

POST-CARBON MONOXIDE POISONING MONITORING: DECISION SUPPORT SYSTEMS AND A COMPREHENSIVE APPROACH TO LONG-TERM ASSESSMENT

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ABSTRACT

Carbon monoxide (CO) poisoning continues to pose a major global public health challenge due to its high morbidity and mortality. The often-nonspecific symptoms, along with limited access to precise diagnostic tools, complicate timely diagnosis and treatment. This article investigates how modern information technologies and advanced mathematical-statistical methods—such as time series analysis, the Mann-Whitney U-test, and biostatistical techniques—can improve the diagnosis, monitoring, and treatment decisions in CO poisoning cases. It provides an overview of the global epidemiology of CO poisoning, revealing notable regional disparities in incidence and mortality rates. A key focus is the importance of long-term monitoring in affected individuals to prevent or detect delayed complications, particularly neurological and cardiovascular sequelae. The integration of digital systems into clinical practice allows for the continuous collection and analysis of physiological and pathophysiological parameters, supporting early detection and intervention. Real-time data processing and predictive modeling facilitate individualized treatment decisions and timely therapeutic adjustments. These approaches not only enhance clinical outcomes but also reduce the long-term healthcare burden associated with CO poisoning. The article underscores the need for interdisciplinary strategies combining clinical knowledge, data science, and digital infrastructure to address the complex challenges in managing CO intoxication effectively and sustainably.

Keywords: Carbon monoxide poisoning; public health; long-term complications; monitoring; mathematical and statistical methods.