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Web-based applications for prioritizing health: A case study of 27 capital cities in Brazil 2006-2012

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Introduction: Because public health funds are limited, programs need to be prioritized. We developed two indices to prioritize public health based on chronic disease risk factors (CDRF-PHI) and diseases (DZ-PHI).

Methods: We used surveillance data from 27 capital cities in Brazil (2000-2012) about 12 risk factors and 32 diseases for CDRF-PHI and 51 diseases for DZ-PHI. We re-scaled and standardized indicators for risk factors and disease groups to create dimensionless scores. CDRF-PHI and DZ-PHI rank priorities using the sum of the rank of scores, the product or sum of scores across criteria: magnitude, severity, urgency, disparity, intervention effectiveness, intervention cost, and community preference. The current offline version of PHIs limits their use by public health practitioners. We developed a web application (PHP; MySQL-database) to help users upload surveillance data and calculate PHIs at any geographical level. We integrated the statistical R software within the application to conduct analysis.

Results: For the combined 27 capital cities of Brazil, the six priority risk factors were physical inactivity, hypertension, hypercholesterolemia, smoking, heavy drinking and no hypertension screened in past 2 years; the 15 priority diseases were heart disease, pneumonia/influenza, other infectious diseases, assault/homicide, stroke/other cerebrovascular disease, diabetes, other diseases/disorders, health infant issues (<1 year), alcohol/related disorders, other mental diseases, HIV/AIDS, motor-vehicle accident, falls, zoonosis and colorectal cancer.

Conclusions: Identified public health priorities varied across the 27 Brazilian capital cities. PHIs summarize and harmonize data from multiple indicators, health conditions and factors.

Biography

Eduardo J Simoes, MD, is Chair and Alumni Distinguished Professor of the Department of Health Management and Informatics-University of Missouri School of Medicine (2011-current). He has a medical degree from Faculdade de Medicina, Universidade de Pernambuco in Brazil (1981), diploma and a Master of Sciences degree from University of London School of Hygiene Tropical Medicine (1987) and Master of Public Health degree from Emory University School of Public Health (1991). He is a fellow of the American College of Epidemiology. He has published 106 articles, eight book chapters and 18 reports, made 142 conference presentations, and reviewed/edited for 12 journals.

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