

# Assessing Health System Preparedness for Heatwave Events in Durban, South Africa: A Simulation and Gap Analysis, 2007

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## Abstract

Extreme heat events are a growing public health threat in urban Africa. Coastal cities like Durban, South Africa, face heightened vulnerability due to climate, urban density, and socio-economic factors. Evaluating local health system readiness to manage heat-related illness is therefore a critical policy concern. This policy analysis evaluated the operational preparedness of Durban's health system for a severe heatwave. Its primary objective was to identify critical gaps in protocols, resource allocation, and inter-agency coordination through a simulated emergency scenario. A desktop simulation exercise was conducted with key health sector stakeholders. The methodology combined a review of existing heat-health action plans with a facilitated simulation of a prolonged heatwave. A structured gap analysis then compared simulated response actions against established preparedness benchmarks. The simulation revealed significant systemic vulnerabilities. A critical finding was the absence of a formal heat-health early warning system. Emergency departments were projected to exceed capacity during the peak of the simulated event. Communication between public health authorities and frontline clinical services was also found to be fragmented. Durban's health system was not adequately prepared to manage a severe heatwave. The exercise highlighted fundamental weaknesses in surge capacity, early warning, and coordinated response, which would likely lead to avoidable adverse health outcomes. Immediate development of a formal heat-health early warning system. Revision of emergency department surge capacity plans to explicitly include heat-related illness. Establishment of a clear command structure and communication protocol for extreme heat events across municipal and health authorities. heatwave, health system preparedness, simulation exercise, gap analysis, South Africa, climate change, public health policy This analysis provides evidence to inform the strengthening of health

system resilience to heatwaves in Durban and offers a transferable methodology for similar urban settings in Africa.

**Keywords:** *Health system preparedness, Heatwave, Gap analysis, Simulation exercise, Urban Africa*

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