

# The National Longitudinal Study of Adolescent to Adult Health

## Wave V: Biological Data Collection

Biomarker Network Meeting  
March 30, 2016



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# Carolina Population Center

## University of North Carolina at Chapel Hill

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- Investigator, Add Health

### **Kathleen Mullan Harris, PhD**

- James Haar Distinguished Professor, Sociology
- Director, Add Health



# Add Health – following the cohort for 20+ years

## National Longitudinal Study of Adolescent Health

→ National Longitudinal Study of Adolescent to Adult Health

Wave	Year of data collection	N	Cohort description
Wave I	1995	20,745	Adolescents in grades 7-12 and one of their parents interviewed in the home
Wave II	1996	14,738	Adolescents in grades 8-12
Wave III	2001-02	15,197	Young adults, 18-26 years old
Wave IV	2008-09	15,701	Adults, 24-32 years old
<b>Wave V</b>	<b>2016-18</b>	<b>in the field now</b>	<b>Adults, 32-42 years old</b>



## Wave V Overall Goals

- Assess 4<sup>th</sup> decade of life → hypothesized explosion of chronic disease
- Re-interview Add Health cohort members to collect social, environmental, behavioral, and biological data
- Add and refine early-life measures of birth and childhood
- With existing longitudinal data, create a 40-year life course record
- Test hypotheses about developmental origins of health and disease



## Wave V Data Collection: 2016-2018

- survey data – some relevant to health status and biomarkers
  - mixed mode: web preferred, mail backup
  - continuous interviewing 2016-2018
- birth records of respondents and their children from a subset of states
- surveillance of chronic disease events – start with causes of death
- **in-home visits to collect biological measures and specimens**
  - using research division of an examination management service
  - venous blood draw, fasting



# Add Health Choice of Biological Data

- Biological states prevalent in the general population, from youth into adulthood
- Biological states and processes linked to future health
- Measures that can characterize those processes
- Feasible for a large scale, national field study
- Valid and reliable measures
- Appropriate for longitudinal designs

# Biological Data Measures Collected Across Waves

Adolescence



Transition to Adulthood



Young Adulthood



Adulthood

**Wave I-II (Ages 12-20)**

**Wave III (Ages 18-26)**

**Wave IV (Ages 24-32)**

**Wave V (Ages 32-42)**

Anthropometric

Anthropometric

Anthropometric

**Anthropometric**

STI & HIV measures

Metabolic

**Metabolic**

Genomic

Genomic

**Genomic**

Immune function

**Immune function**

Inflammation

**Inflammation**

Cardiovascular

**Cardiovascular**

Pharmacologic


**Pharmacologic**

**Renal function**

Embedded genetic sample of ~3,000 pairs



# Biological Data Measures Collected Across Waves

Adolescence	→ Transition to Adulthood	→ Young Adulthood	→ Adulthood
Wave I-II (Ages 12-20)	Wave III (Ages 18-26)	Wave IV (Ages 24-32)	Wave V (Ages 32-42)
Anthropometric	Anthropometric	Anthropometric	<b>Anthropometric</b>
	STI & HIV measures	Metabolic	<b>Metabolic</b>
	Genomic	<b>Genomic</b>	<b>Genomic</b>
		Immune function	<b>Immune function</b>
		Inflammation	<b>Inflammation</b>
		Cardiovascular	<b>Cardiovascular</b>
		Pharmacologic	<b>Pharmacologic</b>
			<b>Renal function</b>
Embedded genetic sample of ~3,000 pairs 			



# Wave V Biomarker Overview

Domains	Measures
<b>LONGITUDINAL REPEAT MEASURES</b>	
Cardiovascular	systolic BP, diastolic BP, pulse rate
Anthropometric	weight, height, arm & waist circumference
Metabolic	HbA1c, glucose, total cholesterol, HDL-cholesterol, triglycerides
Inflammatory / Immune	hs-CRP
Pharmacologic	prescription medication use & classification
<b>NEW MEASURES AT WAVE V</b>	
Renal function	creatinine, cystatin C

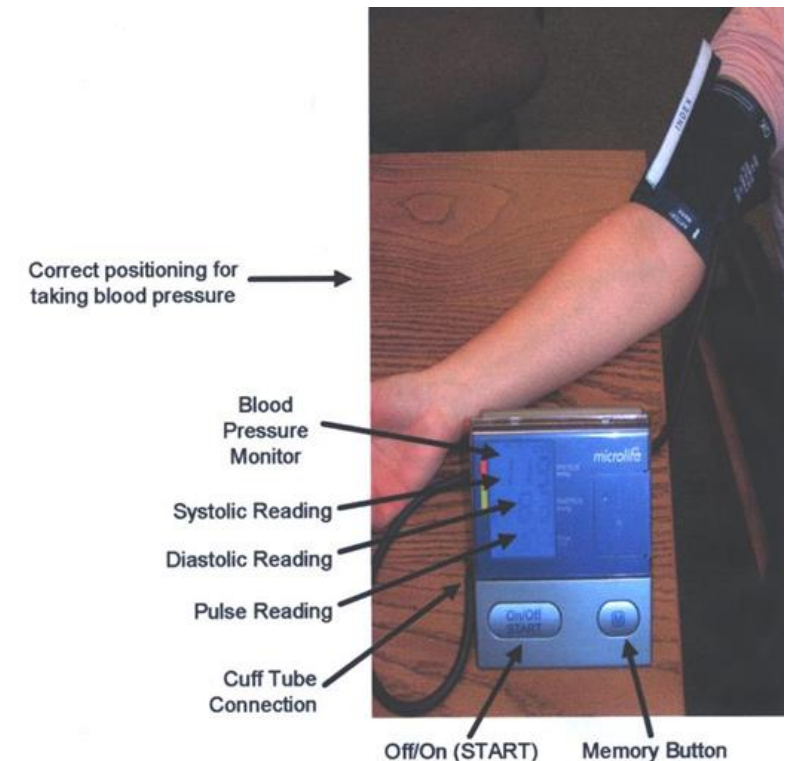
# Wave V Equipment



# Wave V Biomarkers

## Cardiovascular Data Collection Protocol

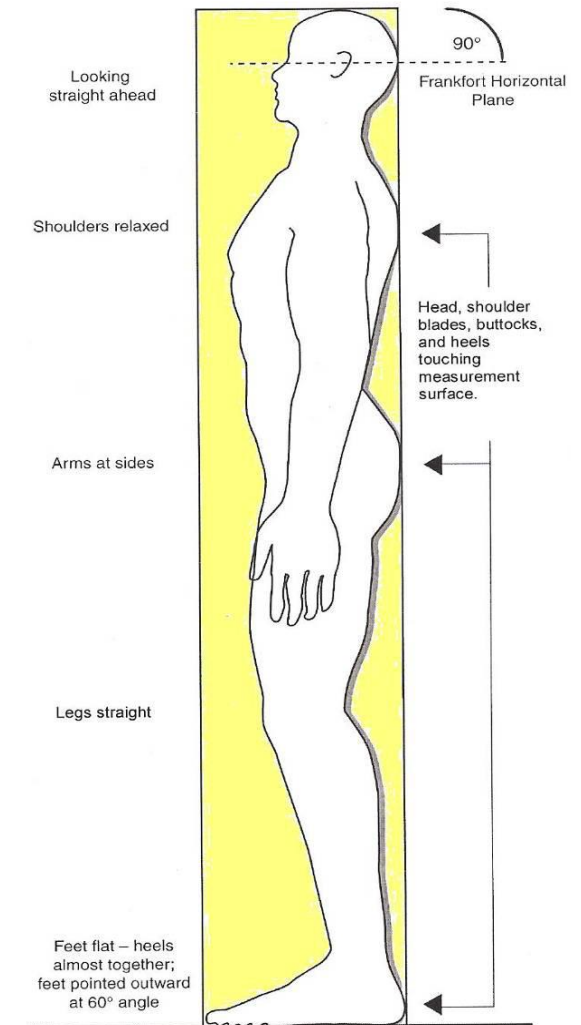
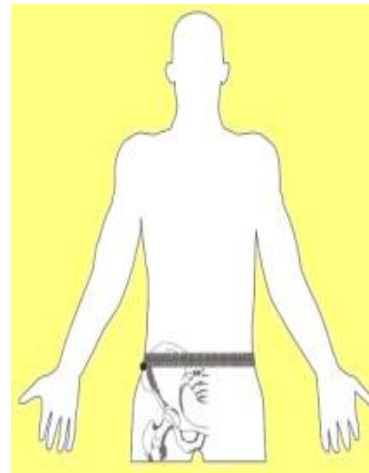
- **Systolic BP, Diastolic BP & Pulse Rate**
  - measure 3 times @ 30-sec intervals
  - average of last 2 measures
  
  - resting & seated respondents
  - legs uncrossed & feet flat on floor
  - measure arm circumference, match cuff



# Wave V Biomarkers

## Anthropometric Data Collection Protocol

- arm circumference
- waist circumference
- height
- weight
  - respondent dressed, no shoes
  - scale placed on uncarpeted floor





# Wave V Biomarkers

## Venous Whole Blood Collection

- **5 or 6 vacutainer tubes**
  - serum
  - plasma
  - buffy coat/RBCs
  - PAXgene
  - Na FI/Pot Ox (glucose substudy)
- provide most assay results to respondents who want them
  - trained & certified phlebotomists
  - **fasting** respondents (ideally)



# Wave V Biomarkers

## Assays on Blood + Archive of Specimens

Domains	Measures
Metabolic	HbA1c glucose total cholesterol HDL-cholesterol triglycerides
Inflammatory / Immune	hs-CRP
Kidney function	creatinine cystatin C



# Wave V Biomarkers Pharmacologic Data

- **prescription medications**
- **select over-the-counter medications (salicylates & NSAIDs)**
  - therapeutically classified (Multum Lexicon Plus<sup>®</sup>)
  - classification examples
    - anti-hypertensives
    - anti-hyperlipidemics
    - anti-depressants
    - anti-inflammatories
    - other classes



# Two Wave V Biomarker Sub-studies

- **Intra-individual Variation (IIV) to assess reliability**
  - sample of ~100 respondents with complete data at first home visit asked to repeat visit within 1-2 weeks
    - stratified by race/ethnicity and gender
  - assess repeated values while controlling as many factors as possible
- **Glucose sub-study to assess validity**
  - sample of ~100 respondents
    - stratified by race/ethnicity, gender, and Wave IV HbA1c measures
  - two glucose assays to assess effects of delayed time from blood collection
    - standard serum tube & tube with sodium fluoride preservative
  - compare assay results





# To Explore and Get Add Health Data

- **Add Health Codebook Explorer (ACE)**

[www.cpc.unc.edu/projects/addhealth/codebooks/ace](http://www.cpc.unc.edu/projects/addhealth/codebooks/ace)

- **Public use data – random subset of all respondents**

[www.cpc.unc.edu/projects/addhealth/data/publicdata](http://www.cpc.unc.edu/projects/addhealth/data/publicdata)

- **Restricted use data – available by contractual agreement**

[www.cpc.unc.edu/projects/addhealth/data/restricteduse](http://www.cpc.unc.edu/projects/addhealth/data/restricteduse)



## 2016 Add Health Users Conference



**Biennial conference for Add Health data users**

**Held at NIH Campus in Bethesda, MD**

**June 20-21, 2016**

**Registration open**

**Features of the conference include:**

- An opportunity to hear about Add Health research projects, and talk with other data users
- Attend methodological sessions
- Travel stipends available to students, postdocs and recent postdocs

[www.cpc.unc.edu/projects/addhealth/events/2016-add-health-users-conference](http://www.cpc.unc.edu/projects/addhealth/events/2016-add-health-users-conference)

# Add Health Co-Funders

- National Institute of Child Health and Human Development\*^
- National Cancer Institute\*
- National Center for Health Statistics, Centers for Disease Control and Prevention, DHHS
- National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, DHHS\*
- National Center for Minority Health and Health Disparities\*
- National Institute of Allergy and Infectious Diseases\*
- National Institute of Deafness and Other Communication Disorders\*^
- National Institute of General Medical Sciences
- National Institute of Mental Health
- National Institute of Nursing Research\*
- National Institute on Aging\*
- National Institute on Alcohol Abuse and Alcoholism\*
- National Institute on Drug Abuse\*^
- National Science Foundation\*^
- Office of AIDS Research, NIH\*
- Office of the Assistant Secretary for Planning and Evaluation, DHHS\*
- Office of Behavioral and Social Sciences Research, NIH\*
- Office of the Director, NIH^
- Office of Minority Health, Centers for Disease Control and Prevention, DHHS
- Office of Minority Health, Office of Public Health and Science, DHHS
- Office of Population Affairs, DHHS\*
- Office of Research on Women's Health, NIH\*

\*Wave 4 co-funders

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# Questions?



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