



# GLOBAL HEALTH STARTER KIT FOR DENTAL EDUCATION

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## Module 6: Environmental Health

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# Competencies:

1.2.3 Identify and describe reciprocal links among oral diseases, systemic diseases, and general health.

2.1.7 Educate, counsel, recognize, and act on the links between oral health/disease and systemic health/disease.

2.3.4 Translate research data into meaningful information tailored for communication and advocacy with specific target audiences.

2.4.1 Identify and assess the range of global oral health research questions.



# Learning Objectives

By the end of this module, students should be able to do the following:

- Define key terms related to environmental health, environmental justice, climate change, the concept of One Health.

- Explain the environmental health pathway and how some ill-health can be attributable to environmental factors.

- Describe ways in which oral healthcare personnel might adversely impact environmental health.

# Introduction

“Humanity is waging war on nature. This is senseless and suicidal. The consequences of our recklessness are already apparent in human suffering, towering economic losses and the accelerating erosion of life on Earth.”

*António Guterres  
Secretary-General of the United Nations  
February 19, 2021*

*United Nations Environment Programme (2021). Making Peace with Nature: A scientific blueprint to tackle the climate, biodiversity and pollution emergencies. Nairobi. <https://www.unep.org/resources/making-peace-nature>*

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# INTRODUCTION TO ENVIRONMENTAL HEALTH

# Highlights in History Environmental Health

Paracelsus



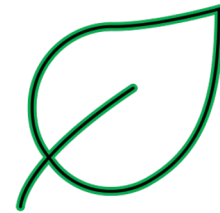
The dose makes  
the poison  
(1500's)

John Snow



Mapped the  
London cholera  
outbreak (1854)

Rachel Carson



Published "Silent  
Spring" on pesticides  
and health (1962)

# Key Definitions of “Health”



**Health:** state of complete physical, mental, and social well being

**Public Health:** prevent disease and promote health among the whole population

**Environmental Health:** all aspects of human health that are determined factors in the environment

# Key Definitions of “Health”



## Global Oral Health

“ . . . oral health for all people . . . approaches that consider common determinants . . . and acknowledge oral health as part of overall health.”

Seymour, et al., 2020



# Key Definitions of “Environment”

## Environment

**A.** Any substance that renders the natural environment unsuitable

## Ecosystem

**B.** All components of Earth

## Pollution

**C.** The introduction of natural or anthropogenic contaminants into a natural environment

## Pollutants

**D.** Comprises all the living and non-living things in a certain area



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# Significant Environmental Concerns



- Safe drinking water
- Proper sanitation



- Air pollutants

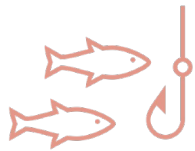


- Greenhouse gases
- Warming temperature



- Excessive generation
- Waste management

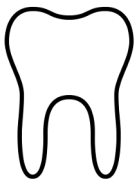
# Bethel, Alaska



Residents noticed altered salmon migratory patterns



Residents add sweeteners to water that is undrinkable due to taste/odor



Bethel has doubled rate of cavities in children

# Fluoride

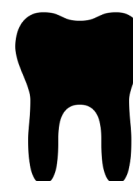
## PROS

- Right amount is Helpful
- Reduces decay 25%
- Top 10 of 20<sup>th</sup> c.
- *Assumes* community trusts and enjoys the water

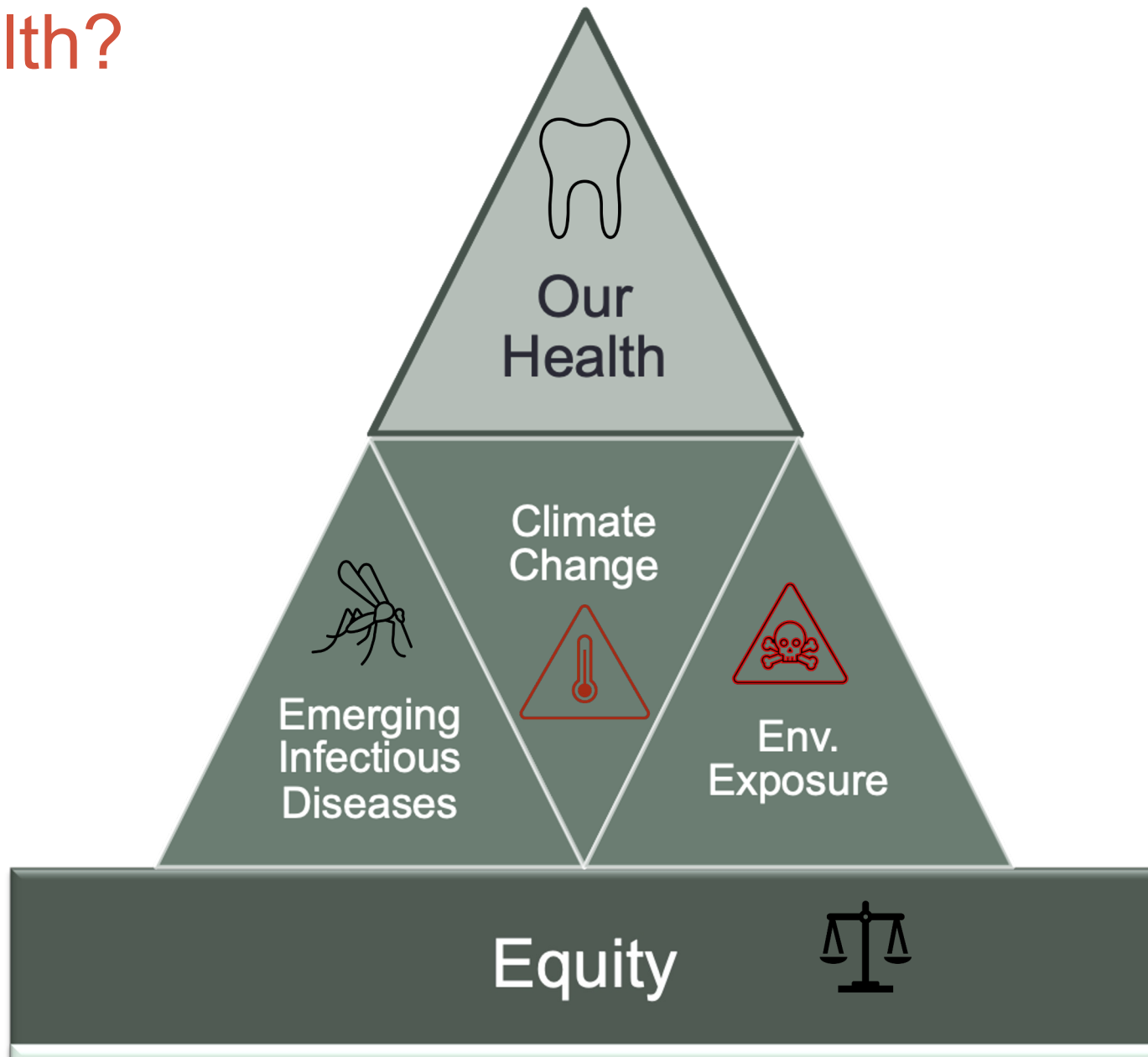


## CONS

- Too much is Harmful
- Causes brown stains
- Can occur naturally in groundwater wells

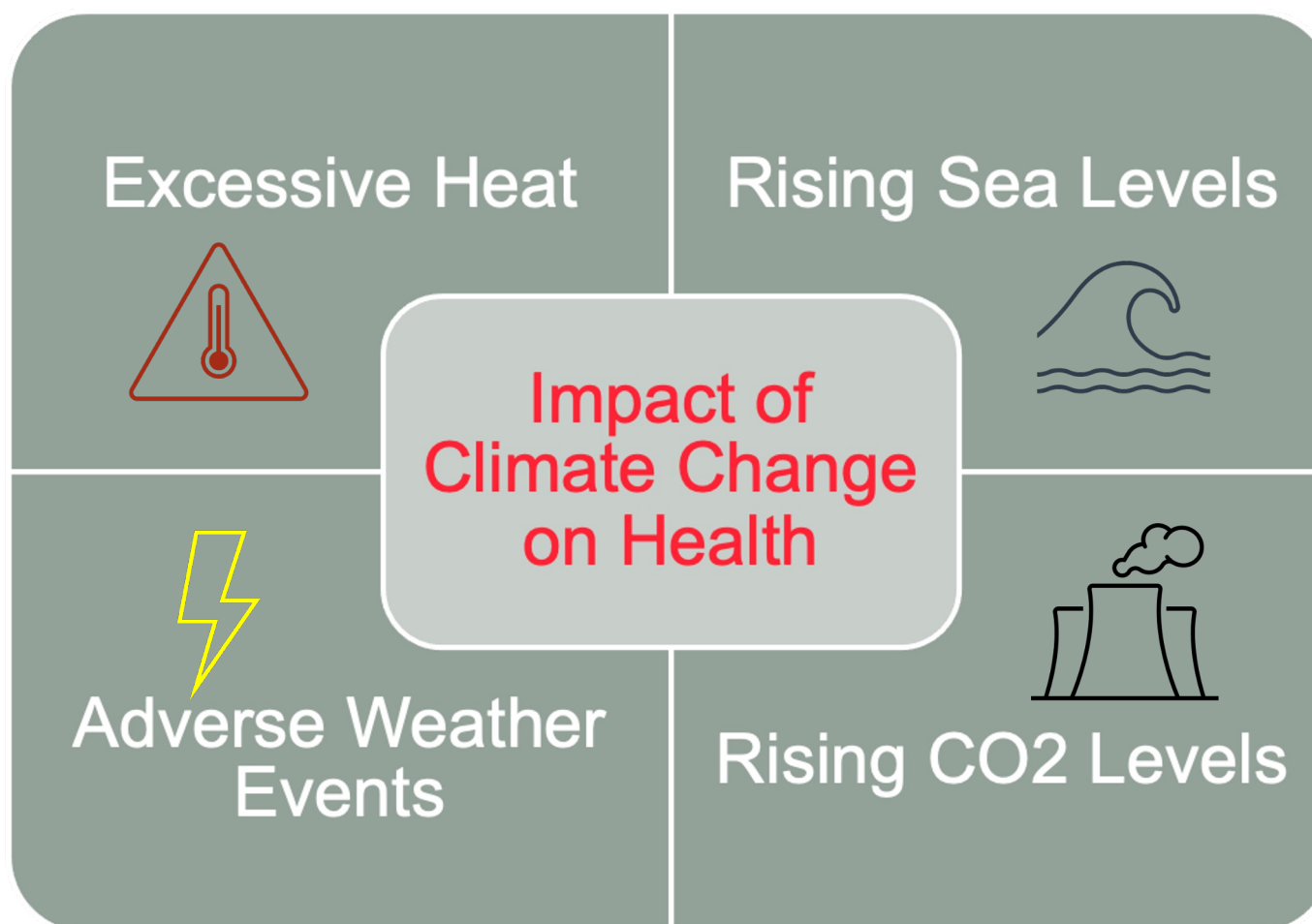


# What Environmental Drivers Affect Our Health?



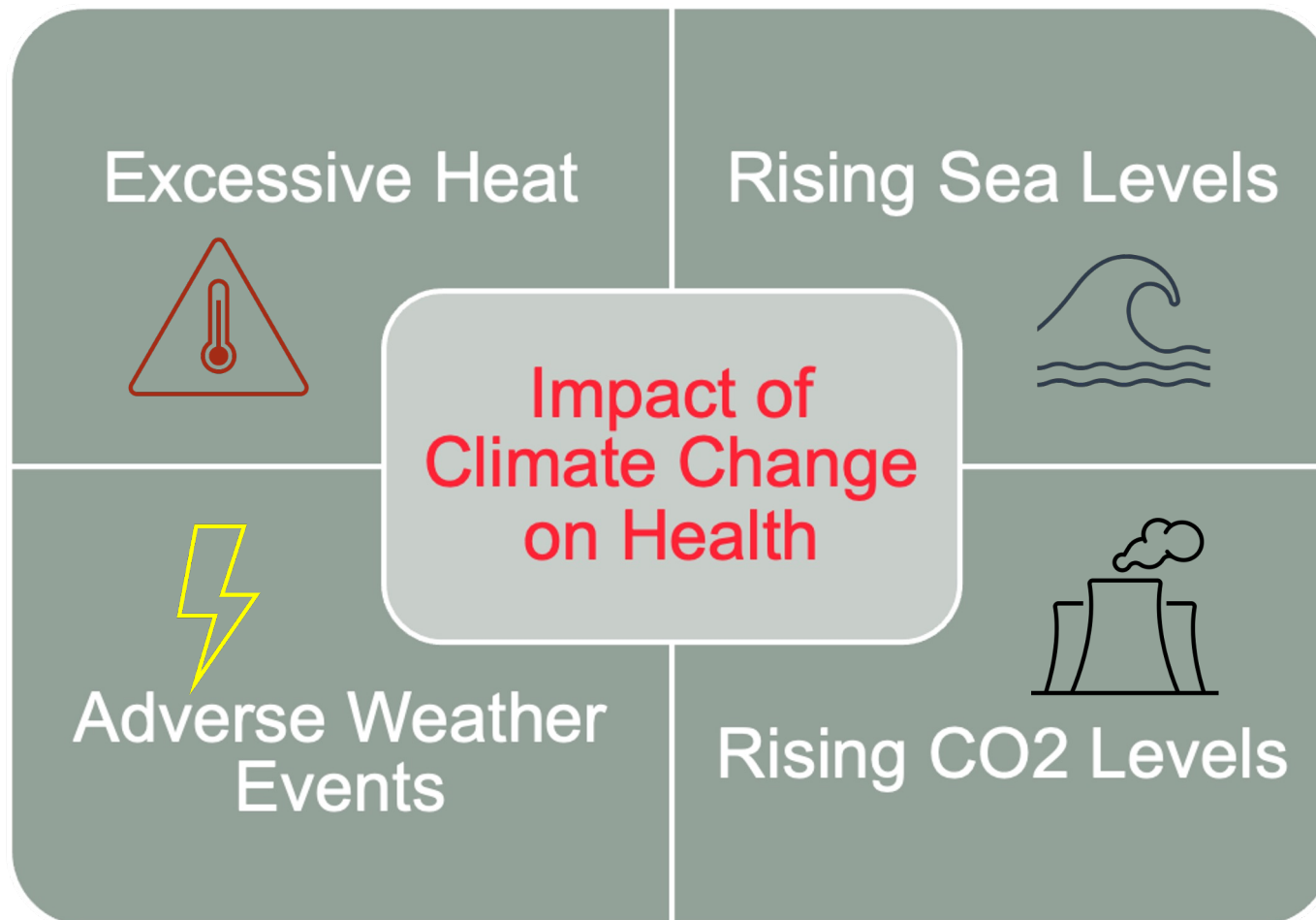
# Climate Change (Direct Effects)

*Climate Change is the Long-term alteration of temperature and typical weather patterns in a place*

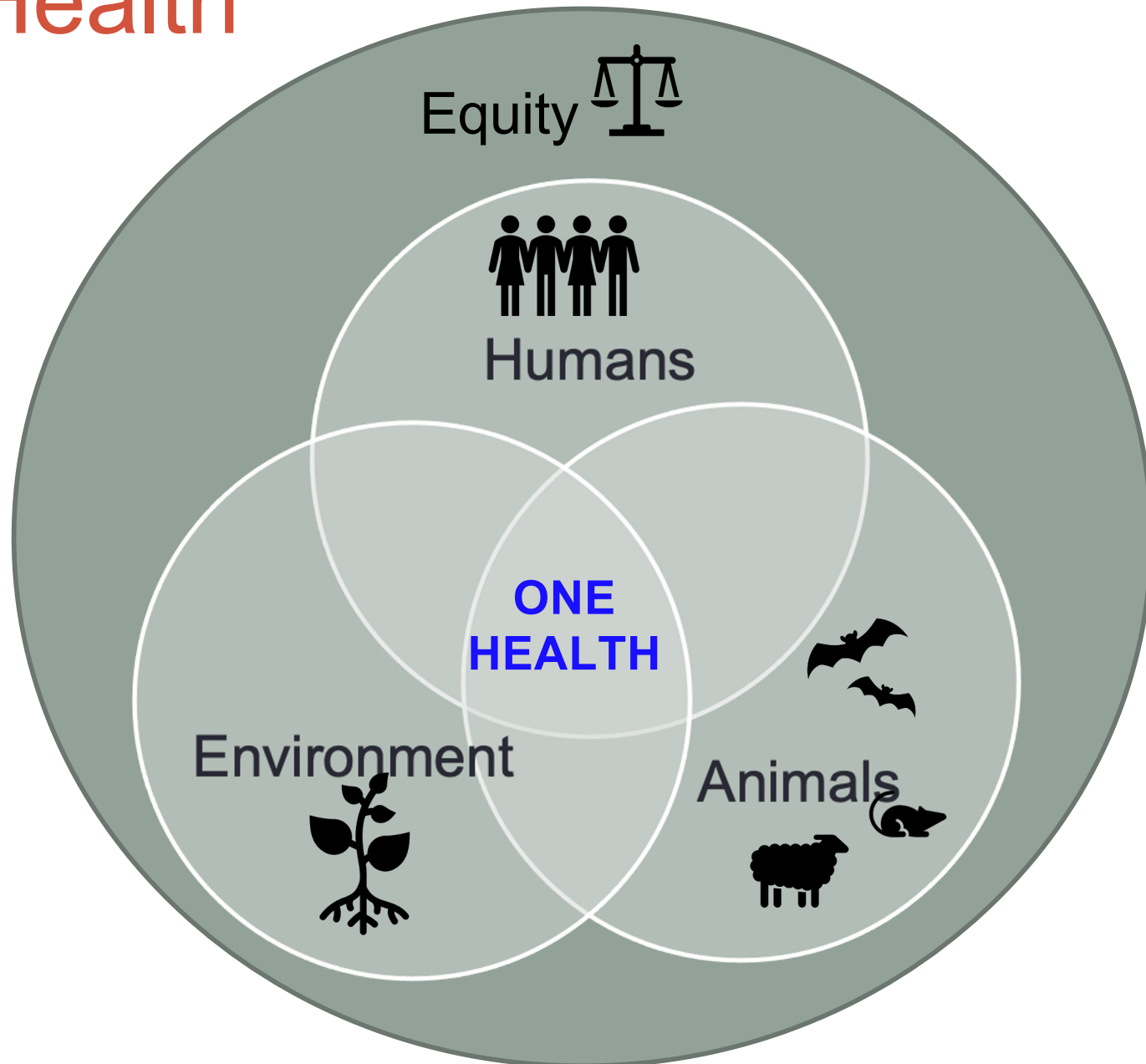




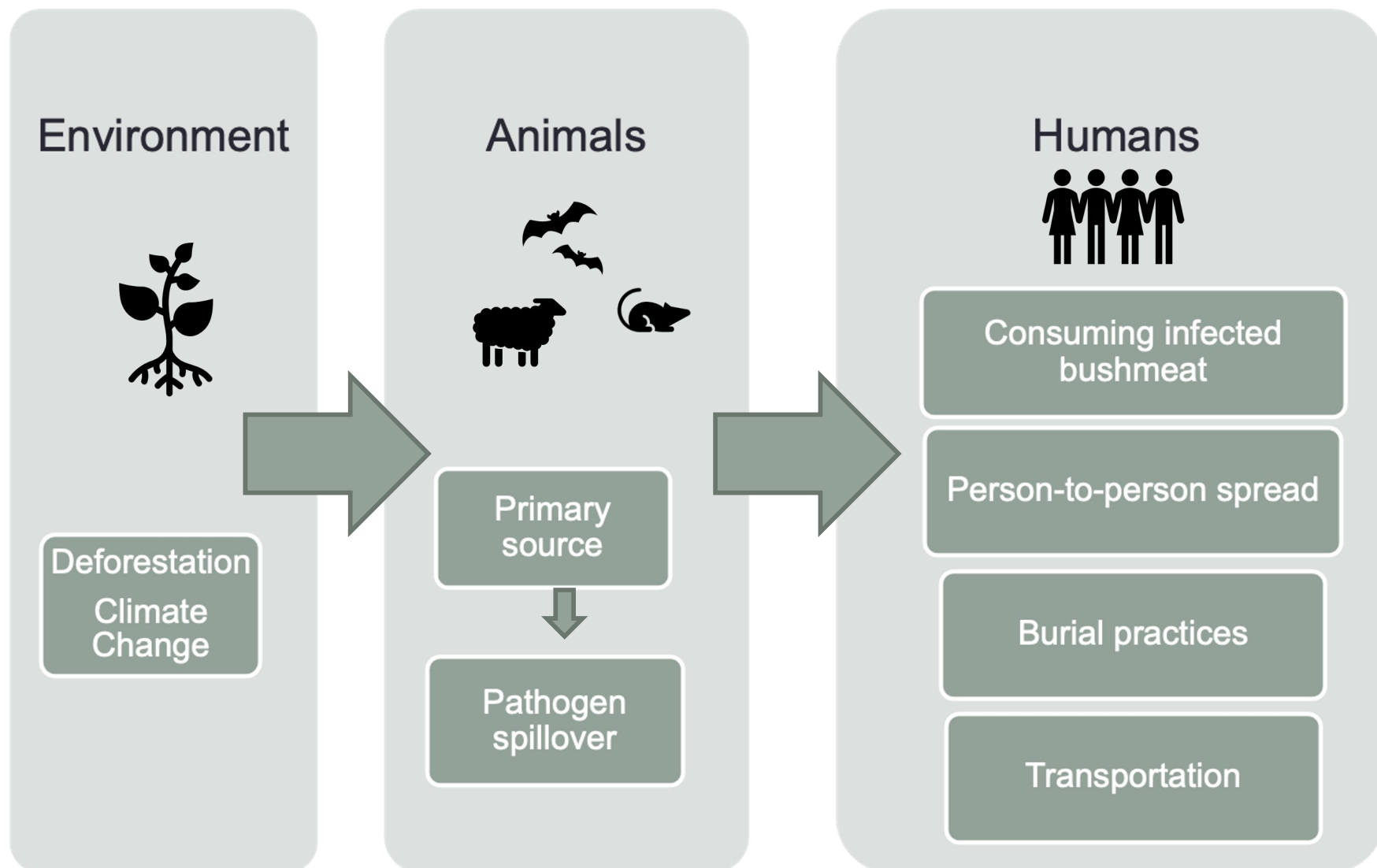
# Climate Change (Indirect Effects)



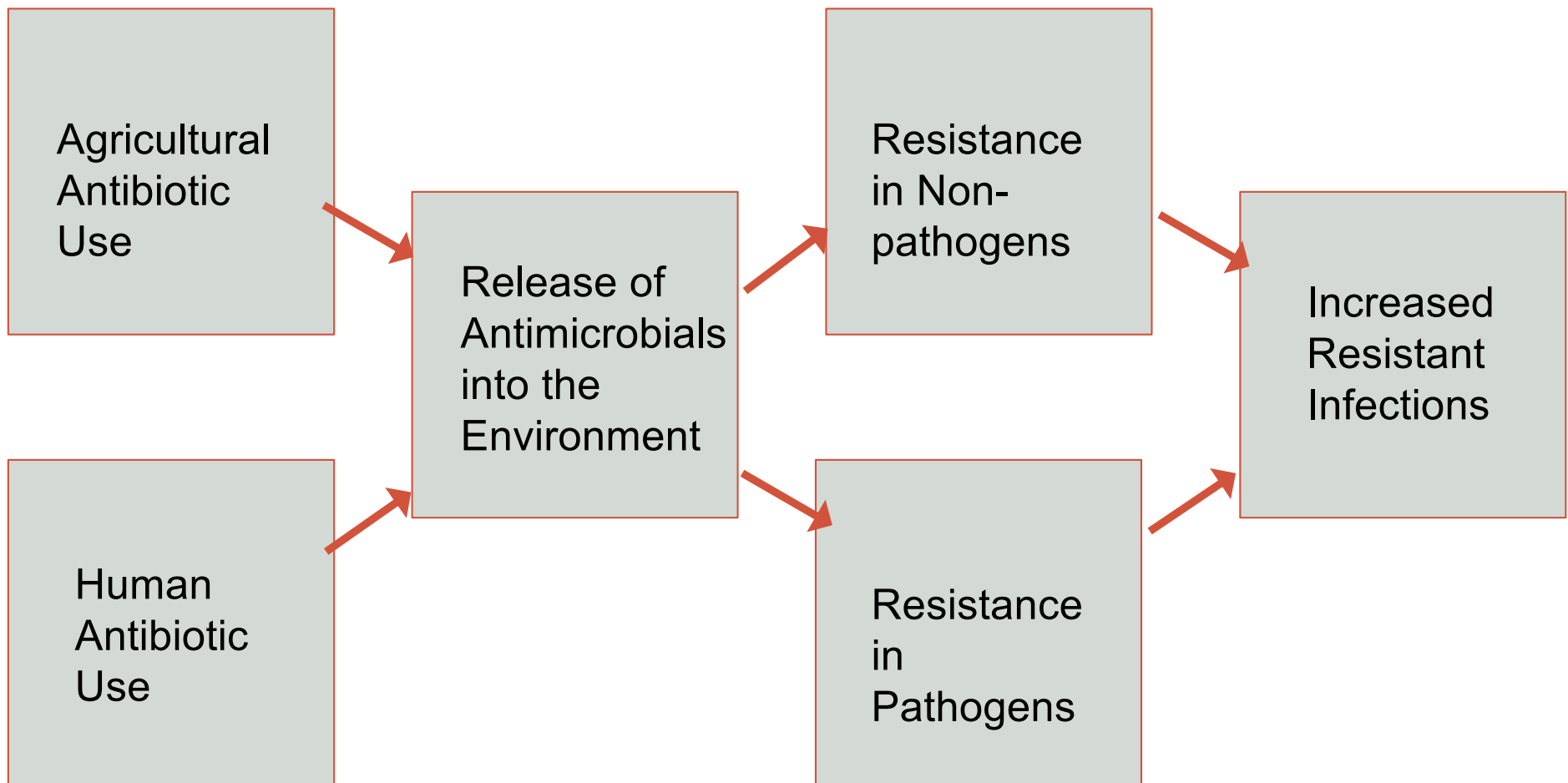
# One Health



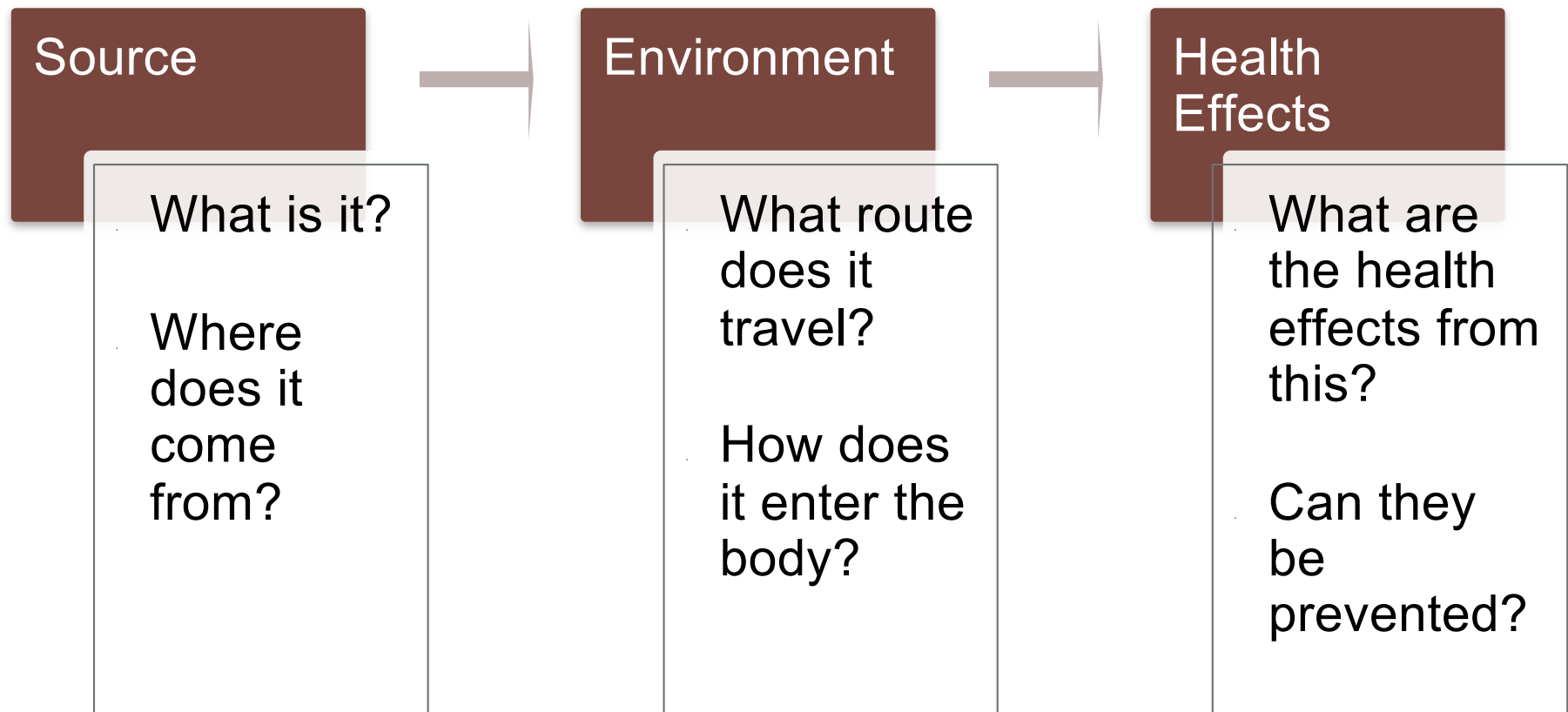
# Emerging Infectious Diseases: EBOLA



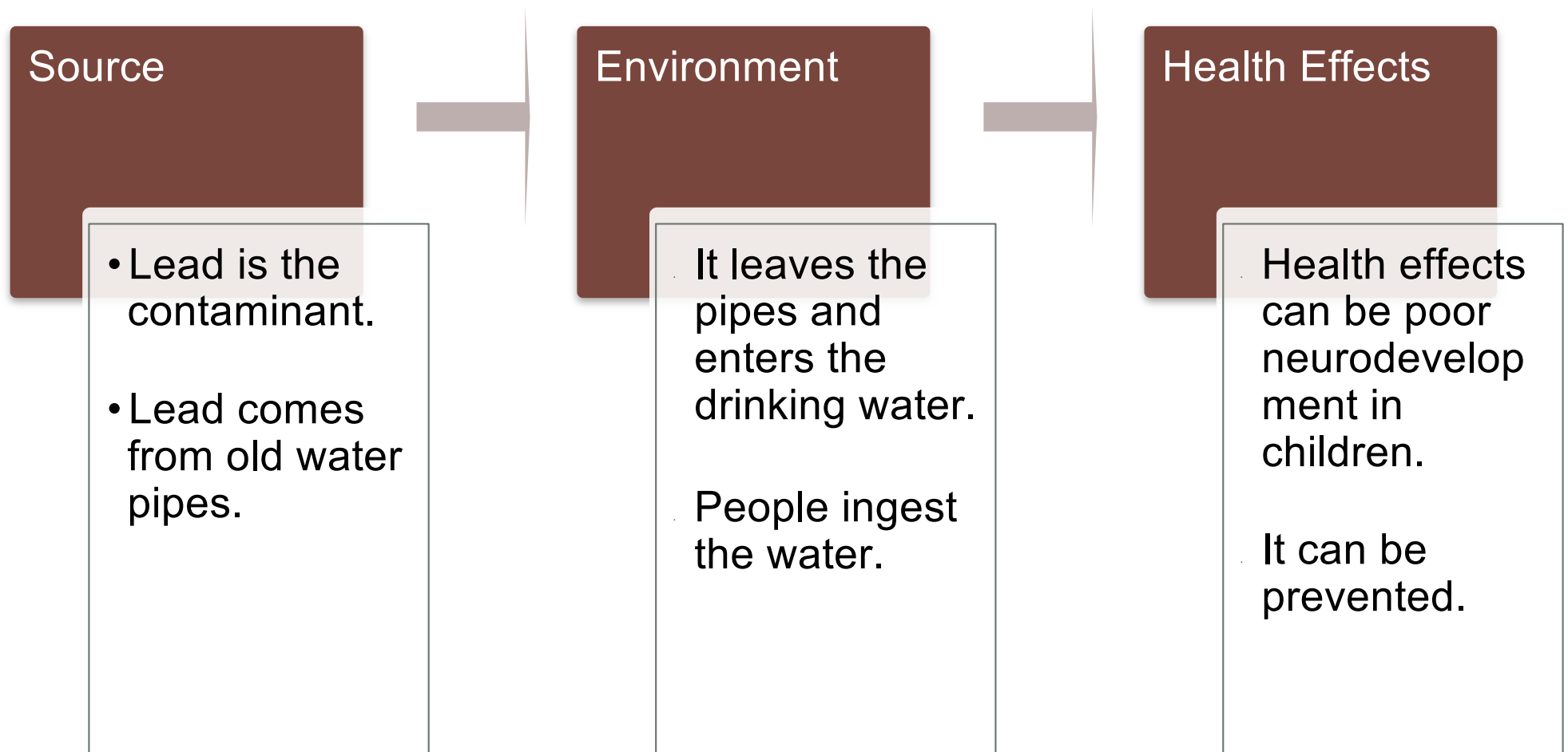
# One Health and Antibiotic Resistance



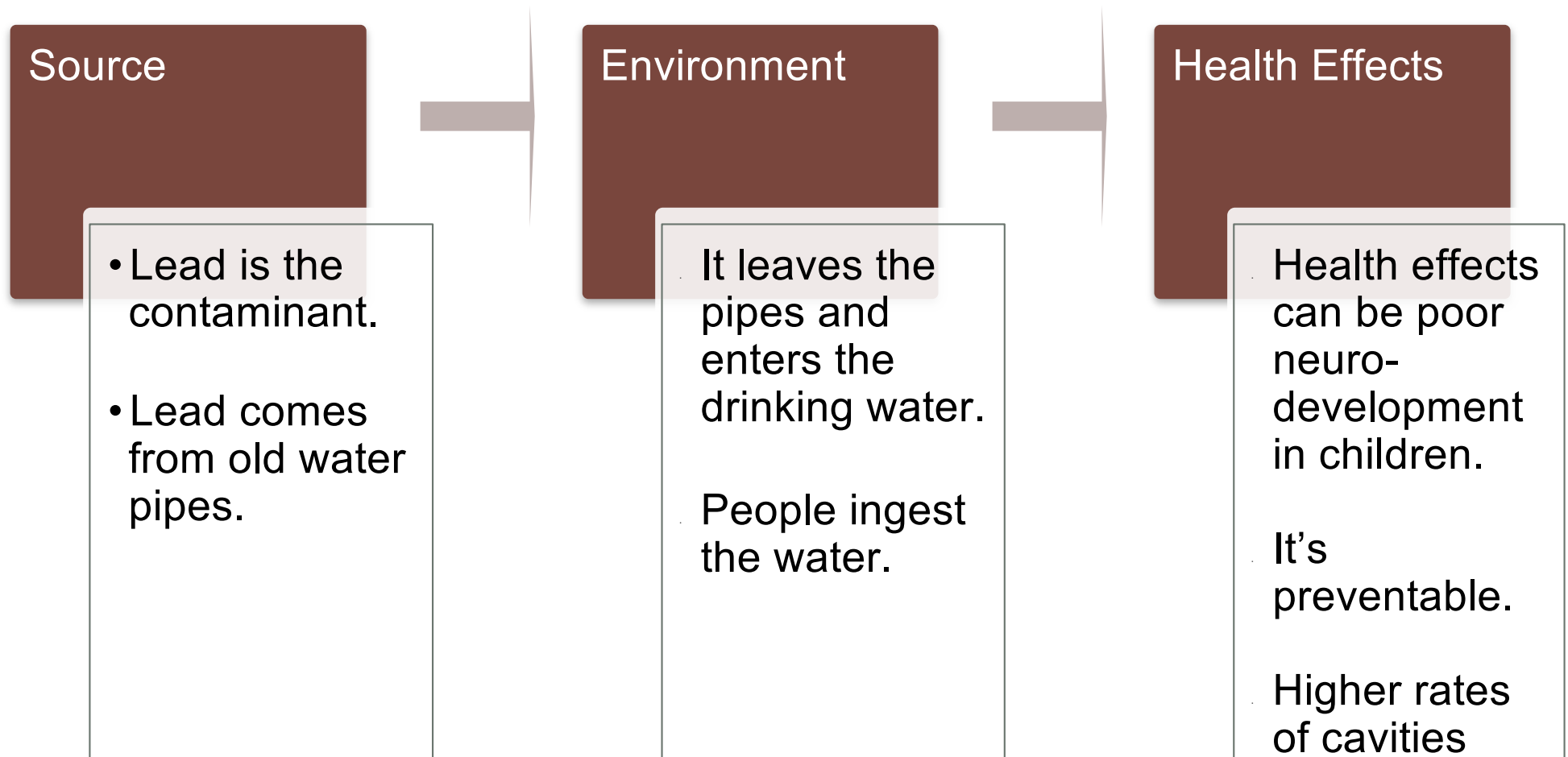
# Environmental Health Pathway: Classic Three Box Model



# Environmental Health Pathway: Example of Lead Poisoning



# Environmental Health Pathway: Example of Lead Poisoning



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# ENVIRONMENTAL JUSTICE



# Environmental Justice



Everyone has the right to equal environmental protection under the law - to live, work and play in communities that have safe and healthy living conditions.

# Was there Environmental Injustice in Flint?



Who was the population?

Who made decisions?

Who was affected? How?

# Global Initiatives

## UN Sustainable Development Summit 2015

17 Sustainable Development Goals

(5 linked to the environment and health)

SDG6: Clean water and sanitation

SDG7: Affordable clean energy

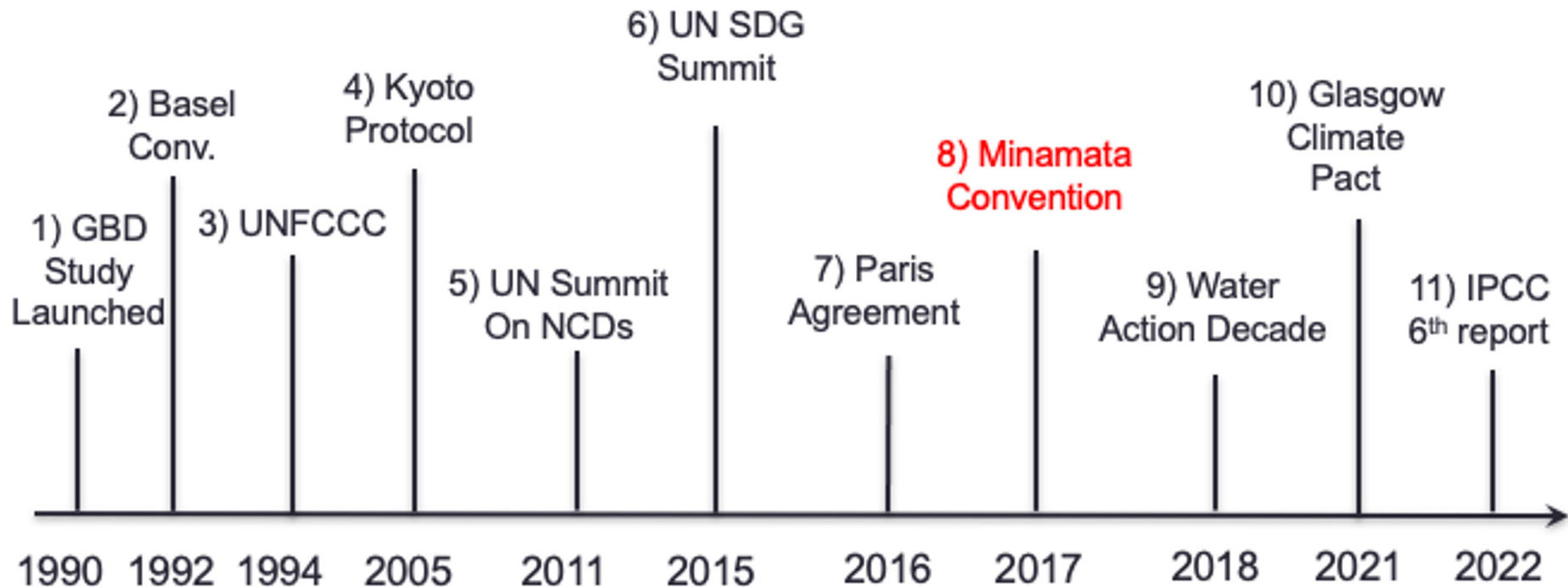
SDG13: Climate action

SDG14: Life below water

SDG15: Life on land

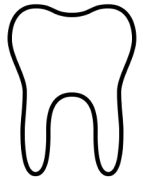


# Global Climate Initiatives Timeline



*Selected recent snapshots  
Dates reflect when initiatives entered into force*

# Minamata Convention on Mercury



Directly relates to the practice of dentistry

Calls for “Phase Down” of dental amalgam use

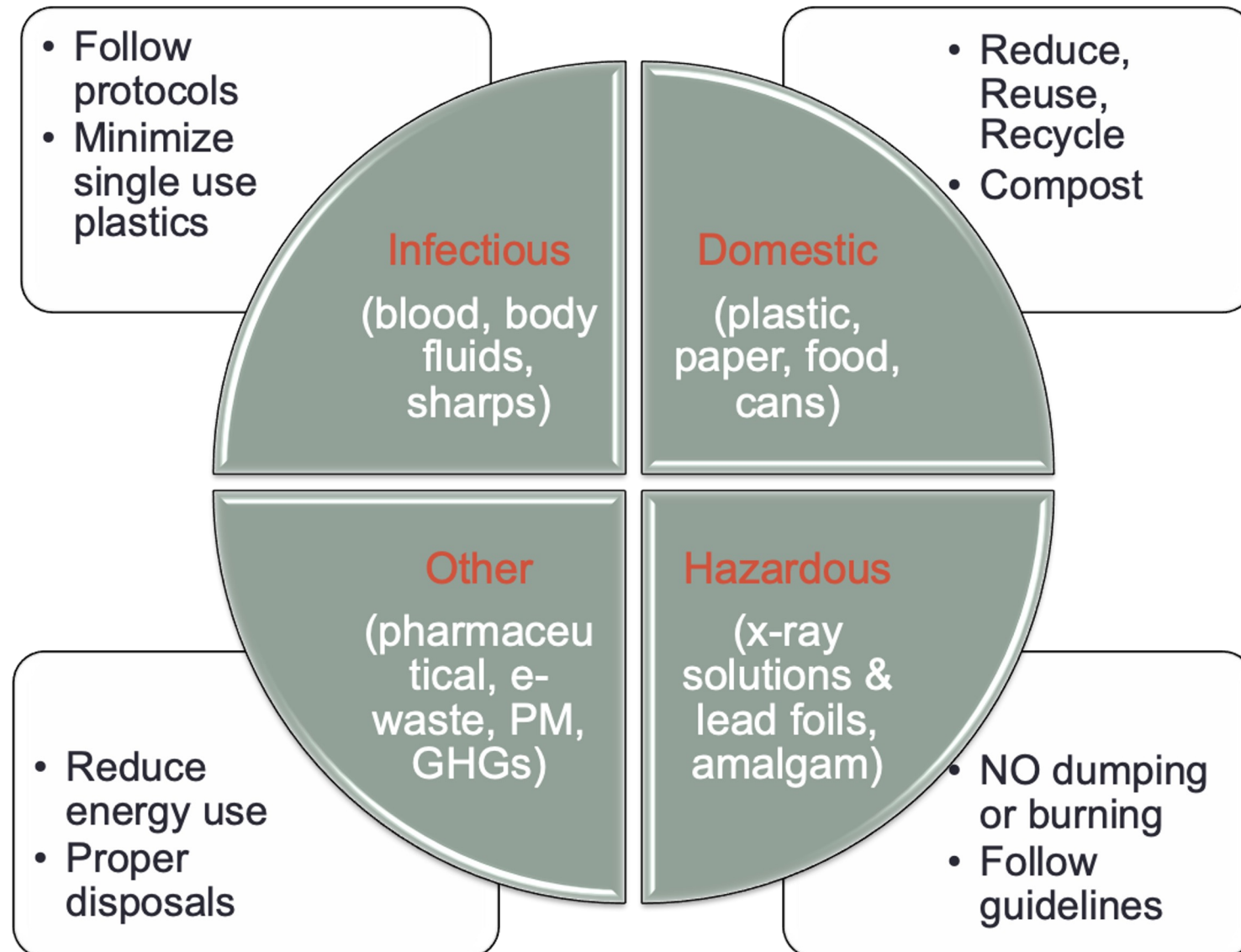
FDI World Dental Federation key action areas:

- prevention of dental caries
- research into alternative restorative materials
- amalgam waste management

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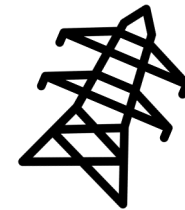
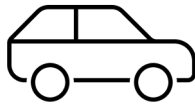
Action!

# Action! Waste Mitigation



# Action! Carbon Footprint

What is the total amount of greenhouse gases we produce by our actions?



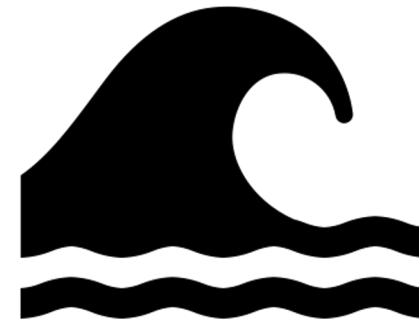
Transportation

Electric Use

Gas and Oil Use



# Action! Prepare



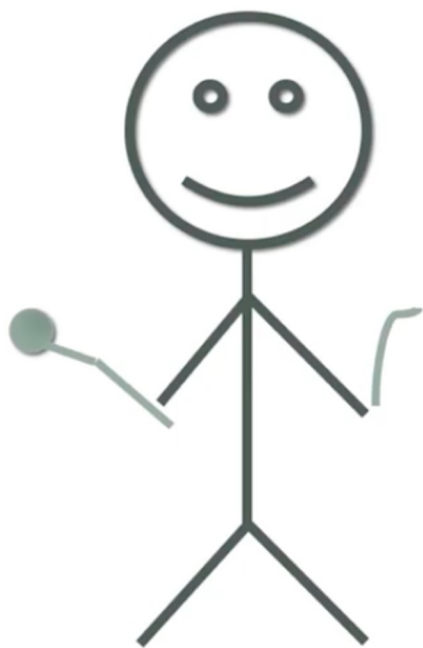
# 60-SECOND WRAP UP

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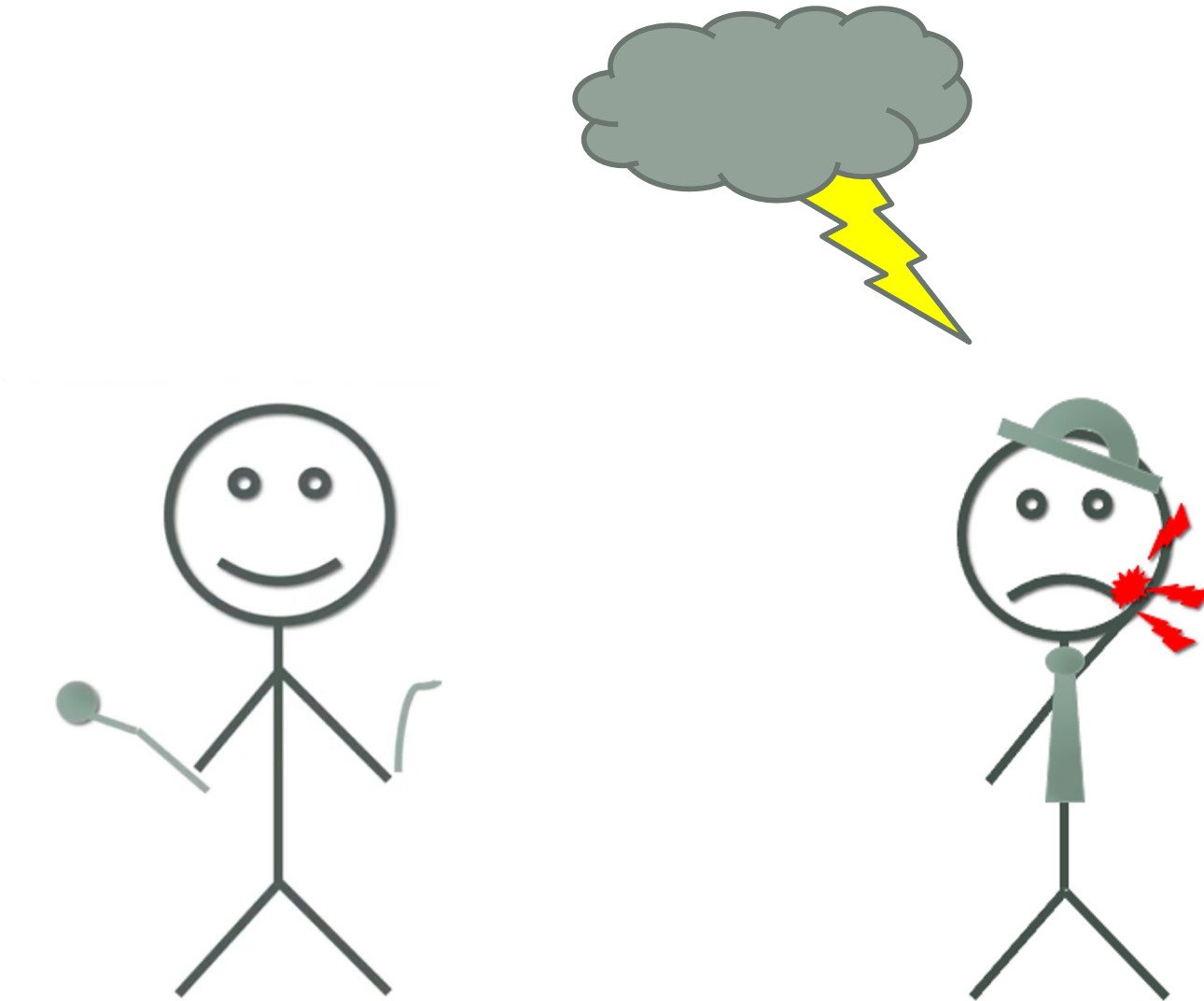
# Dr. Tooth and Joe



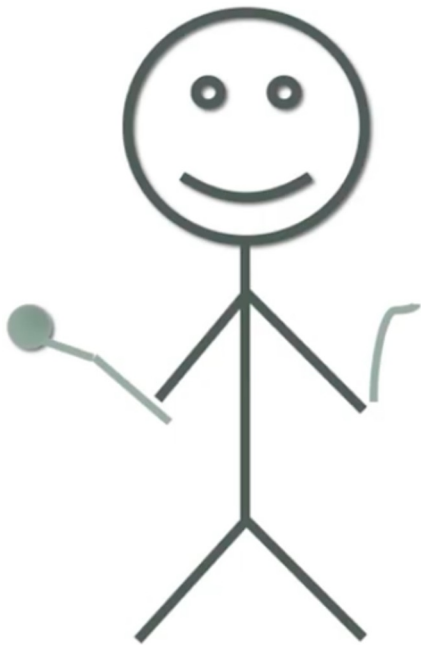
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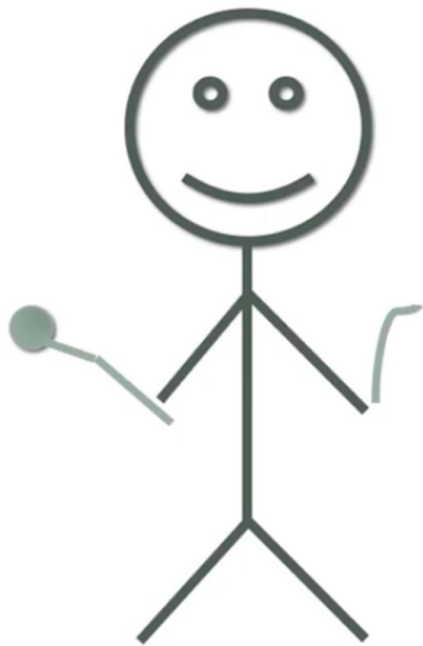
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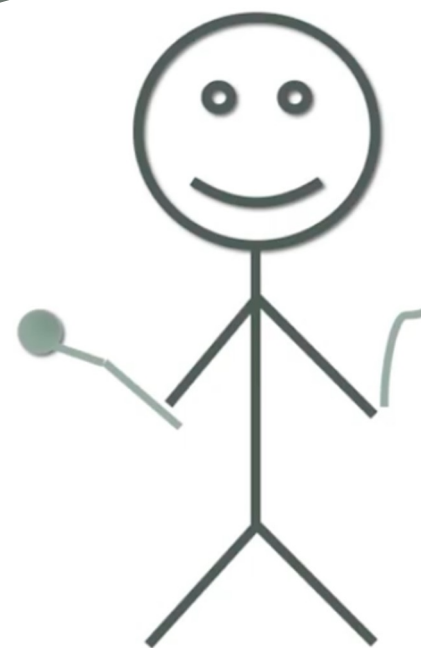


# Dr. Tooth and Joe



Thank you!!

Welcome!





## Global Health Starter Kit for Dental Education

To continue learning, please check out our other modules:

**Module 1: Global Trends**

**Module 2: Global Goals**

**Module 3: Back to Basics - Primary Care**

**Module 4: Social Determinants and Risks**

**Module 5: Ethics and Sustainability**

**Module 7: Covid-19**



## Global Health Starter Kit for Dental Education

*Funding for the project “Toward Competency-Based Best Practices for Global Health in Dental Education: A Global Health Starter Kit” was provided by a Consortium of Universities for Global Health Dr. Thomas Hall Global Health Education Grant, International College of Dentists Foundation USA Section, and Harvard University Center for African Studies. We wish to acknowledge the CUGH Global Oral Health Interest Group for their support of this project and the competency work on which it was based.*

*We also wish to acknowledge the Harvard School of Dental Medicine Department of Oral Health Policy and Epidemiology and Office of Global and Community Health for their support of this project and the course material on which it was based.*

THANK YOU!