



Atherosclerosis Risk in Communities (ARIC)

Presented by

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For ARIC Investigators :

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Univ. of Minnesota - Steering Committee Chair

ARIC & ~70 active ancillary NIH grants

Supported by

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Trans Cohort Meeting: Thoughts

- 1. ARIC as a large, collaborative effort**
- 2. Collaboration across cohorts is great, productive and ongoing**
- 3. Observational epidemiology is evolving**
- 4. Ideas for facilitating collaboration**

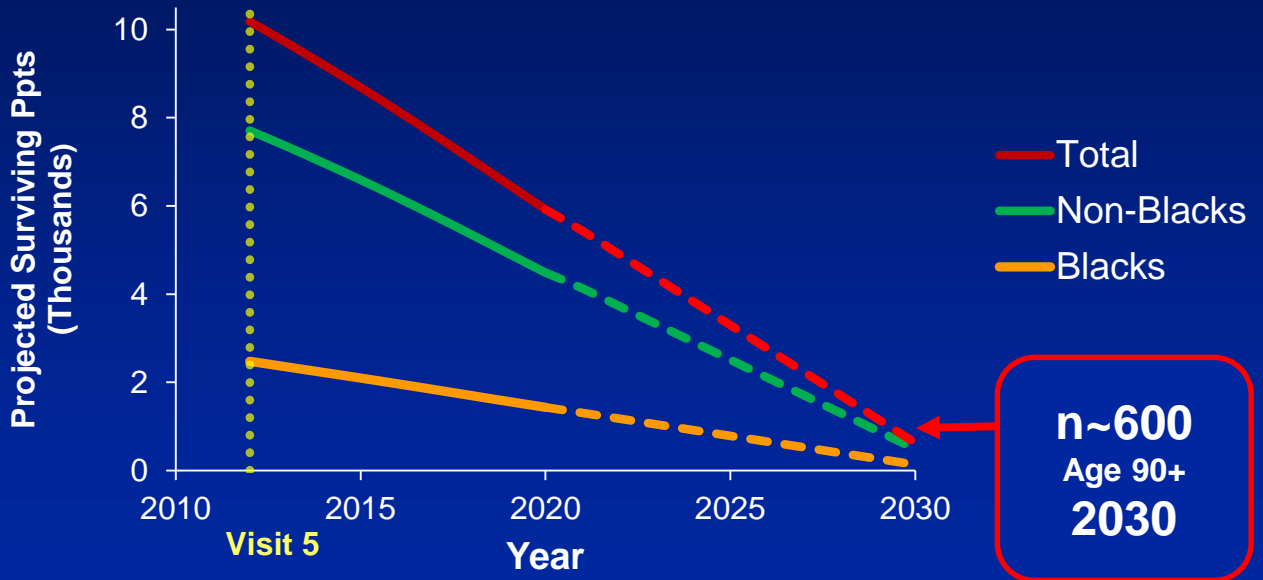
Key – add/enhance, avoid restrict/subtract

1. ARIC as a Large Collaborative Effort

- **Contract (1986-2016): 15,792 (25% African-American)**
 - visits 1-5 + semi-annual calls + surveillance (cohort + community)
 - 5271 Deaths, 2177 CHD, 1205 stroke, >5000 hospitalizations
 - >1 million specimen
 - Renewal 2016-2021 with **basic visit** as a platform for ancillaries (like FHS, MESA etc. – **active f/u**)
- **Ancillaries: 82 active; ~11 NIH institutes**
- **Data sharing (distributed model, dbGAP, etc.)**
 - Omics – GWAS, Exome, Genome, Metabolomics, Transcriptomics
- **Papers: >1,400 (~175 in 2014)**
- **People: 7 PIs, ~30 contract funded investigators, ~70 at data meeting 3/2/2015, 1,000s authors**

ARIC Cohort Projections 2012-2030 (f/u year ~25→43)

15,792 in 1986-1989 age 45-64y



2. Collaboration across cohorts is great, productive and ongoing

- Ad-hoc pooling & grants (often 2-4 cohorts)
- Meta-analysis projects:
 - **ERFC** (est. 2007): 125 cohorts, 3 M participants (JAMA ...)
 - **CHARGE** (est. 2007): 5+ cohorts, ~200 papers (Nature Genetics, ...)
 - » Very large genetic consortia **GIANT** etc.
 - **CKD-PC** (est. 2009): 50 cohorts & health systems, ~3 M participants ~ 11 papers (Lancet, NEJM, JAMA, BMJ, ...)
 - Cambridge collaborations (LpPLA, natriuretic, VitD)
 - **EPIC-Heart** (23 centers) **Inter-ACT** (DM, >500,000)
 - **Non-CVD: NCI**
- **Original data collection across cohorts:**
 - Laboratory (e.g. genotyping, LITE)
 - Visits – **RARE** (may need help, including NIH approval for >\$500k/y)

ARIC Leadership Areas

JHU - CKD¹, gout, diabetes, neurocognitive², cancer

UNC - Surveillance, genetics, heart failure, outcomes, stats

UMN - CVD, atrial fib³, diabetes, venous thrombosis⁴, AAA

UMS - Brain, neurocognitive², physical function*, stroke

UTX - Genomics*, metabolomics⁶, methods

Baylor - Biomarkers*, risk prediction, lipids, CHD

Brigham - Cardiac structure and function

*Specific idea for trans-cohort work put forward

1. Coresh/Grams - lifecourse; 2. Mosley/Gottesman – vascular & cognition;
3. Alonso – a-fib outcomes; 4. Folsom – coagulation; 5. Windham; 6. Boerwinkle

3. Observational Epidemiology is Evolving*

- **Scientifically**
 - More & sometimes better data on each person
 - Integration of data across sources – merge sources
 - » Medical data
 - » Ambulatory data collection (wearable devices & home)
 - Will “big data” substantially improve risk prediction or intervention?
 - New electronic data **won't bridge 3+ decades of LIFESPAN**
- **Geopolitically/fiscally**
 - Precision medicine initiative – NHLBI cohorts included/funded?
 - **Grant review needs IMPROVEMENT** – expertise and continuity should be a must; long term value & efficiency should be a criterion
 - » **NHLBI-convened study sections for cohort grants?**
 - Mega-datasets: fewer needed so access should be broad/fair
- **Need reliable funding to cohorts & consortia**
 - Doesn't diminish from individual cohorts (RFP, RFA)
 - Trans IC mechanisms?

*V. Roger et al. Strategic Transformation of Population Studies

4. Challenges to solve by collaboration

- Continuation of participant contact
 - Bridge to the **future**
 - Collection of suitable specimens (microbiome, RNA, urine ...)
 - MAJOR CHALLENGE FOR ONGOING COHORTS
 - » Golden goose isn't being fed (just want the eggs)
- Phenotyping projects
 - Major challenge: ancillary studies that characterize full cohorts are deemed inefficient; R01 efficiency (e.g. case-control) fragments the cohorts & isn't **efficient in the long term**
- Data analysis projects
 - Focus on non-clinical data - “novel” RFs or subclinical outcomes
 - For clinically available data - can include health systems' data
- Clinical trials in the cohorts
 - Best for orthogonal non-CVD purposes (e.g. hearing correction)
- Review groups
 - **long term value + efficiency** should be a criterion

Guiding Principles for Collaboration

- Open, transparent
- Widely representative
- Doesn't detract value from parent cohorts
 - Dovetail with existing consortia (many)
- Add value
 - Collective bargaining – cohorts are more productive than ever yet funding is threatened & decreasing
 - Increase efficiency
 - **Do things we can't do individually**

Questions

- How do we maximize
 - Long term value & coordination?
 - Innovation, Excellence & IMPACT?
 - Communicating/measuring QUALITY (unbiased)
 - Careers & leadership for junior investigators?
 - Efficiency?
 - Viable funding and continuity (avoid crisis thinking)?
 - Mechanisms for “receiving money” – can we be candidates for “left over funds”? \$50M can be spent “quickly” on genotyping but retention & data collection are “slow”.
- Goals? Governance? Coherence?
- Collective bargaining/advocacy for LONG TERM VALUE & PROMISE of cohort studies

CKD Prognosis Consortium

50 cohorts, 3 M participants, 40 countries

- Open with clear entry criteria – minimum data (eGFR, ACR), sample size
 - General population, high risk, CKD, clinical trials, health systems
- Steering committee – DCC, nephrology, cohort reps.
- Phases – annual goals – maximize **IMPACT**
 - **Answer the most important answerable questions**
 - » clinical practice guideline (first paper 2010 cited 800 times PDF et al.)
 - » KDIGO, FDA, NKF, cohorts, industry – propose ideas
- **Papers: write fewer papers to maximize impact**
 - ~7/year; flagship – address a guideline question or FDA/EMA outcome
 - Rotating **balanced authorship** model - ~15 front + ~200 collaborators
 - Single corresponding author/institution (**DCC – does all analysis; distributed→in-house**)
 - Support (not compete) with “vanguard” cohort papers