

Equivalence In Active Pharmaceutical Ingredient of Generic Antihypertensive Medicines Available In Three Nigerian States (EQUIMEDS): A Case For Further Surveillance

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Introduction: Prevention and optimal management of hypertension in the general population is paramount to the achievement of the WHF goal of reducing cardiovascular disease mortality by 25% by the year 2025. Widespread access to good quality antihypertensive medicines is a critical component for achieving the goal. Poor quality medicines including those that are of substandard quality pose serious health concerns however, there remains a knowledge gap about the quality of generic antihypertensive medicines especially in low-middle income countries.

Objectives: To determine the quality of generic antihypertensive medicines available in the retail market of a developing country.

Methods: We purchased samples of the two most commonly prescribed classes of antihypertensive medicines from three states in three different geopolitical zones in Nigeria following a semi-random sampling framework. Samples were purchased by a mystery shopper from each of 24 pharmacy outlets from six local government areas (1 rural and 1 urban per state) across each of the three states. Samples were analyzed for content at the London School of Hygiene and Tropical Medicine, bioanalytical facility. The stated active pharmaceutical ingredient (SAPI) in each sample was measured using high-performance liquid chromatography photodiode array detection with results expressed as percentage of SAPI. Samples were classified as good quality (acceptable pharmaceutical quality, if compliant with pharmacopoeia tolerance limits of 90-110% SAPI), poor quality (substandard, if contains either less or more than the acceptable dose, <90 ->110% SAPI) and falsified (no SAPI).

Results: Amlodipine and Lisinopril were identified as the most commonly prescribed antihypertensive drugs in Nigeria. In total, 440 samples from 24 pharmacies were collected and tested. We found 69.4% of Amlodipine and 69.9% of Lisinopril samples were of acceptable pharmaceutical quality. However, 30.6% of Amlodipine and 33.1% of Lisinopril samples were of substandard quality. We did not detect any falsified samples of either Amlodipine or Lisinopril.

Conclusion: About one-third of commonly prescribed anti-hypertensive drugs available in Nigeria appear to be of substandard quality. Enhanced quality assurance processes in low-middle income countries such as Nigeria are needed to support optimum management.

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Cardiac Rehabilitation Availability and Density Around the Globe

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Introduction: Despite the global epidemic of cardiovascular disease and the proven benefits of cardiac rehabilitation (CR), program availability and capacity have never been characterized around the world.

Objectives: to establish CR availability, volumes and its' drivers, density, and delivery barriers.

Methods: Availability of any CR in every country of the world was identified via the literature, and cardiac associations were consulted to confirm. Champions from each country with CR were enlisted to identify the number of programs and to administer them an online survey, which assessed volumes and capacity. Factors associated with volumes



were assessed using generalized linear mixed models, and compared by World Health Organization region. Density was computed using Global Burden of Disease study ischemic heart disease (IHD) estimates.

Results: CR was available in 111/203 (54.7%) countries; data were collected in 93 (83.8%; N=1,082 surveys, 32.1% program response rate). Availability by region ranged from 85.2% of countries in Europe, to 17.0% in Africa (p<.001). There were 3,373 programs in the world that could serve 1,675,270 patients/year, despite an estimated 20,611,675 incident IHD cases globally/year. Where available, the median CR volume was 157 patients/program annually (interquartile range=75-350); volume was significantly greater where patients were systematically referred (OR=1.35, 95% CI 1.35-1.38) and programs offered alternative models (OR=1.05, 95% CI 1.04-1.06), and significantly lower with private or public funding (OR= 0.92, 95% CI 0.91-0.93 and OR=0.83, 95% CI 0.82-0.84) compared to hybrid sources, among others. Median capacity was 0 patients/country globally. The CR density was one CR spot per 11 IHD cases in countries with CR, and 12 globally. Financial resources were the greatest barrier.

Conclusion: CR is available in only half of countries globally. Where offered, capacity is grossly insufficient to serve patients in need, such that most indicated patients will not derive the benefits associated with participation.

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Role of Community Health Volunteers In Addressing Cardiovascular Diseases: Lessons From A Large Scale Hypertension Project In Kenya

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Introduction: Hypertension is an important causes of premature death. In Kenya, 24% of adults have High Blood Pressure (HBP) or are currently on medication. More than half of Kenyans have never been screened, 92% of patients are not on treatment and only 3% on treatment are controlled. With the shortage of human resources hypertension screening is not carried out routinely at the health facilities. Community Health Volunteers (CHVs) have been successfully used to increase uptake of health services in Kenya though they remain underappreciated.

Objectives: The objective of this study is to document outcomes of utilizing CHVs in hypertension screening and treatment.

Methods: Amref Health Africa through the Healthy Heart Africa project has been supporting the Ministry of Health (MOH) to provide hypertension screening and treatment in Nairobi, Kiambu and Kirinyaga counties since April 2015. A total of 279 CHV were trained to provide hypertension screening at the health facility and community level and to link those with HBP for diagnosis confirmation and treatment by trained health workers at the health facilities. Routinely collected data for the period April 2015 to December 2017 was analysed retrospectively.

Results: Overall 253,734 participants were screened by CHVs during this period, 165,255 (65%) females and 160,314 (67%) aged below 40 years. Majority (60%) had their initial screening done at a health facility. A total of 43,201 (17%) had HBP at initial screening with males having a higher prevalence of HBP at 20% compared to females at 15%. A total of 8,333 (19%) with HBP were linked for diagnosed and treatment. Of those started on treatment, 6,447 (77%) were started on medication. Retention on treatment (defined as participants who had were not more than 180 days from their last clinic visit) was 49% as at December 2017.

Conclusion: CHVs played a critical role in facilitating screening and diagnosis of hypertension. Linkage to treatment and retention was low. Majority of clients reached were females. Further research is required on effective interventions to address these gaps and inform future initiatives. The role of CHVs in hypertension management should be recognized by the MOH and appropriate compensation provided.

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Know Your Pulse - The Nationwide Campaign For Recognizing Atrial Fibrillation

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Introduction: Atrial fibrillation (AF) is among the most common heart rhythm irregularities, affecting 33 million people worldwide. During AF, the contractions of atria are ineffective, resulting in blood stagnation and clot formation. This may travel to the brain and cause ischemic stroke. In people aged over 80, approximately every third stroke is caused by AF.

AF may cause symptoms, but many times AF is asymptomatic. Recognizing AF before the outcome, stroke, has a major impact on health costs, not to mention the huge impact on one's life.

Objectives: We aimed to raise the awareness about the association between AF and increased risk of stroke. We also aimed to teach citizens to palpate their own pulse.

Methods: The Finnish Heart Association and The Finnish Brain Association developed a campaign called Know Your Pulse, carried out in 2012-2015.

Educational material and an animation with a twist of hilarity were created.

Volunteers from local and regional societies of the Associations educated people to palpate wrists at marketplaces etc. countrywide.

