NIH-Funded VCID Cohorts Figure and Tables

This document and accompanying figure were developed by an NIH working group as part of an assessment of cohorts collecting data relevant to vascular contributions to cognitive impairment and dementia (VCID). This document represents only a subset of VCID-related cohorts funded by the NIH, and does not provide comprehensive details, particularly regarding the specific type of data collected (e.g. type of biosamples, type of brain imaging, etc.). The tables below are intended to present a high-level overview of the cohorts, data that were used to populate the graphic, and links that allow the user to seek additional information on each cohort.

ACT:

Cohort name (Start year)	Adult Changes in Thought study (1994)
Description	ACT is a prospective cohort study with a focus on aging and dementia in older adults. ACT enrolls patients from Kaiser Permanente Washington which enables integration of health care data with data collected by the ACT study.
PI	Eric B. Larson, Paul Crane
Primary IC	NIA
Website	http://act.kpwashingtonresearch.org/dqt/
Age range at baseline	65-101
Size	4,960
Location	Seattle, WA
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data

ARIC:

Cohort name (Start year)	Atherosclerosis Risk in Communities (1985)
Description	ARIC investigates causes of atherosclerosis and its clinical outcomes among middle-aged African American and white adults living in four U.S. communities. The ARIC Neurocognitive Study (NCS) is estimating the burden of dementia and mild cognitive impairment, and the role of midlife vascular risk factors in predicting dementia and cognitive decline.
PI	Aaron Folsom, Gerardo Heiss, Josef Coresh, Thomas Mosley, David Couper
Primary IC	NHLBI
Website	https://www2.cscc.unc.edu/aric/
Age range at baseline	45-64
Size	15,792
Location	Washington County, MD; Forsyth County, NC; Jackson, MS; and Minneapolis, MN
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

CARDIA:

Cohort name (Start year)	Coronary Artery Risk Development in Young Adults Study (1985)
Description	CARDIA investigates the risk factors, determinants, and development of cardiovascular disease beginning in young adulthood in African American and white adults from 4 U.S. communities.
PI	Cora Lewis, Pamela Schreiner, Donald Lloyd-Jones, Stephen Sidney, James Shikany
Primary IC	NHLBI
Website	https://www.cardia.dopm.uab.edu/
Age range at baseline	18-30
Size	5,115
Location	Birmingham, AL; Chicago, IL; Minneapolis, MN; and Oakland, CA
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

CHS:

Cohort name (Start year)	Cardiovascular Health Study (1988)
Description	CHS is an observational study of risk factors for cardiovascular disease in adults aged 65 or older recruited via four Field Centers in the U.S.
PI	Richard Kronmal, Alice M. Arnold, Bruce Psaty
Primary IC	NHLBI
Website	https://chs-nhlbi.org/
Age range at baseline	65-92
Size	5,888
Location	Washington County, MD; Forsyth County Winston-Salem, NC; Pittsburgh, PA
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

COPDgene:

Cohort name (Start year)	COPD Genetic Epidemiology (COPDGene) (2008)
Description	The goal is to discover genetic contributions to Chronic Obstructive Pulmonary Disease (COPD) risk. Phase 1 included 10,000 smokers with and without COPD; additional participants who are non-smokers are being recruited for Phase 2 of COPDgene.
PIs	James D. Crapo, Edwin Silverman
Primary IC	NHLBI
Website	http://www.copdgene.org/
Age range at baseline	45-80
Size	10,300
Location	21 clinical study centers across the US
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

DCCT/EDIC:

Cohort name (Start year)	Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications (1983)
Description	The DCCT was a clinical intervention study conducted from 1983 to 1993 that showed that sustained lowering of blood glucose reduces risk of diabetic complications. Researchers continue to study more than 90% of DCCT participants in a follow-up study, EDIC, to assess the incidence and predictors of cardiovascular disease events and diabetic complications.
PI	Saul M. Genuth, David M. Nathan
Primary IC	NIDDK
Website	https://edic.bsc.gwu.edu/web/edic/dcct-study; https://portal.bsc.gwu.edu/web/edic
Age range at baseline	13-39
Size	1,441
Location	29 DCCT Clinical Centers in the US and Canada
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, genetic data, biosamples

DPP/DPPOS:

Cohort name (Start year)	Diabetes Prevention Program (1996-2001) and Diabetes Prevention Program Outcomes Study (2002-ongoing)
Description	The Diabetes Prevention Program (DPP) was a trial initiated in 1996 that showed that lifestyle changes or metformin can delay diabetes in overweight American adults at risk of diabetes. The long-term follow-up study, DPPOS, aims to explore whether metformin or prior intensive lifestyle intervention started in the DPP would lead to prevention of micro- and macrovascular complications, CVD, cancer and other outcomes.
PI	Marinella Temprosa, Michael Larsen
Primary IC	NIDDK
Website	https://dppos.bsc.gwu.edu/
Age range at baseline	25-62
Size	3,234
Location	26 clinics across the U.S.
Race / Ethnicity	White, Black, Hispanic, Asian
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, genetic data, biosamples

EAS:

Cohort name (Start year)	Einstein Aging Study (1992)
Description	EAS is a cohort of older adults from the Bronx, including health disparities populations, to study modifiable risk factors that lead to cognitive decline and dementia.
PI	Richard Lipton, Martin Sliwinski
Primary IC	NIA
Website	http://www.einstein.yu.edu/departments/neurology/clinical-research-program/eas/
Age range at baseline	70-104
Size	2,265
Location	Bronx, NY
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

ELSA:

Cohort name (Start year)	English Longitudinal Study of Ageing (2002)
Description	ELSA is a longitudinal study that collects multidisciplinary data from a representative sample of the English population aged 50 or older to investigate the aging process.
PI	Andrew Steptoe
Primary IC	NIA
Website	https://www.elsa-project.ac.uk/
Age range at baseline	50-100
Size	12,099
Location	England
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, cognitive testing, genetic data, biosamples

FHS:

Cohort name (Start year)	Framingham Heart Study (1948)
Description	Started in 1948, the Framingham Heart Study (FHS) aimed to understand the factors that contribute to cardiovascular disease by a long-term follow up of over 5,000 adult participants in Framingham, MA (Original cohort). In 1971, the study enrolled a second generation with the original participants' adult children and their spouses (Offspring cohort). In 1994, the first Omni cohort of the FHS was enrolled to reflect a more diverse community (African-American, Hispanic, Asian, Indian, Pacific Islander and Native American origins) and in 2003, a second group of Omni participants was enrolled (Omni cohorts). In 2002, a third generation of participants, the grandchildren of the Original Cohort, was enrolled (Generation Three).
PI	Vasan S. Ramachandran, Emelia J. Benjamin, Daniel Levy
Primary IC	NHLBI
Website	https://www.framinghamheartstudy.org/
Age range at baseline	28-62 (original)
Size	5,209 (original); 5,124 (offspring); 4,095 (generation 3)
Location	Framingham, MA
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

HRS:

Cohort name (Start year)	Health Retirement Study (1992)
Description	The HRS is a nationally representative longitudinal study, collecting information via biennial surveys and supplementary data on the health and economic circumstances of Americans over age 50. The goal is to provide deeper insights into the aging process and to study the spectrum of behavioral and environmental risk and protective factors.
PI	David Weir
Primary IC	NIA
Website	http://hrsonline.isr.umich.edu/
Age range at baseline	51+
Size	42,000 ever-enrolled; approximately 24,000 survivors
Location	U.S.
Race / Ethnicity	White, Black, Hispanic
Collected data	Cardiovascular risk factors, cognitive testing, genetic data, biosamples

HCHS/SOL:

Cohort name (Start year)	Hispanic Community Health Study / Study of Latinos (2006)
Description	HCHS/SOL is a multi-center study of Hispanic/Latino populations to assess the role of acculturation in the prevalence and development of disease and to identify risk or protective factors.
PI	Jianwen Cai, Robert Kaplan, Neil Schneiderman, Gregory Talavera, Martha Daviglus, Scott Solomon
Primary IC	NHLBI
Website	https://sites.cscc.unc.edu/hchs/
Age range at baseline	18-74
Size	16,415
Location	Miami, FL, San Diego, CA, Chicago, IL, and the Bronx, NY
Race / Ethnicity	Hispanic/Latino
Collected data	Cardiovascular risk factors, cognitive testing, genetic data, biosamples

IDCD:

Cohort name (Start year)	Israel Diabetes and Cognitive Decline Study (2009)
Description	IDCD is a prospective longitudinal study to identify characteristics of Type 2 Diabetes (T2D) that may increase the risk of cognitive impairment and dementia. The cohort follows cognitively normal T2D patients aged 65 or older in the Tel-Aviv area.
PI	Michal Schnaider Beeri
Primary IC	NIDDK
Website	N/A
Age range at baseline	65+
Size	1,200
Location	Tel-Aviv, Israel
Race / Ethnicity	Jewish
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, brain imaging, genetic data, biosamples

JHS:

Cohort name (Start year)	Jackson Heart Study (1999)
Description	JHS is an observational study that aims to identify causes for health disparities in cardiovascular disease among African Americans and to reduce this disparity.
PI	Adolfo Correa
Primary IC	NHLBI
Website	https://www.jacksonheartstudy.org/
Age range at baseline	21-84
Size	5,302
Location	Urban and rural areas of Jackson, MS
Race / Ethnicity	Black
Collected data	Cardiovascular risk factors, genetic data, biosamples

MAP:

Cohort name (Start year)	Rush Memory and Aging Project (1997) (updated 4/14/18)
Description	This study includes older lay persons without dementia who undergo annual detailed medical and psychological evaluation to document risk factors, and outcomes including incident MCI and AD dementia. All participants agree to donate brain, spinal cord nerve, and muscle tissue.
PI	David A. Bennett
Primary IC	NIA
Website	www.radc.rush.edu
Age range at baseline	53-100
Size	1,929
Location	Northeastern Illinois
Race / Ethnicity	White, Black, Latino
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

MCSA:

Cohort name (Start year)	Mayo Clinic Study of Aging (2004)
Description	The goal of MCSA is to study normal memory and aging, mild memory and thinking problems, Alzheimer's disease and other forms of dementia in a population-based setting. The study randomly samples persons from the community and characterizes their cardiovascular and other risk factors from the Mayo Clinic electronic medical record, clinical measures, and imaging and fluid biomarkers. This prospective, longitudinal study will provide a profile of aging and cognitive function across the lifespan.
PI	Ronald C. Petersen
Primary IC	NIA
Website	http://www.mayo.edu/research/clinical-trials/cls-20311806
Age range at baseline	30-89
Size	3,000
Location	Olmsted County, MN
Race / Ethnicity	Predominantly White
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, biosamples, genetic data,

MESA:

Cohort name (Start year)	Multi-Ethnic Study of Atherosclerosis (1999)
Description	MESA investigates the characteristics of subclinical cardiovascular disease, and the risk factors that predict its progression by studying adults from four race-ethnic groups in six communities in the U.S.
PI	Robyn McClelland, Gregory Burke, Steven Shea, Wendy Post, Aaron Folsom, Norrina Allen, Karol Watson, Russell Tracy, Matthew Budoff, Joao Lima
Primary IC	NHLBI
Website	https://www.mesa-nhlbi.org/
Age range at baseline	45-84
Size	6,814
Location	New York, NY; Baltimore, MD; Chicago, IL; Los Angeles, CA; Minneapolis, MN; and Winston-Salem, NC
Race / Ethnicity	White, Black, Hispanic, Chinese
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

MARS:

Cohort name (Start year)	Minority Aging Research Study (2004)
Description	The goal of MARS is to learn how to prevent common problems associated with aging, including poor memory, slowed walking and weakness among older African Americans.
PI	Lisa Barnes
Primary IC	NIA
Website	https://www.radc.rush.edu
Age range at baseline	65-99
Size	745
Location	Chicago, IL
Race / Ethnicity	Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

NOMAS:

Cohort name (Start year)	Northern Manhattan Stroke Study (1990)
Description	NOMAS investigates stroke risk factors in whites, blacks, and Hispanics living in the same community in Northern Manhattan. The study also investigates health disparities in risk factors for dementia, and how they relate to stroke risk factors.
PI	Mitchell Elkind
Primary IC	NINDS
Website	http://columbianomas.org/
Age range at baseline	40-81
Size	4,400
Location	Washington Heights in Northern Manhattan, New York, NY
Race / Ethnicity	Hispanic, Black, white
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

REGARDS:

Cohort name (Start year)	Reasons for Geographic and Racial Disparities in Stroke (2003)
Description	REGARDS is an observational study that is measuring stroke risk factors in over 30,000 adults to help understand the higher burden of stroke in African Americans and in residents of the southeastern portion of the U.S. termed the "stroke belt". The study also explores health disparities in risk factors for dementia, and how they relate to stroke risk factors.
PI	George Howard
Primary IC	NINDS
Website	http://www.regardsstudy.org/
Age range at baseline	45-79
Size	30,239
Location	Within and outside the stroke belt in the U.S.
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, genetic data, biosamples

ROS:

Cohort name (Start year)	Religious Orders Study (1993)
Description	Study participants include nuns, priests and brothers without dementia who undergo annual detailed medical and psychological evaluation to document risk factors, and outcomes including incident MCI and AD dementia. All participants agree to donate brain, and a subset agree to donate spinal cord nerve and muscle tissue.
PI	David A. Bennett
Primary IC	NIA
Website	www.radc.rush.edu
Age range at baseline	55-102; mean 76.0 (SD 7.5)
Size	1407
Location	~50 groups across the U.S.A.
Race / Ethnicity	White, Black, and Latino
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

SPRINT-MIND:

Cohort name (Start year)	Systolic Blood Pressure Intervention Trial-Memory and cognitive IN Decreased hypertension (2010)
Description	SPRINT is a multicenter randomized clinical trial that demonstrated reducing systolic blood pressure to a lower goal than currently recommended reduced risk of cardiovascular events and mortality. The SPRINT Memory and cognition IN Decreased hypertension (SPRINT-MIND) study is investigating whether the lower blood pressure targets can improve cognition and reduce risk for dementia.
PI	David M. Reboussin, Jackson T. Wright, Alfred Cheung, Suzanne Oparil, Mike Rocco, Bill Cushman
Primary IC	NHLBI
Website	https://www.sprinttrial.org/public/dspHome.cfm (SPRINT), http://www.wakehealth.edu/Research/Gerontology-and-Geriatrics/Kulynych-Center/SPRINT-MIND.htm (SPRINT-MIND)
Age range at baseline	50+
Size	2,800
Location	Over 90 clinics across the U.S. and in Puerto Rico
Race / Ethnicity	White, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

SHS:

Cohort name (Start year)	Strong Heart Study (1989) and the Strong Heart Family Study (1998)
Description	As the largest epidemiologic study of American Indians ever undertaken, SHS investigates cardiovascular disease and its risk factors among American Indian men and women. The study includes the original cohort recruited in 1989 and the SHS Family cohort recruited in 1998. Participants are from 13 American Indian tribes and communities in three geographic areas.
PI	Jason Umans, Julie Stoner, Stacey Jolly, Richard B. Devereux, Shelley Cole
Primary IC	NHLBI
Website	www.strongheartstudy.org
Age range at baseline	45-74
Size	4,549 (original cohort); 3,776 (family cohort)
Location	An area near Phoenix, AZ, the southwestern area of Oklahoma, and western and central North and South Dakota.
Race / Ethnicity	American Indian/Alaska Natives (13 American Indian tribes and communities in AZ, OK, ND/SD)
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

90+ Study:

Cohort name (Start year)	The 90+ Study (2003)
Description	Goals of this study are to determine factors associated with longevity, and to examine the epidemiology of dementia, rates of cognitive and functional decline, and clinical pathological correlations in the oldest-old.
PI	Claudia Kawas, Maria Corrada
Primary IC	NIA
Website	http://www.90study.org
Age range at baseline	90-104
Size	1,710
Location	Southern California
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data

VETSA:

Cohort name (Start year)	Vietnam Era Twin Study of Aging (2003)
Description	VETSA is a set of longitudinal projects that examine genetic and environmental influences on cognitive and brain aging starting in midlife. The goals are to understand the factors accounting for the great heterogeneity of cognitive and brain trajectories, and to advance the early identification of risk factors for mild cognitive impairment (MCI) and dementia.
PI	William Kremen, Michael Lyons, Carol Franz
Primary IC	NIA
Website	https://healthsciences.ucsd.edu/som/psychiatry/research/VETSA/Pages/default.aspx
Age range at baseline	51-60
Size	1,417
Location	U.S. (data collected at UCSD, CA, and Boston University, MA)
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, brain imaging, genetic data, biosamples

WHICAP:

Cohort name (Start year)	Washington Heights-Inwood Community Aging Project (1988)
Description	WHICAP is a community-based longitudinal study of aging and dementia that aims to understand rates of, and risk factors for, Alzheimer's disease and other dementias among elderly, urban-dwelling residents.
PI	Richard Mayeux
Primary IC	NIA
Website	http://www.cumc.columbia.edu/dept/taub/res-normal.html
Age range at baseline	65-102
Size	6,519 (since 1992), 2,300 (active)
Location	Northern Manhattan, New York City, NY
Race / Ethnicity	Black, White, Caribbean Hispanics
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, autopsy, genetic data, biosamples

Whitehall II:

Cohort name (Start year)	Whitehall II Study (1985)
Description	Established to explore the relationship between socio-economic status, stress and cardiovascular disease, a cohort of participants aged 35-55 was recruited from the British Civil Service in 1985, and self-completion questionnaires and clinical data have been collected from the cohort every two to five years with a high level of participation.
PI	Mika Kivimaki, Eric Brunner, Archana Singh-Manoux
Primary IC	NIA
Website	http://www.ucl.ac.uk/whitehallII/
Age range at baseline	35-55
Size	10,308
Location	All over the United Kingdom
Race / Ethnicity	White, Asian, Black
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples

WLS:

Cohort name (Start year)	Wisconsin Longitudinal Study (1957)
Description	WLS is a long-term study of a random sample of 10,317 men and women who graduated from Wisconsin high schools in 1957. The WLS provides an opportunity to study the life course, intergenerational transfers and relationships, family functioning, physical and mental health and well-being, and morbidity and mortality from late adolescence.
PI	Pamela Herd
Primary IC	NIA
Website	http://www.ssc.wisc.edu/wlsresearch/
Age range at baseline	16 (original), 44-62 (cohort of siblings initiated in 1977)
Size	10,317 (original), 5,539 (siblings)
Location	Wisconsin
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, cognitive testing, genetic data, biosamples

WSC:

Cohort name (Start year)	Wisconsin Sleep Cohort (1988)
Description	WSC is a longitudinal study of the causes consequences and natural history of sleep disorders, particularly sleep apnea. The WSC assessed sleep, breathing, cardiovascular health, and medical events at four-year intervals. The baseline sample of 1,500 Wisconsin state employees was expanded in 2012 to include 700 Hmong immigrants residing in Wisconsin.
PI	Paul Peppard
Primary IC	NHLBI
Website	https://pophealth.wisc.edu/Research/WSC
Age range at baseline	30-60
Size	1,545
Location	Wisconsin
Race / Ethnicity	White
Collected data	Cardiovascular risk factors, metabolic risk factors, cognitive testing, genetic data, biosamples

WHI:

Cohort name (Start year)	Women's Health Initiative (1992)
Description	The WHI is a long-term nationwide health study focused on strategies for preventing heart disease, breast and colorectal cancer, and osteoporotic fractures in postmenopausal women. In 1993, the WHI began with randomized clinical trials testing the health effects of hormone therapy, dietary modification, and/or calcium and Vitamin D supplementation, and an observational study. Follow-up beyond the end of the initial study continues through the WHI Extension Studies.
PI	Garnet L. Anderson, Marcia Stefanick, Rebecca Jackson, Jean Wactawski-Wende, Sally Shumaker
Primary IC	NHLBI
Website	https://www.whi.org/SitePages/WHI%20Home.aspx
Age range at baseline	50-79
Size	161,808
Location	40 clinical sites across the U.S.
Race / Ethnicity	White, Black, Hispanic, Asian, American Indian
Collected data	Cardiovascular risk factors, cognitive testing, brain imaging, genetic data, biosamples