HAZARD ASSESSMENT

Learning objectives

- Describe the concepts of hazard and secondary hazards.
- Explain hazard characteristics such as magnitude, frequency, intensity and rate of onset and their importance
- To discuss the hazard assessment process

Hazard assessment
Islamabad Pakistan

There is a potential for occurrence of an event

adpc
Asian Disaster Preparedness Center

Classification of Hazards

Classification of Hazards

- Natural
- Technological
- Societal

Origin or Causes of Hazards

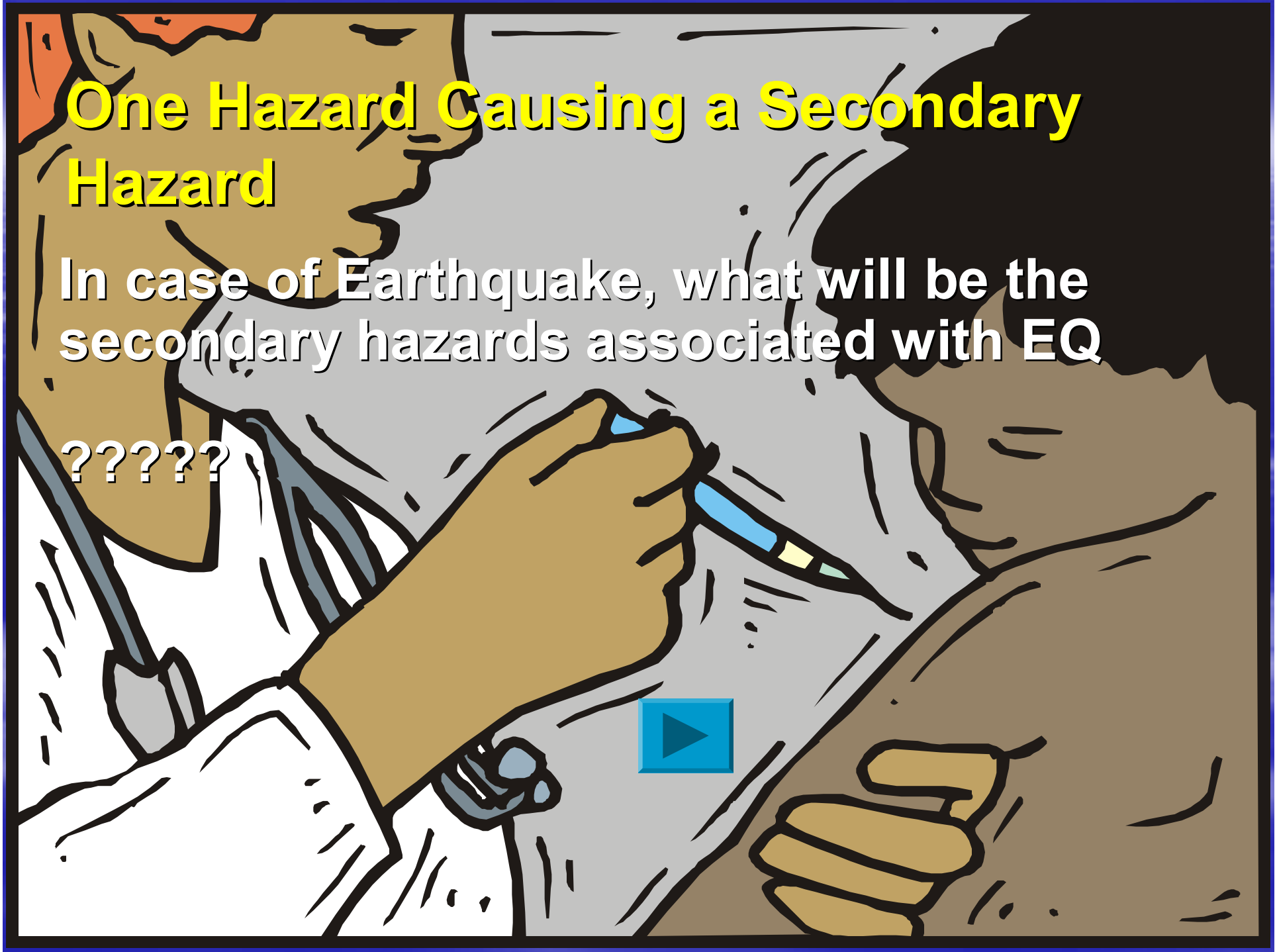
Hazards	Origin or Causes
Earthquake	
Tsunami	
Volcanoes	
Landslides	
Epidemic	

Origin or Causes of Hazards

Hazards	Origin or Causes
Earthquake	Shaking of earth by the waves below the earth's surface
Tsunami	Due to earthquake in sea/ocean/lake
Volcanoes	Magma pushed upwards through internal pressure developed by dissolved gases
Landslides	Down slope transport of soil & rock by natural vibrations changes in direct water content or removal of lateral support
Epidemic	Rise in parasitic infestations due to exposure to contamination

Origin or Causes of Hazards

Hazards	Origin or Causes
Cyclones	Wind currents that spin
Floods	River and coastal rising of water due to intense rainfall
Drought	Rainfall deficit over long time periods
Environmental pollution	Caused by air, marine & fresh water pollutants
Storm Surges	Due to cyclones or tides in ocean/sea


One Hazard Causing a Secondary Hazard
In case of Earthquake, what will be the secondary hazards associated with EQ
?????

One Hazard Causing a Secondary Hazard

In case of Earthquake, which can bring further hazards like

- Building collapse
- Dam failure
- Fire
- Hazardous material spill Interruption of power/ water supply/ communication/ transportation/ waste disposal
- Landslide
- Soil liquefaction
- Tsunami (tidal wave)

Hazard Causing a Secondary Hazard

- ✓ Flood:
- ✓ Drought:
- ✓ Civil war:
- ✓ Landslide:
- ✓ Pollution:

Hazard Causing a Secondary Hazard

- ✓ **Flood:** Epidemics, snake bite, dam failure
- ✓ **Drought:** Epidemics, famine
- ✓ **Civil war:** Refugees & displaced persons
- ✓ **Landslide:** Epidemics, Temporary damming
- ✓ **Pollution:** Disease

Rate of onset

Include rapid-onset and slow-onset natural hazards.

HAZARD ASSESSMENT

"The process of studying the nature of hazards determining its essential features (degree of severity, duration, extent, impact on the area) and their relationship".

Some Important Points to Consider in Hazard Assessment

- Look at scientific and statistical data
- Historical record
- Approach other knowledgeable sources/people
- Understand the various intensities of the same hazard
- Hazard mapping

Possible reasons for new hazards

- **Natural -** changes in the pattern of weather leading to new forms of drought and flooding

- **Economic -** Fluctuations in the value of currency affecting livelihoods, trade related policy changes, structural adjustment measures

Possible reasons for new hazards

- **Social and political trends-** changes in policies, subsidy programs, re-locations of people
- **Structural changes-** decentralization / centralization, conflicts
- **Industrial hazards-** chemical accidents, poisonings
- **New forms of epidemics-** Bird Flu, AIDS, Hepatitis B & C

Factors to consider in understanding the nature & behavior of hazards

- **Origin**

  Factors which create, result in a hazard. Can be natural or man made

- **Warning Signs and signals**

  Scientific & indigenous indicators that hazard is likely to occur

  Rainfall duration, intensity, quantity, speed of wind, temperature, movement of animals, insects and birds

- **Forewarning**

  Time gap between warning signs & the impact of hazard

  Relatively short but can vary from a few hours (over-night) to a few days

Factors to consider in understanding the nature and behavior of hazards

- **Force**

  Factors that make the power of hazards, e.g. intensity and magnitude of earthquake

- **Speed of Onset**

  Rapidity of arrival and impact

- **Frequency**

  Time related patterns of occurrence of hazards

Factors to consider in understanding the nature and behavior of hazards

- **Seasonality**

  Occurrence of a hazard in a particular time of the year

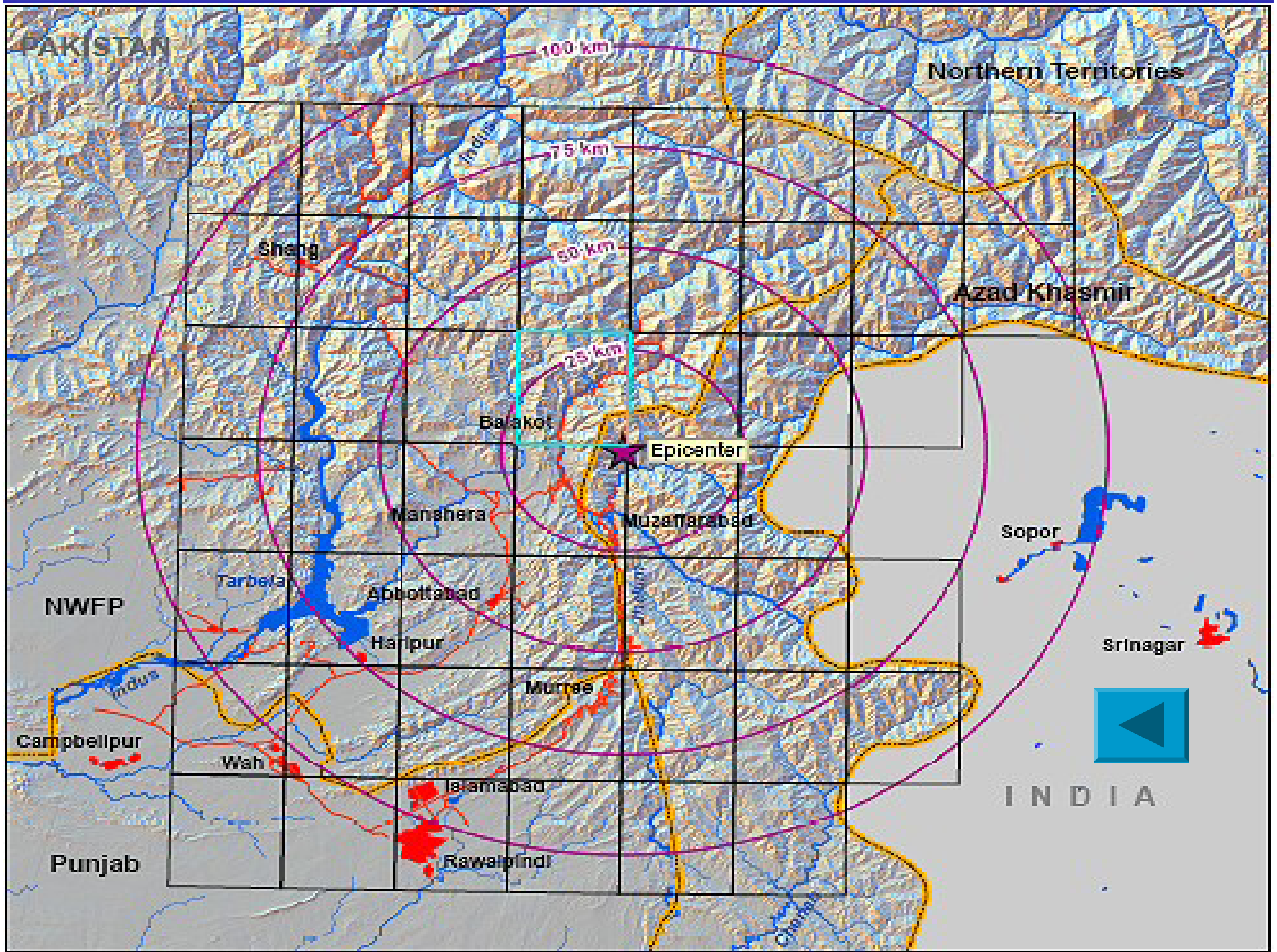
- **Duration**

  Hazard's presence in a time scale

Hazard Matrix

Hazard Type	Origin	Warning Signs	Fore-warning	Force	Speed of Onset	Frequency	Seasonality	Duration
Flooding	1. Torrential RF 2. Seasonal rainfall 3. Storm Surge 4. Dam burst	Met data, Rainfall duration, intensity, quantity, speed of wind, tempe-rature, move-ment of animals, insects and birds	Relati-vely short but can vary from a few hours (over-night) to a few days	Volume of water	Can often be predic-ted a few days in advance	Seasonal	Wet / Mon-soon Season	Days / Weeks

Hazard Type	Origin	Warning Signs	Fore-warning	Force	Speed of Onset	Frequency	Seasonality	Duration


PAKISTAN
Northern Territories
100 km
75 km
50 km
25 km
Indus
Shang
Azad Khasmir
Balakot
Epicentar
Manshera
Muzaffarabad
Sopor
Tarbela
Abbottabad
NWFP
Haripur
Srinagar
Murree
Indus
Campbellpur
Wah
Islamabad
INDIA
Punjab
Rawalpindi
Jhelum