

GENERATIONS PROJECT

and DNA-based Health Screening

CT Forum on DNA Testing and Genomic Medicine

Thursday, January 23, 2020

Legislative Office Building (LOB) Room 2C

300 Capitol Ave, Hartford, CT 06106

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New Haven, CT

**Genomic Screening Has the Power
To Make Important Disease Risks Visible**

1 in 75 have risk

***4 out of 5
and risk***



GENERATIONS

A project that will
enroll a cohort of $\geq 100,000$ volunteers
and be an engine for
21st century preventive health care

Generations

- Led by Yale Center for Genomic Health.
- Formal launched September 2019.
- Plan is to enroll $\geq 100K$ volunteers who agree to have their genome sequenced (Exome & Genotype Array)
- Link their electronic health record (EHR) to their DNA sequence data in a EHR-DNA dataset that enables both clinical care and research.
- Collaboration between: Yale New Haven Health System & Yale School of Medicine

What kind of Health Screens have you undergone?

- *Blood Pressure*
- *Cholesterol*
- *Mammogram*
- *Colonoscopy*

Health Screens make risk visible

When is a screening method ready for the Population?

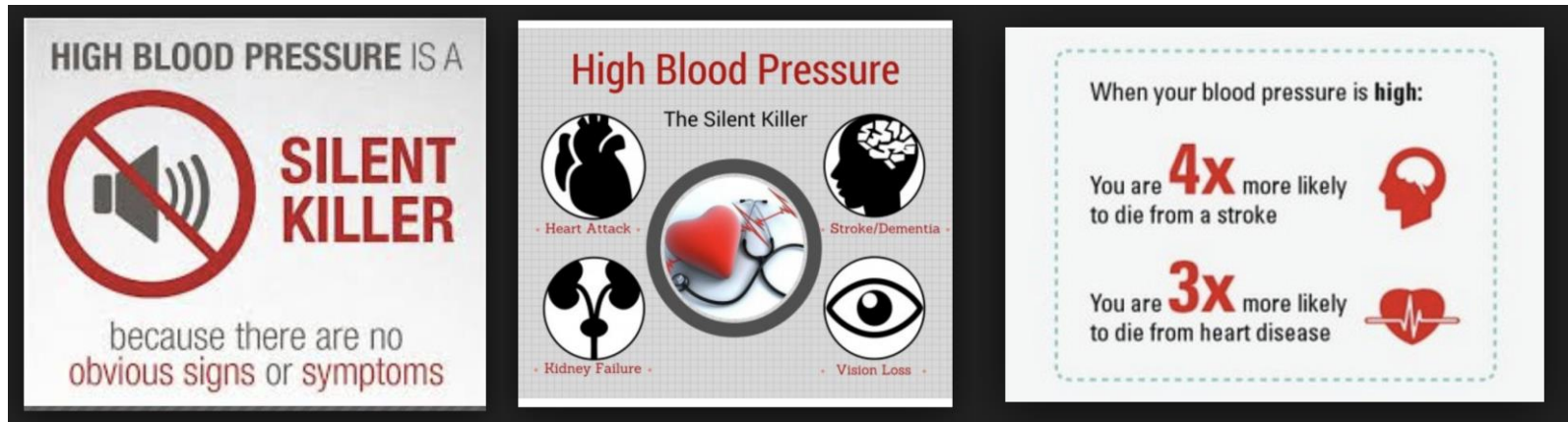
BLOOD PRESSURE CHECK

(circa 1710)

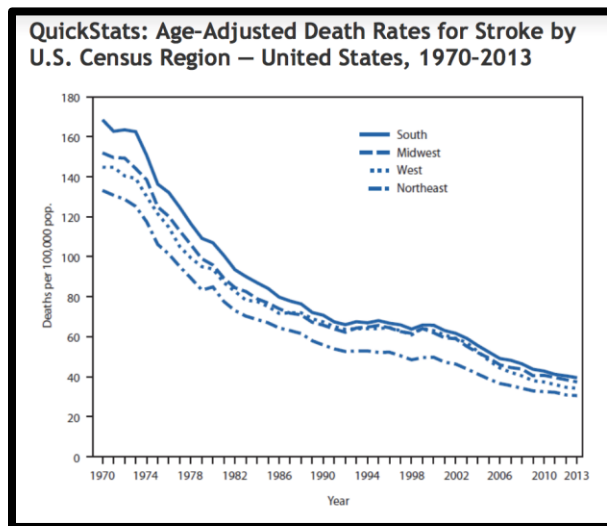


In December (1710) I caused a mare to be tied down alive on her back; she was 14 hands high, and about 14 years of age, had a fistula on her withers, was neither very lean nor very lusty: having laid open the left crural artery about 3 inches from her belly, I inserted into it a brass pipe whose bore was $\frac{1}{6}$ of an inch in diameter; and to that, by means of another brass pipe which was fitly adapted to it, I fixed a glass tube, of neary the same diameter, which was 9 feet in length; then untying the ligature on the artery, the blood rose in the tube 8 feet 3 inches perpendicular above the level of the left ventricle of the heart: but it did not attain to its full height at once; . . when it was at its full height, it would rise and fall at and after each pulse 2, 3, or 4 inches. . ." (Reverend Stephen Hales, 1738; 1).

Public Health Campaign for Blood Pressure Screening



Did it work?



4 out of 5 adults with high blood pressure know that they have this risk for heart attack and stroke.

[<https://www.cdc.gov/bloodpressure/facts.htm>]

What kind of Health Screens have you undergone?

- ***Blood Pressure***
- ***Cholesterol***
- ***Mammogram***
- ***Colonoscopy***

Health Screens make risk visible

When is a screening method ready for the Population?

- ***Is it acceptable?***
- ***Does it focus on important issues?***
- ***Is it better than what we're currently doing?***
- ***Is it worth the investment?***

***WHAT IF WE WEREN'T CURRENTLY IDENTIFYING PEOPLE
WITH THE HIGHEST RISK FOR SOME OF THE
LEADING CAUSES OF DEATH?***

10 Leading Causes of Death
(CDC statistics)

LEADING CAUSES OF DEATH	
1.	Heart Disease
2.	Cancer
3.	Accidents
4.	Chronic Lower Respiratory Disease
5.	Stroke
6.	Alzheimer's Disease
7.	Diabetes
8.	Septicemia
9.	Influenza/Pneumonia
10.	Kidney Disease

2013 - The Angelina Effect

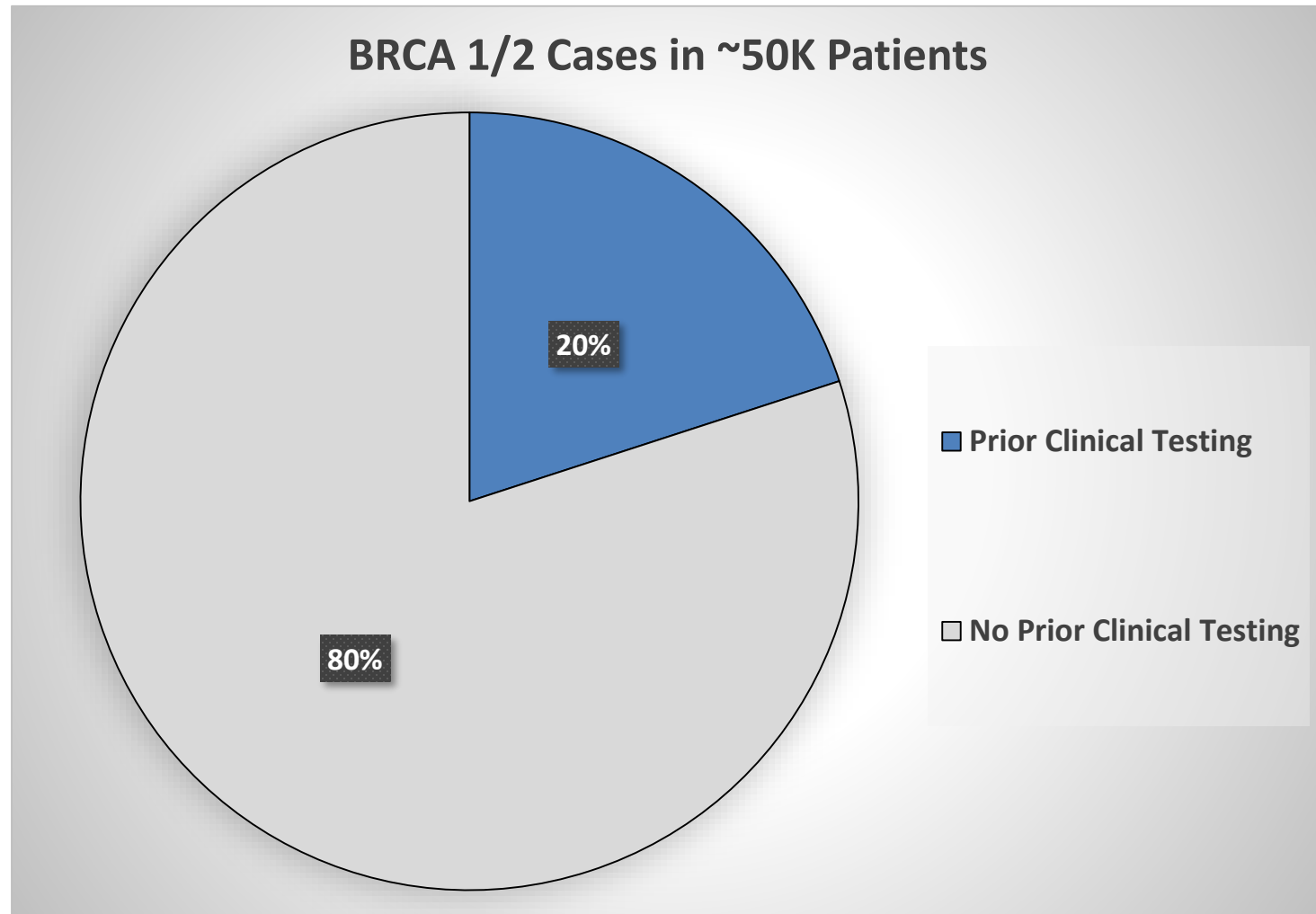


***BRCA* testing recommendations based on personal history or strong family history of Breast and/or Ovarian Cancer.**

Angelina Jolie's Family History

Mother	Ovarian CA
Aunt	Breast CA
Aunt	Breast CA
Cousin	Breast CA
G-mother	Ovarian CA

How are we doing with identifying individuals with BRCA 1/2 Associated Risk for Cancer?



4 out of 5 people with this cancer risk didn't know it but for DNA-based screening

WHAT IF WE WEREN'T CURRENTLY IDENTIFYING PEOPLE WITH THE HIGHEST RISK FOR SOME OF THE LEADING CAUSES OF DEATH?

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***WE ARE NOT
IDENTIFYING PEOPLE
WITH THE HIGHEST RISK***

1 in 75

- Screening 10 Genes can identify people with significant elevated risk for
 - Breast Cancer
 - Ovarian Cancer
 - Colon Cancer
 - Heart Attack
 - Stroke
- In CT - estimated 45 thousand people
- In USA - estimated 4.6 million people



GENERATIONS

To learn more about Generations and how you can participate, please contact us at:

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Thank you!