Atherosclerosis Risk in Communities (ARIC)

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For ARIC Investigators:
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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 an 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

Projected Surviving Ppts (Thousands)

Visit 5

Year

2010 2015 2020 2025 2030

Total
Non-Blacks
Blacks

n~600
Age 90+
2030
2. Collaboration across cohorts is great, productive an 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  -  CKD$^1$, gout, diabetes, neurocognitive$^2$, cancer

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

UMN  -  CVD, atrial fib$^3$, diabetes, venous thrombosis$^4$, AAA

UMS  -  Brain, neurocognitive$^2$, physical function*, stroke

UTX  -  Genomics*, metabolomics$^6$, methods

Baylor  -  Biomarkers*, risk prediction, lipids, CHD

Brigham  -  Cardiac structure and function

* Specific idea for trans-cohort work put forward
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