

STRENGTHENING PAPER HEALTH REGISTER SYSTEMS: STRATEGIES FROM CASE STUDIES IN ETHIOPIA, GHANA, SOUTH AFRICA, UGANDA, AND URUGUAY

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BACKGROUND/METHODS

Paper health registers continue to be relevant tools in many low-resource settings, even as many health information systems (HIS) worldwide move toward electronic and mobile data collection systems. Registers occupy a particularly unique space in HIS as they serve as an intermediary between individual patient records and aggregate data. Registers must meet both the needs of health providers and the needs of administrators and decision-makers. This tension between clinical use and reporting is one of the defining challenges faced by health registers.

Five case studies from various health domains and geographies were selected through a review of peer-reviewed and gray literature and investigated through expert interviews. **Ethiopia's Family Folder (FF)** obviates the need for traditional primary care registers. Developed in 2008, this folder meets patient care and administrative needs with individual records for each family member and key indicators at the household level, allowing health extension workers easy access to both individual and aggregate data. **Ghana's Simplified Registers (SR)** are a set of five consolidated primary care registers, including maternal and child health and family planning. They were introduced in 2010 as part of the Mobile Technology for Community Health (MoTeCH) initiative. **South Africa's 3-Tiered Antiretroviral Treatment (ART) Monitoring Strategy** gathers a reduced number of monthly and quarterly data elements to track ART services. This strategy was developed in 2004 and includes paper-based and electronic tiers for facilities with different infrastructure and capacity. **Uganda's Tuberculosis (TB) and Leprosy Program Registers** were updated in 2005 to include a mechanism for monitoring TB/HIV cooperative activities. This link allows patients with TB/HIV co-infection to be monitored by the system more easily. **Uruguay's National Vaccination Program Register (SNNI)** is a mixed paper and electronic system developed in 1987, in which a paper form is filled out for each vaccination encounter and submitted to an electronic database at the national level. Case studies are publicly available at TechNet-21.org.

STRATEGIES FOR OPTIMIZING PAPER HEALTH REGISTERS

Paper health register systems face many common challenges and opportunities regardless of context. Actionable strategies for strengthening paper register systems were demonstrated or identified by key informants as lessons learned in the selected case studies. While changing a register's physical attributes can improve how it is used, solutions to strengthen register systems extend beyond register design and include innovations in policymaking, human resource models, and implementation. Some solutions are only relevant when a register system is being developed and others can be applied to existing systems.

SUPPORT LOCAL SOLUTIONS, ALIGN WITH GLOBAL STANDARDS

Register systems that are developed locally may overcome many of the challenges that registers face. Register systems should align with global standards to ensure recognized standards of care are used and

funding requirements are met. Through a process that intentionally involves all stakeholders, registers should be standardized at the national level to systemize supply chains and training, as well as provide data comparability. Examples of actionable steps include:

- Seek insight into register problems from those who use the registers
- Hold periodic stakeholder workshops to sustain support as a register matures
- Gather a panel of local experts to vet innovations proposed for national standardization

STRATEGICALLY COLLECT ONLY ESSENTIAL DATA ELEMENTS

Consolidation efforts have been attempted as a solution to the proliferation of registers. Register content should align to the services provided to a population, and the indicators chosen should inform decision-making for providers or administrators. Reporting needs should also be assessed and reporting mechanisms streamlined. Examples of actionable steps include:

- Link registers for complementary areas of care
- Separate reporting and patient care functions in the workflow
- Assess what data elements need to be reported and define an essential data set

FOSTER DATA USE AND DATA QUALITY IMPROVEMENT

Fostering a commitment to utilizing data for evidence-based decision-making is essential at all levels of a register system, from frontline register users to policymakers. When data is of high quality, it is more likely to be used by stakeholders at every level, and when data is considered to be more useful it will likely be collected and aggregated more carefully. Examples of actionable steps include:

- Format registers to support and inform patient care
- Conduct operational research to optimize register design and workflows
- Include instructions for data collection and reporting on the register
- Design an internal audit system to standardize data quality monitoring

INVEST IN STRENGTHENING HUMAN RESOURCES

These case studies demonstrate the importance of a strong human commitment to register systems. Acceptance of the registers can be encouraged through health worker engagement, and existing commitment to the registers should be harnessed. Overburdened workers should be acknowledged and their time respected by anticipating time-intensive activities and allocating staff time specifically to support the register system. Examples of actionable steps include:

- Use peer-to-peer training models
- Minimize or abbreviate historical data capture for certain types of patients
- Relieve the burden on health providers by assigning administrative tasks to data clerks
- Implement supportive supervision models

CONCLUSIONS

Paper health registers are important tools in HIS and will continue to occupy a critical role in health service provision, administration, and reporting in many low-resource settings. This varied menu of approaches offers multiple stakeholders the opportunity to bolster evidence-based decision-making in patient encounters, program planning, and policy through strong paper health register systems.