Exploring Tradeoffs in the Cancer Control System: The complexity in choosing priorities and an appropriate course of action.

Guiding Cancer Control: A Path to Transformation
The National Academies of Sciences, Engineering & Medicine
The Cancer Control System

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The Task at Hand

- The Problem
- The Approach
- The Trade-offs
- The Priorities
- The Appropriate Course of Action

The Problem

- Cancer soon to be the number one cause of death in the U.S.
- Rates are decreasing but numbers rising.
- Cancer is complex
- Cancer care is expensive

The Approach

- Ever more complex
- Multiple players
- Lack of coordination
- Impact unclear for the effort
- More options
- More expenses

Trade Offs

- Spending for cancer vs. neurodegenerative diseases, cardiovascular conditions, diabetes, etc.
- Spending for cancer vs. military, environmental protection, prison system, national parks, etc.
- Spending for cancer vs. Medicaid

Trade Offs

- Within health/cancer spending ("iron triangle") of access, quality and cost containment.
- Cancer prevention and control (distant benefit) vs. treatment (immediate benefit, but expensive).
- Patients decide between treatment costs vs. other family obligations, mortgages, and food

Perspectives

"Where you stand depends on where you sit."

- The individual at risk of cancer
- The cancer patient
- The individual provider
- The health system
- The government as funder
- The government as regulator and payer
- The cancer researcher
- etc. etc.

Trade-offs

From the federal government's perspective most of these trade-offs can be managed by negotiation, leadership and reliance on data and evidence of need and benefit to society.

Process vs. System of Cancer Control

- Process – The Cancer Continuum
- System- Health professionals, hospitals, biopharmaceutical and device companies, payers, consumer technology and computing firms, research organizations, advocacy and support groups, regulatory agencies, patient and family members.

Priority of Process vs. System

This may be the trade-off that deserves the most discussion in terms of the perspective of federal leadership in cancer control research, funding and organization.

From the perspective of a cancer researcher…

- Traditionally paid more attention to *process* than *system*. (e.g. cancer continuum)
- More recently with attention to cancer health outcomes and implementation and policy research researchers also turning to *systems science*.

THE CANCER CONTROL CONTINUUM

FOCUS

PREVENTION	DETECTION	DIAGNOSIS	TREATMENT	SURVIVORSHIP
Tobacco control	Pap test	Informed decision-making	Health services and outcomes research	Coping
Diet	Mammography			Health promotion for survivors
Physical activity	FOBT			
Sun exposure	Sigmoidoscopy			
Virus exposure	PSA			
Alcohol use				
Chemoprevention				

CROSSCUTTING ISSUES

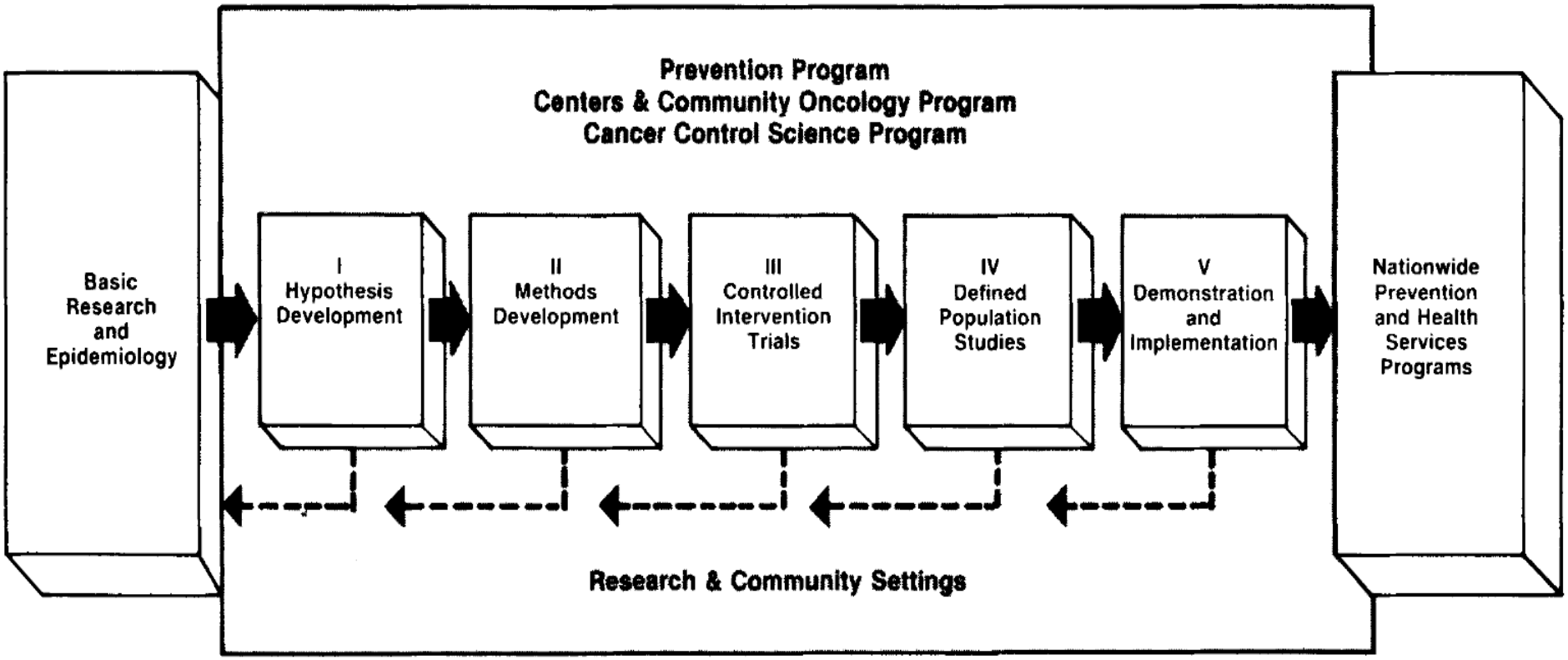
- Communications
- Surveillance
- Social Determinants of Health Disparities
- Genetic Testing
- Decision-Making
- Dissemination of Evidence-Based Interventions
- Quality of Cancer Care
- Epidemiology
- Measurement

Adapted from David B. Abrams, Brown University School of Medicine.

Two Examples of Complex Systems in Cancer Control Research

1. The Evolution of Frameworks or Models in Cancer Control
2. Implementation Research as in the San Francisco Cancer Initiative

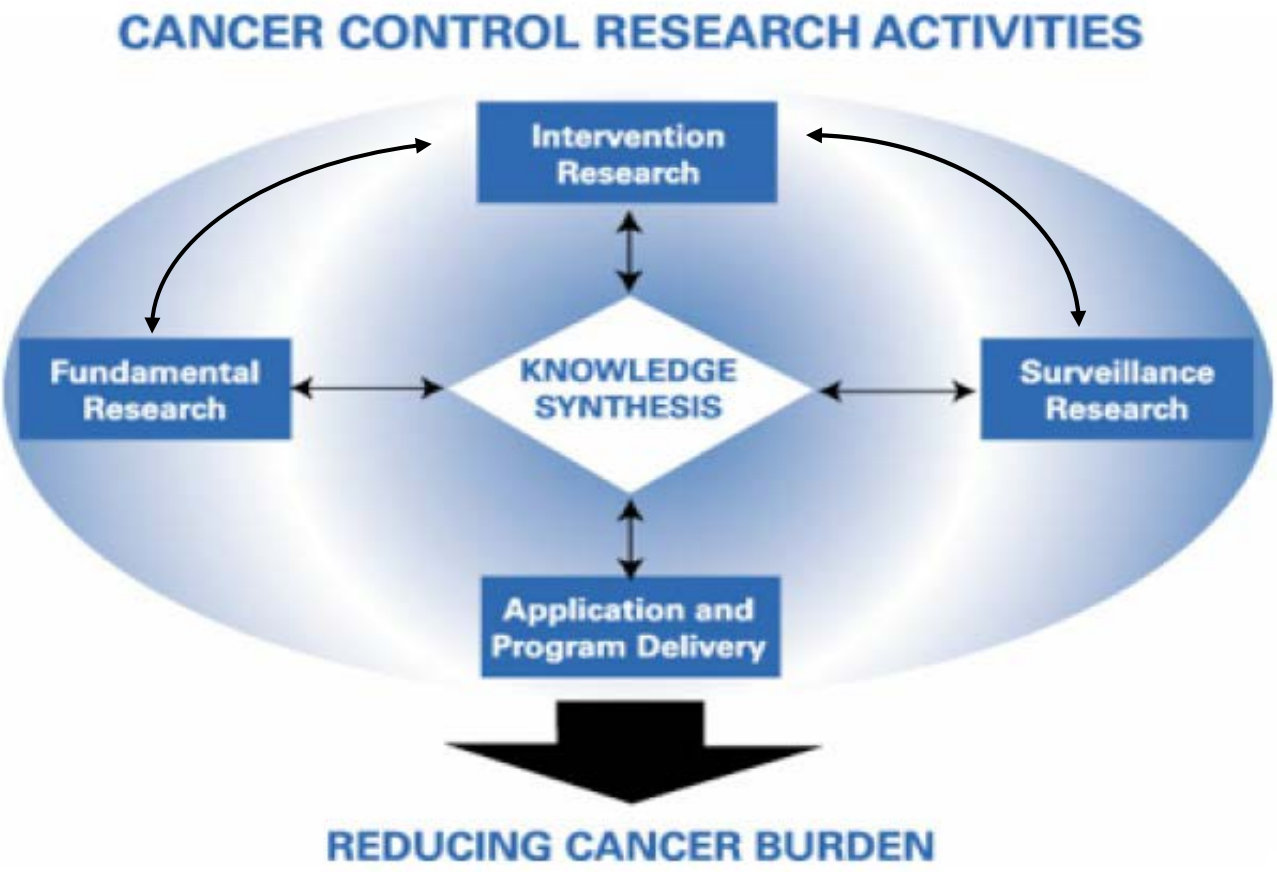
Greenwald and Cullen began to formulate the cancer control research *process* in *1985*



TEXT-FIGURE 1.—Cancer control phases.

Greenwald &Cullen, JNCI 1985

Dynamic Model of Cancer Control Research



Adapted from the Advisory Committee on Cancer Control, National Cancer Institute of Canada, 1994, Hiatt & Rimer CEBP 1999.

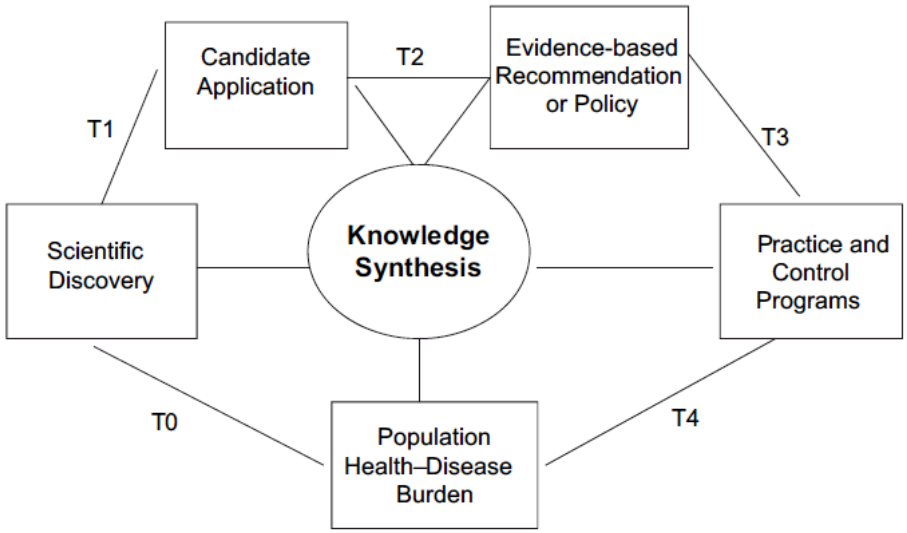


Figure 1. Epidemiology and the phases of translational research: T0, scientific discovery research; T1, translational research from discovery to candidate application; T2, translational research from candidate application to evidence-based recommendation or policy; T3, translational research from recommendation to practice and control programs; T4, translational research from practice to population health impact.

Am J Epidemiol 2010;172:517–524

Khoury et al AJE 2010

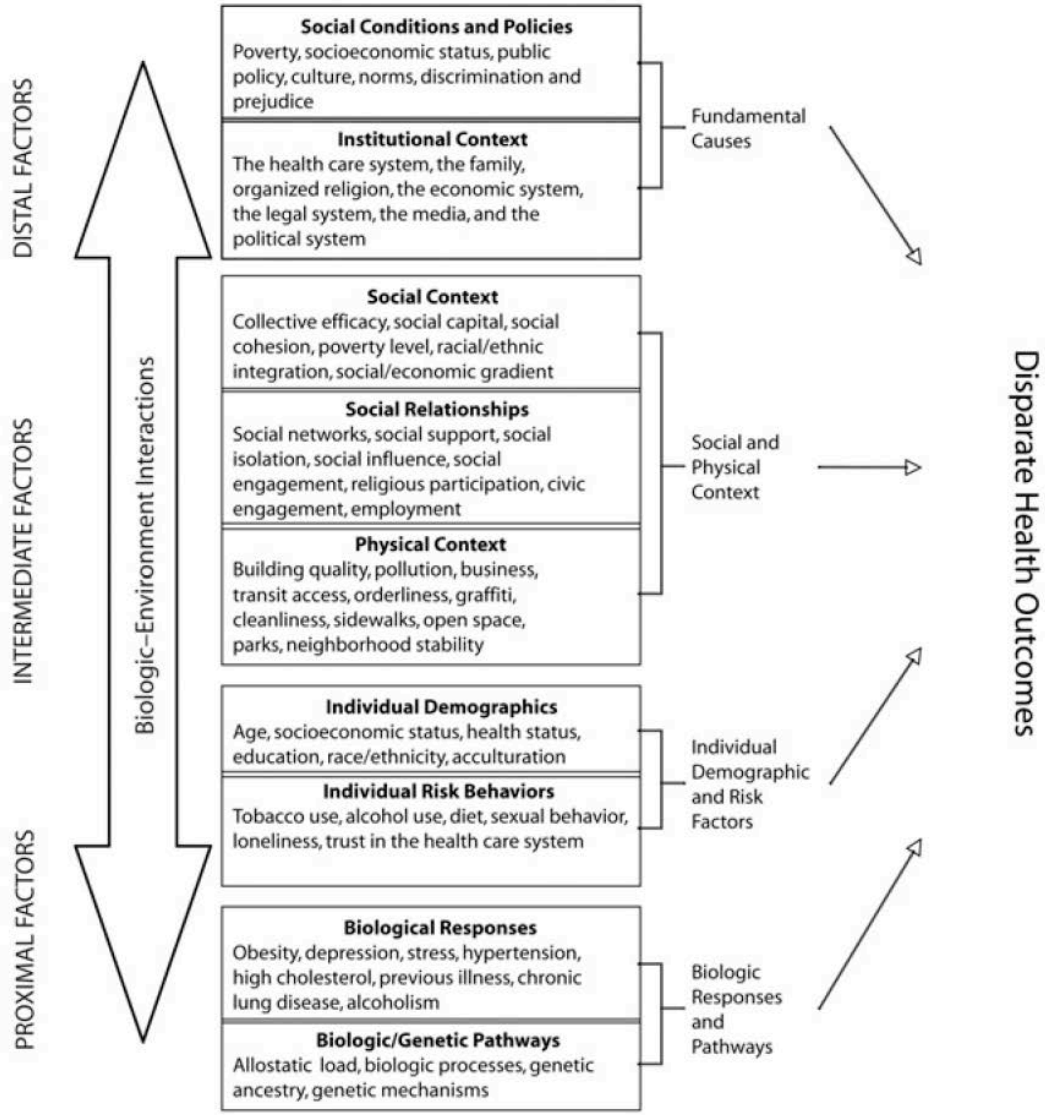
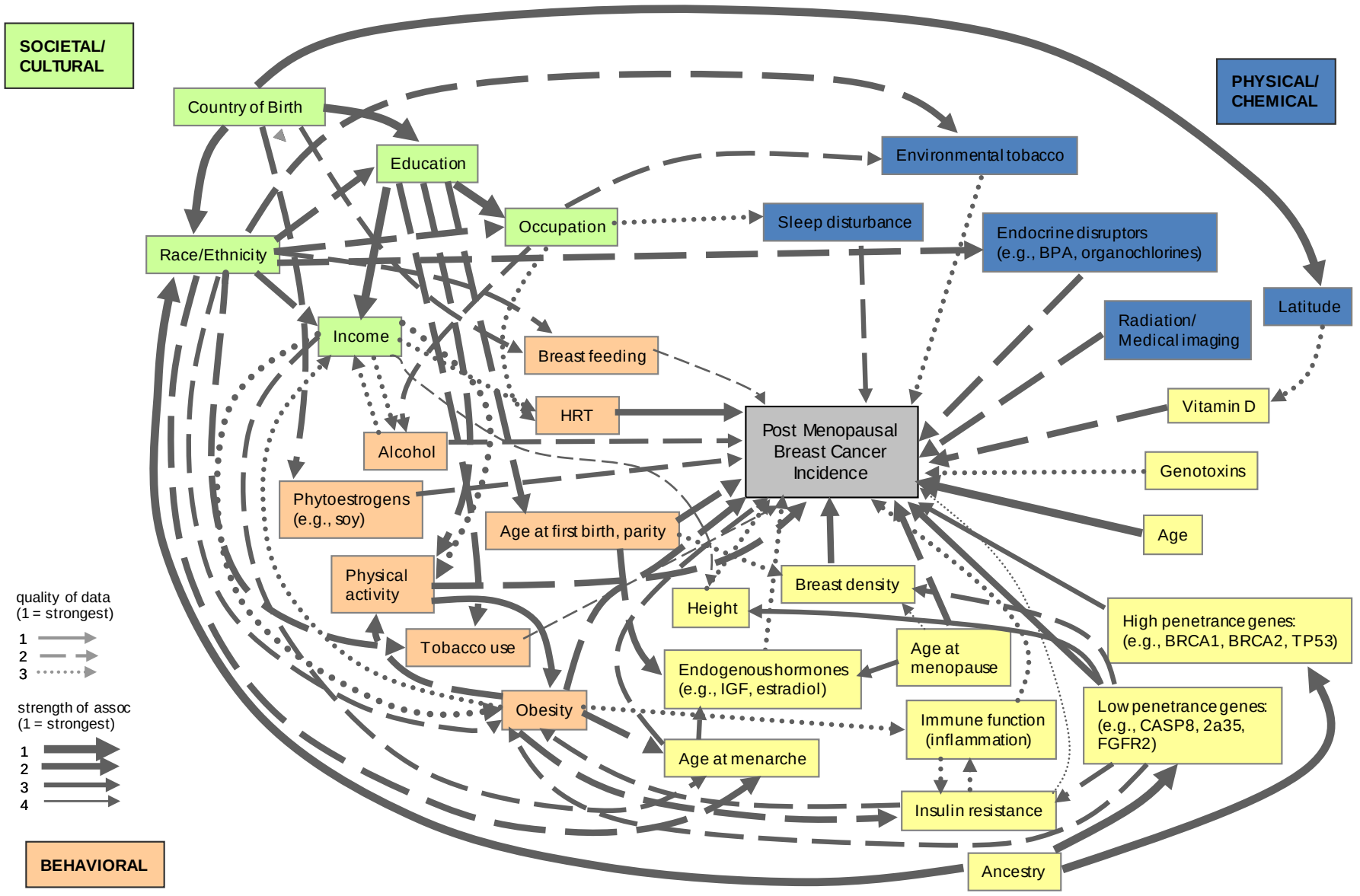


FIGURE 1—Model for analysis of population health and health disparities.

Warnecke et al. AJPH 2008

New Paradigm of Breast Cancer Causation and Prevention



- This model is specific to incidence, not survival
- Factors may differ by tumor subtype

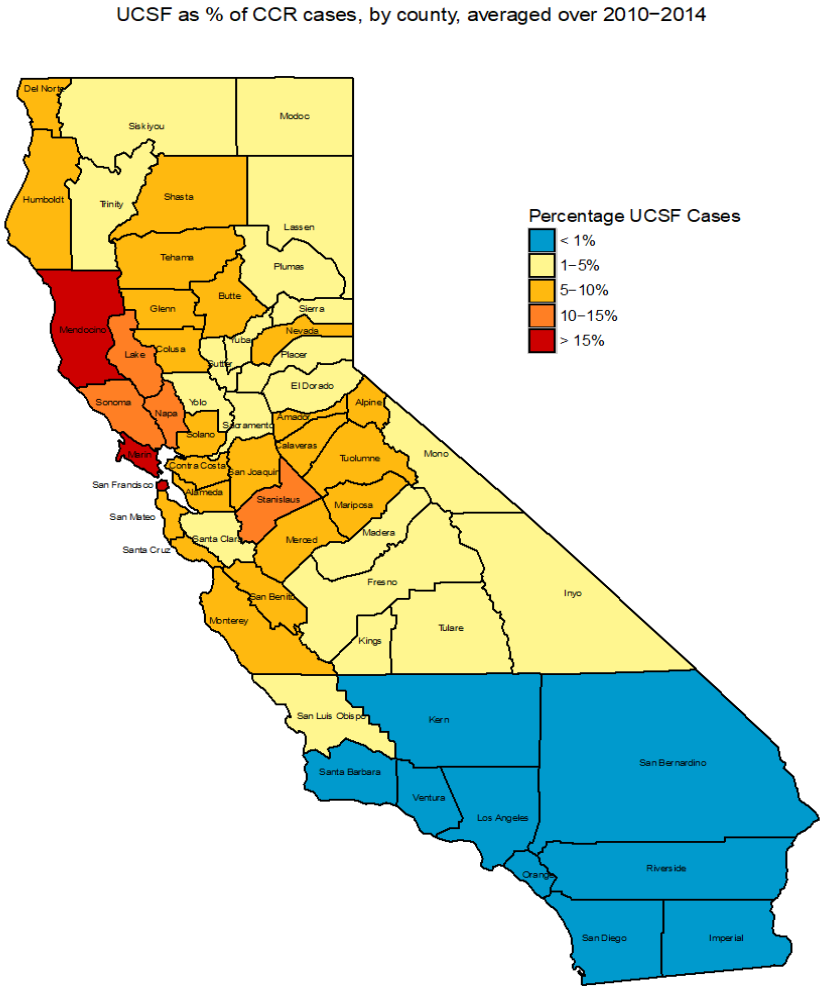
Hiatt et al. CEBP 2014

Exit

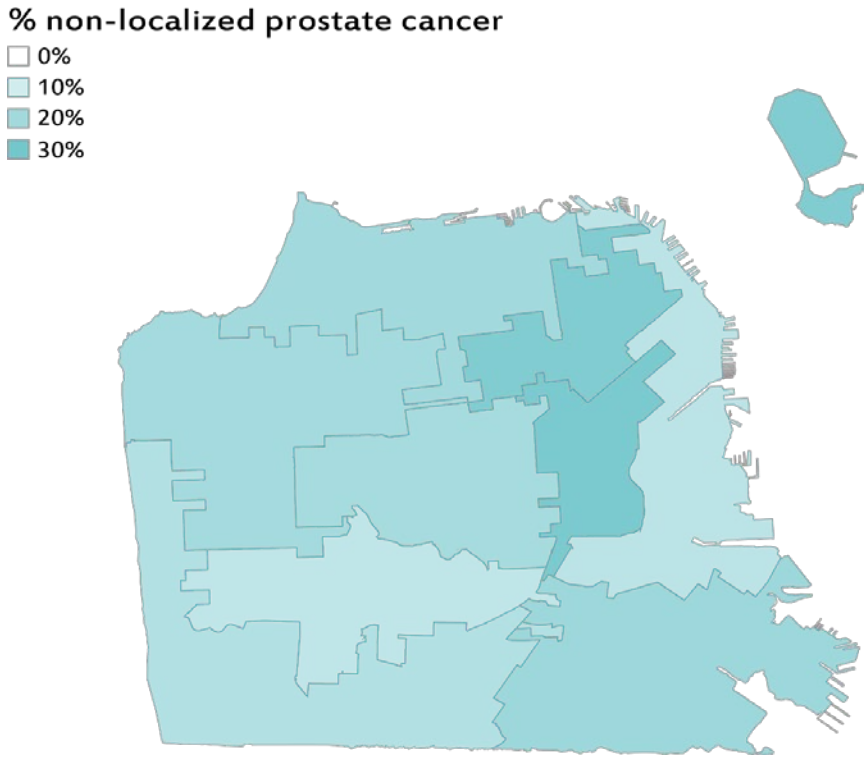
Example of SF CAN

- Independent of funding system, rather depends on philanthropy
- Interested in translating evidence from research on *process* into actions that depend on understanding and partnering with *systems*.

UCSF Cancer Cases as a % of all Cancer Cases in a County, 2010-14



Proportion of non-localized (regional and remote) prostate cancer cases by SF CAN area, 2006-2015



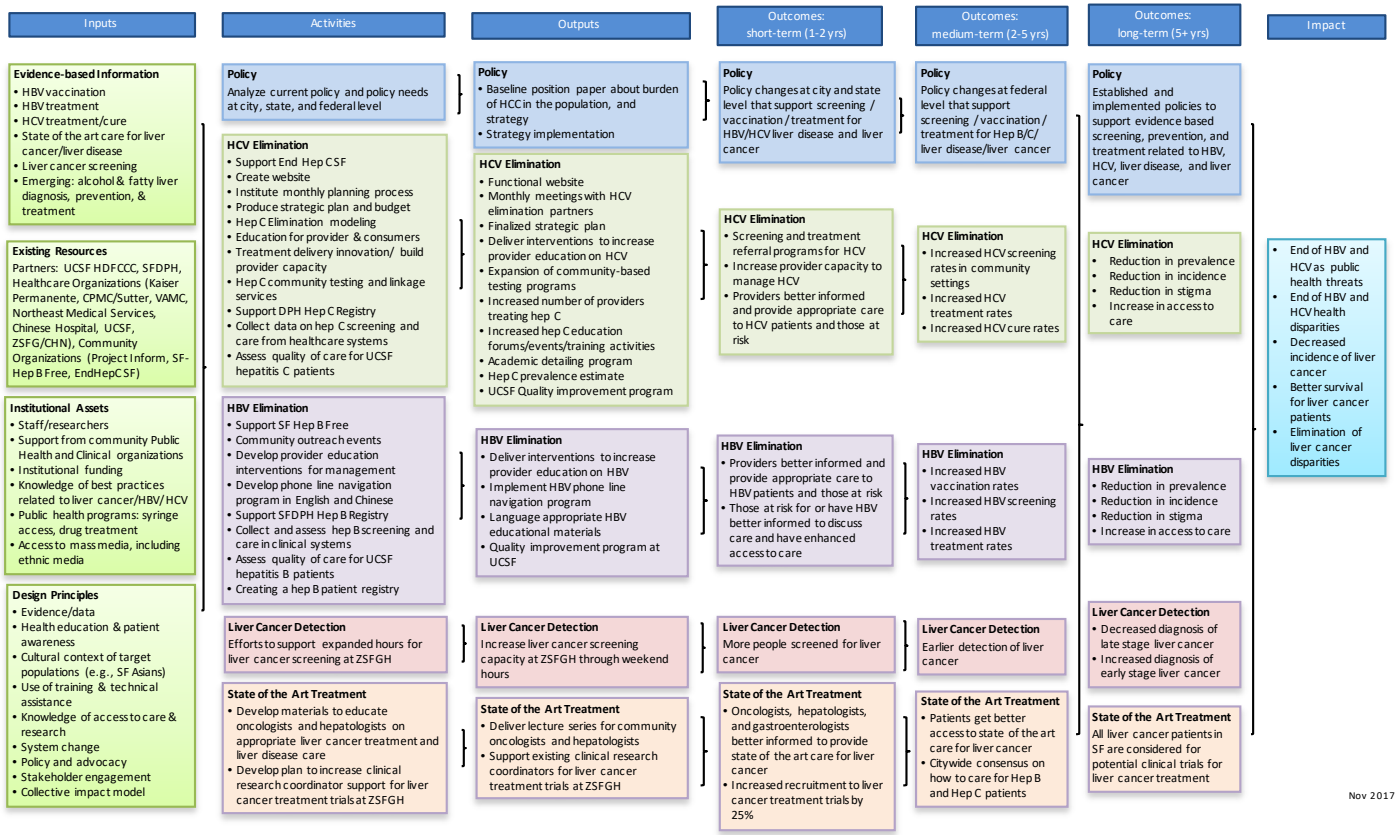
San Francisco Cancer Initiative

- Our goal is to reduce the cancer burden and particularly address disparities of incidence and outcome by harnessing innovative science, new technologies and our knowledge of needs of all the citizens of San Francisco.
- Will take a broad long-term population health perspective.
- A multilevel–genes to society view of the determinants of cancer.
- A transdisciplinary approach with teams, community partners and political leaders.
- Tie into both the needs of the people and innovations in science coming from 'precision population health' and our capacity to harness 'Big Data'.
- An investment for San Francisco with major new funding.

SF CAN Partners

Liver Cancer Task Force Logic Model

SF CAN San Francisco Cancer Initiative



Conclusions

- Many trade-offs, but…
- The priority depends upon the perspective or lens through which these trade–offs are viewed. Main perspective is that of federal government.
- The difference between process and systems is important and may be the key trade-off.
- The process is going OK. Can embrace complex systems thinking.
- The extent of trying to fix the whole system with its multitude of stakeholders needs to be right sized and feasible.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