NON-COMMUNICABLE DISEASES & INJURIES

Aspirin for secondary prevention after stroke of unknown etiology in resource-limited settings: a decision analysis

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Background: Seventy-one percent of worldwide stroke mortality and 77.5% of worldwide stroke disability-adjusted life years (DALYs) lost occur in low- and middle-income countries (LMIC). This disproportionate burden of stroke in LMIC is due to resource limitations in both prevention and treatment. In addition to risk factor modification, aspirin is an inexpensive and effective medication for secondary stroke prevention. However, only 3.8% of patients with prior stroke in low-income countries take antiplatelet agents, compared to 53.1% in high-income countries. One reason for this is that without access to CT to distinguish ischemic stroke (IS) from intracerebral hemorrhage (ICH), clinicians must balance presumed risks of aspirin administration in patients with potential ICH against potential benefits of secondary prevention in patients with possible IS. In order to assist clinicians practicing in resource-limited settings, we conducted a decision analysis to determine the impact of administering aspirin as long-term secondary preventive therapy to all patients after stroke when CT is not available to distinguish IS from ICH.

Methods: We used a Markov state transition model to evaluate the potential outcomes of two strategies for long-term secondary prevention after stroke of undetermined etiology: administering aspirin to all patients versus not administering aspirin to any patients. Data on the risks and benefits of aspirin use after IS and ICH were obtained from meta-analyses and large series. Sensitivity analyses were performed across the worldwide reported range of the proportion of strokes due to ICH and the 95% confidence intervals of aspirin-associated relative risks in patients with ICH.

Findings: For patients with stroke of unknown etiology, long-term aspirin was the preferred treatment strategy across the worldwide reported range of the proportion of strokes due to ICH. At 34% of strokes due to ICH (the highest proportion reported in a large epidemiologic study), the benefit of aspirin remained beyond the upper bounds of the 95% confidence intervals of aspirin-associated post-ICH relative risks most concerning to clinicians (ICH recurrence risk and mortality risk if ICH recurs on aspirin). Based on the estimated 11,590,204 strokes in LMIC in 2010, our model predicts that aspirin therapy for secondary stroke prevention in all patients in these countries could lead to an estimated yearly decrease of 84,492 recurrent strokes and 4,056 stroke-related mortalities.

Interpretation: The concern that the risks of aspirin in patients with stroke of unknown etiology could outweigh the benefits is not supported by our model, which predicts that aspirin for secondary prevention after stroke of undetermined etiology could lead to decreased stroke-related mortality and stroke recurrence. In the absence of a clinical trial to test this approach empirically, clinical decisions still require patient-specific assessment of risk and benefit.

Abstract #: 01NCD001

Cost-Effectiveness of diabetes screening and prevention by global region: A review

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Program/Project Purpose: Diabetes rates are increasing globally and are of growing concern in low and middle-income countries (LMICs). Screening and prevention among high-risk individuals can improve quality of life and reduce associated healthcare costs. We used existing literature to assess cost-effectiveness of diabetes screening and prevention among high-risk individuals by global region.

Structure/Method/Design: We compiled data from trial or modeling studies published before June 1, 2013 and registered in the National Library of Medicine, Scopus, or Google Scholar databases. Studies were included if written in English and contained cost-effectiveness data for participants with type-2, gestational, or high-risk for diabetes. We reported incremental cost-effectiveness ratios and cost per quality-adjusted life year (QALY) from the health system perspective in international dollars. We calculated median and range of cost-effectiveness estimates related to 1) diabetes, pre-diabetes, and/or gestational diabetes screening and 2) type-2 diabetes prevention in high-risk individuals. Median cost-effectiveness estimates were compared to WHO-CHOICE thresholds; interventions were considered cost-effective (CE) when intervention cost per QALY was between one and three times regional GDP per Capita. Costs below this range were considered very cost-effective (VCE) and those above were considered not cost-effective (NCE). Regions were defined according to World Bank classifications.

Outcomes & Evaluation: We identified 23 studies that reported economic data for diabetes screening and prevention among high-risk individuals; 21 were from high-income countries (HICs) and 2 were from LMICs. Screening for undiagnosed diabetes was VCE or CE in all regions except for South Asia and Sub-Saharan Africa (SSA). When accompanied by intervention, estimates were VCE or CE in every region except for SSA. Screening for gestational diabetes was VCE or CE for all regions except for South Asia and SSA. When accompanied by intervention, estimates were CE in SSA and VCE in every other region. In trials, individual-level interventions for type-2 diabetes prevention among high-risk individuals were NCE in East Asia & Pacific, South Asia, and SSA. Group interventions were VCE or CE in every region except for SSA. In modeling studies, individual-level interventions were VCE or CE in every region except for SSA, for which they were NCE. Group-level interventions were NCE in East Asia & Pacific, South Asia, or SSA.

Going Forward: Our analysis suggests that screening for undiagnosed or gestational diabetes with intervention is CE in every region except for SSA, where only gestational screening was CE. Trial and modeling studies provide conflicting results for prevention: trial studies favour group interventions while modelling studies favour individual-level interventions. The lack of cost estimates from LMICs is a limitation, since applying HIC estimates to LMIC settings may not truly represent intervention costs. Further research should be conducted in LMICs to adequately represent costs and burdens of diabetes.

Abstract #: 01NCD002

Prevalence of depression in the rural villages of Gujarat, India: A cross-sectional study

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