Hospital Disaster Response In Impacts of Climate Change

World Health Organization
Regional Office for South-East Asia

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Disaster

Any emergency that disrupts normal community function causing concerns for safety of its citizens including their lives and property

Disaster Planning

Primary function is to minimize the resulting loss of property, injuries, suffering and death that accompanies a disaster

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Types of Disaster

- Climate related emergencies
  - Floods
  - Droughts
  - Cyclones & Typhoons
  - Thunderstorm
- Geologic related emergencies
  - Earthquakes and Tsunami
  - Landslides and Mudflows
  - Dams and reservoir failures
  - Volcanic eruptions
- Complex emergencies
  - Manmade – related to Political/social instability
  - Disease epidemic

Planning and Management in Emergency Situations

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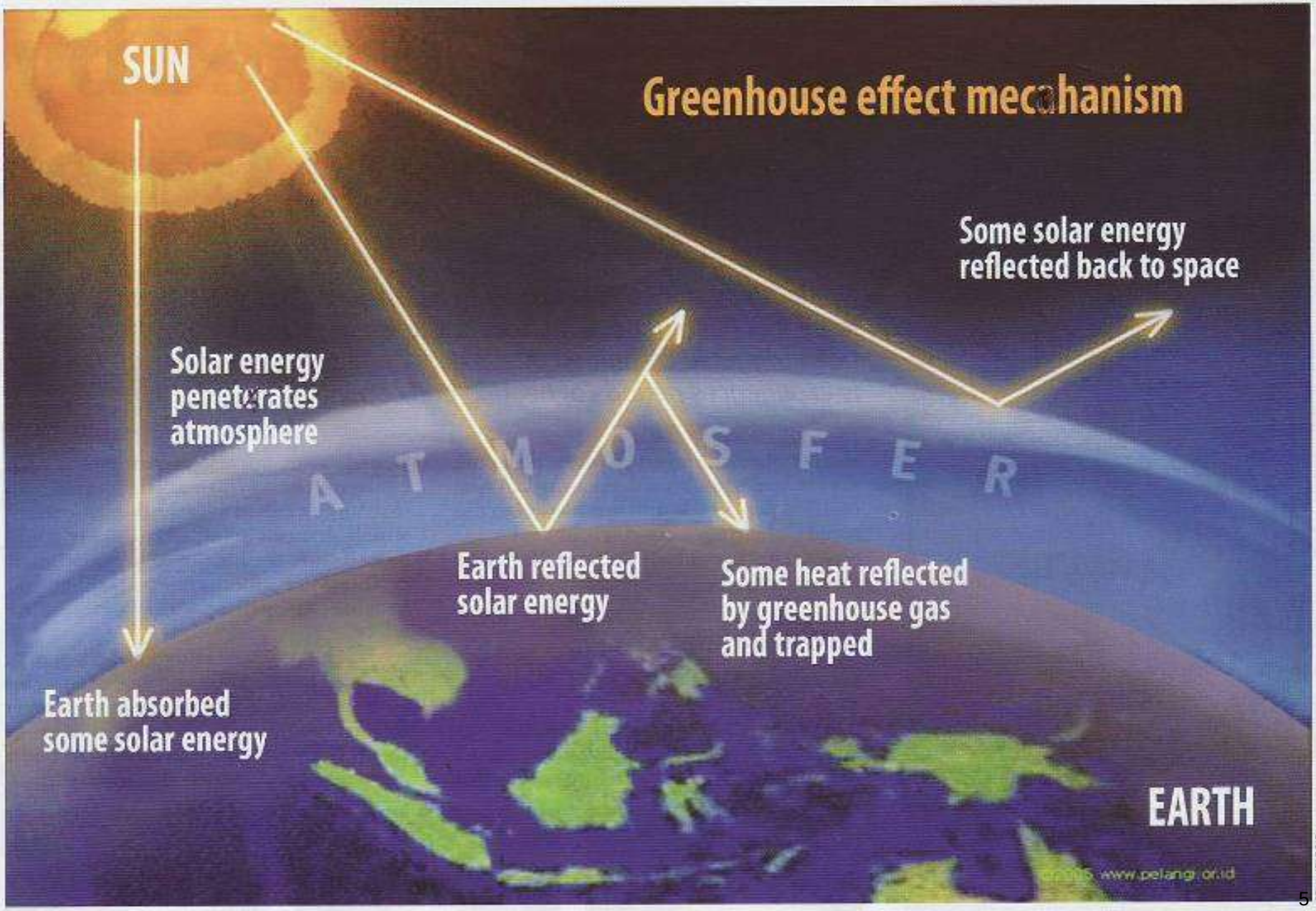
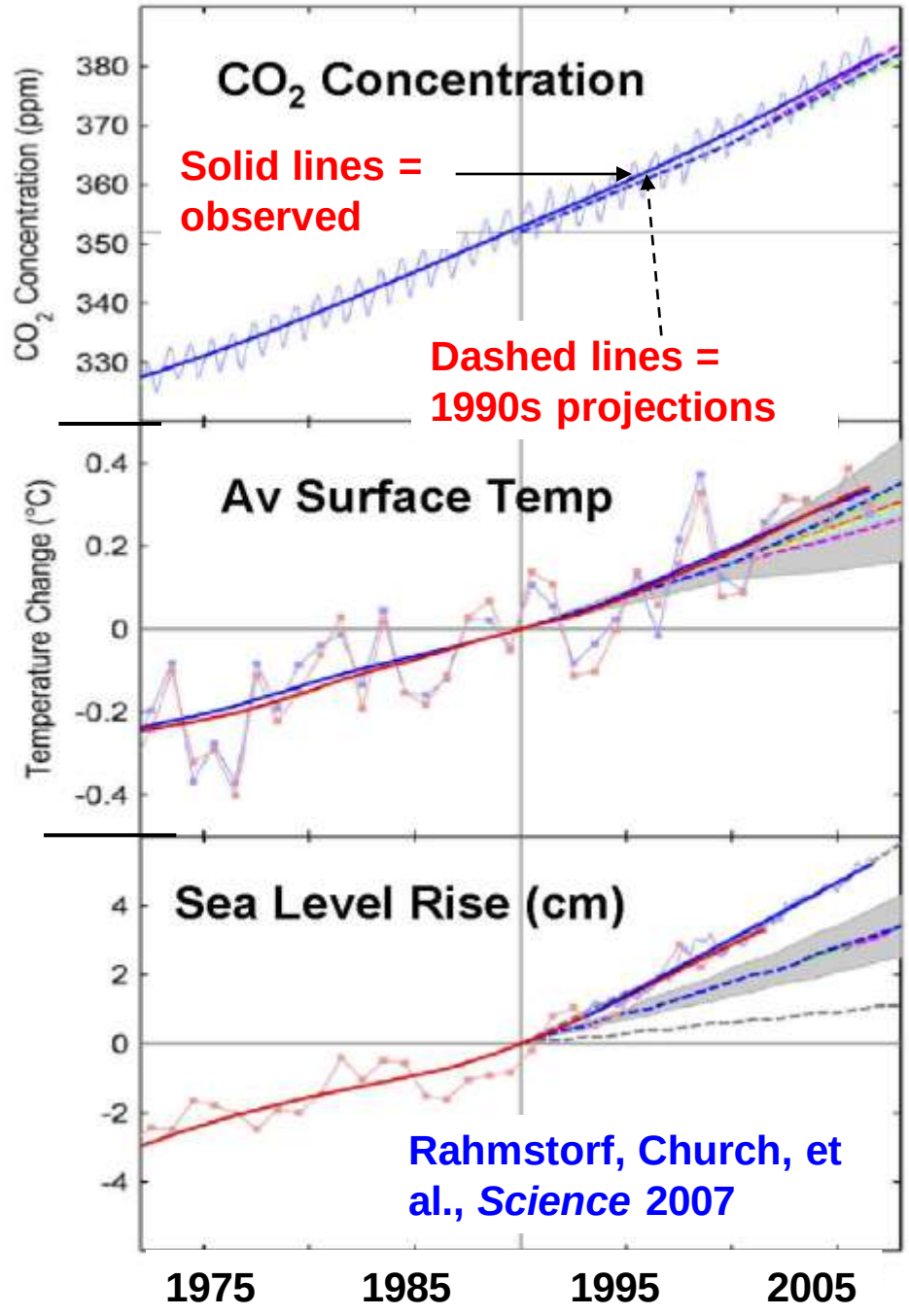
- **Preparedness**
  - Internalizing the issue & policy development
  - National capacity building
  - Vulnerability analysis
  - Contingency planning
  - Early Warning
- **Rapid Responses**
  - Save lives !
  - Assess/Plan & design/Implement/Evaluate & monitor
- **On-going Responses**
  - Rehabilitation/Reconstruction
  - Long term health system & other services in place


SUN
Greenhouse effect mechanism
Some solar energy reflected back to space
Solar energy penetrates atmosphere
ATMOSFER
Earth reflected solar energy
Some heat reflected by greenhouse gas and trapped
Earth absorbed some solar energy
EARTH
www.pelangi.or.id

EXTREME

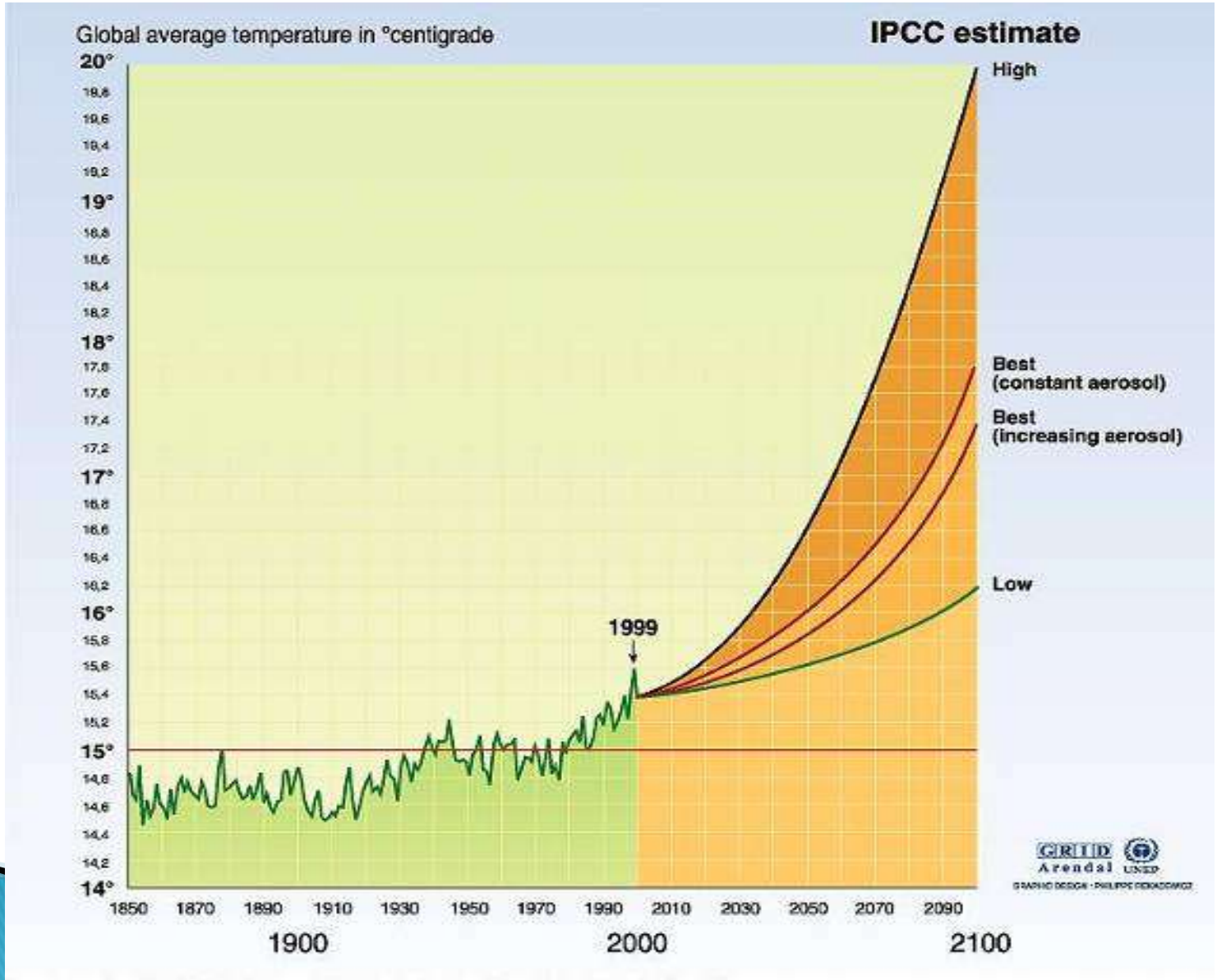
WEATHER

Climate Change: Faster than expected in 1990s



- IPCC (2007) was limited to science before early 2006
- Subsequent research shows increasing rates of:
  - Global GHG emissions
  - **3.3% p.a. in 2000s, vs 1.3% p.a. in 1990s**
  - Temperature rise (**especially in polar regions**)
  - Ice melt (**Arctic: 40% loss since 1980, accelerating in 2008-09**)
  - Sea-level rise

Climate change introduces huge unknowns



Source : Temperatures 1856 - 1998: Climatic Research Unit, University of East Anglia, Norwich UK. Projections: IPCC report 95.

Climate Change Affects the Health of Those Having Low Adaptive Capacity Through:

1. Increased deaths, disease and injury due to heat waves, floods, storms, fires and draughts
2. increased burden of diarrhoeal diseases
3. increase in malnutrition and consequent disorders, with implications for child growth and development
4. the increased frequency of cardio-respiratory diseases due to higher concentration of ground level air pollutants related to climate change;
5. the altered spatial distribution of some infectious disease vectors

- **Over the last 50 years, human activities - particularly the burning of fossil fuels - have released sufficient quantities of carbon dioxide and other greenhouse gases to affect the global climate.**
- **The atmospheric concentration of carbon dioxide has increased by more than 30% since pre-industrial times, trapping more heat in the lower atmosphere.**

- The resulting changes in the global climate bring a range of risks to health, from deaths in extreme high temperatures to changing patterns of infectious diseases.

- From the tropics to the arctic, climate and weather have powerful direct and indirect impacts on human life. Weather extremes - such as heavy rains, floods, and disasters like Hurricane Katrina that devastated New Orleans, USA in 2005, and Myanmar in 2008 - endanger health as well as destroy property and livelihoods.

- Approximately 600 000 deaths occurred worldwide as a result of weather-related natural disasters in the 1990s, some 95% of which took place in developing countries.

Intense short-term fluctuations in temperature can also seriously affect health - causing heat stress (hyperthermia) or extreme cold (hypothermia) - and lead to increased death rates from heart and respiratory diseases.

The recorded high temperatures in western Europe in the summer of 2003 were associated with a spike of an estimated 70 000 more deaths than the equivalent periods in previous years.

- Increasing global temperatures affect levels and seasonal patterns of both man-made and natural air-borne particles, such as plant pollen, which can trigger asthma.

- About 300 million people suffer from asthma, and 255 000 people died of the disease in 2005.
- Asthma deaths are expected to increase by almost 20% in the next 10 years if urgent actions to curb climate change and prepare for its consequences are not taken.

- **Rising sea levels - another outcome of global warming - increase the risk of coastal flooding, and could cause population displacement.**
- **More than half of the world's population now lives within 60 kilometres of shorelines. Some of the most vulnerable regions are the Nile delta in Egypt, the Ganges-Brahmaputra delta in Bangladesh, and small island nations such as the Maldives in the Indian Ocean, and the Marshall Islands and Tuvalu in the Pacific Ocean.**

- **Floods can directly cause injury and death, and increase risks of infection from water and vector-borne diseases.**
- **Population displacement could increase tensions and potentially the risks of conflict.**

- Malnutrition causes millions of deaths each year, from both a lack of sufficient nutrients to sustain life and a resulting vulnerability to infectious diseases such as malaria, diarrhoea, and respiratory illnesses.
- Increasing temperatures on the planet and more variable rainfalls are expected to reduce crop yields in many tropical developing regions, where food security is already a problem. Mali is a good example.

- Unless adaptive measures are taken, climate change is projected to approximately double by the 2050s the percentage of its population at risk of hunger and associated health effects.

- More variable rainfall patterns are likely to compromise the supply of fresh water.
- Globally, water scarcity already affects four out of every 10 people.
- A lack of water and poor water quality can compromise hygiene and health.

- This increases the risk of diarrhoea, which kills approximately 1.8 million people every year, as well as trachoma (an eye infection that can lead to blindness) and other illnesses.

- Climatic conditions affect diseases transmitted through water, and via vectors such as mosquitoes.
- Climate-sensitive diseases are among the largest global killers.
  - Diarrhoea, malaria and protein-energy malnutrition alone caused more than 3 million deaths globally in 2002, with over one third of these deaths occurring in Africa.

Health impacts from changes in transmission dynamics of communicable diseases

Changes in climate may alter the distribution of important vector species (e.g. mosquitoes) and may increase the spread of disease to new areas which lack a strong public health infrastructure.

Examples of hospitals damaged in disasters

- **2001** 3812 health facilities were destroyed in the Gujarat's earthquake, India
- **2003** 50% of health facilities were damaged in the affected area after an earthquake in Algeria
- **2004** 61% of health facilities were damaged in Indonesia's northern Aceh province after the 2004 Tusnami
- **2005** 49% of health facilities completely were destroyed by the earthquake in northern Pakistan
- **2008** 57% of all health facilities were damaged and one in five completely destroyed in the area of Myanmar affected by Cyclone Nargis
- **2008** 11,028 health facilities were damaged or destroyed by the Wenchuan earthquake, China
- **2008** A 175-bed Providence Hospital was completely lost due to three successive hurricanes in Gonaives,Haiti
- **2009** Many hospitals collapsed or were badly damaged by disasters in Burkina Faso, Indonesia, Italy, Nepal, Samoa and Tonga

Source: International Day for Disaster Reduction, 2009 WHO

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Essentials for making health facilities safer

- Develop and implement national policies and programmes to make health facilities safe in emergencies.
- Select a safe site for the health facility
- Design and construct safe health facilities
- Assess the safety of existing health facilities

- Protect health workers, equipment, medicines and supplies
- Ensure that health facilities receive essential services
- Develop partnerships between health facilities and the community
- Develop an emergency risk management programme for individual health facilities
- Develop an emergency response plan for each health facility
- Test and update response plans with drills and exercises
- Train the health workers to respond to emergencies
- Evaluate and learn lessons from past emergencies and disasters

Source: International Day for Disaster Reduction, 2009 WHO

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Hospital Response to CC Disasters

It is essential to:

- Understand health effects of climate variability and climate change;
- Be familiar with climate change surveillance system and outputs;
- Be familiar with the changes in disease burden from (a) communicable and (b) non communicable diseases; and
- Learn from past lessons or experiences

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Hospital response Plan

- Strengthening & expansion of infrastructures;
- Capacity building in terms of HR, diagnostic needs and treatment;
- Upgrading environmental sanitation, waste and cleanliness;
- Increasing of national health expenditures and health care financing; and
- Supporting to research initiatives on CC, health burdens and diseases

Key factors of a successful plan for hospital response to disasters

- Simplicity
- Flexibility
- Coordination
- Leadership
- Communication

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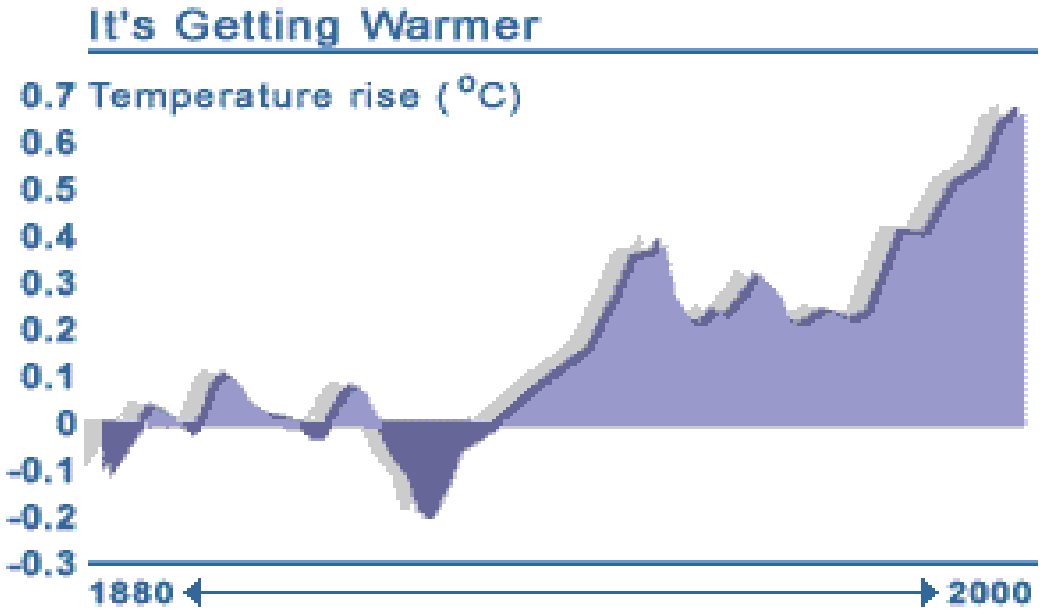

Terima Kasih !

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