Evaluating HSS Interventions using Routine Data

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Health systems strengthening (HSS) is widely understood to be key to achieving universal health coverage and to ensuring robust responses to health emergencies. In recent decades, global health investors have put more attention and investment towards HSS, leading to accelerated efforts to evaluate HSS policies and programs initiated by those investments. Yet, a common definition and framework for how to evaluate HSS interventions remains elusive, hampering efforts to strengthen, coordinate and amplify HSS programs.

The Health Systems Strengthening Evaluation Collaborative (HSSEC) brings together key global and national stakeholders to suggest ways to strengthen the quality of evaluations of health systems strengthening (HSS) investments in LMICs and to improve coordination across stakeholders in this space.

This technical brief describes how data from Routine Health Information Systems (RHIS) can be used to evaluate HSS interventions

The collection and use of health facility data using routine health information systems (RHISs) has increased considerably in recent years. These data are collected from health facilities at regular intervals in numerous low- and middle-income countries (LMICs). For example, the cloud-based DHIS2 system is currently used to collect data in more than 70 countries. HSSEC members recognized the potential of these data for HSS evaluations but identified the need for Global Health Institutions and analysts to better understand their strengths and weaknesses of RHISs as a data source.

We undertook a "deep dive" review of how RHIS data have been used in HSS evaluations to date, their strengths and weaknesses relative to other data sources, how an analyst can get started using RHIS data, and an overview of study designs that can be used for these evaluations. The report uses several examples of prior evaluations that have been conducted using these data to demonstrate their potential.

The use of RHIS in prior evaluations

Our review demonstrated that an increasing number of studies using RHIS data have been conducted over the past decade to answer key questions about program effectiveness and impact. The indicators available in RHISs can include service provision (e.g. vaccinations administered), diagnosis (e.g. hypertension diagnoses), and supply information (e.g. stock of a particular medication).

These data have been used in evaluations of a wide spectrum of HSS policies and interventions, including user fee policies, health financing schemes, governance interventions, supply chain interventions, vaccination campaigns, and others. At the same time, we found that there remain significant opportunities to increase the use of RHIS data, either alone or in combination with other evaluation data sources.

Considerations for using RHIS in an evaluation

In the full report, we provide an overview of key issues to consider in using RHIS data for HSS evaluations, including their strengths and weaknesses. Some advantages to using RHIS data include their low cost, as the necessary data have already been collected from health facilities, their

availability over time, comparatively quick timeframes for their availability, and their ability to facilitate sub-national and facility-level analyses.

In contrast, while survey data often take more time and are expensive to collect, they allow control over the indicators to be collected and can facilitate equity-based analyses of program impact that are not currently possible with RHIS data. Relatedly, an important consideration when planning evaluations is whether the desired program outputs are measurable with the fields available in the RHIS. In comparison to household or facility surveys, RHIS data are limited to the fields that already exist in the dataset and are thus not well-suited to all types of impact questions. Further, while the quality of RHIS data has been increasing over time in many countries, assessments must be made to ensure that the data are accurate, reliable, relevant, and complete.

Assessing and addressing data quality concerns

Once you have decided to use RHIS data in an evaluation, there are several steps and considerations that must be made. After understanding the context and details of the program in question, indicators must be selected from the available fields in the RHIS that reflect the desired impacts of the program in question. At the same time, a data quality assessment should be conducted and issues of missing data, outliers, and denominators for the calculation of rates should be addressed. This quality assessment may inform which indicators will be suitable for analysis.

RHIS data have often been critiqued for data quality issues, particularly related to missing, inconsistent, and implausible data. While many of these concerns have decreased in recent years, there is also a growing evidence base on methods to deal with these issues for analysts to draw upon. In our review, we discuss many of these methods and point readers toward resources that provide further guidance for evaluators.

Research designs which can use RHIS

Our review found that there is a broad range of research designs that are available and that have been used with RHIS in prior HSS evaluations. The available indicators and study timeframes are important inputs into choosing a design that best suits the evaluation. The methods that can be used with RHIS data range from simple approaches that describe trends, all the way up to very powerful methods such as difference-in-differences and interrupted time series approaches. For example, a difference-in-differences design, as shown in Figure 1 below, compares changes in an outcome over time in facilities or regions that received an intervention (blue) to a matched comparison group that did not (red). The estimate of what would have happened absent the intervention—also known as the counterfactual—is estimated from the observed change in the control group.

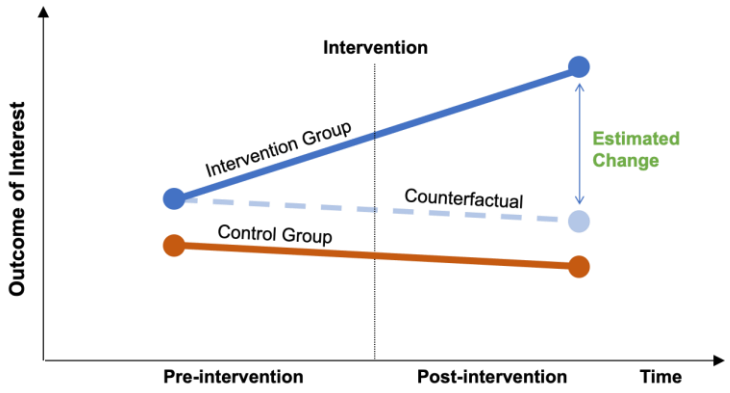

Figure 1. Design of a difference-in-differences study

In addition to providing an overview of several methods, the full report includes a review of a published example of each design. We review and point readers toward research that uses RHIS-

based studies that review progress toward UHC targets, evaluate an intervention to improve data quality, and assess the impact of a performance-based financing pilot.

What have we learned and what is next?

The report concludes that RHIS are a powerful addition to the data sources available for HSS program evaluations but are underutilized. With careful use and strong methods, they can produce estimates of impact that are robust, often less expensive, and frequently not possible with other data sources. Further development should continue to ensure these systems collect complete data on key indicators that can be used in evaluating HSS interventions. As RHIS data continue to improve and their use in HSS assessment proliferates, we believe they will become a standard component in program design and evaluation.

For further information, read the full report on Evaluating HSS Interventions using Routine Data.