Smart Climate-Health Early Warning System

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Impacts of Climate Change

Adverse impacts from human-caused climate change will continue to intensify
~ 2023 IPCC Report


Observed increase in adverse climate impacts: Health & Well-being

IPCC Report https://www.ipcc.ch/report/ar6/syr/downloads/figures/summary-for-policymakers/IPCC_AR6_SYR_SPM_Figure1.png

BEYOND BARRIERS: NAVIGATING THE FUTURE FOR SUSTAINABLE HEALTHCARE
Climate Risks in South Africa

https://showyourstripes.info/c/africa/southafrica/all

Flooding, heat stress, water stress, wildfires

Source: Four Twenty Seven and The New York Times
Mitigation vs. Adaptation

- Mitigation: preventing or reducing the emission of greenhouse gases to make the impacts of climate change less severe.
- Adaptation: process of adjusting to the current and future effects of climate change.

Early Warning Systems as a critical adaptation strategy:

- providing timely and effective information to individuals exposed to hazards,
- enabling them to take action to avoid or reduce their risk and
- prepare for an effective response.
Early Warning Systems as an adaptation strategy

Existing early warning systems in South Africa include:

• National Institute for Communicable Diseases: communicable disease surveillance reports from surveillance systems; this includes the notifiable medical disease surveillance system.

• South African Weather Services: pending severe weather to the National/Provincial Health Operations Centre which is disseminated to district health services and healthcare facilities.

Recommendations to improve early warning systems:

• Adopt a more integrated, inter-sectoral approach that links health and weather systems.

• Improve dissemination of information shared by early warning systems to rapidly target vulnerable populations.
“...through the institution of early warning or surveillance systems, to behavioural interventions...”

“Enhance the resilience of people and the economy to climate change.”

“...principles of communicating risks, early warnings and application of methods relevant for various groups of the population are essential.”

“Develop and continuously update a national climate information and early warning system...”

“Heat Health Action Plans, incorporating Heat Health Warning Systems are important adaptation strategies...”

“This includes setting up and maintaining early warning systems...”
Establishing a smart climate-health EWS

Climate change → Vulnerability

Vulnerability factors:
- Demographic factors
- Geographic factors
- Biological factors & health status
- Sociopolitical conditions
- Socioeconomic factors

Exposure pathways:
- Extreme weather events
- Heat stress
- Air quality
- Water quality and quantity
- Food security and safety
- Vector distribution & ecology

Health system capacity & resilience:
- Leadership & governance
- Health workforce
- Health information systems
- Essential medical products & technologies
- Service delivery
- Financing

Health outcomes:
- Injury and mortality from extreme weather events
- Heat-related illness
- Respiratory illness
- Water-borne diseases and other water-related health impacts
- Zoonoses
- Vector-borne diseases
- Malnutrition and food-borne diseases
- Noncommunicable diseases (NCDs)
- Mental and psychosocial health

Health systems & facilities outcomes:
- Impacts on healthcare facilities
- Effects on health systems

WHO Climate Change Framework: https://www.who.int/publications/i/item/9789240081888
Establishing a smart climate-health EWS

Data Integration and Predictive Analytics

Customized alerts providing timely, targeted early warning alerts & messaging focusing on:
- Climate alerts,
- Adaptation measures during pregnancy and newborns
- When to go to a health facility
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Data Integration and Predictive Analytics

Pregnant?
Dial *134*550# and go to your nearest government clinic & register.

Targeted early warning

• Climate alerts,
• Adaptation measures during pregnancy and newborns
• When to go to a health facility

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Establishing a smart climate-health EWS

Statistics as at September 2023

- **4,663,227** All time users
- **422,545** Active users
- **95%** of clinics to date in SA have registered mothers on MomConnect
- **$0.20** Cost per person per year
- **98.6%** of registered moms would recommend MomConnect to a pregnant relative or friend
- **60%** of all mothers attending their 1st antenatal visit in the public sector in 2018 were registered on MomConnect.
Establishing a smart climate-health EWS

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Monitors:
- Geo-locations
- Pregnancy stage/newborn age
- Cellphone numbers

Data Integration and Predictive Analytics
Establishing a smart climate-health EWS

Monitors:
- Extreme temperatures
- Relative Humidity (wet bulb effect)
- Air quality
- Rainfall
- Wind speed

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Data Integration and Predictive Analytics

Merger of SAWS weather forecasting systems with MomConnect database, incorporating climate-health learnings
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“**If the maximum temperature** at a particular town is expected to **meet or exceed 5 degrees C** above the **average maximum temperature** of “the hottest month” for that particular place, as well as **persisting in that mode for 3 days or more**, then a heat wave may be declared.”

Source: SAWS. What is a heat wave? SAWS. https://www.weathersa.co.za/home/weatherques

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South African Weather Service
Establishing a smart climate-health EWS

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- **Enhanced Climate-Health Literacy:** empowering women to make well-informed decisions about their health and their newborns' welfare.

- **Sustainable and Cost Efficient:** building on existing systems to ensure high levels of acceptability and sustained use.

- **Adverse Health Outcome Mitigation:** avert adverse perinatal health outcomes, including preterm births, miscarriages, and other climate-induced complications.

- **Cross Sector Learnings:** Importance of interoperability and utilising existing health infrastructure and community-based mHealth interventions.

- **Way forward:** Further development of the smart-climate health early warning systems and similar adaptation tools.
Where to next?

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Climate-sensitive health risks

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Thank You.

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