

## EMS, disasters, review of Ordinance No. 2,048, and health technology assessment

*APE, desastres, revisión de la Ordenanza No. 2,048 y evaluación de tecnologías sanitarias*

*APH, desastres, revisão da Portaria n.º 2.048 e avaliação de tecnologias em saúde*

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The latest reports on disasters, both national<sup>1,2</sup> and global<sup>3</sup>, converge on a common warning: the primary care professionals of the future will no longer be able to act as if disasters were exceptions. They will be the rule. Given the intensification of extreme events, it is urgent to rethink training, pre-hospital care practices, and the legal frameworks that guide public policies for health emergencies throughout the country, especially regarding disaster response and recovery actions.

The recent picture is stark. Between 2013 and 2024, disasters caused R\$732.2 billion in economic losses, affecting 95% of Brazilian municipalities at least once and impacting more than 473.2 million people. During this period, 70,361 State of Emergency (SE) or State of Public Calamity (SPC) decrees were issued, averaging nearly six thousand decrees annually. The COVID-19 pandemic, responsible for 23% of the decrees in 2020, did not hide the trend: even excluding it, there was a 64% increase in decrees. The data reveals that we are not facing episodic events, but an ongoing process that directly affects local governance and the routine of the Unified Health System (SUS). In other words, the healthcare system, especially pre-hospital care, is increasingly being called upon to respond not to the “occasional” but to the everyday occurrence of disasters<sup>2</sup>.

In this context, municipalities have become the front line of risk management, but they operate under vulnerable conditions. Only 48.3% of those that declared a state of emergency recorded economic losses, meaning the official figures are underestimated. Even so, the most affected sectors — agriculture (R\$325.6 billion), livestock (R\$94.4 billion), and healthcare (R\$86 billion in public facilities) — show that the impact falls directly on essential services and the ability to provide healthcare in crisis situations. Regionally, the Northeast accounted for over 72% of drought-related declarations, and the South accounted for 37.9% of losses from rainfall, including the 2024 floods, with estimated losses of US\$7 billion<sup>1,4</sup>.

In this scenario, it won't be enough for first responders to simply master classic protocols. Understanding the pathologies resulting from hydrometeorological disasters—from post-flood waterborne diseases, landslide trauma, malignant hyperthermia, and severe respiratory illnesses resulting from extreme events — is becoming increasingly common in the daily lives of first responders. Droughts and dry spells, for example, accounted for 27,900 reports, followed by excessive rainfall with 20,400; together, these categories represented almost 70% of the reports during this period. We're not talking about rare events, but rather phenomena that shape the health situation of entire regions, such as the Northeast and South.

The human dimension is equally serious: almost 3,000 deaths were recorded, with emphasis on emblematic tragedies such as Mariana (2015), Brumadinho (2019), Petrópolis (2022), and the floods in Rio Grande do Sul in 2024. More than 1 million people were left homeless, and another 5.1 million were displaced, the majority in the North, Northeast, and South regions<sup>4</sup>. These figures reveal that prehospital care is increasingly being provided in scenarios of mass population displacement, makeshift shelters, and the risk of epidemic outbreaks. Is it possible to speak of effective care without training professionals capable of working under these conditions?

The economic dimension also poses a challenge. Agriculture alone accumulated losses of R\$325.6 billion, followed by livestock (R\$94.4 billion) and public health facilities (R\$86 billion). However, only 48.3% of the municipalities that issued decrees reported loss figures — meaning the actual figures are likely much higher.



Furthermore, of the R\$13.4 billion authorized by the federal government for risk prevention and management during the period, only R\$5.3 billion was spent (39.8%). How can we demand optimal use of resources from top professionals when public policy fails to provide the bare minimum?

Given these questions, the role of regulatory frameworks becomes central. Ordinance No. 2,048/2002, which organizes emergency care in the SUS (Unified Health System), is outdated in the current scenario. The revision of this Ordinance gained momentum and hope through Ordinance GM/MS No. 911 of September 12, 2024, which appointed members to the Technical Advisory Board for the National Emergency Care Policy (CTA-PNAU). The working group brings together experts with experience in health emergencies, including representatives from SAMU (Mobile Emergency Care Unit), RAU (Rational Emergency Care Unit), and leading organizations such as ABRAMEDE (Brazilian Emergency Care Unit) and SUS Emergency Collective (SUS Urgency Collective). This revision is a strategic action to integrate the dimension of disasters into public policies, coordinating pre-hospital care with civil defense (municipal, state, and national) and with disaster risk reduction policies, strengthening local risk management and disaster management<sup>5,6</sup>.

Disaster assessment and prediction technologies add a new layer of support to decision-making. Health Technology Assessment (HTA) provides a multidisciplinary model that considers medical, social, economic, ethical, and legal aspects, ensuring robust and unbiased information.

Practical applications include the use of unmanned aerial vehicles, popularly known as drones, for mapping vulnerable areas, victim identification, text message alert systems, and apps, as well as predictive machine learning models that optimize transportation, resource allocation, and emergency peak forecasting. Nowcasting of diseases such as dengue, integrating notification data and Google Trends, demonstrates how technologies can reduce notification delays and improve real-time response. However, the use of these technologies depends on adequate infrastructure and municipal capacity, once again highlighting the importance of local strengthening and regulatory coordination<sup>7,8</sup>.

Pre-hospital care, therefore, will not be limited to assisting victims, but also to sustaining care networks in situations of collapse. In addition to classic technical competencies — mass triage, adaptation to specific protocols, shelter care, and improvisation in contexts of scarce resources — it will be essential to incorporate leadership skills, inter-institutional communication, cultural sensitivity, operational flexibility, and the ability to use decision-support technologies in the field. It's no exaggeration to say that pre-hospital disaster care will become the new testing ground for Brazilian public health. The challenge is clear: do we want to prepare professionals solely to react to disasters, or do we want to reinvent the response, making it more resilient, equitable, and sustainable — based on strengthened municipalities, consistent public policies, robust predictive technologies, and updated and responsive regulations?

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