





## Early Detection, Diagnosis, and Prevention of CVD Public Health / Health Systems Perspective

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# About the Presenter



Laurence S. Sperling, MD

# DISCLOSURES

No potential conflicts related to this presentation

Opinions expressed do not necessarily reflect the opinions of the US Dept of HHS, the Public Health Service, the Centers for Disease Control and Prevention, or the presenters affiliated institutions. Use of trade names is for identification only and does not imply endorsement by any of the groups named above.

## Early Detection, Diagnosis, and Prevention

- Challenges
- Solutions / Actions

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# Changing Global Burden of Disease in a Global Economy

1990	2020
1.Lower respiratory infection	1.Ischemic heart disease
2.Diarrhea	2.Major depression
3.Perinatal	3.Road traffic accidents
4.Major depression	4.Cerebrovascular
<ul><li>5.Ischemic heart disease</li><li>6.Cerebrovascular</li></ul>	5.COPD
	Top 10 global causes of deaths, 2016
	Deaths (millions)
	Ischaemic heart disease
	Stroke
	Chronic obstructive pulmonary disease
	Lower respiratory infections
	Alzheimer disease and other dementias
	Diabetes me llitus
	Road injury Noncommunicable diseases
	Diarrhoe al dise ases

Murray and Lopez. Lancet. 1997;349:1498.

Source: Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2016. Geneva, World Health Organization; 2018.

Tuberculosis

10

"CVD is the biggest epidemic (pandemic) ever known to mankind. We need strategies to address epidemics..."

> Salim Yusuf President WHF Europrevent 2013, Rome

#### **Multiple Impacts of the COVID-19 Pandemic**



Adapted with permission from Victor Tseng, MD

Kohli P, Virani SS. Surfing the Waves of the COVID-19 Pandemic as a Cardiovascular Clinician. *Circulation*. 2020 Jul 14;142(2):98-100..

## **CONVERGING SYNDEMICS**



Horton R. Lancet 2020;396:874.

#### Circulation

Volume 141, Issue 24, 16 June 2020; Pages 1946-1947 https://doi.org/10.1161/CIRCULATIONAHA.120.047059



#### ON MY MIND

#### **The Future of Cardiovascular Prevention**

**Unprecedented Times** 

Laurence S. Sperling, MD (D)

"risk for COVID-related morbidity driven by interaction of viral illness with unwell population. Need to invest more than ever in ESSENTIAL services like CV disease prevention, population health initiatives, robust public health programs..."

## Early Detection, Diagnosis, and Prevention

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# What must be different?

- Accountability
- Innovation
- Alignment of Incentives
- Action Plans leading to Equitable Implementation

#### **Promoting and Addressing Global Heart Health**

- Importance of patient / community voice and stories from the heart
- Need to identify challenges and solutions
- Call for policy action and investment prioritization

## Policy Priorities for CVD

- Healthy Aging
  - -"healthspan"
- Workplace Impact
- Health System
  Resilience
- Health Equity

Health Policy Partnership. Thought Leadership Forum on Cardiovascular Disease. September, 2022 The Health Policy Partnership

The heart of society: why addressing cardiovascular disease is critical to achieving wider societal goals

Out now

## Strategies for Preventing Pollution-Related CVD

- Pollution major, potentially preventable risk factor for CVD
- Patient-centered strategies
- Systems, societal, and governmental strategies

Rajagopalan S, Landrigan PJ. NEJM 2021;385;1881-1892





## Focus on CV Population Health: The Health/Disease Continuum

Knapper JT, Quyyumi AA, Mensah GA, Sperling LS. JACC 2015;66:960-7



# Social Determinants of Health: Challenges & Interventions

Schultz WM, Kelli HM, Sandesara P, Quyyumi AA, Mensah GA, Sperling LS. Circulation, 2018.137;2166-2178



#### Sperling,LS, et al. JACC 2015;66:1050–67

#### STATE-OF-THE-ART REVIEW

FIGURE 2 Stages in the Evolution of MetS and Recommended Therapy by Stage



MetS. A greater emphasis on assessing nutritional quality and levels of physical activity, with a focus on filling the gap between public health approaches and implementation in clinical practice, will be needed. Care models will continue to incorporate ACOs, but uncertainty exists as to how the ACA will affect MetS care in the future. It is foreseen that

health care will transition to a greater degree from the clinic to the community, improving access to care, and that there will be a broadening of stakeholders to include public health, community, and industry sectors. Screening and performance metrics

will enhance implementation of new care models in the future. Finally, the TT affirmed a call to action to encourage ongoing partnerships, funding, and initiatives to improve the lives of people with or at risk for MetS.









#### Cardiovascular-Kidney-Metabolic Syndrome

Patient-Centered Implementation Focus

Abbreviations: ASCVD indicates atherosclerotic cardiovascular disease; BMI, body mass index; CKD, chronic kidney disease; and UACR, urine albumincreatinine ratio.









Informing health systems approaches to CVD by prioritizing practical, proven, cost-effective action



2 September 2019 Mitchell S, et al. Global Heart 2019; 14: 215-44

WORLD HEART FEDERATION ROADMAP

gRECS



ESC Congress Paris 2019 World Congress of Cardiology

#### A Roadmap on the Prevention of Cardiovascular Disease Among People Living

#### With Diabetes

Sharon Mitchell<sup>\*</sup>, Belma Malanda<sup>†</sup>, Albertino Damasceno<sup>‡</sup>, Robert H. Eckel<sup>§</sup>, Dan Gaita<sup>||</sup>, Kornelia Kotseva<sup>¶</sup>, James L. Januzzi<sup>\*\*</sup>, George Mensah<sup>††</sup>, Jorge Plutzky<sup>‡‡</sup>, Maksym Prystupiuk<sup>§§</sup>, Lars Ryden<sup>|||</sup>, Jorge Thierer<sup>¶</sup>, Salim S. Virani<sup>##</sup>,\*\*\*, Laurence Sperling<sup>†††</sup>

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## Ideal Pathway of Care

- Prevention, screening, treatment, monitoring, and follow-up
- 5 groups

Mitchell S, et al. Global Heart 2019; 14: 215-44



#### **Understanding and Addressing Barriers**

- Accessibility
- Acceptability (social / cultural)
- Affordability
- Availability

Mitchell S, Malanda B, Damasceno A, et al. Global Heart 2019;14: 215-44

#### Who is the roadmap for? An integrated approach to patient care





## Implementation

#### **GLOBAL IMPLEMENTATION** Facilitation of national Planning & research of Providing a toolkit for stakeholder Facilitation of evidence informed implementation of discussions through national scorecards solutions by creating a solutions Roundtables global network scify key ges of relopment ntify key keholders lopment, semination .











WHF CVD, Diabetes, and Obesity Roundtable Ghana, 3/30/23

- Importance of Minister of Health
- Leverage / engage traditional healers
- Develop CVD scorecards

# Finding high risk individuals through machine learning







#### **Precision screening**





# Risk Underlying Rural Areas Longitudinal (RURAL) Cohort Study https://theruralstudy.org



## Primary ASCVD Prevention: Optimally Active, Agile, and Accountable

Sperling LS, Jain VJ, Razavi AC. JACC Advances. 2023

FIGURE 1 Active, Agile, and Accountable Approach to ASCVD Risk Assessment and Prevention



## What Characterizes Prominent National CVD Plans?

- Implementation and governance
- Measurable policy targets
- Population-level prevention and health promotion
- Screening and early detection
- Risk factor management
- Early Diagnosis
- CVD management and treatment
- Healthcare delivery
- Digital health approaches; effective use of data solutions, CVD research, innovation, wider determinants of health



## What Characterizes Prominent National CVD

## Plans?

- Early identification of people at risk of developing CVD is critical to ensure swift intervention
- Population-level screening and early detection should be a key component of CVD policy
  - Cardio 50- across all 11 Italian regions
  - National screening program for FH in Slovenia
  - Preventive Medical Examinations, Russia
- Following Identification of Individuals Living with CVD RF's, comprehensive management and timely preventive treatment can avert of slow the progression of disease





## ESC CardioPolicy Group: Prioritizing CVD with National Action Plans

- Representatives from 47 national Cardiac Societies
- Aim: creating a healthier future by promoting CV health policy
- Create national action plans to ensure CV health receives policy prioritization proportional to CVD burden
- Address lack of investment
  - -Europe's "Beating Cancer Plan"
  - -U.S. Cancer "Moonshot"

## **Million Hearts<sup>®</sup> 2027 Priorities**

#### **Building Healthy Communities**

Decrease Tobacco Use

**Decrease Physical Inactivity** 

**Decrease Particle Pollution Exposure** 

#### **Optimizing Care**

Improve Appropriate <u>A</u>spirin or <u>Anticoagulant Use</u>

Improve **B**lood Pressure Control

Improve <u>C</u>holesterol Management

Improve <u>S</u>moking Cessation

Increase Use of Cardiac Rehabilitation

#### **Focusing On Health Equity**

Pregnant and Postpartum Women with Hypertension People from Racial/Ethnic Minority Groups People with Behavioral Health Issues Who Use Tobacco

People with Lower Incomes People Who Live in Rural Areas or Other 'Access Deserts'

## **Precision Public Health**

- Precision Medicine
  - Providing right treatment to right patient at right time
- Precision Public Health

 Providing right intervention to right population at right time

Khoury MJ, et al. Am J Prev Med 2016;50(3):398-401

## The Future?

J. Auerbach. J Public Health Manag Pract 2016;22(3): 215-18

## **THE 3 BUCKETS OF PREVENTION**



SOURCE: Auerbach J. The 3 Buckets of Prevention. J Public Health Management Practice 201http://journals.lww.com/jphmp/Citation/publishahead/The\_3\_Buckets\_of\_Prevention\_.99695.aspx Approach to Cardiovascular & Cardiometabolic Epidemics / Pandemics ?

- Identify vectors / complex causes
- Identify barriers / roadblocks / factors that propagate
- Goals:
  - Control
  - Elimination
  - Eradication

# Thanks lsperli@emory.edu





