A viable intervention to control hypertension?


SUMMARY
In middle- to low-income areas in Karachi, Pakistan, a cluster-randomized controlled trial was conducted to study the impact of home health education (HHE) and/or training of general practitioners (GP) on the levels of blood pressure of hypertensive adults ≥40 years of age. Multistage cluster random sampling was undertaken to select 12 clusters, each cluster comprising approximately 250 households. Participants with mean systolic pressure >140 mmHg or mean diastolic pressure >90 mmHg, or those with known hypertension were included in the study. The 12 clusters were assigned to four groups of three clusters each—HHE, trained GP, combined HHE and trained GP, and no intervention. In HHE, six community health workers were trained for 6 weeks, and provided advice on lifestyle modifications, at 3-monthly intervals. One worker was assigned to one cluster. The GPs in the six clusters assigned to this intervention were trained in a 1-day training session, which focused on standard treatment for the management of hypertension. All hypertensive participants in these six clusters were advised to consult GPs. Blood pressure of hypertensive adults was recorded at baseline and at 4-monthly intervals. Data were collected on lifestyle changes and treatment taken. The 1341 participants were almost evenly distributed across the four groups. Of these, 78% completed the planned follow-up period of 2 years. It was found that blood pressure reduced in all three intervention groups. The reduction in systolic blood pressure, after adjustment for age, sex and baseline blood pressure, was significantly higher in the HHE plus trained GP group (11 mmHg), compared with the other groups (~6 mmHg in each; p<0.001).

The present study reports the costs and cost-effectiveness of the interventions. The cumulative intervention costs were estimated for 2 years. These intervention costs included personnel, transport, equipment, training materials and other operational expenses. The cost-effectiveness was estimated by calculating incremental cost-effectiveness ratios (ICER). These were calculated using total healthcare costs, because this analysis was conducted from a societal perspective. The total healthcare costs included the above-mentioned intervention costs, patient costs for healthcare and related lifestyle modifications, and productivity losses.

The annual cost for healthcare was collected from all participants through a questionnaire. The denominator for calculation of costs for lifestyle modification was all individuals aged ≥5 years, because the intervention was delivered at the community level. The authors used average market wage rate for men and women in urban Sindh for calculating productivity loss and the same was projected over 2 years. Opportunity cost was calculated both for subjects and caregivers for accounting time. All costs were converted to US dollar, and also discounted to adjust for time preference using 5% discount rate. Monte Carlo simulation was performed to determine the mean costs, effects on blood pressure, and ICERs among the treatment groups. The cost of each intervention was compared with that for the no-intervention group. One thousand bootstrapping replications were done to estimate the precision of the incremental cost-effectiveness ratios.

From the policy-makers’ perspective, the annual intervention cost per participant was most expensive for the combined HHE plus trained GP group—US$ 3.99. This was 4-times higher than that for the GP only group. Direct costs for HHE plus trained GP were highest and the productivity loss greatest for the trained GP group. From the societal perspective, combined intervention of HHE plus trained GP yielded a bootstrapped ICER of US$ 23 (6–99) per mmHg decrease in systolic BP compared to the no-intervention group. The authors concluded that the combined intervention of HHE plus trained GP is more cost-effective than the other two options or the no-intervention option, in the management of hypertension, and is potentially affordable.

COMMENT
This cluster-randomized trial in Karachi, Pakistan found that an intervention by combined HHE and trained GP was most effective in lowering blood pressure levels, compared to either of them alone, though all three interventions were effective compared to usual care or no intervention.

The planned median follow-up period was 2 years and, though it is not sufficiently long to document large changes in costs and effectiveness, the authors did discount their estimates, to compensate for this limitation. In order to allow for uncertainty, probabilistic sensitivity analysis was done. This is considered a good option to address this issue. The costs of hospitalization of the participants were not included. Though the authors have reported that this number was very small (~1%), it could be important as these costs are often substantial.

Disability-adjusted life-years (DALYs) are generally used in situations where morbidity or mortality is perceived to result in disability. A reported linear relationship between decrease in blood pressure and cardiovascular disease has been used to estimate DALYs. Stroke is another condition in the pathway from hypertension to disability which needs to be considered. To calculate the per patient cost, the denominator was all subjects aged ≥5 years, because the intervention was delivered at the community level. No reason has been given for using this age of ≥5 years, when the interventions focused on patients aged 40 years and above. While it is understandable that the intervention may have benefited a larger number of persons than the patients, the reason for including such a large number of persons in the denominator remains obscure. Information on fruits and vegetables was collected during the preceding 2 weeks. This may have been subject to seasonal variation, as the costs of these items are often influenced by seasonality. Despite these limitations, this study does provide some evidence that the combined intervention is cost-effective in reducing blood pressure levels of patients with hypertension.

In India, the prevalence of hypertension has been estimated to
What sustains the market for TB serodiagnostics in India: A novel analysis


SUMMARY
Serological tests for tuberculosis (TB) lack diagnostic accuracy and WHO has advised against their use. Although not used by the Revised National Tuberculosis Control Programme (RNTCP), serodiagnostics are widely used in the private sector in India. The authors carried out a root-cause analysis to find out why serological tests are so popular and identified seven root causes, which they classified into three categories: technical/medical, economic and regulatory. The current budget of the RNTCP is too low to allow for scale-up to the newer, WHO-endorsed technologies. The authors point out that under the RNTCP, most patients have access to only smear microscopy, a test that is insensitive and underused in the private sector. Because there is no accurate, validated point-of-care test for TB, serological tests meet a perceived need among doctors and patients. Most patients cannot afford imported molecular or liquid culture tests and this, together with the fact that the Indian market does not offer affordable Indian versions either, creates a lucrative market for serological tests. Although serological tests lack accuracy, doctors, laboratories and industry profit from their use. This is reflected in the fact that more than a million serological tests are being done in India every year. Finally, TB tests are poorly regulated and a large number of serological kits are on the market. Doctors in the private sector are outside the scope of the RNTCP and are not required to adhere to the standard guidelines. The authors argue that a clear understanding of these realities can facilitate the formulation of market-based strategies that can help replace serological tests with accurate, validated tools.

COMMENT
Worldwide, TB affects nearly nine million people every year and about two million people die from the disease. In India, every year, about two million people develop incident cases and over 10 million TB suspects need diagnostic testing, such as sputum microscopy, mycobacterial culture, chest radiography and nucleic acid amplification tests. The decision to choose one test over another should be, but is often not, based on accuracy and reliability, logistics and cost. Sputum microscopy, the oldest and most widely used test, misses half of all TB cases. Cultures take time. Nucleic acid amplification tests are expensive and not available in primary care. Serological tests occupy the middle slot in TB diagnostics—these tests are costlier than sputum microscopy,