Lessons learned from the 2003 heat wave in France

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The 2003 heat wave - an overview

- Heat waves
- Importance of the 2003 heat wave - 70,000 additional deaths
- Ambiguous catastrophe
  - Social attenuation
  - Social amplification
- Risk factors: poverty, isolation, age and illness
- What could be done: some cues from France, Australia and UK
Climate change and natural hazards

- 95% of the human causalities in natural hazards are due to extreme temperatures (CRED)
- Heat wave → predominant cause of death resulting from natural hazards
- Human activities more than doubled the risk of heat waves (Stott et al., 2004).
- CC will be accompanied by an increase in frequency and intensity of heat waves (IPCC, 2007).

A Heat wave definition

- A 4°C increase in 30-year average temperature for the same place and month (UK meteorologists).
- Murcia example
Heat wave in France

• 2003 Summer → Record of maximum and minimum daily temperatures for the period of 1\textsuperscript{st} Jun - 11\textsuperscript{th} Aug.

• Heat wave → from 4\textsuperscript{th} - 18\textsuperscript{th} August
  • 1-5 Aug: ↑ to an average of 37°C (normal is 24°C).
  • 5-11 Aug: excessively high temperatures (between 36° and 37°)
  • 11-12 Aug: situation is worsen by ↓ winds and ventilation and ↑ air pollution
• Deaths were proportional to the number of consecutive days of heat superior to 35°C
• 82.5% of fatalities correspond to the age group above 75 years
• Increase in mortality directly attributable to heat: dehydration, and hyperthermia or heat stroke.

• Increased air pollution (ozone concentrations) played a role as well (InVS, 2004)

Socio-psychological risk factors

- Social attenuation
  - Heat waves can be perceived as a normal part of the summer
  - Social characteristics of the most vulnerable groups (elderly, isolated, sick, poor) and tendency to rejection
  - Reluctance of French administration to share quantified information
  - French people high levels of trust and fatalism towards health risks (Slovic et al., 2000)
  - Before 2003, it was rare to attribute the primary cause of death as heat wave effects

First, attenuation

- Limiting the dissemination of death numbers
- Result: Official counts of fatalities soon lagged behind alarming reports from undertakers
Then, amplification

- When the catastrophe became evident, blame was placed upon ‘others’: summer absence of medical personnel, French societal values regarding elders, government reduction of working week...
- Shift in media coverage of usual summer events
- Public perception of heat wave and consequent government response
The worst hit

- Excess deaths particularly heavy in urban centers (Ex.: Paris ↑ 150%)
- Poor living conditions
  - 41% in a one room apartment
  - Half lived in the 2 highest floors of Parisian buildings
- Social isolation:
  - 92% of the victims lived alone
  - 25% had no family, friendly or social link.
Heat wave and isolation

- Chicago heat wave in 1995: different impacts according to either
  - high social contact (Little Village)
  - low social contact (North Lawndale)

Heat wave risk groups

- older people
  - especially those over 75 years old and/or living on their own, or in a retirement home
- people suffering from ill mental health
  - those who rely on help from other people to manage day-to-day activities
- people who are bed bound
- people taking certain types of medication
- babies and young children
  - especially those under four years old.

Why didn’t anyone notice?

- Inadequate mindset *(unready to perceive unfamiliar pattern)*
- Noisy context
- Unusual geographical pattern
- Monitoring difficulties *(prediction)*
- An unusual killer
- Inadequate data monitoring
- Unusual data
- Inadequate focus of attention
- Stealth problems
- Scientific gap

Crisis management - what could be done?

- Sharp and wide open surveillance abilities.
- Swift reports
- Upgraded monitoring capacity, crisis team-work and data-sharing
- Ability to mobilize expertise in crisis
- Sharing of leadership, network-based decision-making
- High-quality communication from start to finish
- Management of the crisis to the very end
- Strategic intelligence
- After the crisis, a careful healing process

Lessons learned

- Where was the *epicenter* of the disaster?
- What was the central target?
- Which was the most dangerous place?
- When did the National Crisis Centre notice that a disaster was unfolding?
- Where were the best resources to combat the heat?
- What kind of technology was the most appropriate to tackle the emergency?

Road ahead...

- Plan *Canicule* (France)
  - Information
  - Monitoring
- Victoria - Australia (heat wave in January 2009)
  - 12-15°C above normal during 3 days (↑43°C)
  - Casualties were avoided with public information
- UK Heatwave Plan
  - Based upon 4 levels: Awareness, Alert, Heatwave and Emergency

Conclusion

- **Here and now** example of climate change effects (Poumadère et al., 2005)

- Social tissue importance

“Silent and invisible killers of silenced and invisible people”