



# Global initiatives in NAFLD

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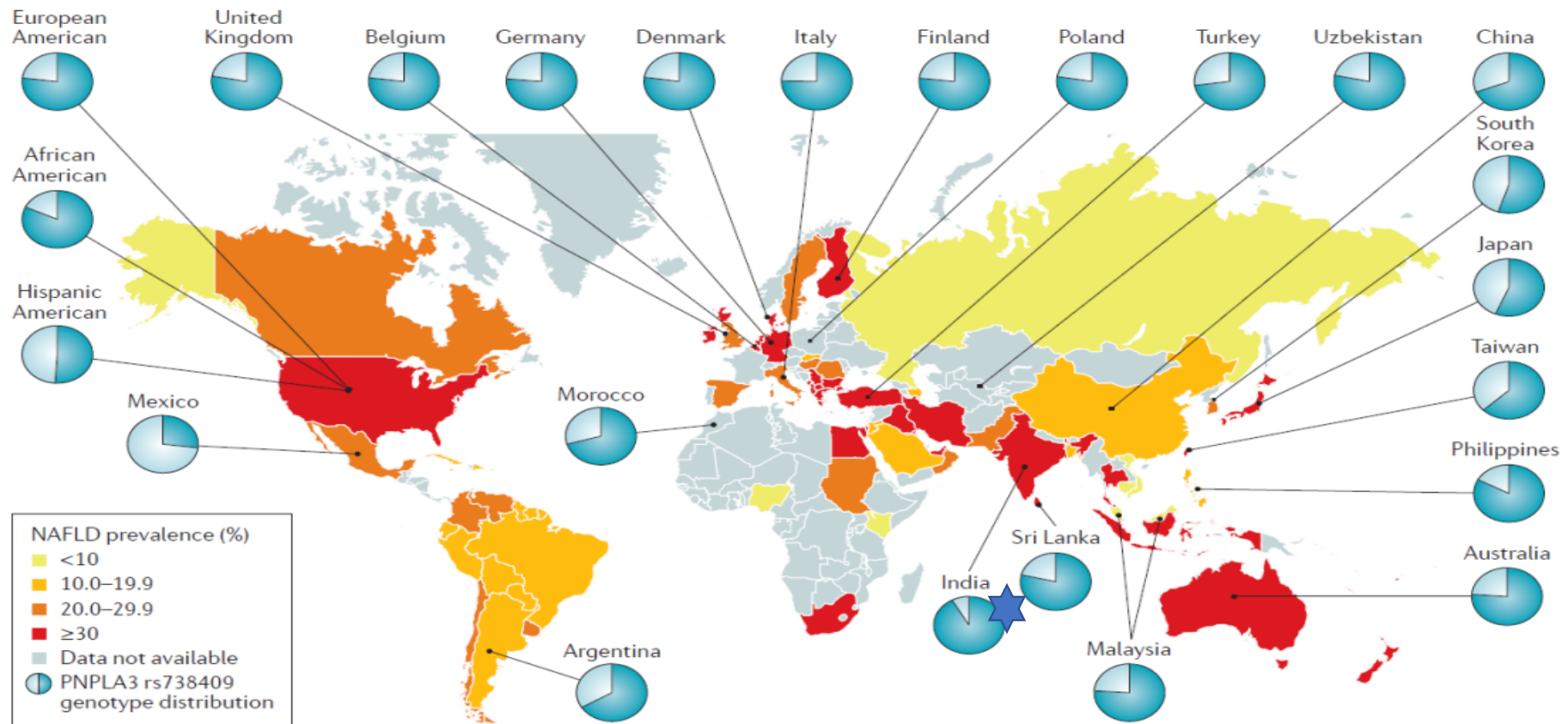
# Disclosures

## **[Arun J. Sanyal]**

I disclose the following financial relationship(s) with a commercial interest:

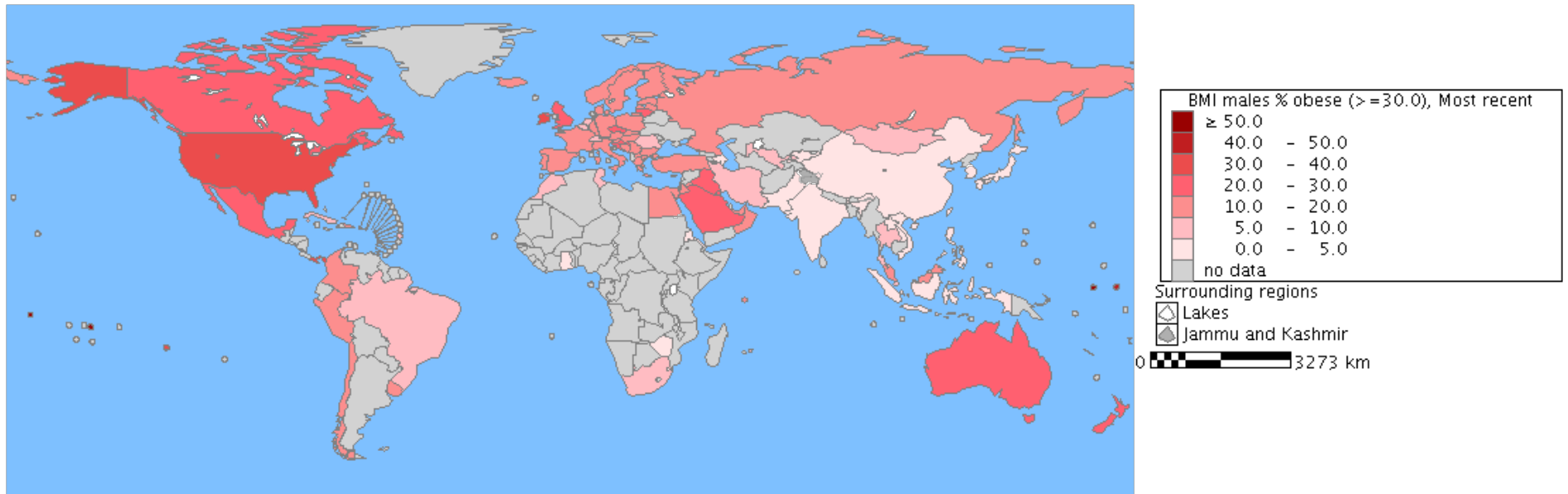
- Ownership interests: Durect, Tiziana, Genfit, Exhalenz
- Consultant: Gilead, Intercept, Novartis, Novo Nordisk, Inventiva, Merck, Pfizer, Boehringer Ingelhiem, Bristol Myers Squibb, Eli Lilly, Genentech, Amgen, Alnylam, Regeneron, Thera Technologies, Madrigal, Salix, Malinckrodt, Gatehouse, Rivus, Siemens, Lipocine, 89 Bio, Astra Zeneca, Akero, Foresite, Mitopower, Takeda, Ursobio, Histoindex, Path AI,
- Grant support to school: Gilead, Intercept, Novartis, Novo Nordisk, Inventiva, Eli Lilly, Genentech, Boehringer Ingelhiem, Bristol Myers Squibb

# A global view of NAFLD



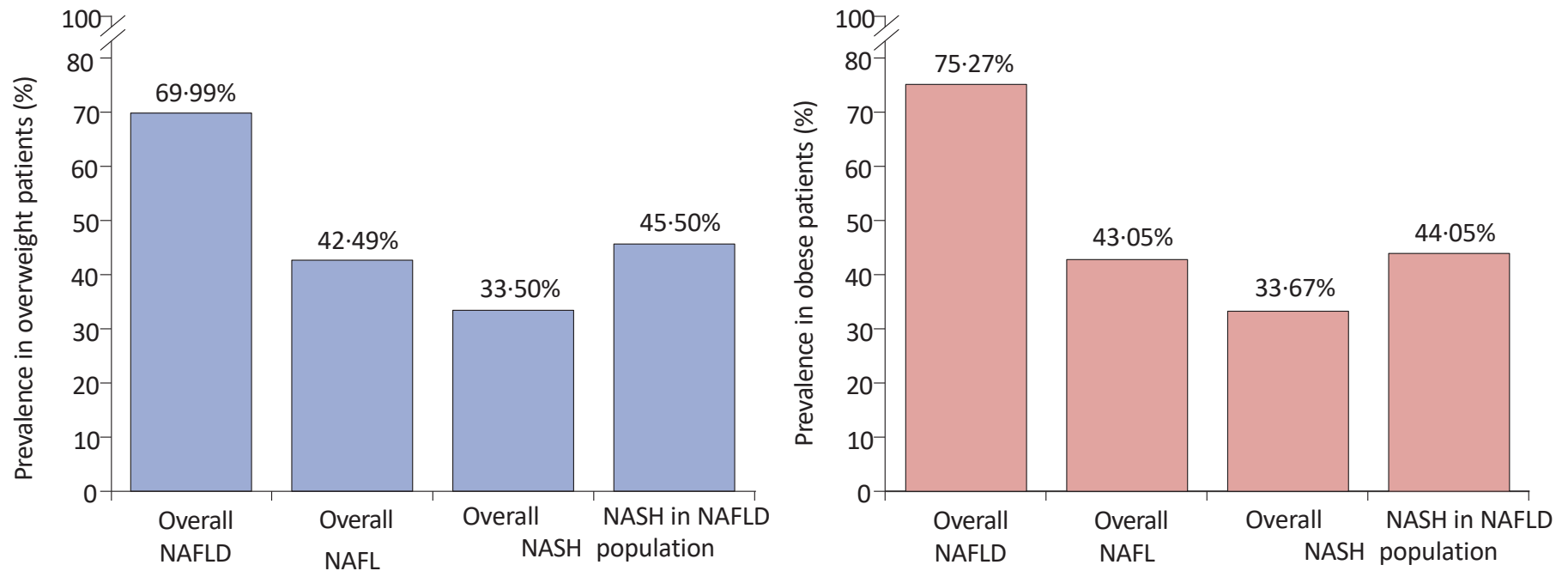
Z. YOUNOSI , NATURE REVIEWS GASTRO-HEPAT , 2017

# Obesity is a global phenomenon



<http://apps.who.int/bmi/index.jsp>; Accessed on March 4, 2019

## Prevalence of NAFLD in overweight individuals

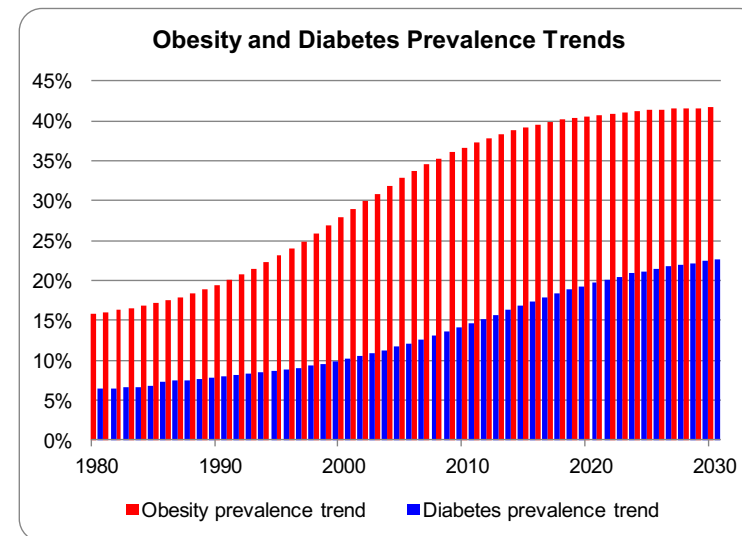
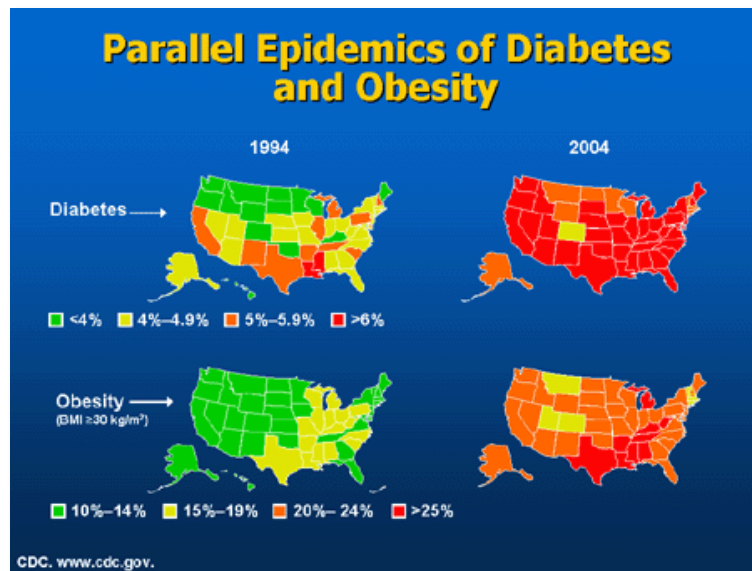


**Figure 2: Prevalence of NAFLD, NAFL, and NASH in overweight and obese populations**

NAFLD=non-alcoholic fatty liver disease. NAFL=non-alcoholic fatty liver. NASH=non-alcoholic steatohepatitis.

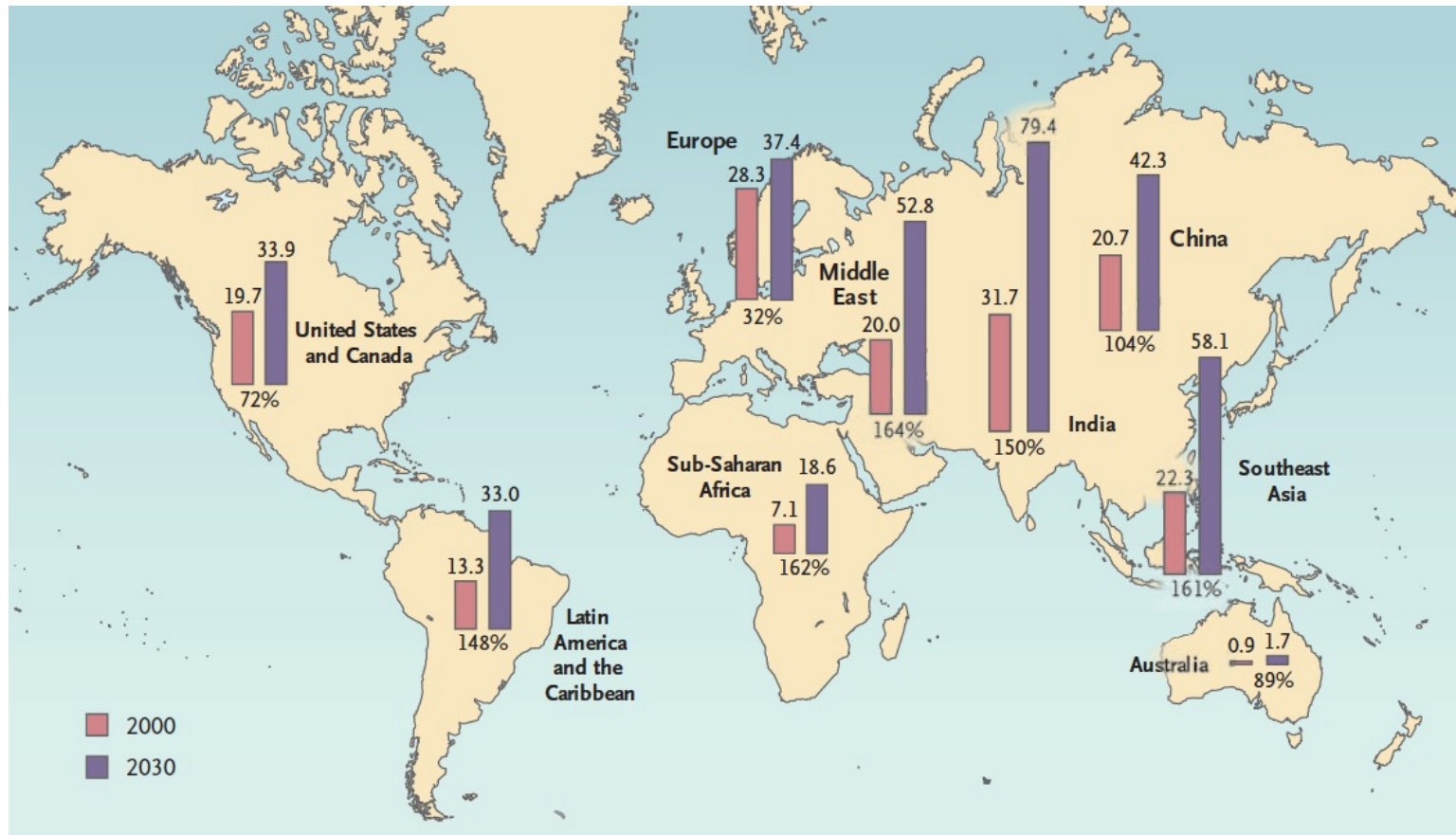
# Obesity NAFLD and Diabetes are temporally linked

- It takes 10-15 years for obese individuals to become diabetic



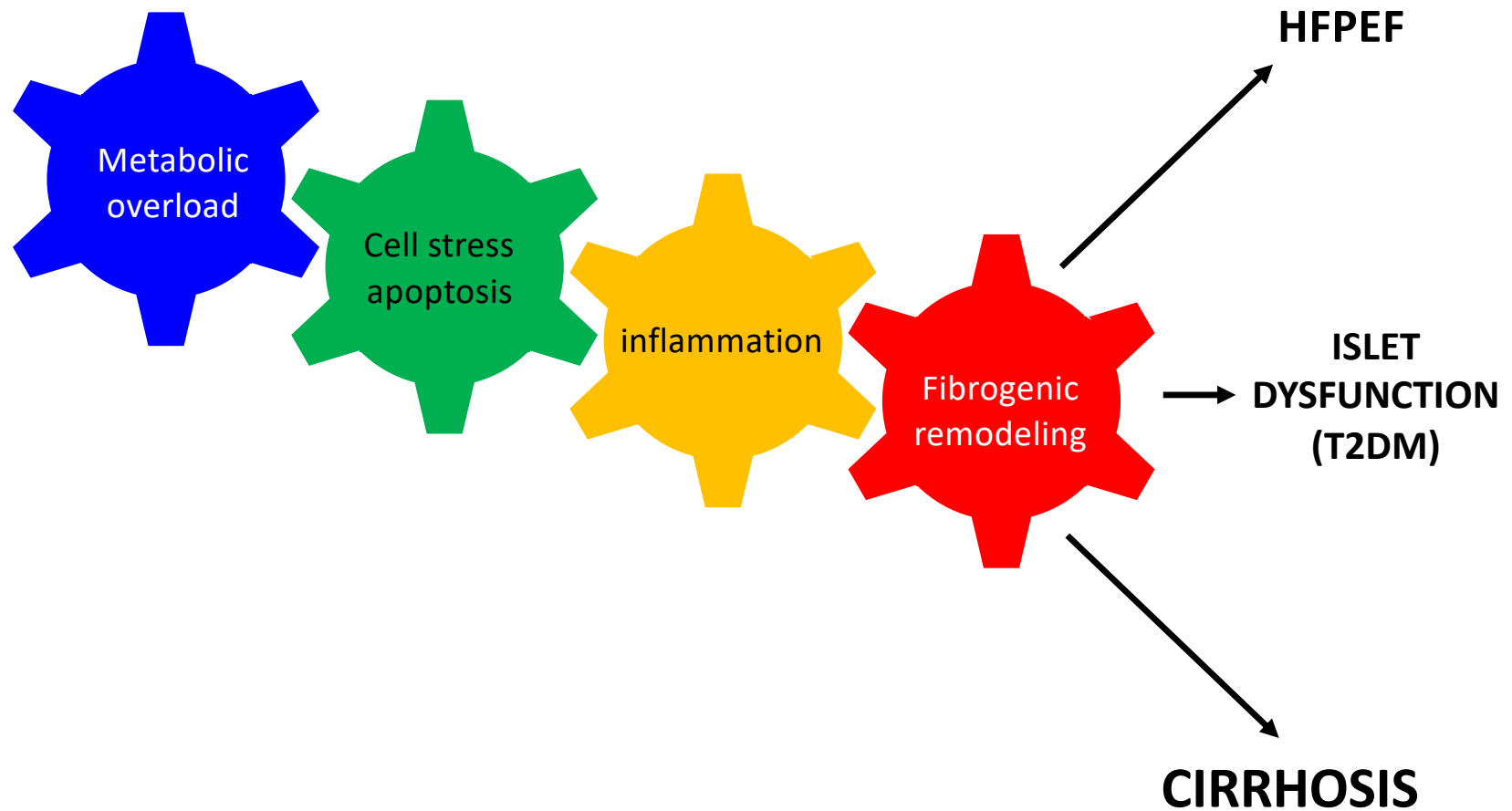
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- Zregg EW, Boyle JP, Thompson TJ, Barker LE, Albright AL, Williamson DF. Modeling the impact of prevention policies on future diabetes prevalence in the United States: 2010-2030. Population health metrics. 2013;11(1):18. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24047329>

# High prevalence of type 2 diabetes



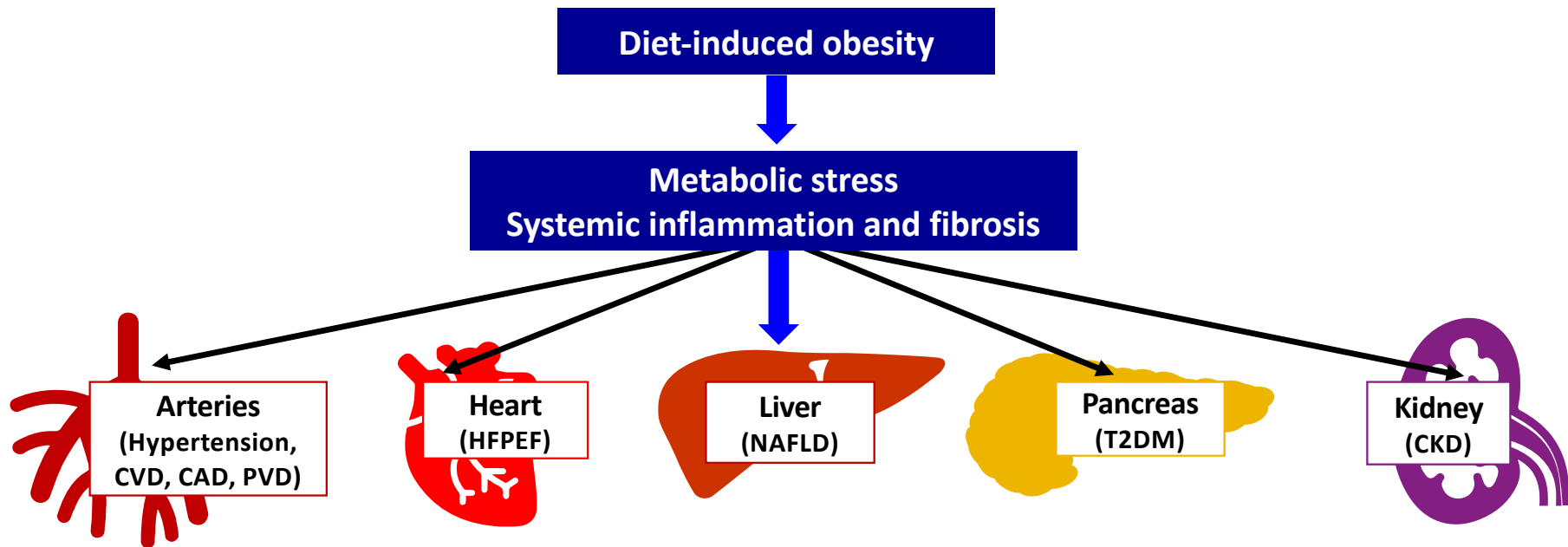
Hosseini P et al NEJM 2007, Wild et al. Diabetes Care 2004, New York Times 2017

# NASH, T2DM AND HFPEF SHARE ELEMENTS OF COMMON BIOLOGY





# Nonalcoholic fatty liver disease (NAFLD) is part of a multi-system disorder



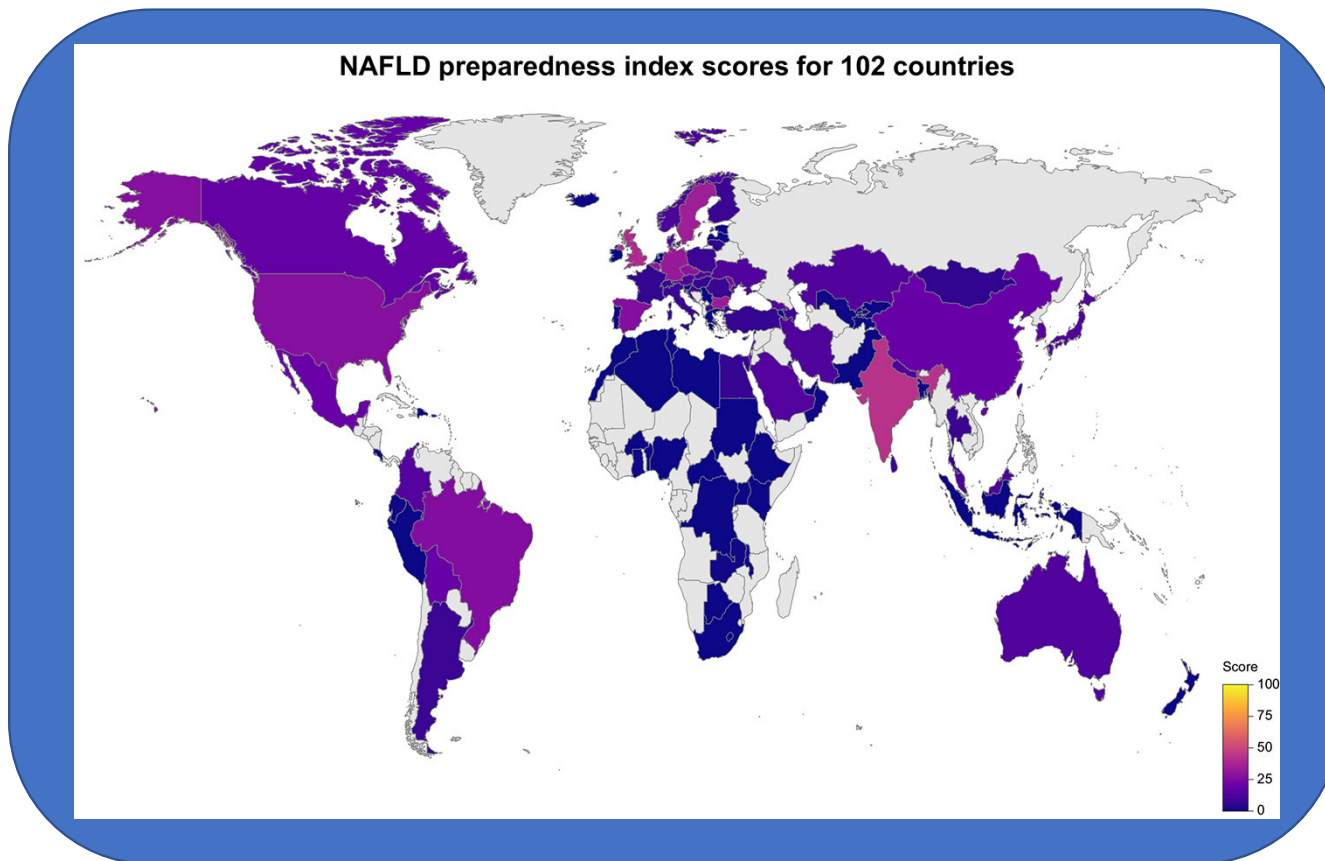
*Risk factors for NAFLD/NASH include obesity, hypertension, dyslipidemia, Type 2 DM*

For clinical, biological and pragmatic economic and logistical reasons, NAFLD must be tackled in the context of metabolic health and non-communicable diseases

# Key elements of a global strategy for NAFLD

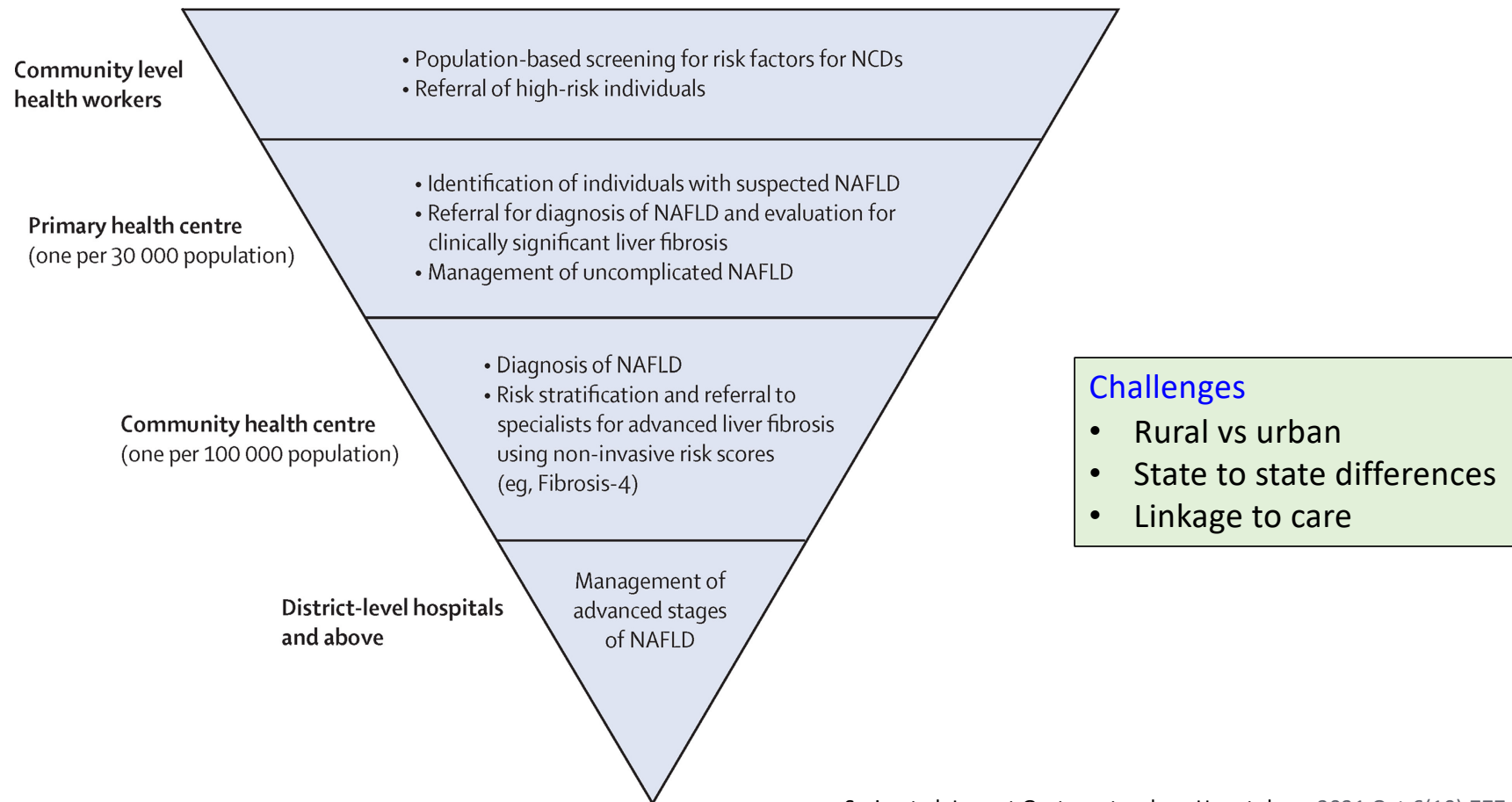
- Recognition of NAFLD as a public health threat
- Inclusion of NAFLD under the umbrella of non-communicable disease and metabolic health
- NAFLD in the context of metabolic health:
  - care pathway development
  - implementation and surveillance
  - integration with metabolic health care
  - integration with food and healthy lifestyle access and safety
  - focus on children
- Legislation on food and beverage quality, cost and safety

# Global initiatives in NAFLD

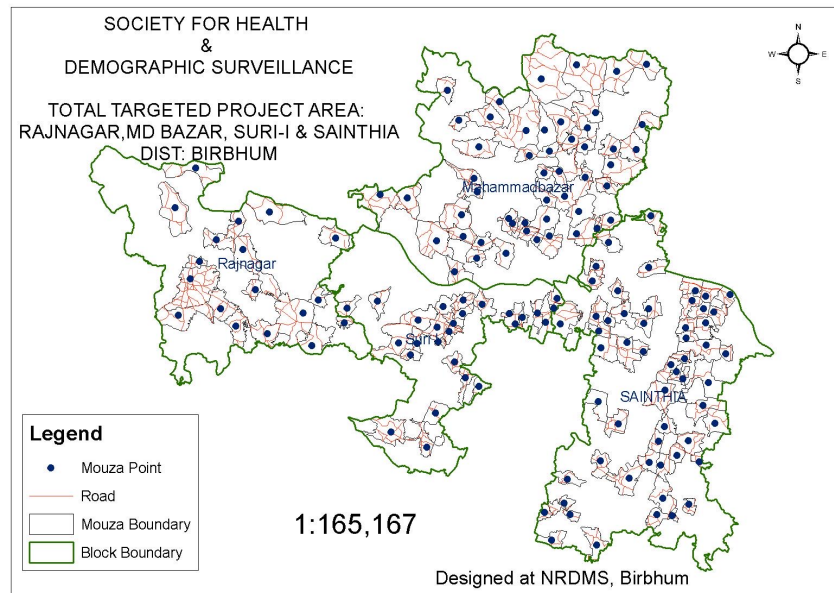


- Policies
- Guidelines
- Civil awareness
- Epidemiological data
- NAFLD detection
- NAFLD Care management

# Indian govt. forward viewing care pathway for NAFLD



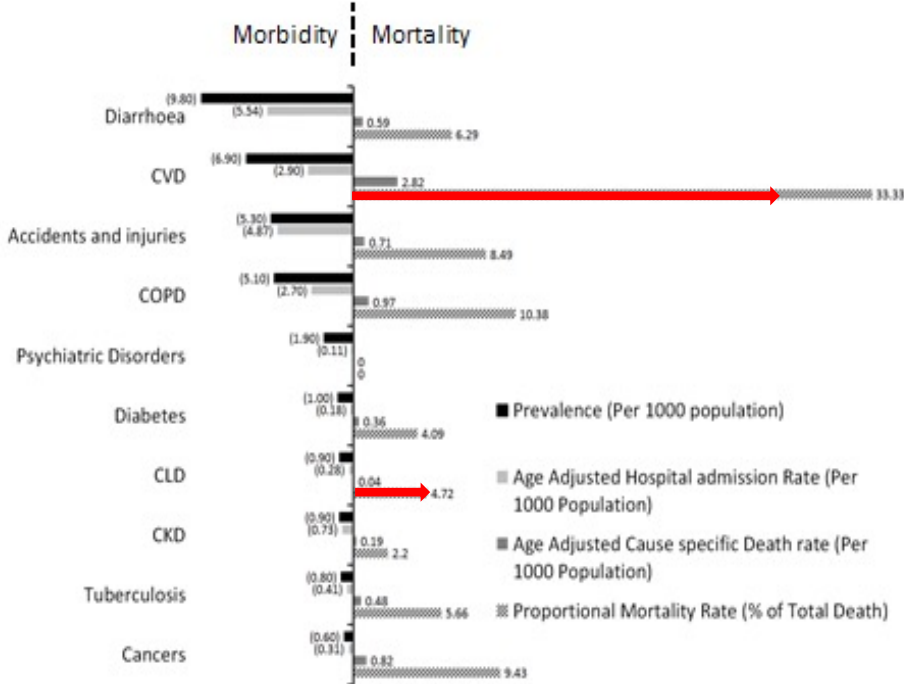
# BIRBHUM FATTY LIVER COHORT



Courtesy, Prof. Abhijit Chowdhury

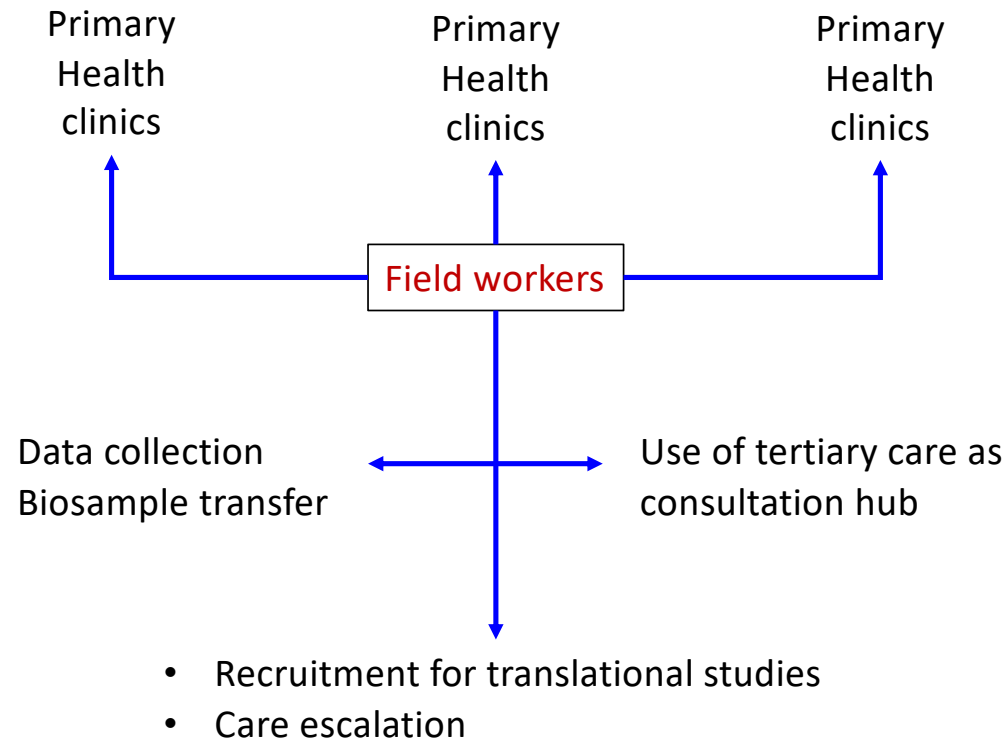
# Data from rural cohorts in West Bengal, India

Figure 6: Cause specific Morbidity and Mortality profile in the population under 'Society for Health and Demographic Surveillance System (SHDS)'



Courtesy, Prof. Abhijit Chowdhury, West Bengal liver institute

# The West Bengal Experiment



## Workforce Development

- Train the trainer
- Training curriculum for field workers
- Tools for use- use of technology

## Surveillance

- Leverage data collection systems developed

## Health promotion activities

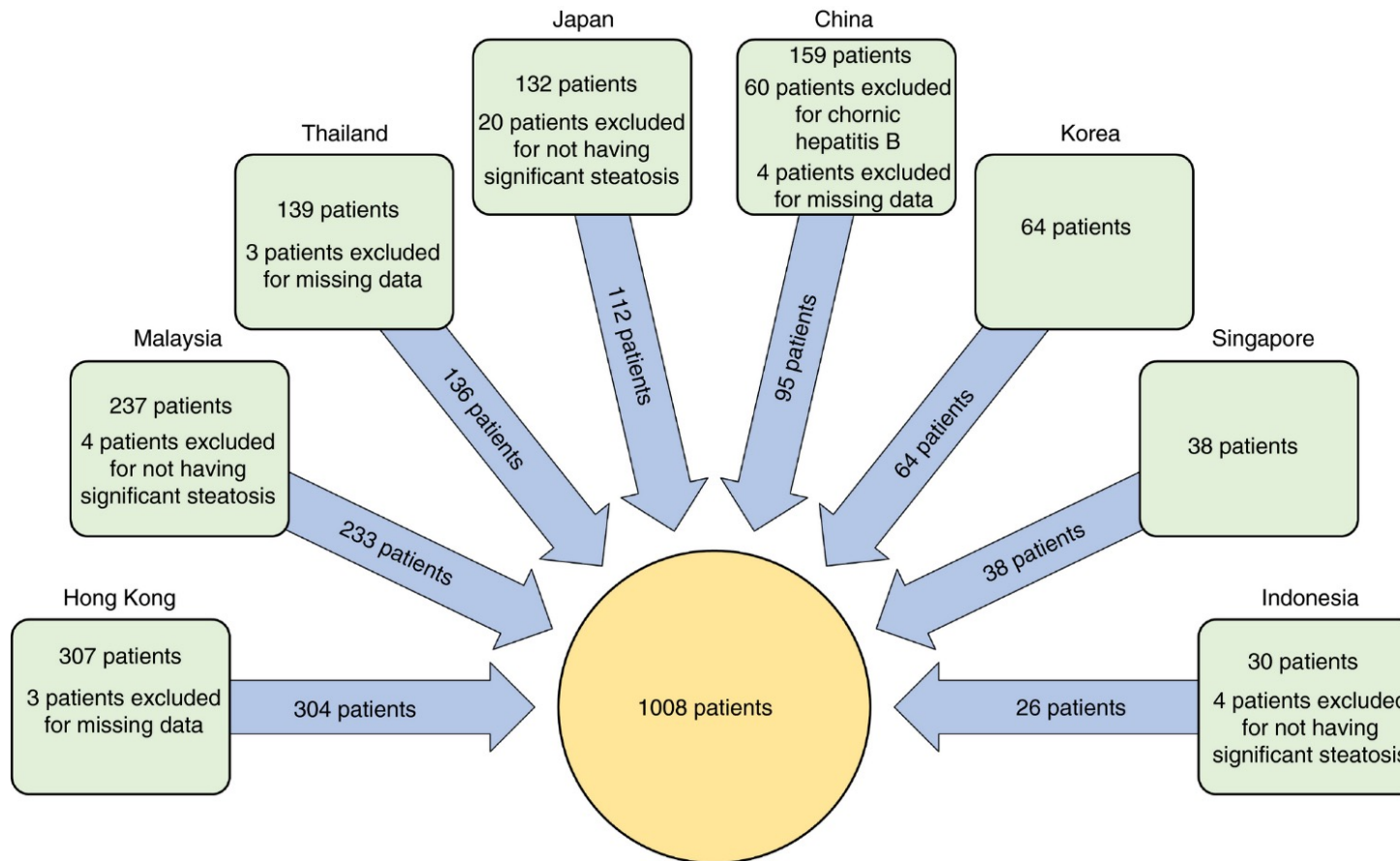
- Integrated messaging- alcohol, tobacco, diet, exercise
- Focus on maternal-pediatric clinic

## Creating infrastructure for research

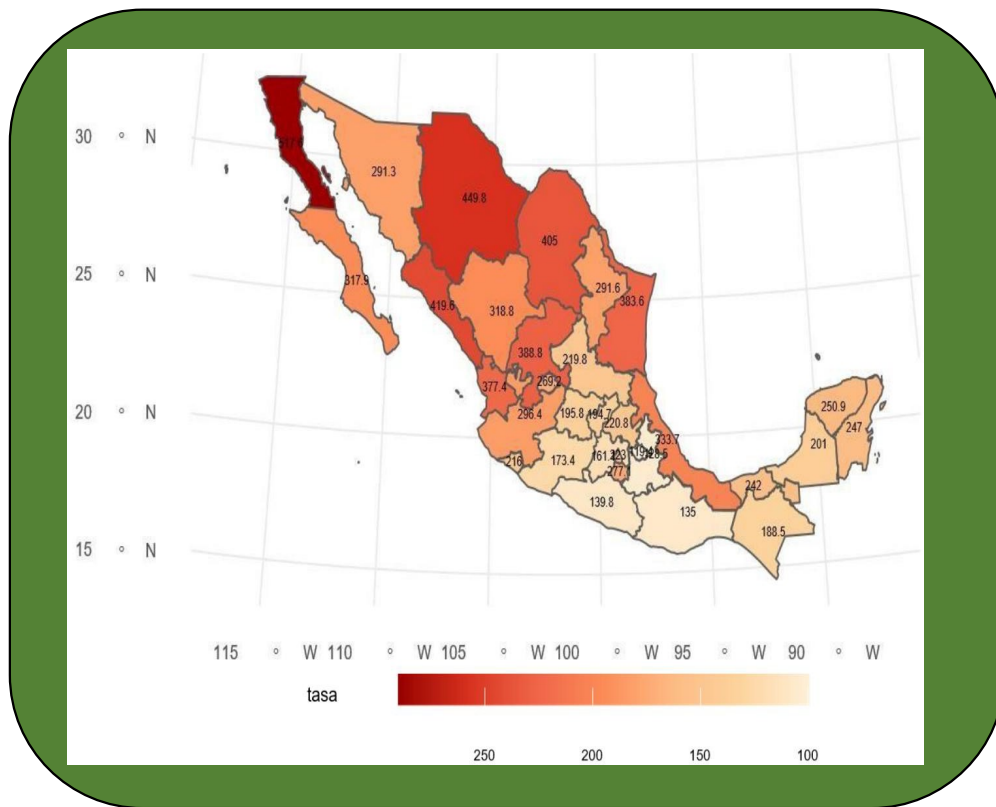
- Epidemiological
- Disease biology
- Diagnostics and validation of utility of NITs
- therapeutic development in local context
- Economic modeling



# Clinical features and treatment of nonalcoholic fatty liver disease across the Asia Pacific region—the GO ASIA initiative



# Global needs for metabolic health- mexico

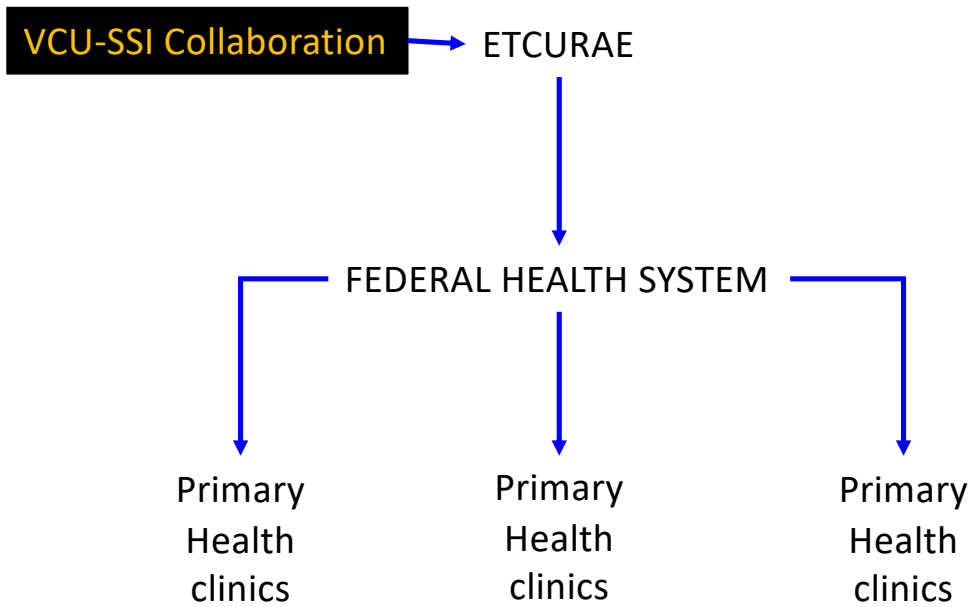


## Mortality in men in Jalisco state

1. Ischemic heart Disease 13.87%
2. Type 2 Diabetes Mellitus 10.81%
3. Homicides 6.16%
4. Liver Disease 5.88%

Source: SS/SINAIS/DGIS/CUBOS /2018 SEED/SS SINBA Database 2018 (Consultation: 05/25/2018)

# Public Health efforts in Mexico



# VCU-SSI collaborative effort with EtCurae-Mexico

## Focus on Knowledge

### Key partners:

- National Institute of Nutricion (Prof. Kersenobich)

### Step 1:

- Identification of trainers
- Knowledge and Attitude assessments

### Step 2:

- Creation of curriculum and materials
- Integration with global efforts

### Step 3:

- Beta testing with target audiences (PCP, endocrinologists, nursing, pharmacy staff etc.)
- Best practices in knowledge dissemination

### Step 4:

- Large scale training with scale up to 10000 providers in 3 years

## Focus on care delivery

Analysis of care delivery

Identification of opportunities

Care pathway development

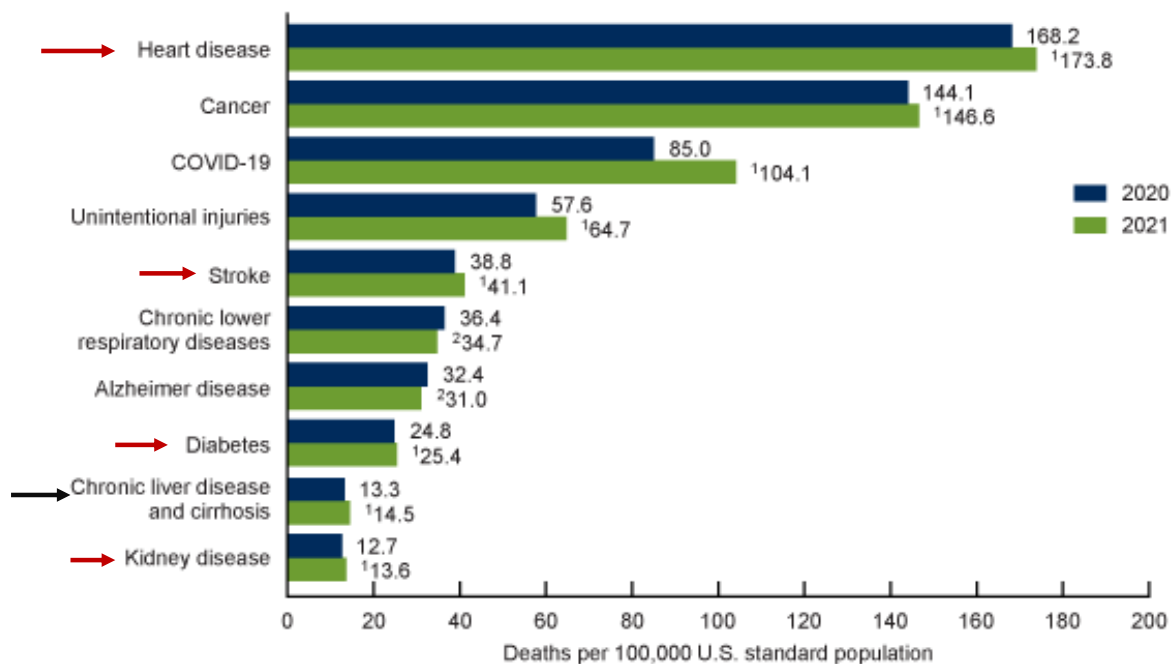
Infrastructure for real-world effectiveness studies

Integration with outcomes assessment



Once better outcomes at less cost demonstrated, scale up with policy, translation to LATAM

# USA: Metabolic health related disorders are key contributors to population mortality



<sup>1</sup>Statistically significant increase from 2020 to 2021 ( $p < 0.05$ ).

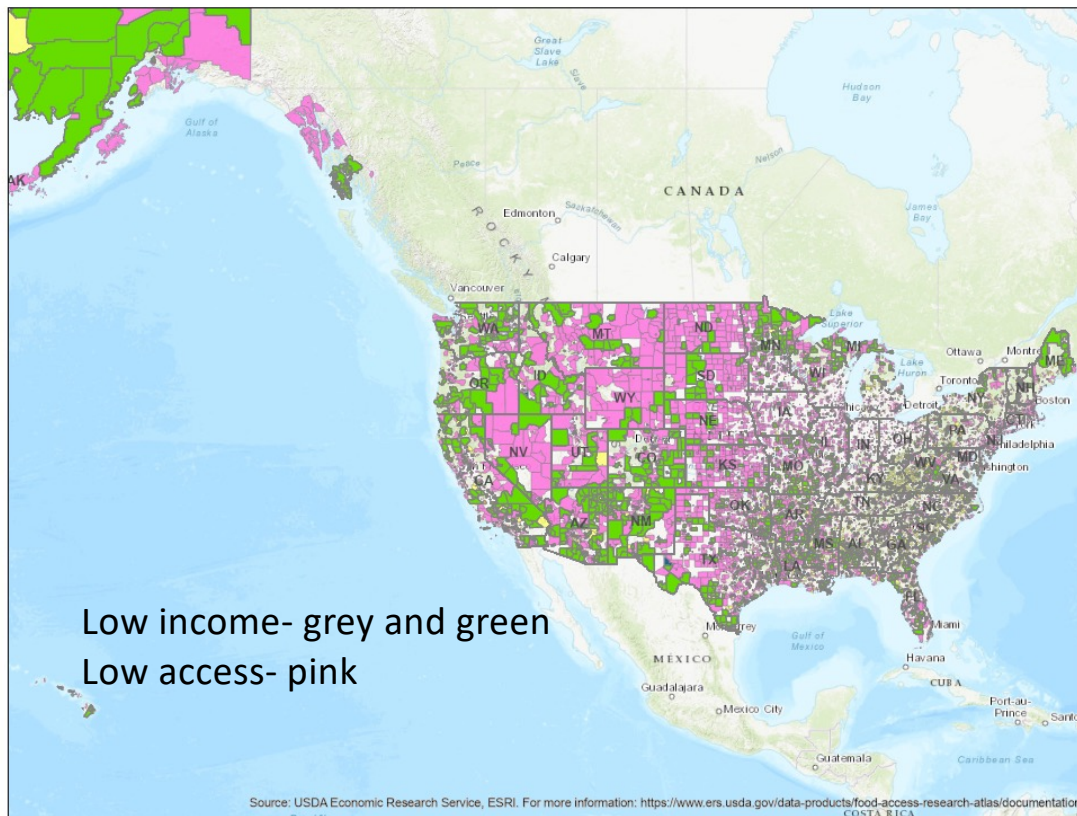
<sup>2</sup>Statistically significant decrease from 2020 to 2021 ( $p < 0.05$ ).

- Life expectancy for the U.S. population in 2021 was 76.4 years, a decrease of 0.6 year from 2020 to 2021.

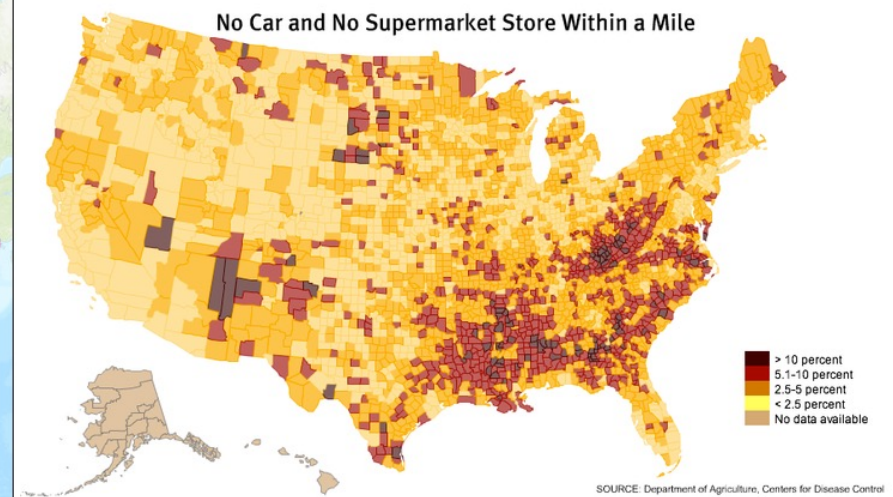
- The age-adjusted death rate increased by 5.3% from 835.4 deaths per 100,000 standard population in 2020 to 879.7 in 2021.

- Age-specific death rates increased from 2020 to 2021 for each age group 1 year and over.

# Food access remains a major challenge in USA



<https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/>



Source: CDC

# A global toxic food environment

- Families influence eating habits and food choices
- Worksite vending machines cater unhealthy food
- Schools cafeteria choices often unhealthy
- Neighbourhoods:
  - less access to supermarkets and greater access to convenience stores and fast food
- Marketing-
  - direct marketing (\$ 10 billion in USA annually total and \$ 1.6 billion for marketing to children- IOM 2005)
  - 2/3rds of US companies making food products have no policy for responsible marketing
- Regulations:
  - Price of food and vegetables have risen while sugary processed foods have declined
  - Government subsidies to corn growers
- Societal:
  - social norms and network influencing

# Lack of acknowledgement of NAFLD as part of metabolic diseases

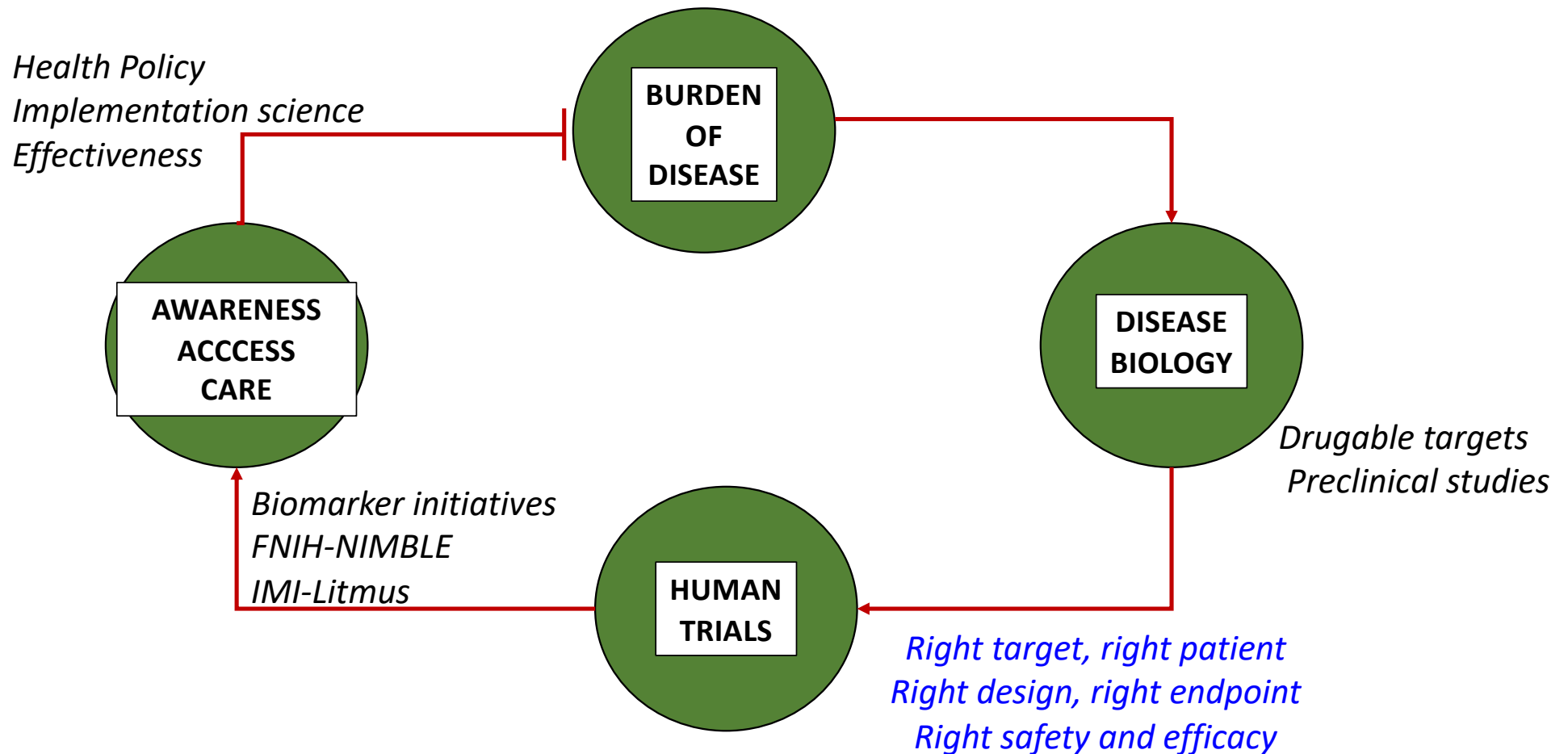


**World Health  
Organization**

- Not recognized in spectrum of noncommunicable diseases
- No consideration for integrated metabolic health
- Stravitz-Sanyal collaboration with Etcurae in Mexico developing proof of concept of benefit
- Requires multi-stakeholder effort
- Having a policy is not enough-it must be implemented



# And miles to go before we sleep- Robert Frost



# Thank you for your attention

*When no one responds to your call, then walk your life journey alone*  
- RN Tagore Poet Laureate



**VCU** Stravitz-Sanyal Institute for  
Liver Disease and Metabolic Health  
School of Medicine