Evaluating the impact of the Special Operating Agency

Introduction

Recent research by the Cambodia Development Resource Institute under the ReBUILD programme examined elements of health contracting arrangements in Cambodia, including the implementation of the current Special Operating Agency (SOA) model, and the effects on service coverage and equity. The study concluded that a link between the SOA model and improved health outcomes cannot reliably be demonstrated using existing data, and recommended that if it is decided to continue with the approach, a robust evaluation of the model should be conducted, comparing SOA districts with non-SOA but similarly funded districts.

This briefing outlines two options that could be considered for such an evaluation.

What is required for a robust evaluation?

A number of key elements are required for any robust evaluation:

- A well-defined intervention with theorised theory of change
- Defined primary, secondary and intermediate outcomes as well as unintended consequences
- A clearly defined point of implementation and expected phasing of impact
- Baseline/before data available
- A counterfactual based on a comparable control
- Knowledge and measurement of likely confounding factors, including other interventions
- Given the measurement problems associated with proportions, absolute numbers should be used to assess progress
- Understanding the circumstances under which the intervention works and does not work

Two options for a robust evaluation are outlined based on these key elements.

Option 1: An experimental 'Gold-Standard' approach: Randomised Control Trial

A Randomised Control Trial (RCT) would be a prospective study, and would involve:

- Random assignment of intervention and control areas
- Measurement of outcomes before and after implementation

A cluster RCT, as used for example to evaluate performance based payments in Rwanda (1), is often required for trials of health system/service interventions because:

- it is not possible to randomise individual subjects
- there is a contamination effect since neighbouring subjects are affected by the intervention

In the case of the SOA, facilities can be regarded as subjects but there is a cluster effect because

- all facilities in an Operational Health District (OD) are chosen and
- services in one facility may affect others (e.g. referral hospitals affect services across all health centres).

At least 20 and preferably more than 30 clusters of each type (intervention and control) are generally required. If SOA is applied to an entire OD (as has been current practice) there are unlikely to be a sufficient clusters and an alternative evaluation approach is required.

UNIVERSITY OF LEEDS

**Cambodia Development
Resource Institute**

## Option 2: A Quasi-experimental approach: Interrupted Time Series

A quasi-experimental approach replicates as far as possible an experimental design by controlling for factors leading to bias in the selection of intervention and control areas. One robust alternative is an Interrupted Time Series (ITS), which if implemented accurately can provide evidence almost as robust as an RCT (2).

Key elements of an Interrupted Time Series approach would be:

- It can be undertaken on prospective or retrospective data
- It takes account of a) initial impact and b) lagged impact of intervention (See Fig 1)
- Data is collected from both intervention and (preferably) control areas
- Measurement are taken of primary and secondary outcomes (plus unintended consequence indicators) for the subject on a frequent (monthly/quarterly) basis before and after the intervention is introduced. In practice, this involves at least 12 periods before and 12 after the intervention.
- Outcomes are measured as close as possible before and after the intervention
- Data are collected as absolute numbers to avoid 'denominator problems'
- Other interventions are identified, together with their timing

Given likely differences in implementation across SOAs, disaggregation of time series data by SOA and facility is suggested. For a prospective evaluation, a qualitative analysis around the time of the intervention will help understand why intervention works. If monthly data are available from the HMIS, an ITS design could be applied both to retrospective data on existing SOAs and prospectively on new SOAs.

Fig 1: An example of interrupted time-series demonstrating level and trend impact

$y = 0.449x - 17008$

$y = 1.2631x - 49960$
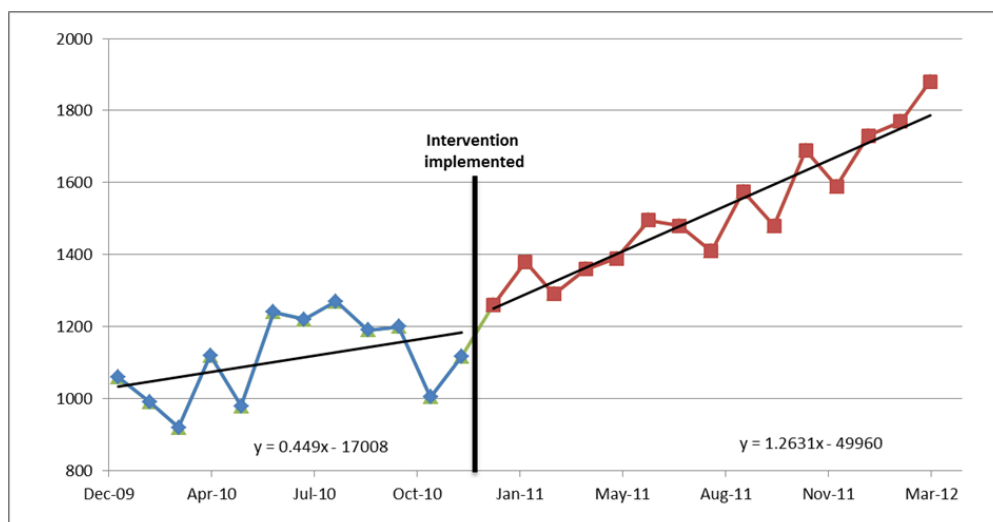
Cost:

Costs of each method are largely driven by data collection. Using routine data like HMIS reduces costs unless much verification and cleaning is needed. Additional sophisticated process measures or impact on household finances will increase costs substantially. A prospective qualitative investigation of circumstances under which an intervention works increases cost but yields valuable data for refining/replicating an evaluation.

References: (1) Basinga P, Gertler PJ, Binagwaho A, Soucat AL, Sturdy J, Vermeersch CM. Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation. Lancet. 2011 Apr 23;377(9775):1421-8. PubMed PMID: 21515164. (2) Fretheim A, Zhang F, Ross-Degnan D, Oxman AD, Cheyne H, Foy R, et al. A reanalysis of cluster randomized trials showed interrupted time-series studies were valuable in health system evaluation. J Clin Epidemiol. 2015 Mar;68(3):324-33. PubMed PMID: 25499983.