Heat Action and Innovation in Hong Kong

1st Global Forum for Heat and Health, Hong Kong SAR

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HONG KONG

Hong Kong’s unique urban planning and as a subtropical city (such as urban heat island with 40+ storeys high buildings) means findings from other major cities may not be applicable to Hong Kong

<table>
<thead>
<tr>
<th>Issues</th>
<th>Situation</th>
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<tbody>
<tr>
<td>Globalization</td>
<td>Annually, HK has 10 times as much transient migrants than local population</td>
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<tr>
<td>Income inequality</td>
<td>The <strong>highest income inequality</strong> in developed regions</td>
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<td>Environmental stress</td>
<td>One of the <strong>highest population density</strong></td>
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<td>Urbanization</td>
<td>98% of the city is urbanized</td>
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<td>Emergency risk</td>
<td>Experiences with <strong>global public health crisis</strong> such as SARS(2003), H7N9 (2012)</td>
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<td>Impact of climate change</td>
<td>The <strong>highest increase</strong> in average urban temperature in the past century</td>
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Hong Kong: Very Hot Weather Warning (VHWW)

- Since 2000, The Hong Kong Observatory (HKO) established very hot weather warning system (VHWW)
  - A weather-based warning and factors accounted includes: temperature, humidity, solar radiation, and wind speed
- Research collaboration with HKO created a new impact based warning system **additionally accounts for excess hospitalization ratio**. Adopted since 2014

In 2016 alone, 38 of such warnings were issued, the most of any year even accounting for retrospective temperature recordings
Suggested Health Actions during VHWW

By HKO

• Government departments e.g. Home Affairs may open temporary shelters
• Ensure ventilation in indoor areas
• Check and pay attention to vulnerable populations
• If warning persists, observatory will repeat special announcement to public
• Warnings are broadcasted over radio and television

By Centre for Health Protection

• Public should carry and drink plenty of water
• Engaged in strenuous outdoor activities should avoid caffeinated and alcoholic beverages
• Wear loose and light-coloured clothing
• Perform outdoor activities in the morning or late afternoon
• Open all windows; use a fan or air-con for indoor activities

Hong Kong Observatory; Department of Health
Co-benefits of Climate and Health

• ‘Hong Kong People’s Carbon-reduction Behaviours and Health’
  – Large-scale telephone survey
  – Representational sample from 18 districts in Hong Kong

• To understand the awareness and practice of:
  – Reduce electricity consumption?
  – Use less packaging and plastic bags?
  – Use less air-conditioners or heaters?
  – Walk or cycle? Do more exercise?
  – Eating less meat?
Hospital admissions ↑ by 4.5% for every increase of 1°C above 29°C

Mortality ↑ by 1.8% for every increase of 1°C above 28.2°C

Cumulative mortality* ↑ by 3.8% for every decrease of 1°C

Hospital admissions ↑ by 1.4% for every decrease of 1°C within the 8.2-26.9°C range

12.7% Required medical help
82% Professional medical help
18% Self-care only

66.9% Have symptoms
67.1% reported changes

66.9% reported changes

1.9% Heatstroke

82% Professional Medical Health (Western 70.0%/Chinese 25.0%)
5% Self-Care only

Help-seeking e.g. Clinic attendance

Behavioral changes#

* Cumulative mortality is used because the lagged effect of coldness towards mortality is estimated to be 3 weeks.

# Behavioral changes include amount of physical activity, appetite, frequency of social activity, mood and sleeping quality.

Health-related calls ↑ when max. temp. reaches 30-32°C. About 49% of calls were for explicit health-related reasons
Between Extremes: Threatening Heat and Cold Health Series
Hong Kong’s Weather Acquisition Study

- Television was the most widely used channel but most people would prefer smartphone apps
- Radio user consistent
- Smartphone ownership was **inversely** related to age
  - May become the dominant source of information in the near future due to the high usage rate, especially among young people
  - Issue with technology literacy
  - HKO has a weather information app
Hong Kong’s Climate Action Plan 2030+

- Focus on existing buildings and public infrastructure energy and carbon efficiency
- Mandatory Energy Efficiency labelling Scheme to choose more energy efficient electrical products
- District cooling system - energy-efficient air conditioning at the Kai Tak Development buildings
- Carbon Audits for government buildings and public facilities
- Promote electric vehicles
Heat Focused Action of Health and Climate Change Adaptation in China

National Institute of Environmental Health, Chinese Center for Disease Control and Prevention
GEF/UNDP/WHO global pilot project on Adaptation to Climate Change to Protect Human Health:(2010-2014)

Development of China Heat Warning System
### Health risks prediction

<table>
<thead>
<tr>
<th></th>
<th>Today</th>
<th>Tomorrow</th>
<th>The day after tomorrow</th>
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</thead>
<tbody>
<tr>
<td>城市： 南京采集点1</td>
<td>今天（2013-8-1）</td>
<td>明天（2013-8-2）</td>
<td>后天（2013-8-3）</td>
</tr>
<tr>
<td>总健康风险：</td>
<td>4 级</td>
<td></td>
<td></td>
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<tr>
<td>心脑血管疾病发病风险：</td>
<td>4 级</td>
<td></td>
<td></td>
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<tr>
<td>呼吸系统疾病发病风险：</td>
<td>4 级</td>
<td></td>
<td></td>
</tr>
<tr>
<td>儿童呼吸道疾病发病风险：</td>
<td>4 级</td>
<td></td>
<td></td>
</tr>
<tr>
<td>中暑风险：</td>
<td>4 级</td>
<td></td>
<td></td>
</tr>
<tr>
<td>响应等级：</td>
<td>4 级</td>
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**Warning sign**

**Response level**
Communication of health risk information

• Advisories and information on health risks, jointly issued by health sector and meteorological bureau

• Delivered to the community health service centres and community residents through fixed electronic display screens in the community, mobile APP, website, etc.

Electronic display screen  Mobile APP  Website
Health education and promotion

- EWS training in health sector
- Drawing contest of pupils
- Lecture in community
- Drill of heatstroke first aid at bus station
New research: Scientific investigation on regional climate-sensitive diseases in China

- Funded by the Ministry of Science and Technology of China (grant number 2017FY101200) RMB 26.08 Million
- Execution time: 2017 –2021

- 11 geo-meteorological regions in whole China
- 1 community and 1 county per region

Objectives

- Establish scientific investigation bases and collect related basic data;
- Develop prediction and early warning models and develop intervention strategies;
- Carry out health risk early warning and intervention services;
- Set up an integrated data and information platform.
Sensitive diseases include:

- **CVD**: Ischemic heart disease, myocardial infarction, stroke
- **Respiratory**: COPD, asthma (children)
- **Urinary system**: acute renal failure
- **Heatstroke**
- **Injury**: traffic injury, drowning, dog bite
- **Mental diseases**: suicide, depression, posttraumatic stress disorder (female)
- **Vector-borne disease**: dengue, epidemic hemorrhagic fever
- **Food-borne disease**: hand-foot-and-mouth disease, bacterial dysentery
- **Air-borne disease**: influenza, pulmonary tuberculosis (TB)
- **Mosquito-borne d**: malaria
- **Snails-borne d**: schistosomiasis, angiostrongyliasis
- **Tick/sandfly-borne d**: theileriasis, kala-azar (black fever)
Thank you!

www.ccouc.org