HEALTH AND RETIREMENT STUDY
A Longitudinal Study of Health, Retirement, and Aging
Sponsored by the National Institute on Aging

What's New in HRS? Biomarkers and Genetics

David Weir and Eileen M. Crimmins

HRS

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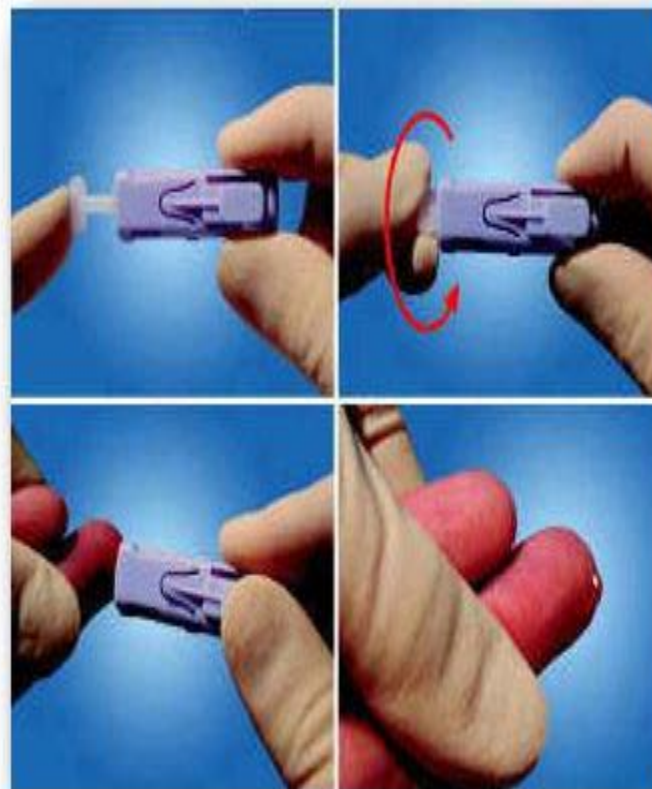Sponsored by the National Institute on Aging

Newer Biological and Performance Data – 2006, 2008, 2010

- **Provide information about the biological mechanisms or paths**

- **Provide information about earlier processes than disease or death**

- **Provide information about progression of disease**

- **Provide information respondent does not know**

- **Use same scale for everyone**

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Saliva Collection Device

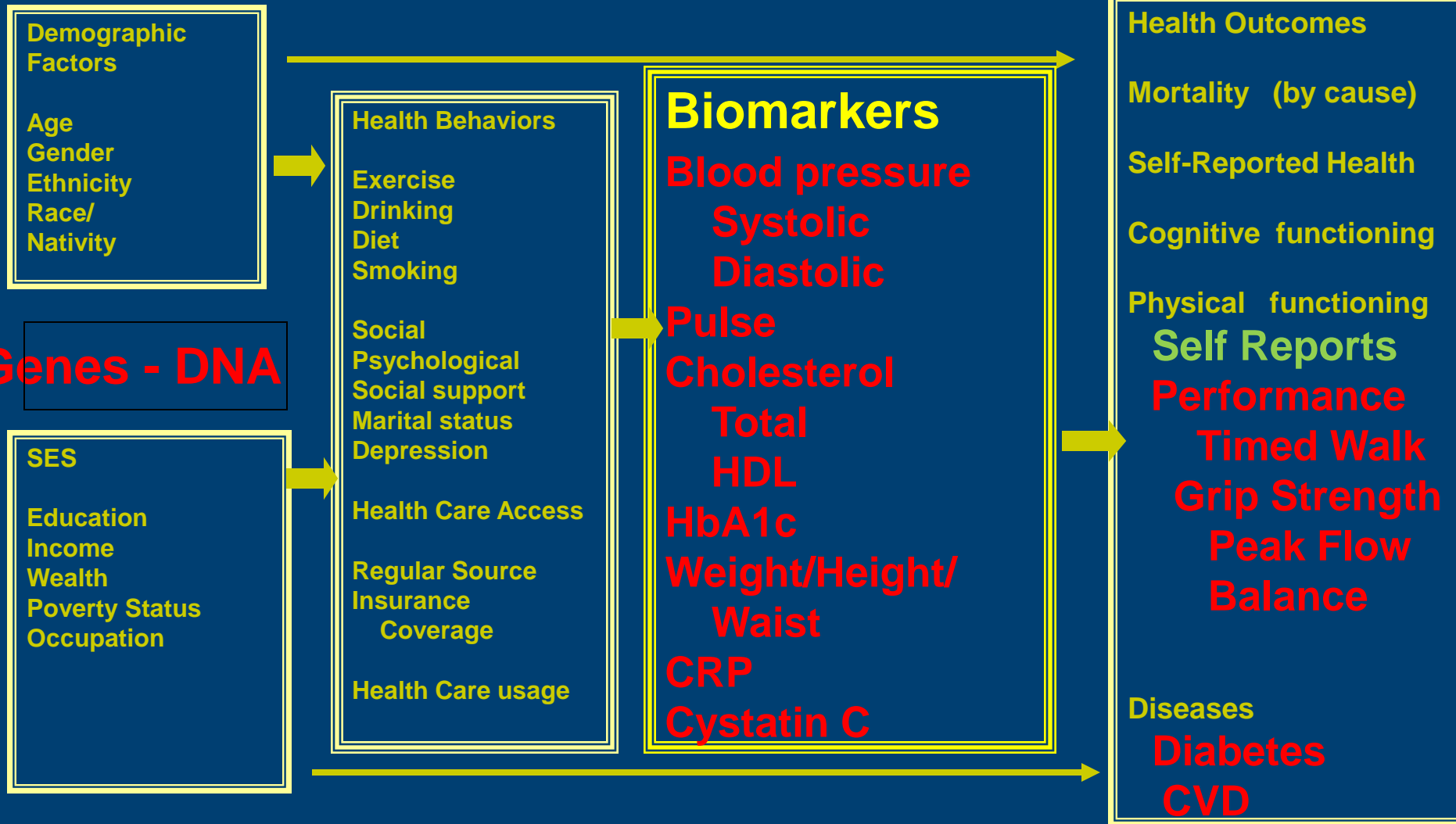# Lancet for cutting finger for DBS

Biomarkers/Physical Measures

- Total and HDL cholesterol
- Glycated hemoglobin
- CRP
- Cystatin- C
- DNA

- Blood Pressure and Pulse
- Height/weight/waist
- Grip strength*
- Peak flow*
- Timed walk/balance

*Also done in 1992 subsample

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Multidisciplinary Model of Health Outcomes

Demographic Factors

Age
Gender
Ethnicity
Race/
Nativity

Genes - DNA

SES

Education
Income
Wealth
Poverty Status
Occupation

Health Behaviors

Exercise
Drinking
Diet
Smoking

Social
Psychological
Social support
Marital status
Depression

Health Care Access

Regular Source
Insurance
   Coverage

Health Care usage

Biomarkers
Blood pressure
   Systolic
   Diastolic
Pulse
Cholesterol
   Total
   HDL
HbA1c
Weight/Height/
   Waist
CRP
Cystatin C

Health Outcomes

Mortality   (by cause)

Self-Reported Health

Cognitive functioning

Physical   functioning
   Self Reports
   Performance
      Timed Walk
      Grip Strength
      Peak Flow
      Balance

Diseases
   Diabetes
   CVD

Validation Project

- USC/UCLA Center on Biodemography and Population Health
  - Dried Blood spots versus whole blood
  - Blood pressure meter

  - Blood Spot results for 2006 and 2008 will come out this month
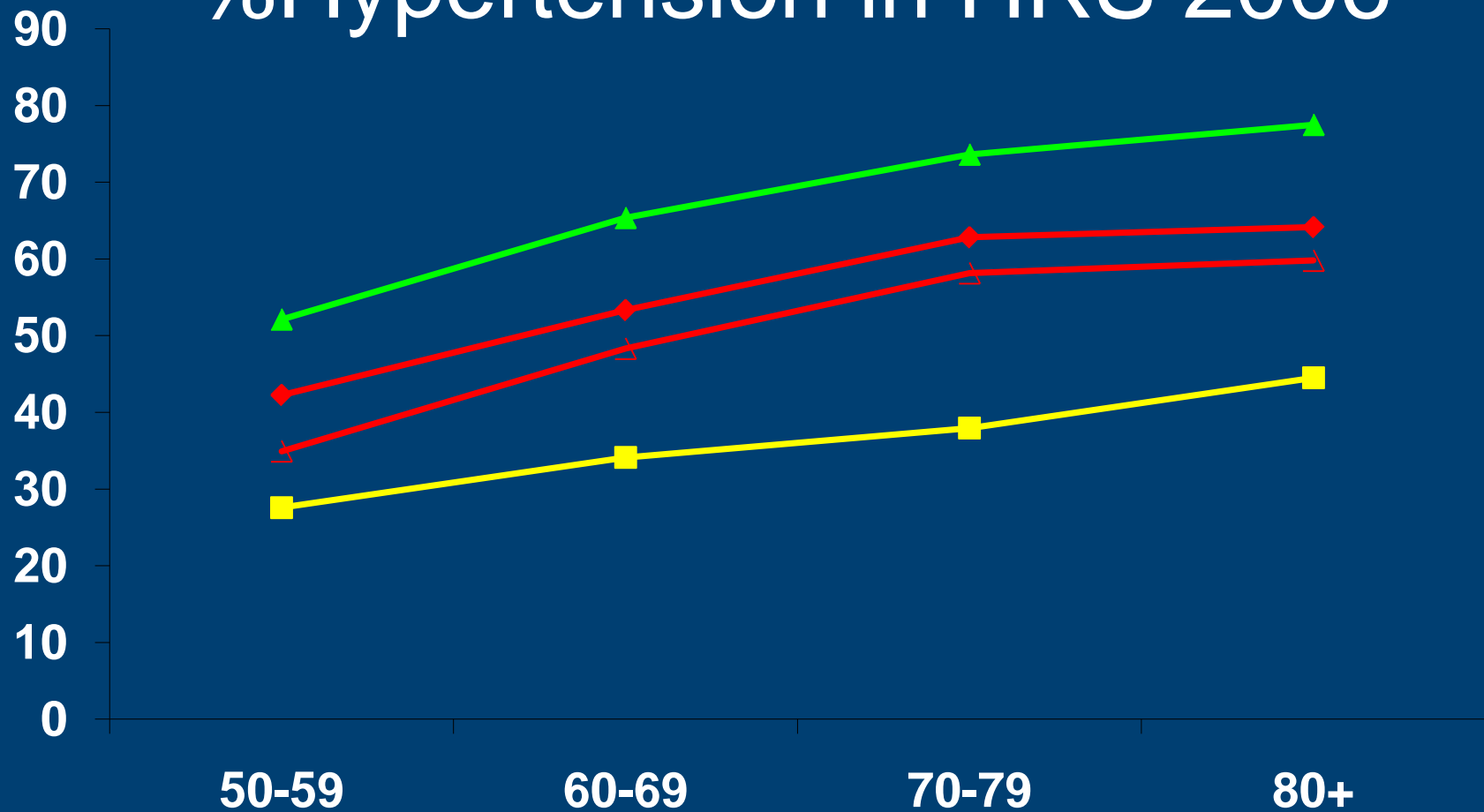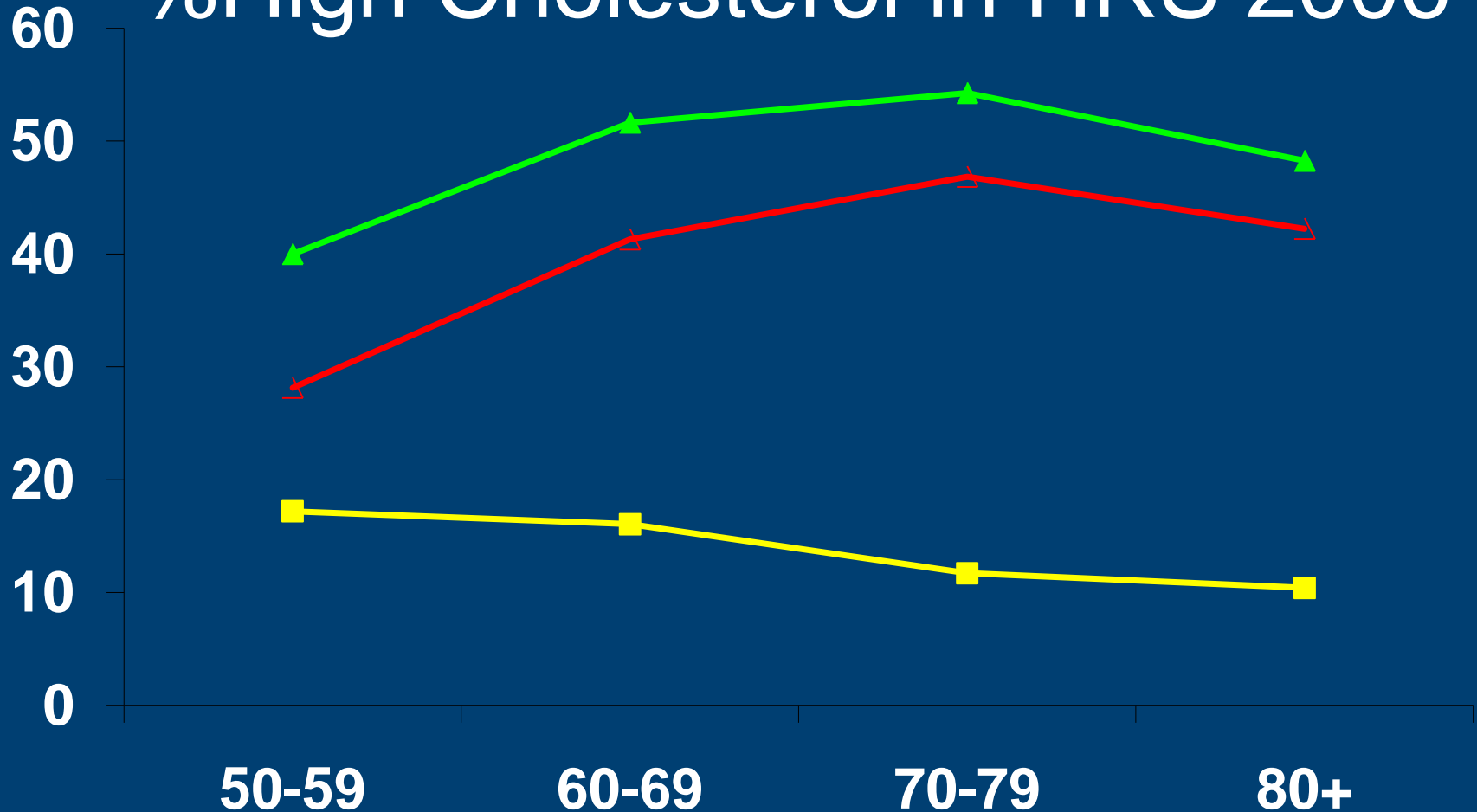
%High Cholesterol in HRS 2006

%d Self Reported Diabetes or High (>6.4% glycated hemoglobin)
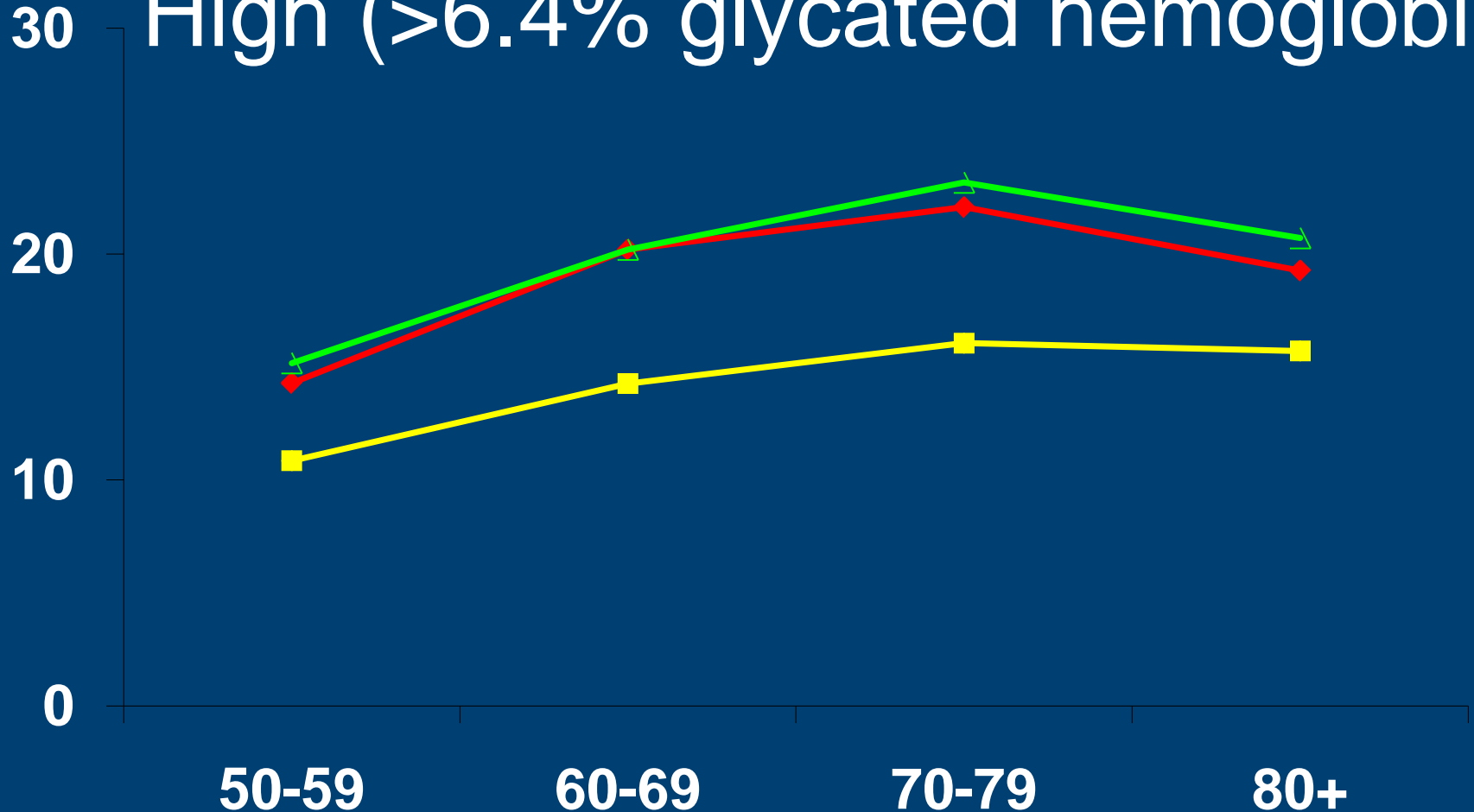
Racial and Ethnic Disparities in Hyperglycemia: Decomposition into Total Prevalence of Diabetes and Poor Management (HRS 2006)

Race/Ethnic Group	Percent at Biological Risk	Total Prevalence	Poor Management
African-Am	23.8%	34.4%	69.4%
Hispanic	24.9%	36.4%	68.4%
White	11.6%	19.9%	58.0%

Race/ethnic comparison	Disparity	Percent due to prevalence	Percent due to poor management
Black-white	12.3%	75.2%	24.8%
Hispanic-white	13.3%	78.5%	21.5%

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Racial and Ethnic Disparities in High Blood Pressure: Decomposition into Total Prevalence of Hypertension and Poor Management (HRS 2006)

	Percent at Biological Risk	Total Prevalence	Poor Management
African-Am	44.6%	82.2%	54.2%
Hispanic	36.0%	64.2%	56.1%
White	33.0%	63.7%	51.8%

Race/ethnic comparison	Disparity	Percent due to prevalence	Percent due to poor management
Black-white	11.5%	85.3%	14.7%
Hispanic-white	3.0%	9.2%	90.8%

Genetics in HRS

- GWAS approach led by HRS itself preferred over ELSA model of letting researchers access DNA to do their own genotyping

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SAMPLE

- 13,000 samples in repository from 2006 and 2008 waves

- 7,000 additional samples collected in 2010 and 2012, including large new oversample of minorities

- Total target of 20,000 individuals

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CHIP

- HRS is using 2.5m SNP chip by Illumina
  - Much better coverage of genetic variation in African-origin populations than earlier chips
  - Covers all SNPs with at least 5% frequency of allelic variation in population

Timeline

- 2006 are 2008 samples are largely completed at CIDR

- 2010 samples to be delivered to CIDR probably mid-2011

- 2012 samples early 2013

Data dissemination

- We want to encourage use and protect confidentiality

- Deposition in dbGap is required
  - dbGap primary point of distribution of genotype data
  - Limited phenotype data

- HRS holds key to linking dbGap ID numbers to HRS public ID numbers

- Restricted data agreement needed to obtain key to link to public data

Thank you