental samples, neuropsychosocial, physical measures, and questionnaires. Many of the tables also illustrate the Study visit(s) of the data collection activities. In addition, a list of the screening activities that determined participant enrollment eligibility is included (Table 1). MOPs and SOPs are available upon request through the NCS Data Archive.

Table 1. Screening Activities

	Initial Vanguard Study	Alternate Recruitment Substudy	Provider-Based Sampling
Pre-Screening	Household Enumeration	Household Enumeration (EH), Address Lookup Tool (PB), PB Recruitment Quex (PB)	PBS Provider Frame Quex
Pregnancy Screener	Pregnancy Screener, Pregnancy Probability Group Follow-Up Instrument	Pregnancy Screener (PB), Pregnancy Screener (EH), Pregnancy Screener (DO-HI, DO- LI) Pregnancy Probability Group Follow-Up Instrument and SAQ (PB, EH, DO-HI, DO-LI)	PBS Prenatal Eligibility Screener, PBS Birth Cohort Eligibility Screener
Notes	**Quex=Questionnaire, SAQ=Self-administered Questionnaire** **PB=Provider-Based, EH=Enhanced Household, DO=Direct Outreach, HI=High Intensity, LI=Low Intensity**		

Table 2. Biospecimen Collection				
Study Visit	**Initial Vanguard Study (2009-2010)**	**Alternate Recruitment Substudy (2011-2012)**	**Provider-Based Sampling Cohort Only (2012-2014)**	**Post Recruitment Follow-up (2014)**
Pre-Pregnancy (P1)	Blood (M), Spot Urine (M), Pregnancy Urine (M), Vaginal Swab (M), Hair (M)	Blood (M), Urine (M) (PB, EH, DO-HI)		
T1/Pregnancy Visit 1 (PV1)	Blood (M), Spot Urine (M), Vaginal Swab (M), Saliva (M), Blood (F), Urine (F), Nails (F), Hair (F)	Blood (M), Urine (M) (PB, EH, DO-HI)		
T3/Pregnancy Visit 2 (PV2)	Blood (M), Spot Urine (M), Vaginal Swab (M), Saliva (M), Hair (M), Nails (M)	Blood (M), Urine (M) (PB, EH, DO-HI)		
Birth Visit	Blood (M), Placenta (M), Umbilical Cord (M), Cord Blood (M), Infant Blood Spot (Ch), Meconium (Ch)	Cord Blood (M) (PB, EH, DO-HI)	Blood (M), Urine (M), Placenta (M), Cord Blood (M), Infant Blood Spot (Ch)	
1 month	Breast Milk (M)	Breast Milk (PB, EH, DO-HI)		
3 month	Breast Milk (M)	Breast Milk (PB, EH, DO-HI)		
6 month	Urine (Ch)	Urine (Ch) (PB, EH, DO-HI)		Urine (Ch)
12 month		Blood (Ch), Urine (Ch), Saliva (Ch) (PB, EH, DO-HI)		Blood (Ch), Urine (Ch), Saliva (Ch)
36 month				Blood (M), Urine (M), Saliva (M), Blood (Ch), Urine (Ch), Saliva (Ch)
Notes:	**M=Mother, F=Father, Ch=Child** **PB=Provider-Based, EH=Enhanced Household,** **DO=Direct Outreach, HI=High Intensity, LI=Low Intensity**			

Table 3. Environmental Sample Collection				
Study Visit	**Initial Vanguard Study**	**Alternate Recruitment Substudy**	**Provider-Based Sampling**	**Post Recruitment Follow-up**
Pre-Pregnancy (P1)	House Dust, Air, Dwelling Unit Visual Observations			
T1/Pregnancy Visit 1 (PV1)	House Dust, Tap Water, Dwelling Unit Visual Observations	Vacuum Bag Dust, Tap Water (PB, EH, DO-HI)		
T3/Pregnancy Visit 2 (PV2)	House Dust, Tap Water, Air, Dwelling Unit Visual Observations	Vacuum Bag Dust, Tap Water (PB, EH, DO-HI)		
6 month	House Dust, Air, Dwelling Unit Visual Observations			
Notes:	**M=Mother, F=Father, Ch=Child** **PB=Provider-Based, EH=Enhanced Household, DO=Direct Outreach, HI=High Intensity, LI=Low Intensity**			

Table 4. Physical Measures				
Study Visit	**Initial Vanguard Study**	**Alternate Recruitment Substudy**	**Provider-Based Sampling**	**Post Recruitment Follow-up**
Pre-Pregnancy (P1)	Maternal Anthropometry, Maternal Blood Pressure			
T1/Pregnancy Visit 1 (PV1)	Maternal Anthropometry, Paternal Anthropometry, Maternal Blood Pressure			
T3/Pregnancy Visit 2 (PV2)	Maternal Anthropometry, Maternal Blood Pressure, Fetal Ultrasound			
Birth Visit	Medical record abstraction, Child Anthropometry, Infant Neonatal Exam			
6 month	Child Anthropometry	Child Anthropometry (PB, EH, DO-HI)		Child Anthropometry
12 month		Child Anthropometry, Child Blood Pressure (PB, EH, DO-HI)		Child Anthropometry, Child Blood Pressure
24 month		Child Anthropometry, Child Blood Pressure (PB, EH, DO-HI)		Child Anthropometry, Child Blood Pressure
36 month				Child Anthropometry, Child Blood Pressure
Notes:	**M=Mother, F=Father, Ch=Child PB=Provider-Based, EH=Enhanced Household, DO=Direct Outreach, HI=High Intensity, LI=Low Intensity**			

Table 5. Neuro-Psychosocial Measures				
Study Visit	**Initial Vanguard Study**	**Alternate Recruitment Substudy**	**Provider-Based Sampling**	**Post Recruitment Follow-up**
T1/Pregnancy Visit 1 (PV1)	Kaufman Brief Intelligence Test (KBIT-2) (F)			
6 month	Rothbart Infant Behavior Quex			
12 month		Brief Infant Toddler Social Emotional Assessment™ (BITSEA) SAQ (PB, EH, DO-HI, DO-LI)	BITSEA™ SAQ	BITSEA™ SAQ,
18 month		Ages & Stages-3™ SAQ (ASQ-3) (PB, EH, DO-HI, DO-LI)	ASQ-3™ SAQ	ASQ-3™ SAQ
24 month		ASQ-3™ SAQ, Modified Checklist for Autism in Toddlers (M-CHAT) SAQ (PB, EH, DO-HI, DO-LI)		ASQ-3™ SAQ, M-CHAT SAQ,
30 month		ASQ-3™ SAQ, BITSEA™ SAQ, Brief Symptom Inventory (BSI) SAQ, Infant/Toddler Sensory Profile™ SAQ (PB, EH, DO-HI, DO-LI)		ASQ-3™ SAQ, BITSEA™ SAQ, BSI® SAQ, Infant/Toddler Sensory Profile™ SAQ
36 month				ASQ-3™ SAQ, SWAN Rating Scale for ADHD SAQ, Major Life Events SAQ, Early Childhood Cognition Battery-NIH Toolbox,
Notes:	**M=Mother, F=Father, Ch=Child Quex=Questionnaire, SAQ=Self-administered Questionnaire PB=Provider-Based, EH=Enhanced Household, DO=Direct Outreach, HI=High Intensity, LI=Low Intensity**			

Table 6. Questionnaires				
Study Visit	**Initial Vanguard Study**	**Alternate Recruitment Substudy**	**Provider-Based Sampling**	**Post Recruitment Follow-up**
Pre-Pregnancy (P1)	P1 Interview, P1/P2/P4 Phone Follow-ups, 3-Day Dietary Checklist, Food Frequency Quex, Participant Evaluation Quex	Pre-Pregnancy Interview, Pre-Pregnancy SAQ (PB, EH, DO-HI) Low-Intensity Quex (DO-LI)		
T1/Pregnancy Visit 1 (PV1)	T1 Mother Interview, T1 Father Interview, T16/T17-Week Phone Interview, 3-Day Dietary Checklist, Food Frequency Quex,	PV1 Interview, PV1 SAQ, Father Interview (PB, EH, DO-HI) Low-Intensity Quex (DO-LI)	PV1 Interview, PV1 SAQ,	
T3/Pregnancy Visit 2 (PV2)	T3 Interview, T36-Week Phone Interview, 3-Day Dietary Checklist, Food Frequency Quex, Life Experiences SAQ	PV2 Interview, PV2 SAQ (PB, EH, DO-HI) Low-Intensity Quex (DO-LI)	PV2 Interview, PV2 SAQ,	
Birth Visit		Birth Visit Interview (PB, EH, DO-HI) Low-Intensity Birth Visit Interview (DO-LI)	Birth Visit Interview,	
1 Month	Infant Feeding Quex, Food Frequency Quex			
3 month	3-Month Phone Interview	3-Month Mother Interview (PB, EH, DO-HI, DO-LI)	3-Month Mother Interview	3-Month Mother Interview
6 month	6-Month Mother Interview, 6-Month Infant Feeding Quex, 3-Day Infant Dietary Checklist, Family Medical History SAQ (M), Participant Evaluation Quex	6-Month Mother Interview, 6-Month Infant Feeding SAQ (PB, EH, DO-HI), Low-Intensity Quex (DO-LI)	6-Month Interview, 6-Month Infant Feeding SAQ	6-Month Interview 6-Month Infant Feeding SAQ
9 month	9-Month Phone Interview	9-Month Mother Interview (PB, EH, DO-HI, DO-LI)	9-Month Mother Interview	9-Month Mother Interview

Table 6. Questionnaires				
Study Visit	**Initial Vanguard Study**	**Alternate Recruitment Substudy**	**Provider-Based Sampling**	**Post Recruitment Follow-up**
12 month		12-Month Mother Interview, 12M Mother SAQ (PB, EH, DO-HI) Low-Intensity Quex (DO-LI)	12-Month Mother Interview, 12-Month Mother SAQ	12-Month Mother Interview, 12-Month Mother SAQ
18 month		18-Month Mother Interview (PB, EH, DO-HI, DO-LI)	18-Month Interview	18-Month Interview
24 month		24-Month Mother Interview (PB, EH, DO-HI, DO-LI) Low-Intensity Quex (DO-LI)	24-Month Interview	24-Month Interview
30 month		30-Month Interview, Core Quex (PB, EH, DO-HI, DO-LI)		30-Month Quex (Child and Adult), Core Quex (Child and Household)
36 month				36-Month Quex (Child, Adult, and Household), Core Quex (Child, Adult, Household)
42 month				Core Quex (Child and Household),
Notes:	**M=Mother, F=Father, Ch=Child Quex=Questionnaire, SAQ=Self-administered Questionnaire PB=Provider-Based, EH=Enhanced Household, DO=Direct Outreach, HI=High Intensity, LI=Low Intensity**			

APPENDIX 5: NATIONAL CHILDREN'S STUDY VANGUARD DATA USER AGREEMENT

** = Required Field*

Requesting Investigator Information

*Name:

*Address:

Title:

*Institution:

*Email:

*Phone:

Department:

Fax:

Website:

NATIONAL CHILDREN'S STUDY VANGUARD DATA USER AGREEMENT

Terms & The data owned by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) is offered as an information and data resource for scientific research.

Users of National Children's Study (NCS) Vanguard data agree to comply with all terms and conditions of the NICHD User Agreement during the registration process.

By accepting the NICHD User Agreement, you agree:

1. to use NCS resources for the purposes of archiving and accessing data obtained from scientific research with the intent of data sharing and reuse, and to notify the NCS Administrator of any breach in use
2. to use NCS data for scientific research in an institution with an approved assurance from the Department of Health and Human Services Office for Human Research Protections, and to not use the data for commercial purposes (or sell the data obtained from NICHD)
3. to preserve and protect the confidentiality of, and not attempt to identify, any individuals or households in the data
4. that archived data are provided without warranty or liability of any kind
5. to notify the NCS Administrator of any errors discovered in the archived data
6. to establish safeguards to prevent unauthorized viewing or release of NCS information or data
7. to comply with any charges that may apply for various services offered by NCS
8. to ensure that the means of access to NCS (such as passwords) are kept secure and not disclosed to anyone else

9. that personal data submitted by you are accurate to the best of your knowledge and kept up to date by you
10. that personal data provided by you may be used for administrative management of NCS and for reporting purposes with the goal of improving services offered by NCS
11. that any breach of the User Agreement could lead to termination of your access to the services
12. to complete NCS Data User Training.

Check the box if you agree to the terms and conditions. ☐ I Agree

Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-0647). Do not return the completed form to this address.

Privacy Act Notification: Information collected as part of the data use agreement, data request forms, and distribution agreement may be made public in part or in whole for tracking and reporting purposes. This Privacy Act Notification is provided pursuant to Public Law 93-579, Privacy Act of 1974, 5 U.S.C. Section 552a. Authority for the collection of the information requested comes from the authorities regarding the establishment of the National Institutes of Health, its general authority to conduct and fund research and to provide training assistance, and its general authority to maintain records in connection with these and its other functions (42 U.S.C. 203, 241, 289l-1 and 44 U.S.C. 3101), and Section 301 and 493 of the Public Health Service Act. These records will be maintained in accordance with the Privacy Act System of Record Notice 09-25-0200 (https://oma.od.nih.gov/forms/Privacy%20Documents/PAfiles/0200.htm) covering "Clinical, Basic and Population-based Research Studies of the National Institutes of Health (NIH), HHS/NIH/OD." The primary uses of this information are to document, track, and monitor and evaluate the submission of data from clinical, basic, and population-based research activities and to notify Submitters in the event a potential error in the dataset is identified or in the event of updates or other changes to the database. The Federal Privacy Act protects the confidentiality of the Submitter's NIH records. The NIH will use the information collected for the purposes described above. In addition, the Act allows the release of some information in the Submitter's records without the Submitter's permission; for example, if it is requested by members of Congress or other authorized individuals. The information requested is voluntary, but necessary for obtaining access to data and samples in the NCS Archive.

The National Children's Study Vanguard Data Request Form

OMB# 0925-0730
2/28/2019

** = Required Field*

1 Request Identifier

Request Name *

Create a brief title for your research plan

2 Requesting Investigator Information

Name *

Address *

Title

Institution

Email *

Phone *

Department

Fax

Website

Recipient Information

Institution type *

- ○ Non-Profit Organization
- ○ Commercial Organization
- ○ Academic

Number of years in scientific research

- ○ 0-5
- ○ 5-10
- ○ 10+

Approximately how many years has the lead investigator been involved in scientific research?

Is funding currently available for this research? *

- ○ Yes
- ○ No

If yes, please upload documentation of primary funding

If no and funding is not yet available, please indicate anticipated primary funding source

- ○ NIH Intramural Research
- ○ NIH Extramural Research
- ○ Non-NIH Federal Funding
- ○ Private Foundation
- ○ Funding Outside of United States
- ○ Industry
- ○ Institutional/Departmental
- ○ State Funding
- ○ Pending
- ○ No Direct Funding or Not Applicable

3 Request Details

Subject Characteristics

Describe the characteristics of the subjects to be searched for available data. Criteria might include gender, age, disease status, genotype, etc. Be as specific as possible.

Research Plan: Describe this request, including a summary of the rationale, main hypothesis and proposed research aims *

A brief overview of your research needs

Scientific Background and Rationale

Provide the research protocol background, objectives, and hypothesis.

Approved Users

Name

Approved User #1 Name

Email

Approved User #1 Email

Name

Approved User #2 Name

Email

Approved User #2 Email

Name

Approved User #3 Name

Email

Approved User #3 Email

Name

Approved User #4 Name

Email

Approved User #4 Email

Information Security: Please check the information security practices to be used *

- ☐ Institute supported, controlled access server
- ☐ Institute supported, password protected desktop computer
- ☐ Encrypted, password protected laptop computer
- ☐ Encrypted portable media (encrypted external hard drive, encrypted thumb drive)
- ☐ Unencrypted portable media backup (CD, DVD, thumb drive) stored in locked file cabinet

Study data must be maintained in a secure and controlled environment

Comments

Upload Checklist

- ☐ I have uploaded institutional sign off or a cover letter approving
- ☐ research I have uploaded documentation of primary funding

Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and

maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-0647). Do not return the completed form to this address.

Privacy Act Notification: Information collected as part of the data use agreement, data request forms, and distribution agreement may be made public in part or in whole for tracking and reporting purposes. This Privacy Act Notification is provided pursuant to Public Law 93-579, Privacy Act of 1974, 5 U.S.C. Section 552a. Authority for the collection of the information requested comes from the authorities regarding the establishment of the National Institutes of Health, its general authority to conduct and fund research and to provide training assistance, and its general authority to maintain records in connection with these and its other functions (42 U.S.C. 203, 241, 289l-1 and 44 U.S.C. 3101), and Section 301 and 493 of the Public Health Service Act. These records will be maintained in accordance with the Privacy Act System of Record Notice 09-25-0200 (https://oma.od.nih.gov/forms/Privacy%20Documents/PAfiles/0200.htm) covering "Clinical, Basic and Population-based Research Studies of the National Institutes of Health (NIH), HHS/NIH/ OD." The primary uses of this information are to document, track, and monitor and evaluate the submission of data from clinical, basic, and population-based research activities and to notify Submitters in the event a potential error in the dataset is identified or in the event of updates or other changes to the database. The Federal Privacy Act protects the confidentiality of the Submitter's NIH records. The NIH will use the information collected for the purposes described above. In addition, the Act allows the release of some information in the Submitter's records without the Submitter's permission; for example, if it is requested by members of Congress or other authorized individuals. The information requested is voluntary, but necessary for obtaining access to data and samples in the NCS Archive.

APPENDIX 7: NATIONAL CHILDREN'S STUDY ARCHIVE DATA AND SAMPLE REQUEST FORM

OMB# 0925-0730

2/28/2019

The National Children's Study Vanguard Data & Sample Request Form

Please use the following form to submit your request to access NCS Study Data and Samples. After you submit your request, it will be reviewed by NCS Archive staff who may reach out to you for additional information or clarification. After your request undergoes the initial review, you will be asked to complete and sign a Research Materials Distribution Agreement (RMDA). Once the signed RMDA is uploaded, the request will be placed in a queue for review by the NICHD. After the review concludes, the NCS Archive staff will notify you if your request is accepted and, if so, work to provide you with secure access to restricted NCS data and samples.

At any point when completing a request, if you are unable to complete the document, select the "Save For Later" button at the end of the form, and all the information you had just entered will be saved. You will be able to access your completed and saved requests at any time from My Requests.

A PDF version of the Data & Sample Request form (PDF - 138KB) is available for your convenience. Please see the accessibility page if you need assistance accessing PDF files.

Please note, we request that you or an associate enter all data and sample requests electronically for final submission. However, if you are unable to or have any difficulty entering request information, you may attach a scanned hard copy form and the NCS Archive staff will assist you.

Please refer to the bottom of the form for information concerning the OMB public reporting burden for this collection of information.

4 Request Identifier

Request Name (required)

Create a brief title for your research plan

5 Requesting Investigator Information

Name

Title

Institution

Address (required)

Email

Phone
(required)

Department

Fax

Website

Recipient Information

Institution type (required)

- ○ Non-Profit Organization
- ○ Commercial Organization
- ○ Academic

Is funding currently available for this research? (required)

If yes, please upload documentation of primary funding

- ○ Yes
- ○ No

Number of years in scientific research

Approximately how many years has the lead investigator been involved in scientific research?

- ○ 0-5
- ○ 5-10
- ○ 10+

If no and funding is not yet available, please indicate anticipated primary funding source

6 SPECIMEN SHIPPING INFORMATION

Will the results be used for a commercial purpose? (required)

- ○ Yes
- ○ No

Shipping Address

Note: All specimens will be shipped to the above address. Specimens cannot be shipped to a post office box.

Fedex Acct. #

Shipping PO #

Lab Contact Name

Lab Contact Email

Lab Contact Phone Number

Request Details

Number of Specimens (required)

Approximate count of specimens required for your study.

Material Type (required)

Minimum volume (or mass if requesting DNA) (required)
Please include units

Optimum volume (or mass if requesting DNA) (required)

Please include units.

Specimen requirements

Describe any additional requirements pertaining to the biospecimens themselves, such as anticoagulant used, additives, preservatives, etc.

Subject characteristics

Describe the characteristics of the subjects to be searched for available specimens. Criteria might include gender, age, disease status, genotype, etc. Be as specific as possible.

Research Plan: Describe this request, including a summary of the rationale, main hypothesis and proposed research aims (required)

A brief overview of your research needs

Scientific background and rationale

Provide the research protocol background, objectives and hypothesis.

Analyte(s) or parameter(s) to be tested (required)

Describe the assay(s) to be performed and include any test volume requirements.

Type of assay(s)/ platform(s) to be used (required)

Describe the assay kit(s)/platform(s) to be used, if applicable.

Rationale for number of biospecimens requested, including power calculations, and describe the use of covariates, if applicable (required)

Also describe your intended use of covariates from study datasets, if applicable.

Approved Users

Approved user #1

Name	Email

Approved user #2

Name	Email

Approved user #3

Name	Email

Approved user #4

Name	Email

Information Security: Please check the information security practices to be used (required)

Study data must be maintained in a secure and controlled environment

- ☐ Institute supported, controlled access server
- ☐ Institute supported, password protected desktop computer
- ☐ Encrypted, password protected laptop computer
- ☐ Encrypted portable media (encrypted external hard drive, encrypted thumb drive)
- ☐ Unencrypted portable media backup (CD, DVD, thumb drive) stored in locked file cabinet

Comments

Upload checklist

- ☐ I have uploaded Institutional sign off or a cover letter approving research
- ☐ I have uploaded documentation of primary funding

7 Attach Files

You may use this section to upload files relevant to your request. There are no restrictions on file types. If you answered "Yes" to the "Is funding currently available for this research?" question above, then please upload documentation of primary funding.

File	Size

Attachments

Submit Request | Save For Later

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. **An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.** Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-0647). Do not return the completed form to this address.

Privacy Act Notification: Information collected as part of the data use agreement, data request forms, and distribution agreement may be made public in part or in whole for tracking and reporting purposes. This Privacy Act Notification is provided pursuant to Public Law 93-579, Privacy Act of 1974, 5 U.S.C. Section 552a. Authority for the collection of the information requested comes from the authorities regarding the establishment of the National Institutes of Health, its general authority to conduct and fund research and to provide training assistance, and its general authority to maintain records in connection with these and its other functions (42 U.S.C. 203, 241, 289l-1 and 44 U.S.C. 3101), and Section 301 and 493 of the Public Health Service Act. These records will be maintained in accordance with the Privacy Act System of Record Notice 09-25-0156 09-25-0200 (https://oma.od.nih.gov/forms/Privacy%20Documents/PAfiles/0200.htm) covering "Clinical, Basic and Population-based Research Studies of the National Institutes of Health (NIH), HHS/NIH/OD." The primary uses of this information are to document, track, and monitor and evaluate the submission of data from clinical, basic, and population-based research activities and to notify Submitters in the event a potential error in the dataset is identified or in the event of updates or other changes to the database. The Federal Privacy Act protects the confidentiality of the Submitter's NIH records. The NIH will use the information collected for the purposes described above. In addition, the Act allows the release of some information in the Submitter's records without the Submitter's permission; for example, if it is requested by members of Congress or other authorized individuals. The information requested is voluntary, but necessary for obtaining access to data and samples in the NCS Archive.

APPENDIX 8: NICHD RESEARCH MATERIALS DISTRIBUTION AGREEMENT (RMDA)

8 INTRODUCTION AND DEFINITIONS

The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), the RECIPIENT Organization (RECIPIENT) and the Principal Investigator (PI) hereby enter into this Research Materials Distribution Agreement (RMDA) as of the effective date specified on the final signature page.

The Research Materials and Research Plan covered by this RMDA are:

Name of Clinical Study: The National Children's Study Title of Research Plan:
Research Materials Requested:
Research Plan includes a Commercial Purpose: Name of Principal Investigator (PI):
Email of Principal Investigator (PI):
Name of Other Approved Users at PI's Institution:

The Research Materials are provided through the NCS Vanguard Data and Sample Archive and Access System. The Center was established by the NICHD to develop and maintain the infrastructure necessary to facilitate and maximize access to Research Materials from NICHD-sponsored studies in accordance with NICHD approved procedures.

The Research Materials were collected as part of the above clinical study; hereafter referred to as "STUDY." They constitute a unique scientific resource and the NICHD is committed to making them available in a timely manner, on appropriate terms and conditions, to the largest possible number of qualified investigators who wish to analyze the materials in a secondary study designed to enhance the public health benefit of the original work. The RECIPIENT and PI acknowledge responsibility for ensuring the review of and agreement to the terms within this RMDA and the appropriate research use of the Research Materials, subject to applicable laws and regulations.

The RECIPIENT and PI acknowledge that other researchers are entitled to access to the Research Materials on the same terms as RECIPIENT so that duplication of research may occur. RECIPIENT and PI also recognize that the STUDY Investigators have made a substantial long-term contribution in establishing the Research Materials and the NICHD encourages appropriate collaborative relationships by outside investigators with the STUDY Investigators and proper acknowledgement of their contributions.

The NICHD believes that the confidentiality and privacy of the STUDY participants can best be assured by requiring all who are interested in accessing the Research materials to acknowledge their review of this RMDA and agree to adhere to its provisions. Violation of its confidentiality provisions could lead to legal action on the part of STUDY participants, their families, or the U.S. Government.

Note: RECIPIENT requests access to NICHD Research Materials for its PI at its sole risk.

For the purpose of this agreement

"RECIPIENT" is any organization that is seeking access to STUDY Research Materials, and may be a:

- **Public/State Controlled Institution of Higher Education;**
  Private Institution of Higher Education;
- **Nonprofit organization with 501(c)(3) IRS Status (Other than Institution of Higher Education)**
  Nonprofit Organization without 501(c)(3) IRS Status (Other than Institution of Higher Education);

State Government;

- Government of a U.S. Territory or Possession;
- Non-domestic (non-U.S.) Entity (Foreign Organization);
- or Eligible Agency of the U.S. Government.

"Principal Investigator (PI)" is an individual judged by the RECIPIENT to have the appropriate level of authority and responsibility to lead the scientific investigation proposed in the Research Plan using the requested materials, oversee the supporting staff who are provided access to the Research Materials and contribute to the analytic effort and public disclosure of STUDY results, and assume responsibility for all team members' compliance with the terms and conditions of this RMDA.

"APPROVED USERS" are all individuals specifically identified in the Research Plan, including the PI. Only individuals listed in the Research Plan may have access to the Research Materials.

"Research Plan" is a description of the proposed research that includes the identities of the investigators participating in the research effort. The Research Plan must include the project title, the RECIPIENT's name, the PI's name, the name of other APPROVED USERS, and the proposed research protocol with the research objectives and design. For plans including biological and/or environmental samples, the material type, number, minimum volume, and required characteristics needed to meet the objectives of the protocol must also be included.

"Research Materials" are the requested materials covered by this RMDA and may include STUDY data, defined as clinical or epidemiologic subject data, and/or STUDY biological and/or environmental samples. STUDY samples may have associated characterization data. Characterization data serve to describe STUDY samples only and are not considered to be STUDY data; they are exempt from STUDY data requirements that may be described elsewhere in this RMDA.

"STUDY" is the clinical study that collected the Research Materials described in this RMDA.

"STUDY Investigator" is a research investigator with a current or previous grant, contract, or consulting agreement from the NICHD, or one of its contractors, to work on the STUDY.

9 Terms of Access

1. Research Use

The RECIPIENT and APPROVED USERS agree that they will use the Research Materials solely in connection with the research project described in the Research Plan named in this RMDA. Substantive modifications to the research project will require submission of a revised RMDA.

2. Institutional and Approved User Responsibilities

RECIPIENT and APPROVED USERS acknowledge that RECIPIENT's Institutional Review Board (IRB) has reviewed the RESEARCH PLAN and either approved it or determined that it is exempt from review. RECIPIENT certifies that its IRB is operating under an Office of Human Research Protections (OHRP) - approved Assurance and in accordance with Department of Health and Human Services regulations at 45 CFR Part 46. RECIPIENT and APPROVED USERS agree to comply fully with all such conditions.

RECIPIENT and APPROVED USERS agree to report promptly to the NICHD any proposed change in the Research Plan and any unanticipated problems involving risks to subjects or others. Changes to the Research Plan include changes in the APPROVED USERS list. This RDMA is made in addition to, and does not supersede, any of RECIPIENT's institutional policies or any local, State, and/or Federal laws and regulations that provide additional protections for human subjects.

Evidence of local IRB review and/or approval (where appropriate) from an expedited or convened review to conduct the Research Plan with the requested STUDY data must be included in a supplemental Adobe PDF document that will be uploaded during the application process and attached to the RMDA form.

10 Certification of Compliance with Safety Standards

The RECIPIENT and APPROVED USERS acknowledge that all biospecimens distributed under this RMDA may be potentially biohazardous even when they are not specifically designated as such. The PI understands, along with the RECIPIENT, that the requested biospecimens may pose health risks to persons handling or in the vicinity of the biospecimens, the environment, and the community.

The PI certifies that all APPROVED USERS:

- **Are cognizant of and will employ good laboratory practice and the appropriate biosafety standards including special practices, equipment, and facilities.**
- **Will comply with all applicable Institution and Government health and safety regulations and the guidelines detailed in: Biosafety in Microbiological and Biomedical Laboratories, 5th Edition, HHS Publication No. (CDC) 21-1112, December 2009, or the most recent revision of these guidelines.**

3. Public Posting of Approved User's Research Use Statement

The RECIPIENT and PI agree that information about the proposed research use can be posted on a public web site that describes the project(s) included in the RESEARCH PLAN. The information will include the PI's name, RECIPIENT institution, project title, and a brief summary of the research. In addition, citations resulting from the use of Research Materials may be posted on the NCS Vanguard Data and Sample Archive and Access System Website.

4. Non-Identification

The PI agrees not to use the Research Materials, either alone or in concert with any other information, to identify or contact individual STUDY subjects without specific approval to contact STUDY subjects obtained from the IRB(s) responsible for the STUDY.

5. Non-Transferability of Research Materials

The RECIPIENT and PI agree to retain control over the Research Materials, and further agree not to release or distribute Research Materials in any form to any entity or individuals not specified in the Research Plan described in the Request. The RECIPIENT and PI agree to store Research Material data on a computer with adequate security controls (see Section 6), and to maintain appropriate control over the Research Materials at all times. Research Materials data containing individual-level information, in whole or in part, may not be transferred or sold to any entity or individual at any point in time for any purpose.

The PI agrees that if his or her relationship with the RECIPIENT terminates and a relationship with a different RECIPIENT is established during the period of the RMDA, a new RMDA from the second RECIPIENT will be submitted and approved before the PI resumes use of the Research Materials. Any versions of Research Material data stored at the first RECIPIENT will be destroyed and their destruction documented. However, if advance written notice and approval by the NICHD Program Office is obtained to transfer responsibility for the approved Research Plan to a different PI with a relationship with the first RECIPIENT, the Research Material data may not need to be destroyed.

6. Security of Research Materials

The RECIPIENT and PI agree to store Research Material data on a computer with security controls adequate to protect sensitive or identifiable information, to ensure that only approved, supervised persons have access to the Research Material, and to maintain appropriate control over the Research Materials at all times. Hard copies of any Research Material or related data must similarly be stored under conditions sufficiently secure to avoid inappropriate access, and shredded prior to discarding.

This RMDA will be in effect for a period of three (3) years from its effective date for the requested STUDY data set. At the end of the three (3) year period, the RECIPIENT and PI agree to destroy all copies of the STUDY data, and all derivatives that

contain individual-level information,. Characterization data associated with the STUDY biological and/or environmental samples are exempt from this requirement.

An extension of this RMDA may be permitted by the NICHD upon submission by the PI and RECIPIENT of evidence of IRB approval for the extended period.

7. Intellectual Property (IP)

By requesting access to the STUDY Research Materials, the RECIPIENT and APPROVED USERS acknowledge the intent of the NICHD to see that anyone authorized for research access through the attached Research Plan, follow the intellectual property principles within the NIH Genomic Data Sharing Policy (http://grants.nih.gov/grants/guide/notice-files/NOT-OD-14-124.html; Notice Number: NOT-OD-14-124, Release Date: August 27, 2014) as summarized below:

Achieving maximum public benefit is the ultimate goal of Research Material distribution through the NICHD Biological and Data Repository Information Coordinating Center. The NIH believes that Research Materials, such as these covered by this RMDA, should be considered as pre-competitive, and urges APPROVED USERS to avoid making IP claims derived directly from the STUDY Research Materials. However, the NICHD also recognizes the importance of obtaining IP rights for downstream discoveries, especially in therapeutics, that may be necessary to support full investment in products to benefit the public.

It is expected that these NICHD-provided data, and conclusions derived there from, will remain freely available, without requirement for licensing. The NICHD encourages broad use of shared Research Materials coupled with a responsible approach to management of IP derived from downstream discoveries in a manner consistent with the NIH's Best Practices for the Licensing of Genomic Inventions (http://www.ott.nih.gov/sites/default/files/documents/pdfs/70fr18413.pdf) and the NIH Research Tools Policy (http://grants.nih.gov/grants/intell-property_64FR72090.pdf).

8. Acknowledgement of NICHD Research Resources

RECIPIENT and APPROVED USERS agree to acknowledge the contribution of the STUDY in all oral and written presentations, disclosures, or publications resulting from any analyses conducted on the STUDY Research Materials.

APPROVED USERS will acknowledge the source of the data by including language similar to the following either in the acknowledgment or in the text of the manuscript: "This Manuscript was prepared using National Children's Study Research Materials obtained from the NCS Vanguard Data and Sample Archive and Access System and does not necessarily reflect the opinions or views of the National Children's Study or the NICHD." Manuscripts and abstracts resulting from the Research Plan should not use the name of the STUDY in the title of the manuscript/abstract unless the title clearly denotes the source of the Research Materials as being from the NCS Vanguard Data and Sample Archive and Access System (e.g., "...An investigation using the National Children's Study").

The RECIPIENT and PI agree to ensure that all APPROVED USERS will not include in any manuscripts derived from Research Materials any case studies that describe the characteristics of individual participants, or groups of fewer than 10 participants.

9. Research Use Reporting

It is expected that any new individual level data that are produced under this research plan will be provided back to the archive for addition to study resources. This shall be completed before the expiration of the RMDA.

10. Non-Endorsement, Indemnification

The RECIPIENT and PI acknowledge that although all reasonable efforts have been taken to ensure the accuracy and reliability of Research Materials, the NICHD, and STUDY Investigators do not and cannot warrant the results that may be obtained by using any Research Materials included therein. The NICHD and all contributors to these Research Materials disclaim all warranties as to performance or fitness of the Research Materials for any particular purpose.

No indemnification for any loss, claim, damage or liability is intended or provided by any party under this agreement. Each party shall be liable for any loss, claim, damage, or liability that said party incurs as a result of its activities under this

agreement, except that the NIH, as an agency of the United States, assumes liability only to the extent provided under the Federal Tort Claims Act, 28 U.S.C. 2671 et seq.

11. Termination and Violations

The NICHD may terminate this agreement if RECIPIENT or APPROVED USERS are in default of any of its conditions and such default has not been remedied within 30 days after the date of written notice of such default by an authorized representative of the NICHD. Past violations will be taken into consideration by the NICHD for future requests from the RECIPIENT and APPROVED USERS to access NICHD Research Materials.

12. Amendments

Amendments to this Agreement must be made in writing and signed by authorized representatives of all parties.

Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.
Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892- 7974, ATTN: PRA (0925-0647). Do not return the completed form to this address.

Privacy Act Notification: Information collected as part of the data use agreement, data request forms, and distribution agreement may be made public in part or in whole for tracking and reporting purposes. This Privacy Act Notification is provided pursuant to Public Law 93-579, Privacy Act of 1974, 5 U.S.C. Section 552a. Authority for the collection of the information requested comes from the authorities regarding the establishment of the National Institutes of Health, its general authority to conduct and fund research and to provide training assistance, and its general authority to maintain records in connection with these and its other functions (42 U.S.C. 203, 241, 289l-1 and 44 U.S.C. 3101), and Section 301 and 493 of the Public Health Service Act. These records will be maintained in accordance with the Privacy Act System of Record Notice 09-25-0156 09-25-0200 (https://oma.od.nih.gov/forms/Privacy%20Documents/PAfiles/0200.htm) covering "Clinical, Basic and Population-based Research Studies of the National Institutes of Health (NIH), HHS/NIH/OD." The primary uses of this information are to document, track, and monitor and evaluate the submission of data from clinical, basic, and population-based research activities and to notify Submitters in the event a potential error in the dataset is identified or in the event of updates or other changes to the database. The Federal Privacy Act protects the confidentiality of the Submitter's NIH records. The NIH will use the information collected for the purposes described above. In addition, the Act allows the release of some information in the Submitter's records without the Submitter's permission; for example, if it is requested by members of Congress or other authorized individuals. The information requested is voluntary, but necessary for obtaining access to data and samples in the NCS Archive.

Signatures Page

By submission of the RMDA, the RECIPIENT and PI attest to the APPROVED USERS qualifications for access to and use of STUDY Research Materials and certify their agreement to the NICHD principles, policies, and procedures for the use of Research Materials as articulated in this document.

This Agreement is entered into as of: _____

BY RECIPIENT:

Name of RECIPIENT Institution:

_____

Name and Title of RECIPIENT's Authorized Institutional Business Official*:

_____

Signature and Date of RECIPIENT's Authorized Institutional Business Official*:

_____ **E-**

Mail address of Authorized Institutional Business Official*:

_____

*** Authorized Institutional Business/Signing Official is an individual with the authority to enter into business transactions on behalf of the RECIPIENT.**

BY REQUESTING INVESTIGATOR:

Name:

Title: _____

Surface Mail Address: _____

E-Mail Address: _____

Telephone Number: _____

Fax Number: Signature _____

and Date:

BY NICHD AUTHORIZED REPRESENTATIVE:

Name and Title: Signature and Date:

_____

_____

APPENDIX 9: GLOSSARY OF TERMS

Acceptability: The impact of each Study visit and each assessment on the participants, Study personnel, and Study infrastructure.

Advisory Committee to the Director Working Group (ACDWG): A working group of the chartered federal advisory committee established to assist the Office of the Director, NIH, in the making of major plans and policies, especially those related to the allocation of NIH funds and resources.

Alternate Recruitment Strategy (ARS): See *Recruitment Strategy/Recruitment Schema* below.

Anthropometric Data: Physical measurements of body size, shape, and composition such as height or weight, waist circumference, skinfold thickness, etc.

Biospecimen: A sample of biological material taken from the human body, such as blood, plasma, urine, saliva, tissue, etc.

Centers for Disease Control and Prevention (CDC): The CDC is a federal agency within the U.S. Department of Health and Human Services. Its main goal is to protect public health and safety through the control and prevention of disease, injury, and disability.

Cognitive Assessment: A test of one's thinking capabilities. Cognitive function includes the processes by which an individual perceives, registers, stores, retrieves, and uses information.

Computer Assisted Personal Interview (CAPI): An interviewing technique in which the study participant or the interviewer uses a computer to administer questions and capture the answers.

Direct Outreach Recruitment (DO): Also known as Two-tiered (or Hi/Lo) Recruitment Strategy, "Direct Outreach" is a preferred term to describe this strategy that uses marketing, direct mail, and other referral techniques to enroll a broad-based population in larger geographic areas (SSUs) beyond the predefined geographic segments. The approach is similar in concept to the U.S. Census Short Form and Long Form, or the Canadian Longitudinal Study on Aging. The Low Intensity National Children's Study provides participants with web-based, mail-in, or telephone-based brief questionnaires administered at about every 6 months. From the pool of participants in the Low Intensity protocol, those living in predefined geographic segments (TSUs) are invited to participate in the High Intensity protocol, which follows the Study visit schedule as that of the other recruitment strategies, namely the EH and PB.

Enhanced Household-based Recruitment (EHBR): During recruitment, this strategy utilized field workers who entered predefined geographic segments and contacted individuals and families at their residence. This strategy is similar to that used by the initial seven Vanguard Centers, but was enhanced through application of best practices from experience, targeted marketing campaigns, enhancement of additional sources of referral into the Study(such as health care providers, social clubs and organizations), and public events, as well as streamlined enrollment procedures.

Enrolled: refers to participants who consented to participate in the Study.

Environmental Protection Agency (EPA): The United States Environmental Protection Agency (EPA) is an agency of the U.S. federal government which was created for the purpose of protecting human health and the environment.

Feasibility: Assessment of the technical performance of an aspect of the Study visits logistics or infrastructure.

High Intensity/Low Intensity Dynamic Model (Hi/Lo): Also known as Two-tiered Recruitment Strategy /Direct Outreach. See *Direct Outreach Recruitment (DO).*

Information Management System (IMS): An integrated system or set of systems consisting of hardware, software, connectivity, and business rules that provides secure administrative, computational, telecommunications, and data collection and transmission functions.

Initial Vanguard Study (IVS): The very first phase of the Vanguard Study, intended to serve as a pilot to inform the planning of the National Children's Study Main Study. In the context of Vanguard Study data, IVS refers to data collected in seven PSUs from January 2009 to September 2010, when the IVS ended. The IVS recruitment was based on area probability household sampling.

Institutional Review Board (IRB): A committee established to review and approve research involving human subjects, to assure that the research is conducted in accordance with all federal, institutional, and ethical guidelines.

National Academy of Sciences (NAS): A private non-profit organization in the United States established by an Act of Congress and charged with providing independent, objective advice to the nation on matters related to science and technology.

National Children's Study (NCS): A longitudinal study to examine the effects of the environment and gene-environment interaction on the growth, development, and health of children across the United States from before birth until age 21 years.

National Institute of Child Health and Human Development (NICHD): One of the National Institutes of Health (NIH) and part of the United States Department of Health and Human Services, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development funds and conducts research on topics related to the health of children, adults, families, and populations.

Neuropsychosocial: Refers to the combination of neurological, psychological and social factors, which affect and are affected by one another.

Office of Management and Budget (OMB): An office within the Executive Office of the President that oversees the activities of federal agencies in the United States. The Paperwork

Reduction Act of 1980 established The Office of Information and Regulatory Affairs within OMB to review requests it receives from federal agencies to collect information from the public.

Personally Identifiable Information (PII): Information about an individual including (1) any information that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records; and (2) any other information that is linked or linkable to an individual, such as medical, educational, financial, and employment information.

Post Recruitment Follow-Up (PRF): Refers to the final phase of the NCS Vanguard from March 2014 through December 2014. No new enrollments were allowed during this phase and a common set of protocol assessments was administered to all study participants in all study locations.

Pregnancy Probability Group (PPG): A status assigned to age-eligible women identified during recruitment who are not pregnant but likely to become pregnant. In the Initial Vanguard Study, women were assigned to low, medium, high tryer (i.e., trying to become pregnant) or high non-tryer PPG status based on responses to a series of questions. The PPG status determined the periodicity of follow-up calls to determine if women became pregnant or if their PPG status changed. In the Alternate Recruitment Strategy phase, PPG status changed to tryer or non-tryer only.

Pregnancy Visit 1: First visit among pregnant enrolled women in ARS and PBS. Different from the pregnancy visit terminology used in the IVS (equivalent to T1First or T3First visits in IVS).

Pregnancy Visit 2: Second visit among pregnant enrolled women in ARS and PBS (equivalent to T3Prior in IVS).

Primary Sampling Units (PSUs): Individual components into which the target population is divided for the first sampling stage. In the National Children's Study, PSUs correspond roughly to U.S. counties.

Probability Sampling: A sampling methodology where every person in the target population has a chance of being selected into the Study, and this probability can be calculated. Examples of probability sampling methodology are simple random sampling, systematic sampling, stratified sampling, sampling with probability proportionate to size, and multi-stage sampling.

Program Office (PO): Refers to the National Children's Study Program Office.

Provider-based Recruitment (PBR): Alternate Recruitment Substudy strategy in which women are recruited from health care providers in contact with women who are or may become pregnant. Women who reside in predefined geographic segments are recruited from prenatal care provider offices.

Provider-based Sampling Feasibility Substudy (PBS): An arm of the Vanguard Study. Provider-based Sampling arm features include (1) county as the Primary Sampling Unit (PSU),

(2) providers of prenatal care as the Secondary Sampling Units (SSUs), and (3) recruitment of participants from selected providers with eligibility criteria based on confirmed pregnancy, age, and residence in the sampled PSU. This approach eliminates the recruitment limitation of requiring participants to reside within predefined geographic segments, and instead bases the geographic eligibility on residing within the PSU. Three counties participated in this feasibility substudy.

PubMed: A free search engine which primarily accesses the MEDLINE database of references and abstracts on biomedical and life sciences. The United States National Library of Medicine (NLM) at the National Institutes of Health maintains the database.

Recruitment Strategy/Recruitment Schema: A recruitment methodology evaluated for the NCS. The NCS recruitment strategies were: Household based recruitment (Initial Vanguard Study [IVS]), Provider-based Recruitment (PBR), Enhanced Household-based Recruitment (EHBR), Direct Outreach (DO), also known as Two-tiered Recruitment (High Intensity/Low Intensity), and Provider Based Sampling (PBS).

Regional Operations Centers (ROC): Contract research organizations responsible for participant retention and data collection within the given Study locations divided into four regions (East, Central, South, and West).

Research Materials Distribution Agreement (RDMA): Agreement with the NICHD governing data and sample use.

Sampling: The selection of a subset of individuals from a population to estimate selected characteristics of the target population.

Sampling Frame: A listing of the target population from which a sample can be drawn.

Self-administered Questionnaire (SAQ): A type of questionnaire, either in paper or electronic form, that a respondent completes on his/her own without intervention of the researchers (for example, an interviewer) collecting the data.

Secondary Sampling Units (SSUs): Units sampled directly within primary sampling units in a multi-stage sample.

Segments: In a multi-stage probability sample, primary sampling units (PSUs) are divided into smaller geographic areas called secondary sampling units (SSUs) or segments. In the National Children's Study, the boundaries for these segments correspond to "neighborhoods or communities". In Direct Outreach Strategy where three levels of sampling stages exist, tertiary sampling units (TSUs) form the sampled segments. In PBS there were no segments, only PSUs (which are counties).

Study Population: The individuals that are selected from the target population for participation in the Study.

Study Visits: Encounters of Study participants with Study personnel for the purpose of collecting data and/or materials.

Substudies: Focused clinical research studies that integrate with the Vanguard or Main Study.

T1 First: Designation code in the Initial Vanguard Study for the first trimester visit among enrolled women (equivalent to Pregnancy Visit 1 in the ARS phase).

T3 First: Designation code in the Initial Vanguard Study for the third trimester visit among women who have *not* previously received a first trimester visit (equivalent to Pregnancy Visit 1 in the ARS phase).

Vanguard Study Locations: The counties (or in sparsely populated areas, groups of contiguous counties) that were selected as primary sampling units in the first stage of sampling. They are the areas from which Study participants were recruited in the Vanguard Study and in which most of the community level data collections occur.

Vanguard Study/Vanguard Phase: The pilot phase of the National Children's Study, designed to study the feasibility, acceptability, and cost of methodological, operational, and logistic activities, recruitment-related activities, and Study visit assessments, for the purpose of informing the Main Study. Refers to all Vanguard Study locations.

Visit Assessment: The various data collections performed at Study visits, including tests, physical measurements, interviews, questionnaires, biospecimens, and environmental samples.

APPENDIX 10: GLOSSARY OF ABBREVIATIONS

ACDWG - Advisory Committee the Director

ARS - Alternate Recruitment Substudy

CAPI - Computer Assisted Personal Interview

CDC - Centers for Disease Control and Prevention

DO - Direct Outreach Recruitment

EHBR - Enhanced Household-based Recruitment

EPA - Environmental Protection Agency

HI/LI - High Intensity/Low Intensity data collection

IMS - Information Management System

IRB - Institutional Review Board

IVS - Initial Vanguard Study

NAS - National Academy of Sciences

NCS - National Children's Study

NICHD - National Institute of Child Health and Human Development

OMB – Office of Management and Budget

PBR - Provider-Based Recruitment

PBS - Provider-Based Sampling

PII - Personally Identifiable Information

PL - Provider Location

PSU - Primary Sampling Unit

PV - Pregnancy Visit

ROC - Regional Operations Center

RMDA - Research Materials Distribution Agreement

SC - Study Centers

SAQ - Self-administered Questionnaire

SSU - Secondary Sampling Unit

TSU - Tertiary Sampling Unit

VS - Vanguard Study

APPENDIX 11: SAMPLE CHARACTERIZATION INFORMATION

Characterization Information for NCS Repository Samples with Inventory Counts of 10 or Greater as of July 2017

Biological Samples

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Blood	Pre-birth	T3M, T1F, PV1	ACD Tube	AD10	8.5mL	ambient	Whole Blood with 20% DMSO/RPMI	2.0mL	VPLN	IVS , ARS	Mother, Father
Saliva	Post-birth	36M Adult	Saliva-Salimetrics swab	AS30		Frozen	Saliva	0.5mL	-80°C	ARS	Adult
Blood	Birth	Birth Child	Blood Spot Card (Protein Saver Card)	B009	75uL per spot	Frozen	Whole Blood (903 Protein Saver)	1 drop of blood per spot from heel stick	25°C	IVS	Child
Blood	Birth	Birth Child	Blood Spot Card (FTA Card)	B010	75uL per spot	Ambient	Whole Blood (FTA)	1 drop of blood per spot from heel stick	-20°C	IVS	Child
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM01	120mL capacity	Frozen	Breast Milk	0.2mL + 0.6mL 4% perchloric acid	VPLN	IVS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM01	120mL capacity	Frozen	Breast Milk	Various, 0.5-5mL	VPLN	IVS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM01	120mL capacity	Frozen	Breast Milk	4mL (prescreened)	VPLN	IVS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM01	120mL capacity	Frozen	Breast Milk	10mL (prescreened)	VPLN	IVS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM01	120mL capacity	Frozen	Breast Milk	10mL (prescreened)	VPLN	IVS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM20	120mL capacity	Frozen	Breast Milk	0.2mL + 0.6mL 4% perchloric acid	VPLN	ARS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM20	120mL capacity	Frozen	Breast Milk	Various, 0.5-5mL	VPLN	ARS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM20	120mL capacity	Frozen	Breast Milk	4mL (prescreened)	VPLN	ARS	Mother
Breast milk	Post-birth	1M, 3M Mother	Urine Collection Container	BM20	120mL capacity	Frozen	Breast Milk	10mL (prescreened)	VPLN	ARS	Mother

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Urine	Post-birth	6M Child	Urine Collection Container	BU01	120mL capacity	Frozen	Urine	Various, 0.5-8mL (prescreened)	VPLN	IVS	Child
Urine	Post-birth	6M, 12M, 36M Child	Urine Collection Container	BU20	120mL capacity	Frozen	Urine	Various, 0.5-8mL (prescreened)	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Plasma	Various, 0.5-1.5mL	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Plasma	4mL (prescreened)	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Whole blood	1mL (prescreened)	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Whole blood	2.0mL (prescreened)	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Whole blood	0.5mL	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	Buffy coat+ RBCs	2.5mL	VPLN	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-CPD	CB01	210mL capacity	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	IVS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	plasma	Various, 0.5-1.5mL	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	plasma	4mL	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	Whole blood	1mL (prescreened)	VPLN	ARS	Child

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	Whole blood	2.0mL (prescreened)	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	Whole blood	0.5mL	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	Buffy coat+ RBCs	2.5mL	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	ARS	Child
Blood	Birth	Birth Child	Cord Blood Collection Bag-Heparin	CB11	210mL capacity	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	ARS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	plasma	0.5mL	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	Whole blood	0.2mL	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6mL	2 - 8°C	Buffy coat+ RBCs	2.5mL	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	Buffy coat	1.25mL	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	RBCs	1.25mL	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood-Lavender Top Tube	CB17	6-10mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood- Red Top Tube	CB18	10 mL	2 - 8°C	Serum	0.5mL	VPLN	PBS	Child
Blood	Birth	PBS Birth Child	Cord blood- Red Top Tube	CB18	10 mL	2 - 8°C	Serum	0.5mL (amber)	VPLN	PBS	Child
Blood	Birth	Birth Child	Cord Stick Lavender Top Tube	CL10	6-10mL	2 - 8°C	Plasma	0.5mL	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Stick Lavender Top Tube	CL10	6-10mL	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Stick Lavender Top Tube	CL10	6-10mL	2 - 8°C	Whole blood	0.2mL	VPLN	ARS	Child
Blood	Birth	Birth Child	Cord Stick Lavender Top Tube	CL10	6-10mL	2 - 8°C	Buffy coat+ RBCs	2.5mL	VPLN	ARS	Child

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Blood	Birth	Birth Child	Cord Stick Lavender Top Tube	CL10	6-10mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	ARS	Child
Blood	Birth	Birth Child	Cord Stick Lavender Top Tube	CL10	6-10mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	ARS	Child
Saliva	Post-birth	12M Child	Saliva-Oragene (1.5ml)	CS20	1.5mL	Ambient	Saliva	0.75mL	-20°C	ARS	Child
Saliva	Post-birth	12M Child	Saliva-Oragene (1.5ml)	CS20	1.5mL	Ambient	Saliva	0.75mL	-20°C	ARS	Child
Saliva	Post-birth	36M Child	Saliva-Salimetrics swab	CS21		Frozen	Saliva	0.5mL	-80°C	ARS	Child
Saliva	Post-birth	36M Child	Saliva-Salimetrics swab	CS21		Frozen	Saliva	0.5mL	-80°C	ARS	Child
Urine	Post-birth	36M Child	Urine Collection Container	CU20	120mL capacity	Frozen	Urine	1.8mL + 20uL sulfamic acid (prescreened)	VPLN	ARS	Child
Urine	Post-birth	36M Child	Urine Collection Container	CU20	120mL capacity	Frozen	Urine	Various, 0.5-8mL (prescreened)	VPLN	ARS	Child
Infant Formula	Birth	Birth Mother		FM01	5mL	Frozen	Formula	5mL (prescreened)	VPLN	IVS	Mother
Hair	Pre-birth	P1M, T3M, T1F	bag	HR01	20 strands minimum	Ambient	Hair	bag	25°C	IVS	Mother, Father
Blood	Birth	PBS Birth Child	Blood Spot Card (Protein Saver Card)	HS17	75uL per spot	Frozen	Whole Blood (903 Protein Saver)	1 drop of blood per spot from heel stick	-20°C	PBS	Child
Blood	Pre-birth	P1M, T1M, BR-M, T1F	Lavender Top Tube (prescreened)	LP10	3mL	Frozen	Whole Blood	None	-20°C	IVS , ARS	Mother, Father
Blood	Post-birth	36M Child	Lavender Top Tube (prescreened)	LP20	3mL	Frozen	Whole Blood	None	-20°C	ARS	Child
Blood	Post-birth	36M Adult	Lavender Top Tube (prescreened)	LP40	3mL	Frozen	Whole Blood	None	-20°C	ARS	Adult
Blood	Pre-birth	P1M, T1M, T3M, Pre-preg, PV1, PV2	Lavender Top Tube	LV10	6mL	2 - 8°C	Plasma	0.5mL	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, T3M, Pre-preg, PV1, PV2	Lavender Top Tube	LV10	6mL	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, T3M, Pre-preg, PV1, PV2	Lavender Top Tube	LV10	6mL	2 - 8°C	Whole blood	0.2mL	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, T3M, Pre-preg, PV1, PV2	Lavender Top Tube	LV10	6mL	2 - 8°C	Buffy coat+ RBCs	2.5mL	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, T3M, Pre-preg, PV1, PV2)	Lavender Top Tube	LV10	6mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	IVS , ARS	Mother

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Blood	Pre-birth	P1M, T1M, T3M, Pre-preg, PV1, PV2	Lavender Top Tube	LV10	6mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	IVS , ARS	Mother
Blood	Pre-birth	T1F	Lavender Top Tube	LV11	6mL	2 - 8°C	Plasma	0.5mL	VPLN	IVS	Father
Blood	Pre-birth	T1F	Lavender Top Tube	LV11	6mL	2 - 8°C	Buffy coat+ RBCs	2.5mL	VPLN	IVS	Father
Blood	Pre-birth	T1F	Lavender Top Tube	LV11	6mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	IVS	Father
Blood	Pre-birth	T1F	Lavender Top Tube	LV11	6mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	IVS	Father
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV17	6mL	2 - 8°C	Plasma	0.5mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV17	6mL	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV17	6mL	2 - 8°C	Buffy coat	1.25mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV17	6mL	2 - 8°C	RBCs	1.25mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV17	6mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV17	6mL	2 - 8°C	FTA Blood spot cards	1 drop of blood per spot from heel stick	25°C	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV18	6mL	2 - 8°C	Plasma	0.5mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV18	6mL	2 - 8°C	Whole blood	0.2mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV18	6mL	2 - 8°C	Buffy coat	1.25mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Lavender Top Tube	LV18	6mL	2 - 8°C	RBCs	1.25mL	VPLN	PBS	Mother
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	Plasma	0.5mL	VPLN	ARS	Child
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	Whole blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	ARS	Child
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	Whole blood	0.2mL	VPLN	ARS	Child
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	Buffy coat	0.25mL	VPLN	ARS	Child
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	RBCs	0.25mL	VPLN	ARS	Child
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	ARS	Child
Blood	Post-birth	12M Child	Lavender Top Tube	LV21	3mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	ARS	Child

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	4mL	2 - 8°C	Plasma	0.5mL	VPLN	ARS	Child
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	4mL	2 - 8°C	Whole Blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	ARS	Child
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	4mL	2 - 8°C	Whole Blood	0.25mL	VPLN	ARS	Child
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	4mL	2 - 8°C	Buffy coat	0.25mL	VPLN	ARS	Child
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	4mL	2 - 8°C	RBCs	0.75mL	VPLN	ARS	Child
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	3mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	ARS	Child
Blood	Post-birth	36M Child	Lavender Top Tube	LV22	3mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	ARS	Child
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	Plasma	0.5mL	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	Whole Blood	0.1mL + 1mL 1% Ascorbic Acid (amber)	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	Whole Blood	1.0mL	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	Buffy coat	0.5mL	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	RBCs	1.25mL	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	903 Blood spot cards	0.075mL per spot	-20°C	ARS	Adult
Blood	Post-birth	36M Adult	Lavender Top Tube	LV30	6mL	2 - 8°C	FTA Blood spot cards	0.075mL per spot	25°C	ARS	Adult
Meconium	Birth	Birth Child	various volume in 30mL para-pak container	MC01	30mL capacity	Frozen	Meconium	various volume in 30mL para-pak container	-80°C	IVS	Child
Nails	Pre-birth	T3M, T1F	bag	NL01	nails	Ambient	Toe Nails	bag	25°C	IVS	Mother, Father
Placenta (cord)	Birth	Birth Mother	Placental Tissue Sample	PC01	placenta	Fresh Tissue - RefrigeratedFixed Tissue - Ambient	Umbilical Cord	Block/Slide	25°C	IVS	Mother
Placenta (membrane)	Birth	Birth Mother	Placental Tissue Sample	PC01	placenta	Fresh Tissue - Refrigerated Fixed Tissue - Ambient	Membrane	Block/Slide	25°C	IVS	Mother

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Placenta	Birth	Birth Mother	Placental Tissue Sample	PC01	placenta	Fresh Tissue - Refrigerated Fixed Tissue - Ambient	Placenta	Block/Slide	25°C	IVS	Mother
Placenta	Birth	PBS Birth Mother	Placental Tissue Sample	PC17	5ml RNALater	2 - 8°C	Placenta	None	-80°C	PBS	Mother
Placenta	Birth	PBS Birth Mother	Placental Tissue Sample	PC18	5ml RNALater	2 - 8°C	Placenta	None	-80°C	PBS	Mother
Blood	Pre-birth	T1M, T3M, Pre-preg, PV1	P100 Tube	PN10	8.5mL	2 - 8°C	Plasma	0.5mL	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, T3M, PV1, PV2	Plasma Preparation Tube	PP10	5mL	2 - 8°C	Plasma	0.5mL	VPLN	IVS , ARS	Mother
Blood	Pre-birth	T3M, PV2	PaxGene Tube	PX10	2.5mL	Frozen	Whole blood	None	-80°C	IVS , ARS	Mother
Blood	Post-birth	36M Child	PaxGene Tube	PX20	2.5mL	Frozen	Whole blood	None	-80°C	ARS	Child
Blood	Post-birth	36M Adult	PaxGene Tube	PX30	2.5mL	Frozen	Whole blood	None	-80°C	ARS	Adult
Blood	Pre-birth	PV2	Royal blue EDTA serum tube	RB10	6mL	Frozen	Whole blood	None	-80°C	ARS	Mother
Blood	Pre-birth	P1M, T1M, Pre-preg, PV1, PV2	Red Top Tube	RD10	10mL	2 - 8°C	Serum	0.5mL	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, Pre-preg, PV1, PV2	Red Top Tube	RD10	10mL	2 - 8°C	Serum	0.5mL (amber)	VPLN	IVS , ARS	Mother
Blood	Pre-birth	P1M, T1M, T3M	Red Top Tube	RD11	10mL	2 - 8°C	Serum	5mL (prescreened)	VPLN	IVS	Mother
Blood	Pre-birth	T1F	Red Top Tube	RD12	10mL	2 - 8°C	Serum	0.5mL	VPLN	IVS	Father
Blood	Pre-birth	T1F	Red Top Tube	RD12	10mL	2 - 8°C	Serum	4.5mL (prescreened)	VPLN	IVS	Father
Blood	Pre-birth	T3M	Red Top Tube	RD13	10mL	2 - 8°C	Serum	0.25mL + 1mL MPA (amber)	VPLN	IVS	Mother
Blood	Pre-birth	T3M	Red Top Tube	RD13	10mL	2 - 8°C	Serum	0.5mL (amber)	VPLN	IVS	Mother
Blood	Pre-birth	T3M	Red Top Tube	RD13	10mL	2 - 8°C	Serum	0.5mL	VPLN	IVS	Mother
Blood	Pre-birth	T3M	Red Top Tube	RD13	10mL	2 - 8°C	Serum	1mL (prescreened)	VPLN	IVS	Mother
Blood	Birth	Birth Mother	Red Top Tube	RD14	10mL	2 - 8°C	Serum	5mL (prescreened)	VPLN	IVS	Mother
Blood	Birth	Birth Mother	Red Top Tube	RD15	10mL	2 - 8°C	Serum	0.5mL	VPLN	IVS	Mother

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Blood	Birth	Birth Mother	Red Top Tube	RD15	10mL	2 - 8°C	Serum	4.5mL (prescreened)	VPLN	IVS	Mother
Blood	Birth	Birth Mother	Red Top Tube	RD16	10mL	2 - 8°C	Serum	5mL (prescreened)	VPLN	IVS	Mother
Blood	Birth	PBS Birth Mother	Red Top Tube	RD17	10mL	2 - 8°C	Serum	0.5mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Red Top Tube	RD18	10mL	2 - 8°C	Serum	0.5mL	VPLN	PBS	Mother
Blood	Birth	PBS Birth Mother	Red Top Tube	RD18	10mL	2 - 8°C	Serum	4.5mL (prescreened)	VPLN	PBS	Mother
Blood	Post-birth	12M Child	Red Top Tube	RD20	3mL	2 - 8°C	Serum	0.5mL	VPLN	ARS	Child
Blood	Post-birth	12M Child	Red Top Tube	RD21	3mL	2 - 8°C	Serum	0.5mL (amber)	VPLN	ARS	Child
Blood	Post-birth	12M Child	Red Top Tube	RD21	3mL	2 - 8°C	Serum	0.5mL	VPLN	ARS	Child
Blood	Post-birth	36M Child	Red Top Tube	RD22	5mL	2 - 8°C	Serum	0.25mL + 1mL MPA (amber)	VPLN	ARS	Child
Blood	Post-birth	36M Child	Red Top Tube	RD22	5mL	2 - 8°C	Serum	0.5mL (amber)	VPLN	ARS	Child
Blood	Post-birth	36M Child	Red Top Tube	RD22	5mL	2 - 8°C	Serum	0.5mL	VPLN	ARS	Child
Blood	Post-birth	36M Adult	Red Top Tube	RD30	10mL	2 - 8°C	Serum	0.25mL + 1mL MPA (amber)	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Red Top Tube	RD30	10mL	2 - 8°C	Serum	1mL	VPLN	ARS	Adult
Blood	Post-birth	36M Adult	Red Top Tube	RD30	10mL	2 - 8°C	Serum	0.5mL	VPLN	ARS	Adult
Saliva	Pre-birth	P1M,T1M, T3M,T1F	Saliva-Oragene	SB01	2mL	Ambient	Saliva	2mL	-20°C	IVS	Mother, Father
Saliva	Pre-birth	P1M,T1M, T3M,T1F	Saliva-Oragene	SB01	2mL	Ambient	Saliva	2mL	-20°C	IVS	Mother, Father
Saliva	Pre-birth	T1M, T3M	2mL cryovial	SL01	2mL	Frozen	Saliva	2mL	VPLN	IVS	Mother
Saliva	Pre-birth	T1M, T3M	2mL cryovial	SL02	2mL	Frozen	Saliva	2mL	VPLN	IVS	Mother
Saliva	Pre-birth	T1M, T3M	2mL cryovial	SL03	2mL	Frozen	Saliva	2mL	VPLN	IVS	Mother
Saliva	Pre-birth	T1M, T3M	2mL cryovial	SL04	2mL	Frozen	Saliva	2mL	VPLN	IVS	Mother
Saliva	Pre-birth	T1M, T3M	2mL cryovial	SL05	2mL	Frozen	Saliva	2mL	VPLN	IVS	Mother
Saliva	Pre-birth	T1M, T3M	2mL cryovial	SL06	2mL	Frozen	Saliva	2mL	VPLN	IVS	Mother
Blood	Pre-birth	P1M, T1M, T3M, PV1, PV2	Serum Separator Tube	SS10	8.5mL	2 - 8°C	Serum	0.5mL	VPLN	IVS , ARS	Mother
Blood	Post-birth	36M Child	Serum Separator Tube	SS20	3.5mL	2 - 8°C	Serum	0.5mL	VPLN	ARS	Child
Blood	Post-birth	36M Adult	Serum Separator Tube	SS30	8.5mL	2 - 8°C	Serum	0.5mL	VPLN	ARS	Adult

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Urine	Pre-birth	T1M	Urine Collection Container	UR01 (old aliquoting extensions) Aliquoting extensions updated May 2009	120mL capacity	Frozen	Urine	1mL	VPLN	IVS	Mother
Urine	Pre-birth	T1M	Urine Collection Container	UR01 (old aliquoting extensions) Aliquoting extensions updated May 2009	120mL capacity	Frozen	Urine	1mL (prescreened)	VPLN	IVS	Mother
Urine	Pre-birth	T1M	Urine Collection Container	UR01 (old aliquoting extensions) Aliquoting extensions updated May 2009	120mL capacity	Frozen	Urine	2mL (prescreened)	VPLN	IVS	Mother
Urine	Pre-birth	P1M, T1M, T3M, T1F, Pre-preg, PV2	Urine Collection Container	UR01, UR02, PU01	120mL capacity	Frozen	Urine	1.8mL + 20uL sulfamic acid (prescreened)	VPLN	IVS (UR01, UR02, PU01), ARS (UR01)	Mother, Father
Urine	Pre-birth	P1M, T1M, T3M, T1F, Pre-preg, PV2	Urine Collection Container	UR01, UR02, PU01	120mL capacity	Frozen	Urine	2.0mL (prescreened)	VPLN	IVS (UR01, UR02, PU01), ARS (UR01)	Mother, Father
Urine	Pre-birth	P1M, T1M, T3M, T1F, Pre-preg, PV2	Urine Collection Container	UR01, UR02, PU01	120mL capacity	Frozen	Urine	Various, 0.5-5mL	VPLN	IVS(UR01, UR02, PU01), ARS (UR01)	Mother, Father
Urine	Pre-birth	P1M, T1M, T3M, T1F, Pre-preg, PV2	Urine Collection Container	UR01, UR02, PU01	120mL capacity	Frozen	Urine	8mL (prescreened)	VPLN	IVS (UR01, UR02, PU01), ARS (UR01)	Mother, Father
Urine	Birth	PBS Birth Mother	Urine Collection Container	UR17	120mL capacity	Frozen	Urine	1.8mL + 20uL sulfamic acid (prescreened)	VPLN	PBS	Mother

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Temperature at Receipt	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Urine	Birth	PBS Birth Mother	Urine Collection Container	UR17	120mL capacity	Frozen	Urine	8mL (prescreened)	VPLN	PBS	Mother
Urine	Birth	PBS Birth Mother	Urine Collection Container	UR17	120mL capacity	Frozen	Urine	2.0mL (prescreened)	VPLN	PBS	Mother
Urine	Birth	PBS Birth Mother	Urine Collection Container	UR17	120mL capacity	Frozen	Urine	Various, 0.5-5mL	VPLN	PBS	Mother
Urine	Post-birth	36M Adult	Urine Collection Container	UR30	120mL capacity	Frozen	Urine	1.8mL + 20uL sulfamic acid (prescreened)	VPLN	ARS	Adult
Urine	Post-birth	36M Adult	Urine Collection Container	UR30	120mL capacity	Frozen	Urine	8mL (prescreened)	VPLN	ARS	Adult
Urine	Post-birth	36M Adult	Urine Collection Container	UR30	120mL capacity	Frozen	Urine	2.0mL (prescreened)	VPLN	ARS	Adult
Urine	Post-birth	36M Adult	Urine Collection Container	UR30	120mL capacity	Frozen	Urine	Various, 0.5-5mL	VPLN	ARS	Adult
Slide, vaginal	Pre-birth	P1M, T1M, T3M	Vaginal Slide Sample	VL01	slide	Ambient	Vaginal Slide	Slide	25°C	IVS	Mother
Swab, vaginal	Pre-birth	P1M, T1M, T3M	5mL cryovial	VS01	swab in 5mL vial	Frozen	Vaginal Swab	1.0mL	VPLN	IVS	Mother
Swab, vaginal	Pre-birth	P1M, T1M, T3M	5mL cryovial	VS02	swab in 5mL vial	Frozen	Vaginal Swab	1.0mL	VPLN	IVS	Mother
DNA	Birth	PBS Birth Mother	2mL cryovial	PC17	DNA extract from placenta	Frozen	DNA- 200 ng/ul	50 ul	-80°C	PBS	Mother
DNA		P1M, T1M, T3M, Pre-preg, PV1, PV2, T1F, Birth Child	2mL cryovial	7001, 7021	RNA extract from mixed buffy coat	Frozen	DNA- 200 ng/ul	50 ul	-80°C	IVS	Mother, Father, Child
RNA	Pre-birth	T3M, PV2	2mL cryovial	PX10	RNA extract from whole blood	Frozen	RNA- 25 ng/ul	40 ul	-80°C	IVS , ARS	Mother, Father
RNA	Birth	PBS Birth Mother	2mL cryovial	PC17	RNA extract from placenta	Frozen	RNA- 25 ng/ul	40 ul	-80°C	PBS	Mother

Abbreviations: 12M=12 months; 1M=1 month; 36M=36 months; 3M=3 months; 6M=6 months; ARS=Alternate Recruitment Substudy; BR-M=Birth-mother; CPD=citrate-phosphate-dextrose; DMSO=Dimethyl sulfoxide; EDTA=ethylene diamine tetraacetate; FTA=Flinders Technology Associates; HDPE=High-density polyethylene; IVS=Initial Vanguard Study; MPA= Metaphosphoric acid; P1M=maternal prepregnancy visit in IVS; PBS=Provider-Based Sampling Substudy; PM2.5=fine particulate matter (≤2.5 micron diameter); PV1=maternal first pregnancy visit in ARS; PV2=maternal second pregnancy visit in ARS; RPMI=Roswell Park Memorial Institute growth medium; SVOC=semi-volatile organic compounds; T1F=first trimester father visit in IVS; T1M=first trimester mother visit in IVS; T3M=third trimester mother visit in IVS; VPLN=vapor phase liquid nitrogen

Characterization Information for NCS Repository Samples with Inventory Counts of 10 or Greater as of July 2017

Environmental Samples

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Air – PM2.5 filter	Pre-birth	P1M	Filter Disk	AP01	Air - PM Filter	37 mm Teflon filter in sealed container, bagged	Not Applicable	Walk-in -20 C	IVS	Not applicable
Dust – Vacuum Allergens/Endotoxin	Pre-birth	T1M, T3M	15 mL vial	DA01	Dust - Vacuum - Allergens	Dustream filter in 15 ml vial, double bagged	Not Applicable	-80°C	IVS	Not applicable
Dust – Vacuum Bag; Processed remainder	Pre-birth	PV1	Amber Jar	DB02	Dust - Vacuum Bag	Sieved dust in 2 oz or larger amber glass jar with Teflon lined cap, bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Organics	Pre-birth	PV1	Amber Jar	DB20	Dust - Organics	Sieved dust in 30 ml amber glass jar, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Organics	Pre-birth	PV1	Amber Jar	DB21	Dust - Organics	Sieved dust in 30 ml amber glass jar, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Organics	Pre-birth	PV1	Amber Jar	DB22	Dust - Organics	Sieved dust in 30 ml amber glass jar, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Organics	Pre-birth	PV1	Amber Jar	DB23	Dust - Organics	Sieved dust in 30 ml amber glass jar, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Organics	Pre-birth	PV1	Amber Jar	DB24	Dust - Organics	Sieved dust in 30 ml amber glass jar, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Inorganics	Pre-birth	PV1	10 mL vial	DB25	Dust - Inorganics	Sieved dust in 10 ml polyethylene vial, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Inorganics	Pre-birth	PV1	10 mL vial	DB26	Dust - Inorganics	Sieved dust in 10 ml polyethylene vial, double bagged	1	-80°C	ARS	Not applicable

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Dust – Vacuum Bag Aliquot -- Inorganics	Pre-birth	PV1	10 mL vial	DB27	Dust - Inorganics	Sieved dust in 10 ml polyethylene vial, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Inorganics	Pre-birth	PV1	10 mL vial	DB28	Dust - Inorganics	Sieved dust in 10 ml polyethylene vial, double bagged	1	-80°C	ARS	Not applicable
Dust – Vacuum Bag Aliquot -- Inorganics	Pre-birth	PV1	10 mL vial	DB29	Dust - Inorganics	Sieved dust in 10 ml polyethylene vial, double bagged	1	-80°C	ARS	Not applicable
Dust – Wipe Inorganic	Pre-birth	T1M, T3M	2 oz Amber Jar	DN01	Dust - Wipe Inorganic	Wipe in 2 oz amber glass jar with Teflon lined cap, bagged	Not Applicable	-20°C	IVS	Not applicable
Dust – Wipe Pyrethroids	Pre-birth	P1M, T1M, T3M	2 oz Amber Jar	DP02	Dust - Wipe Pyrethroids	Wipe in 2 oz amber glass jar with Teflon lined cap, double bagged	Not Applicable	-80°C	IVS	Not applicable
Dust – Wipe SVOC	Pre-birth	T1M, T3M	2 oz Amber Jar	DS01	Dust - Wipe SVOC	Wipe in 2 oz amber glass jar with Teflon lined cap, double bagged	Not Applicable	-80°C	IVS	Not applicable
Dust – Vacuum Bag Aliquot -- Organics	Pre-birth	PV1	Amber Jar	SB20	Dust - Organics	Sieved dust in 30 ml amber glass jar, double bagged	1	-80°C	ARS	Not applicable
Dust – Deposition Plate Wipe - Inorganics	Pre-birth	T3M	Amber Jar	SD08	Dust - Wipe Inorganic	Wipe in 2 oz amber glass jar with Teflon lined cap, double bagged	Not Applicable	-20°C	IVS	Not applicable
Water - Pharmaceuticals	Pre-birth	PV1	1 L amber HDPE bottle	SF01	Water - Pharma TWF	Tap water with 50 mg of 1% Ascorbic acid in 1 liter HDPE bottle in foam insert, bagged – 3 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pharmaceuticals	Pre-birth	PV1	1 L amber HDPE bottle	SF02	Water - Pharma TWF	Tap water with 50 mg of 1% Ascorbic acid in 1 liter HDPE bottle in foam insert, bagged – 3 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pharmaceuticals	Pre-birth	PV1	1 L amber HDPE bottle	SF03	Water - Pharma TWF	Tap water with 50 mg of 1% Ascorbic acid in 1 liter HDPE bottle in foam insert, bagged – 3 bottles/sample	1 L	-20°C	ARS	Not applicable

Primary Sample Type	Timing Relative to Birth	Visit Type	Collection Type/Container	Parent Sample ID Extension	Draw/Collection Volume	Processed Component	Aliquot Volume or Quantity	Storage Temperature	Study Phase	Participant Type
Water - Pesticides	Pre-birth	PV1	1 L amber HDPE bottle	SQ01	Water - Pest - TWQ	Tap water with 80 mg of sodium thiosulphate in 1 liter HDPE bottle in foam insert, bagged – 2 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pesticides	Pre-birth	PV1	1 L amber HDPE bottle	SQ02	Water - Pest - TWQ	Tap water with 80 mg of sodium thiosulphate in 1 liter HDPE bottle in foam insert, bagged – 2 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pharmaceuticals	Pre-birth	PV1	1 L amber HDPE bottle	WF01	Water - Pharma TWF	Tap water with 50 mg of 1% Ascorbic acid in 1 liter HDPE bottle in foam insert, bagged – 3 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pharmaceuticals	Pre-birth	PV1	1 L amber HDPE bottle	WF02	Water - Pharma TWF	Tap water with 50 mg of 1% Ascorbic acid in 1 liter HDPE bottle in foam insert, bagged – 3 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pharmaceuticals	Pre-birth	PV1	1 L amber HDPE bottle	WF03	Water - Pharma TWF	Tap water with 50 mg of 1% Ascorbic acid in 1 liter HDPE bottle in foam insert, bagged – 3 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pesticides	Pre-birth	PV1	1 L amber HDPE bottle	WQ01	Water - Pest - TWQ	Tap water with 80 mg of sodium thiosulphate in 1 liter HDPE bottle in foam insert, bagged – 2 bottles/sample	1 L	-20°C	ARS	Not applicable
Water - Pesticides	Pre-birth	PV1	1 L amber HDPE bottle	WQ02	Water - Pest - TWQ	Tap water with 80 mg of sodium thiosulphate in 1 liter HDPE bottle in foam insert, bagged – 2 bottles/sample	1 L	-20°C	ARS	Not Applicable

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