

MEETING REPORT

Coordinating Analyses of Routine Health Management Information Systems Data to Identify Disruptions in Essential Health and Family Planning Care

MARCH 9 – 10, 2021



ACKNOWLEDGMENTS

This meeting report was written by Eve Brecker with support from Alex Reed, Devyn Bell, Francesca Alvarez, and Kaitlyn Patierno at PRB. PRB gratefully acknowledges meeting participants who contributed to this report, including representatives of Avenir Health; World Bank Global Financing Facility for Women, Children, and Adolescents; and Data for Impact project.

We express appreciation to all the individuals who provided technical and logistic support to make this meeting possible. In particular, we thank Ishrat Husain, Bill Weiss, and Amani Selim at the United States Agency for International Development (USAID) without whose technical guidance the event would not have been possible. We also thank Emily Sonneveldt, Priya Emmart, and Margaret Reeves for the technical expertise and logistical support provided by Avenir Health. Avenir Health's participation was made possible through the Track 20 Project and funded by the Bill & Melinda Gates Foundation. We thank all of our presenters, speakers, and facilitators for generously donating their time. We also thank Katherine Kinzer for her digital solutions support.

This publication is made possible by the generous support of USAID under cooperative agreement AID-AA-A-16-00002. The information provided in this document is the responsibility of PRB, is not official U.S. government information, and does not necessarily reflect the views or positions of USAID or the U.S. Government.



Background

This report summarizes proceedings and takeaways from a convening jointly hosted by PRB and Avenir Health, “Coordinating Analyses of Routine Health Management Information Systems (HMIS) Data to Identify Disruptions in Essential Health and Family Planning Care.” The purpose of the meeting was to convene expert researchers, data officers, program implementers, and other stakeholders to 1) promote learning and exchange on methodological approaches to analyzing the impact of health system shocks, such as the COVID-19 pandemic, on family planning and other essential health care; and 2) discuss opportunities for sustained collaboration across stakeholders. More than 70 invitees participated from more than 40 institutions over the course of two half-day meetings (see [Annex A](#) for participant list).

Study Methods and Findings

Representatives from Amplify Family Planning and Sexual and Reproductive Health (Amplify FP), Avenir Health, Data for Impact (D4I), Zimbabwe’s Ministry of Health and Child Care (MoHCC), and World Bank’s Global Financing Facility for Women, Children, and Adolescents (GFF) shared methods and findings from analyses of routine HMIS data to assess disruptions in essential health and family planning services due to COVID-19 or other health system shocks.

Most analyses aligned with World Health Organization (WHO) data quality review (DQR) standards and employed comparable methods including addressing outliers and accounting for seasonality (see Table 1). Multiple presenters noted that some deviations from WHO DQR standards were necessary. In particular, presenters indicated that

TABLE 1

ANALYSES EVALUATED ACCORDING TO WHO DATA QUALITY REVIEW MODULE COMPONENTS

Organization	Completeness and Timeliness	Internal Consistency	External Consistency
Amplify FP	x	x	x
Avenir Health	x	x	x
D4I	x	x	
GFF	x	x	
Zimbabwe MoHCC	x	x	

Note: External comparisons component is excluded because this component is not relevant to the discussed analyses.

the WHO standard on extreme outliers (at least three standard deviations from the mean) introduced bias in some analyses. As use of HMIS data increases, opportunities may arise to revise WHO standards in response to this type of practical learning.

Two of the analyses (D4I and GFF) employed the use of counterfactual scenarios to measure the impact of the pandemic on service delivery, using historical data to project expected service utilization and comparing the projected trend to the actual data for the same months.

Presented findings concerning the impact of COVID-19 on essential services were largely consistent across the five analyses. While specific patterns vary by country, within country, and by service type (see Table 2), key themes included:

- Countries mostly experienced initial sharp declines in service utilization between March and July 2020 with

some exceptions, in DRC for example, where countries experienced increases for select services.

- Service utilization largely recovered in the following months to expected or typical levels although the timing, speed, and scale of this recovery varied with disruptions persisting or recurring across some countries during November and December 2020.
- Reporting rates and timeliness of reports declined in many analyses. Some countries specifically showed a lag in data entry that resulted in data heaping (where several months of data were entered at once rather than in real time).
- National trends may mask impacts on key geographies or vulnerable populations. For example, multiple studies found service disruptions in urban areas were more drastic and slower to recover.

TABLE 2

ANALYSES BY COUNTRY, DISRUPTION TYPE, AND SERVICE TYPE

Organization	Country	Disruption Type	Service Type
Amplify FP	Côte d'Ivoire, Niger, Togo	COVID-19	New family planning (FP) clients, continuing FP users, quantity of contraceptives, ante-natal care (ANC) and deliveries, discharges with FP after delivery, post-abortion care (PAC), PACFP
Avenir Health	Kenya, Liberia, Sierra Leone	Ebola, health worker strike	Modern contraceptive prevalence rate, FP commodity and visits
D4I	DRC, Bangladesh	COVID-19	Outpatient, diarrhea, malaria, vaccination, ANC and deliveries, post-natal care (PNC), FP
GFF	Afghanistan, Cameroon, DRC, Liberia, Malawi, Nigeria, Mali, Sierra Leone, and Somalia	COVID-19	Outpatient, vaccination, ANC and deliveries, PNC, FP
MoHCC	Zimbabwe	COVID-19, health worker strike	New FP clients, ANC and deliveries

Note: Some presentations only featured a subset of work from larger analyses.

Key Takeaways

Over the course of the convening (see [Annex B](#) for agenda), a rich discussion ensued on the methodologies, findings, barriers, and opportunities in using HMIS data to assess disruptions in service utilization during shocks. Key takeaways are summarized below.

HMIS DATA PRESENT AN INFORMATIVE, BUT FRAGMENTED, PICTURE OF SERVICE DISRUPTIONS DRIVEN BY HEALTH SYSTEM SHOCKS. HMIS data have been a valuable source of information on service disruptions during the pandemic. However, lack of standardized reporting across the health sector, particularly limited integration of data from the private sector, may obscure findings. For example, while both the Ministry of Health and Population in Nepal and MSI Reproductive Choices highlighted data showing increases in service utilization in the private sector during the pandemic, studies presented in the convening did not examine shifts in service uptake between the public and private sector. To capture a holistic picture of how shocks may influence service utilization, stewarding robust private sector participation in routine reporting is critical.

WHEN SHOCKS OCCUR, THE TRADEOFFS BETWEEN PRECISION AND SPEED BECOME ESPECIALLY CHALLENGING. Timeliness of reporting via HMIS platforms is a persistent issue, exacerbated when a system shock disrupts reporting while also increasing the need for timely information. To respond rapidly to the dual crisis of the COVID-19 pandemic and an ongoing health worker strike, the Zimbabwe MoHCC transitioned from monthly to weekly data processing for key indicators. Initially, the MoHCC's HMIS was primarily centered on collecting disease data, leaving out most other data from the health service delivery system (for example, commodities, financing, and human resources). The MoHCC integrated these data into the weekly disease surveillance system for more rapid and holistic review.

Other presenters discussed efforts aimed to address the data quality issues that may be exacerbated by shocks, including completeness of reporting, using comparatively sophisticated statistical approaches. These methodological approaches, such as generating counterfactual

IDENTIFYING SERVICE DISRUPTIONS THROUGH COUNTERFACTUAL SCENARIOS

One way to identify atypical changes in service utilization is to build an expected scenario, or counterfactual. Counterfactuals are built by analyzing historical data and projecting expected service utilization rates for a given time period. If, for example, service utilization drops significantly below the expected (counterfactual) scenario, it may indicate a shock that has created disruptions in service delivery. Participants observed that if this function could be applied at scale, HMIS could function as a health sector surveillance system to quickly identify atypical changes in service delivery.

scenarios to identify significant changes in service utilization (see Box), may enhance precision but may also require more time and resources. Automation of such analytical functions within HMIS platforms could address time and resource constraints. However, automating some components—such as handling missing data or generating subnational estimates—may not be feasible in all contexts.

Simpler approaches to data cleaning and trend analysis may be less precise, but more timely and therefore more useful for decisionmaking. Participants also discussed the tradeoffs between comprehensiveness and interpretability. A workable balance must be found between providing enough information while not overwhelming decision-makers with too much data. For example, GFF focused its work on a narrow set of key bellwether indicators with a rigorous, but not overly complicated analysis.

TO MAXIMIZE THE USEFULNESS OF HMIS DATA FOR CRISIS RESPONSE, MORE INVESTMENT IN STRONG DATA GOVERNANCE IS NEEDED. While the convening was not focused on broader HMIS challenges—including completeness, timeliness, accuracy of the data, standardization of indicators, and fragmentation of data

management across the health system—these issues unquestionably influence the usefulness of the data during shocks. Participants highlighted several approaches, tools, and resources to address these issues that may be particularly relevant in the context of health system shocks:

- Kenya improved data completeness by routing District Health Information Software 2 reporting through a centralized, national data warehouse allowing all facilities to report every time they dispense pharmaceutical products related to family planning (private or public).
- Nepal created a task force to provide data governance and standardize protocols (based on global standards) exchanging data and operating across public, private, and nongovernmental organization providers. Data are collected and processed at the district level and submitted to the national system.
- MSI Reproductive Choices has accelerated the transition to digital reporting by increasing the flexibility of the system, including introducing mobile reporting tools.
- In the Philippines, Dure Technologies leveraged data governance lessons learned from HIV and tuberculosis to better collate COVID-19 data by using existing data collection infrastructure. Dure was able to bring large quantities of program data together into one system, eliminating data processing at the central level and enabling a more granular understanding of the COVID-19 crisis.

Several participants from ministries of health called for increased investment to scale up and maximize the functionality of existing tools and platforms, rather than expanding the proliferation of new tools.

LESSONS LEARNED DURING THE COVID-19 PANDEMIC ARE APPLICABLE TO OTHER HEALTH SYSTEM SHOCKS.

To support countries in monitoring essential health services during the pandemic, WHO released the critical

resource [Analysing and Using Routine Data to Monitor the Effects of COVID-19 on Essential Health Services: Practice Guide for National and Subnational Decisionmakers, Interim Guidance](#). Participants noted that COVID-19 is one of several types of shocks, with many data officers calling for expansion of the guidance to address other types of shocks, including health worker strikes, conflict, and natural disasters. Recognizing that WHO guidance was released almost a full year into the pandemic, participants noted that revising the guidance now to address a broader range of expected shocks could equip countries with a ready-made resource to guide analyses of HMIS data when those shocks inevitably occur.

Participants also observed that improved coordination among global stakeholders is needed. Better coordination of HMIS studies could reduce duplication of effort, make technical assistance available to more countries, and alleviate the management burden on decisionmakers already responding to crisis. However, competition, limited bandwidth, and incentive structures can hamper efforts to improve coordination at both global and country levels. Communication and coordination across global donors and multilateral partners supporting the analyses above have been limited.

Conclusion

The COVID-19 pandemic has created enhanced global interest in HMIS data, which should be leveraged to strengthen HMIS systems to deliver complete, timely, and high-quality data. This momentum is particularly critical for the family planning community, which has arguably underinvested in HMIS relative to other health areas.¹ More immediately, a window of opportunity exists to consolidate learning from the growing volume and visibility of HMIS analyses to update the WHO practical guide to address a broader range of health system shocks. Continued conversation across stakeholders is critical for sustained efficiency and collaboration.

1 Bridgit Adamou, Janine Barden-O’Fallon, Katie Williams, and Amani Selim, “Routine Family Planning Data in the Low- and Middle-Income Country Context: A Synthesis of Findings From 17 Small Research Grants,” *Global Health: Science and Practice* 8, no. 4 (2020): 799-812. <https://doi.org/10.9745/ghsp-d-20-00122>.

Participant List

Name	Project/Organization
Aguima F. Tankoano	AmplifyFP (Pathfinder)
Dela Nai	AmplifyFP (Pathfinder)
Hassane Atamo	AmplifyFP (Pathfinder)
Macoumba Thiam	AmplifyFP (Pathfinder)
Claire-Helene Mershon	Bill & Melinda Gates Foundation
Win Brown	Bill & Melinda Gates Foundation
Ray Karekezi	Clinton Health Access Initiative, Rwanda
David Hotchkiss	Data for Impact (UNC)
Erin Luben	Data for Impact (UNC)
Gustavo Angeles	Data for Impact (UNC)
Hannah Silverstein	Data for Impact (UNC)
Janna Wisniewski	Data for Impact (UNC)
Jessica Fehringer	Data for Impact (UNC)
Manish Kumar	Data for Impact (UNC)
Sian Curtis	Data for Impact (UNC)
Skye Gilbert	Digital Square (PATH)
Vipin Yadav	Dure Technologies
Jason Bremner	Family Planning 2030 (UN Foundation)
Claire Giry	Foreign, Commonwealth, and Development Office, United Kingdom
Nicola Wardrop	Foreign, Commonwealth, and Development Office, United Kingdom
Gil Shapira	Global Financing Facility (World Bank)
Peter Meredith Hansen	Global Financing Facility (World Bank)
Petronella Vergeer	Global Financing Facility (World Bank)
Tashrik Ahmed	Global Financing Facility (World Bank)
Paulin Tra	International Planned Parenthood Federation
Nicholas Karugahe	IntraHealth, Rwanda
Suzanne Mukakabanda	IntraHealth, Rwanda
Yoonjong Choi	iSquared
Kate Gilroy	John Snow, Inc.
Debra Jackson	London School of Hygiene and Tropical Medicine

Name	Project/Organization
Anisa Berdellima	MSI Reproductive Choices
Joseph Siteinei	Ministry of Health, Kenya
Oliver Munyao	Ministry of Health, Kenya
Onesmus Kamau	Ministry of Health, Kenya
Wesley Oghera	Ministry of Health, Kenya
Patrick Knowloh	Ministry of Health, Liberia
Issac Dambula	Ministry of Health, Malawi
Maines Munyani	Ministry of Health and Child Care, Zimbabwe
R. Kangwende	Ministry of Health and Child Care, Zimbabwe
Binod Joshi	Ministry of Health and Population, Nepal
Kabita Aryal	Ministry of Health and Population, Nepal
Deborah Sitrin	MOMENTUM Country and Global Leadership (Jhpiego)
Craig Arnold	MOMENTUM Integrated Health Resilience (JSI)
Katie Morris	MOMENTUM Integrated Health Resilience (CARE)
Soumya Alva	MOMENTUM Knowledge Accelerator (JSI)
Lara Vaz	MOMENTUM Knowledge Accelerator (PRB)
Nikki Gurley	PATH
Alex Reed	PACE (PRB)
Dennis Mwambi	PACE (PRB)
Eve Brecker	PACE (PRB)
Kaitlyn Patierno	PACE (PRB)
Katherine Kinzer	Consultant (PRB)
Emily Sonneveldt	Track20 (Avenir Health)
Jerry Parks	Track20 (Avenir Health)
Jessica Williamson	Track20 (Avenir Health)
Margaret Reeves	Track20 (Avenir Health)
Priya Emmart	Track20 (Avenir Health)
Shurat Munir	Track20, Afghanistan (Avenir Health)
Barrière Airy Y. Fodjo	Track20, Cameroon (Avenir Health)
Ousman Esléman Esmale	Track20, Ethiopia (Avenir Health)
Ashwani Kumar	Track20, India (Avenir Health)
Jay Prakash	Track20, India (Avenir Health)
YP Gupta	Track20, India (Avenir Health)
Beatrice A. Okundi	Track20, Kenya (Avenir Health)

Name	Project/Organization
Gabrielle Appleford	Track20, Kenya (Avenir Health)
Sulaiman Gbadamosi	Track20, Nigeria (Avenir Health)
Khan Muhammad	Track20, Pakistan (Avenir Health)
Ken Borling	Track20, Philippines (Avenir Health)
Joel Serucaca	Track20, Rwanda (Avenir Health)
Victor Ndaruhutse	Track20, Rwanda (Avenir Health)
Rogers Kagimu	Track20, Uganda (Avenir Health)
Brighton Muzavazi	Track20, Zimbabwe (Avenir Health)
Chika Hayashi	UNICEF
Monica Giuffrida	UNICEF
Howard Friedman	UNFPA
Bertille Agueh Onambele	USAID/Benin
Ishrat Husain	USAID/Bureau for Africa
Madeleine Short	USAID/Bureau for Africa
Rachel Rhodes	USAID/Bureau for Africa
Sylvia Alford	USAID/Bureau for Africa
Barbara Rawlins	USAID/Maternal and Child Health
Bill Weiss	USAID/Maternal and Child Health
Marc Cunningham	USAID/Maternal and Child Health
Ana Scholl	USAID/Office of HIV/AIDS
Amani Selim	USAID/Population and Reproductive Health
Baker Maggwa	USAID/Population and Reproductive Health
Bamikale Feyisetan	USAID/Population and Reproductive Health
Radina Soebiyanto	USAID/President's Malaria Initiative
Alaa El-Bashir	USAID/West Africa
Kathleen Louise Strong	WHO
Ann-Beth Moller	WHO
Theresa Diaz	WHO
Elizabeth Katwan	WHO

Agenda

COORDINATING ANALYSES OF ROUTINE HMIS DATA TO IDENTIFY DISRUPTIONS IN ESSENTIAL HEALTH AND FAMILY PLANNING CARE	
MARCH 9, 2021	
7:30-7:45 AM	<p>Welcome and meeting objectives</p> <p>Emily Sonneveldt, Track20 (Avenir Health) Kaitlyn Patierno, PACE (PRB)</p>
7:45-9:15 AM	<p>Analyzing the impact of shocks on family planning and essential health services using HMIS data: Methods and findings</p> <p>Moderator: Maggwa Baker, USAID/Population and Reproductive Health</p> <p>Panel Presentations</p> <ul style="list-style-type: none"> • Petra Vergeer and Gil Shapira, Global Financing Facility (World Bank) • Maines Munyani, Ministry of Health and Child Care, Zimbabwe • Gustavo Angeles, Data for Impact (UNC) • Macoumba Thiam, AmplifyFP (Pathfinder) • Priya Emmart, Track20 (Avenir Health) <p>Q&A</p>
9:15-9:20 AM	<p>Break</p>
9:20-10:35 AM	<p>Methods considerations: Commonalities, high impact approaches, and scalability</p> <p>Moderator: Emily Sonneveldt, Track20 (Avenir Health)</p> <p>Overview</p> <ul style="list-style-type: none"> • WHO quality guidelines <p>Discussion Topics</p> <ul style="list-style-type: none"> • Alignment on methods to address data quality • Feasibility, scalability, and sustainability of approaches
10:35-10:45 AM	<p>Break</p>
10:45 AM-12:00 PM	<p>Consolidating best practices</p> <p>Moderator: Bill Weiss, USAID/Maternal and Child Health</p> <p>Session Objectives</p> <p>Breakout Rooms</p> <ul style="list-style-type: none"> • Adjusting for data quality issues in the analysis (French) • Creating a counterfactual to assess the impact of shocks <p>Discussion and Next Steps</p> <ul style="list-style-type: none"> • Scaling up best methodological practices: Challenges and opportunities • Recommendations

**COORDINATING ANALYSES OF ROUTINE HMIS DATA TO IDENTIFY
DISRUPTIONS IN ESSENTIAL HEALTH AND FAMILY PLANNING CARE**

MARCH 10, 2021

7:45-8:00 AM	<p>Day 1 Recap Eve Brecker, PACE (PRB)</p>
8:00-9:35 AM	<p>Getting ahead of the next crisis: Opportunities, challenges, and innovations to enhance the quality and use of HMIS data during shocks</p> <p>Moderator: Kaitlyn Patierno, PACE (PRB)</p> <p>Opening Remarks</p> <ul style="list-style-type: none"> • Dr. Joseph Sitienei, Ministry of Health, Kenya <p>Opening Remarks</p> <ul style="list-style-type: none"> • Kabita Aryal, Ministry of Health and Population, Nepal Stewardship of the private sector • Patrick Knowloh, Ministry of Health, Liberia Implementing innovative data management solutions • Anisa Berdellima, Marie Stopes International Innovations in data visualization for routine service statistics • Vipin Yadav, Dure Technologies Automating analytics in DHIS2 • Skye Gilbert, Digital Square (PATH) Global goods to support automated analytics and visualizations in HMIS platforms <p>Q&A</p>
9:35-9:45 AM	<p>Break</p>
9:45-11:15 AM	<p>Coordinating and harmonizing country, regional, and global support for sustained analysis</p> <p>Moderator: Lara Vaz, MOMENTUM Knowledge Accelerator (PRB)</p> <p>Discussion Themes</p> <ul style="list-style-type: none"> • Coordinating and harmonizing efforts at the country, regional, and global level • Collaborative efforts to increase the speed at which data are analyzed and insights are generated • Capturing and evaluating service adaptations and strengthening data systems for resilience
11:15-11:30 AM	<p>Debrief and close Ishrat Husain, USAID/Bureau for Africa</p>

