

Situation and Programmatic Monitoring in the context of COVID-19



Integrated Outbreak Analytics: From Ebola to COVID-19 in the Democratic Republic of Congo (DRC)

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for every child



Mirielle Dombilo, a psychologist supported by UNICEF, accompanies a family affected by Ebola in Mbandaka, Equator Province. This experience, and that of many others working on Ebola response, was applied to COVID-19.

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Abstract

The Integrated Outbreak Analytics (IOA) approach was developed during the 2018 Ebola outbreak by UNICEF, WHO, CDC-Atlanta and Epicentre under the direction of the Ministry of Health (MoH). UNICEF led the CASS (Social Sciences Analytics Cell) which provided the platform for IOA to systematically complement epidemiological data and modelling with social science evidence to understand the epidemiological, behavioural and perception trends in relation to the outbreak and the outbreak response. Insights from the application of IOA in Ebola were quickly translated into recommendations for humanitarian responders in the COVID-19 pandemic in the DRC and beyond. In the DRC, IOA integrated epidemiological data, evidence on perceptions and factors influencing behaviours generated by the CASS team with health services and other available data to explain trends in health outcomes and epidemiological trends. Recommendations were co-developed with technical and operational partners, and tracked transparently. IOA highlighted critical broader health impacts of the pandemic on communities, including the impact of COVID-19 on women and girls, that shaped response actions.

Lessons learned for consideration

“Create or facilitate space for exchange that is free from competition.”¹ The team that facilitated IOA created a neutral, transparent platform for the collective use of data to improve the COVID-19 response. Agencies could share data, see how data could be better used, or make data requests.

In order to get something done collectively, you may need to forgo getting credit for it. The IOA team made a conscious choice to be open source, transparent, and ego-less. Nothing related to IOA was branded as a specific agency output. Tools and materials did not have agency colours or branding which resulted in collective ownership of process and products.

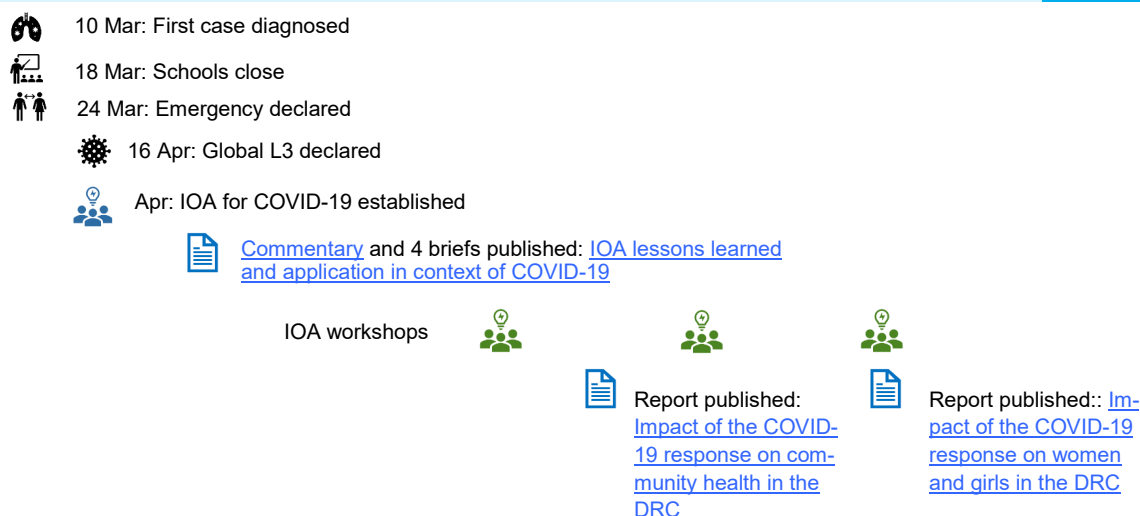
Invest in standing capacity and flexible systems: The team facilitating IOA had adequate resources and flexibility to maintain a standing team and hire additional team members for periods of time when needed. The added benefit of the approach was that the standing team gained skills and presented findings to civil society at local level.

Design questions with the end user in mind. It was important to identify how each study would be used for action and by whom, along with why the data was being collected. The more data users were involved in study design, the more likely they were to use the evidence for action because it was tailored to meet their needs.

Secure the right expertise for the effort. IOA required specialized expertise in UNICEF and partners. In UNICEF this expertise may sit in different sections which may limit the direct link with health and epidemiological data analytics.²

Technical resources embedded at country level can influence global innovation. DRC and Headquarters agreed that the IOA facilitation team manager could support other countries and global IOA developments. This resulted in global guidance and publications, more than 60 global presentations in one year, technical support to country and regional offices, and contributions to establishment a global IOA Working Group.

Timeline



Context

The first case of COVID-19 was declared in Kinshasa on 10 March 2020. The DRC had already faced years armed conflict and cycles of disease outbreaks. Fragile public health, social service, and food systems were already strained at the beginning of 2020. An estimated 15.9 million people, including 8.6 million children, were in need of humanitarian assistance. The 5.2 million displaced persons (primarily women and children) and more than 500,000 refugees already faced challenges in accessing services.

Integrated Outbreak Analytics (IOA)

Rapid and regular analysis of the situation was critical to inform the response to COVID-19 in the DRC. A platform and approach to do so was already in place. During the 2018-20 Ebola outbreak in Eastern DRC, a Social Sciences Analytics Cell (CASS) was established by UNICEF as a service to the Ministry of Health (MOH) and agencies in the Ebola response.

This UNICEF-led process was in service to the MOH, the National Institute for Biomedical Research (INRB) and in partnership with academic and response actors³. A team in UNICEF facilitated the CASS platform to work along the Epidemiology Cell and produce IOA⁴. Facilitation included lever-

aging other agencies data and expertise, as well as initiation of studies to contribute to the collective analysis. The CASS platform “was the first field-based, multi-actor, operational research mechanism that provided rapid social and behavioural sciences evidence integrated with epidemiological and health service data and used to systematically inform real-time⁵ epidemiological analyses, government and response decision-making in an outbreak⁶.”

The aim of IOA was to bring together different data sources (epidemiological, health service, social behavioural, socio-economic and programme data) to better understand outbreak dynamics and its impact on communities for a more appropriate, accountable and evidence based response. (Figure 1). Epidemiological data on its own could not explain the causes behind any trends in the data. For example, epidemiological data on its own cannot explain the reasons for delays in seeking treatment or the high case numbers in one area versus another. IOA used data and analytical approaches from multiple technical disciplines (Box 1). Triangulation of data, use of data disaggregated (age, sex and location) and trend analysis over time were essential.

¹ Quote from Simone Carter, Manager Social Science Analytics Cell.

² For example in UNICEF, Health, Communications for Development, Communications Section, and Social and Behaviour Change Communication experts in Programme Sections. IOA also required people from WHO, CDC-Atlanta, MSF, IFRC, NGO and other partners for expertise and data. It is beyond the scope of this note to comment on how other agencies structured their technical expertise.

³ Academic actors such as Harvard Humanitarian Initiative and LSHTM during the Ebola outbreak. Response actors such as the World Health Organization, International Federation of the Red Cross, the Center for Disease Control and Prevention.

Box 1: IOA data sources

- Epidemiological analysis
- Health service use data (District Health Information Software ([DHIS2](#)) or direct collection)
- Individual community and healthcare worker data (perceptions, norms and behaviours) disaggregated by age, sex and location
- Events and timelines (e.g. policies, political restrictions, information) and response strategies
- Markets, prices and movement
- Intervention location and population density

cies that were Cluster partners (e.g. NGO), and non-cluster local actors (e.g. civil society organisations, local level health leadership or associations. Recommended actions would be recorded in an Excel-based [MONITO tool](#) and the CASS/IOA facilitation team tracked implementation status. Recommendations could be analyzed by location, type of recommendation, responsible Commission or actor, study and over time.

All tools, data and presentations were (and are) freely available online in a Google drive in [English](#) and [French](#). Materials did not carry specific agency branding on their contributions.

Co-creating solutions through IOA

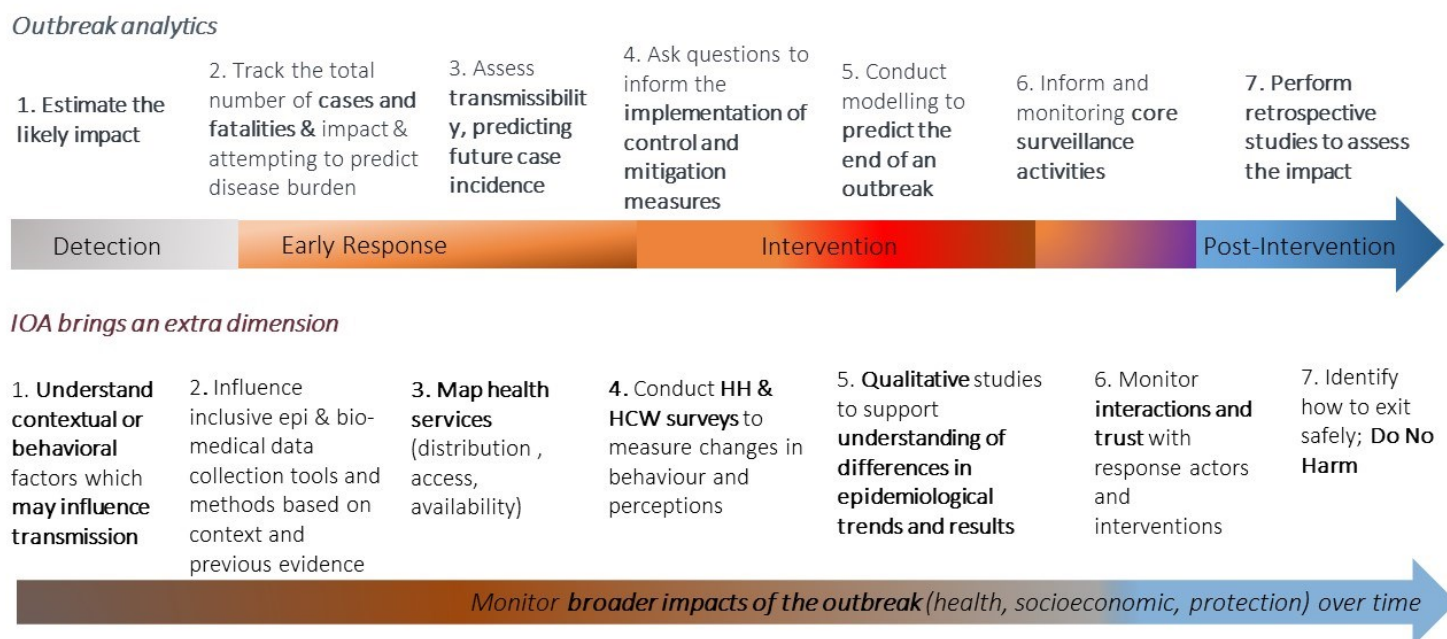
IOA research questions were collectively identified and addressed according to a [specific procedure](#). Findings would be presented to different stakeholder groups at national and subnational levels and the CASS/IOA facilitation teams (based in each location) supported co-development and monitoring of recommended actions from the analysis with technical stakeholders and policy makers. Stakeholders included the Commissions (e.g. Risk Communication and Community Engagement (RCCE), WASH-Infection Prevention and Control (IPC), Vaccination, Surveillance etc.), agen-

Pivoting IOA to COVID-19

In April 2020, UNICEF along with the MOH and INRB agreed that similar support would be needed for COVID-19. Expanding from Eastern DRC for Ebola to national engagement for COVID-19 required:

- **Approval of the national COVID-19 focus:** MOH colleagues involved in the COVID-19 response were familiar with working with the CASS and conducting IOA in Eastern DRC. Previous collaboration enabled swift ap-

Figure 1: Complementarity between Outbreak Analytics and IOA through the outbreak cycle for Ebola⁷



⁴ The approach has been applied in outbreaks including Ebola, cholera and COVID-19 in DRC, and Ebola in Guinea.

⁵ "Real-time" meaning that studies were developed, run and presented within 4-15 days for Ebola, and up to 30 days for COVID-19

⁶ Carter SE, Gobat N, Pfaffmann Zambruni J, et al. [What questions we should be asking about COVID-19 in humanitarian settings: perspectives from the Social Sciences Analysis Cell in the Democratic Republic of the Congo](#). BMJ Global Health 2020;5:e003607

⁷ Graphic draws from materials in <https://europepmc.org/article/med/31104603> and <https://gh.bmj.com/content/bmjgh/5/9/e003607.full.pdf>

proval of establishment of an Integrated Analytics Cell (via the *Commission de Gestion des Informations*) which included epidemiologists, DHIS2 data specialists and the CASS. The terms of reference (TOR) for CASS to do IOA and be part of the commission were signed off within the first week of the COVID-19 response set up.

- **Development and adaptation of partnerships:** The CASS/IOA facilitation team had strong partnerships with NGOs in Eastern DRC for the Ebola response. Partnerships needed to be built and expanded for COVID-19. Partners in Kinshasa were not necessarily those in Eastern DRC.
- **Modifications to data for analysis:** Epidemiological data for COVID-19 was constrained as there was limited testing for COVID-19. Other health related data (health services use, health outcomes) from DHIS2 and health services reports were required and critically important to monitor impacts on health services use and health outcomes during lockdown.
- **Modification to monitoring follow up actions:** MONITO actions were organized by geographic area for Ebola, but was less useful for COVID-19 nationwide scope. The MONITO tracking tool was adapted to track actions by disease rather than geographic location.
- **Adaptation of ethical clearance procedures:** The ethical framework for research was based in the TOR for the CASS which was signed off by the MOH and INRB. Each study would be outlined on one page and signed off by MOH response leadership (supported by INRB) and local MOH. After recognizing that many studies focused on broader impacts of COVID, the CASS/IOA facilitation team sought ethics approval to cover multiple studies on broader impacts of COVID-19 for 2 years together with KSPH and INRB.
- **Translation of previous learning to the COVID-19 context.** Four briefs ([Brief 1](#) [Brief 2](#) [Brief 3](#) [Brief 4](#)) were developed with operational and academic partners to support humanitarian response to COVID-19 in the DRC and beyond with learning from IOA use in Ebola.

Adapting data collection in COVID-19

Multiple COVID-19 studies were undertaken based on collectively identified priorities through the CASS. Face-to-face data collection was limited while movement restrictions were in place. Subsequently, the first two months of qualitative, longitudinal analyses of the impacts of COVID-19 were conducted via phone survey. The Kinshasa School of Public Health provided technical support including enumerators with years of experience in phone-based surveys. Anecdotaly the shift back to face-to-face data collection appeared to improve data quality.

“All outbreaks have a gender dimension- if it isn’t seen, then it means no one is looking for it.”

Simone Carter, Manager Social Science Analytics Cell

Applying the gender lens in IOA

The IOA facilitation team and many partners did collect data on the impact of COVID-19 on girls and women. At the same time, the majority of analyses on the impact of COVID-19 did not apply sex-disaggregation in findings. Pre-existing disparities between men and women prior to COVID-19 were likely to get worse as a result of the outbreak and dynamics in the response. It was likely that women and girls in DRC, as in other countries and other outbreaks, could be negatively impacted through loss of work and increased caregiving responsibilities in light of an outbreak. Increased food insecurity as a loss of cultivation capacity or loss of wages in the informal sector could also increase the risk of exploitation. If the gendered dimension of impacts could not be measured, then specific interventions to mitigate and address these impacts could not be put in place.

In response, the CASS produced an analysis in December 2020 on [“The impacts of the COVID-19 outbreak response on women and girls in the DRC.”](#) Looking at gender meant going beyond sex and age disaggregated data on caseloads to identify the gendered impact of COVID-19 through time use and access to services. The research found that school closures negatively impacted girls, resulting in increased risk of transactional sex, lower return rates when school reopened and increased unpaid care work⁸.

⁸ Further information can be found on the [syndemic of gender based violence and COVID-19](#). The gender analysis lens was applied to other indicators on an ongoing basis in IOA.

IOA to Action

The process of co-creating recommendations evolved over time and a pragmatic approach was taken. The CASS facilitated workshops for analysis (August, October, December 2020), presented findings in relevant response meetings such as cluster meetings and COVID-19 Commissions, as well as other actors via smaller meetings and working sessions. The workshops were crucial to create a space to discuss how to adapt strategies and interventions based on evidence. The [MONITO tool](#) captured recommendations that were co-developed with response actors. The majority of recommendations (92%) were developed in real-time during the workshops.

"It can be very challenging getting the data used, in one sense because the analysis was able to capture the system nature of issues- for example food price hikes and poverty is leading to increased sexual violence or risk of young girls and transaction sex, the actions to take are so massive. The action needed isn't always quick fixes like changing the black body bag in Ebola burials. So we are still learning about how to move to action under the COVID context, sometimes which requires high-level donor advocacy and action."

Izzy Scott Moncrieff, CASS Field Supervisor

Results

The CASS ran 26 studies using IOA over 7 months on the impacts of COVID-19 in 2020. Results from these studies were shared through the publication of briefs, lessons learned, and guidance to support the response to COVID-19 in DRC and beyond. In DRC, these results helped timely and contextually appropriate course correction of the response to COVID-19. A total of 51 COVID-19 related recommendations were made. Actions taken included:

- *Advocacy for reopening of schools in the DRC:* The CASS first compiled evidence on the impacts of school closures in eastern DRC in November 2020. Additional data collection on the impacts of school closures and non-return of girls was collected by the NGO REACH and through U-Report. CASS compiled evidence on

risks of school closures from previous outbreaks and from reports and publications regarding transmission of COVID-19 in schools. The analysis was shared weekly with the MOH COVID-19 secretariat and response leadership to advocate for school reopening which was achieved in February 2021. Further analysis on the [impact of COVID-19 school closures on the health, protection and education of children and youth](#) was released in May 2021.

- *Reinforce return to school among pregnant girls in Eastern DRC:* The CASS team worked with different local actors to use evidence to support the safe return of girls who had become pregnant during school closures. Meetings were held with the heads of general services of the sub-division of public and public schools to identify the parents and families where of girls who had become pregnant during school closures. Follow up engagement and dialogue activities were organised to reinforce the importance of education for girls, even post childbirth and an Official Note was published by the government asking school officials to reintegrate girls who had dropped out of school because of pregnancy.

What it took to deliver

UNICEF

- A standing team (3 internationals + 3 nationals), local researchers recruited for each outbreak, with a small core team on contract in Goma and Kinshasa.
- Continuous training of the local research team.
- Approximately 1 million USD annual budget.

MOH

- Creation of a Commission for Information Management for IOA and facilitating interest in and use of evidence.
- Sign off and support of studies, reports and publications.

Partners

- Open access sharing of data and studies, including programme and activity data to contribute to IOA.
- Participation and engagement in IOA through the CASS.

- Human and technical resources to undertake studies.

Enabling factors

- Clear SOPs to operate signed off by MoH leadership and each study signed off at local level by health actors.
- Co-development of recommendations by technical and operational teams across sectors fostered localized solutions and ownership of the response.
- Inclusion of the CASS in donor relations and funding proposals contributed to coordinated financial support.
- Collaboration with the Public Health Emergencies (PHE) team fostered technical exchange across relevant country, regional and global networks.

Opportunities

- UNICEF may benefit from stronger collaboration with relevant agencies on research methods as it leads development of IOA, as well as mechanisms to as needed technical expertise to 1) develop tools 2) adapt research protocols 3) undertake the analysis itself and 4) train in-country teams.
- There may have been an opportunity in leveraging global familiarity with polio in community awareness in country around the COVID-19 vaccine.

Next steps:

In DRC, the CASS will continue to apply the IOA in relation to Ebola, COVID-19 impacts, cholera, the plague, and influential factors and gendered impacts of malnutrition. The CASS manager also supports other countries and global level discussions, under an agreement between the UNICEF Public Health Emergencies team and UNICEF DRC. The IOA approach was successfully applied in the 2021 Ebola outbreak in Guinea.

UNICEF will continue to lead the development of IOA in DRC and beyond. In the DRC, The CASS team have developed simple online tools and training guidelines in both French and English which were submitted for publication in June 2021. These are critical contributions towards institutionalizing training and deployment of integrated analytic teams in future public health emergencies.

With the support of the Global Outbreak Alert Response Network (GOARN), an IOA Global Working Group was established. An IOA Core Team comprised of agencies with mandates to respond to Public Health Emergencies has been established. Operationalization including development of Strategic Partners and Network Members is in process.

Additional resources

CASS UNICEF DRC Webpage

<https://www.unicef.org/drcongo/cellule-analyse-sciences-sociales>

IOA youtube channel with training & presentations

<https://www.youtube.com/channel/UCORuiEZmQI71nrv-C27cNnQ>

Presentation on IOA and the CASS:

<https://www.youtube.com/watch?v=7Sl7e24iKk4&t=1800s>

Presentation on the MONITO

<https://www.youtube.com/watch?v=-3EOn1yil1w&t=1945s>

How to improve outbreak response: a case study of integrated outbreak analytics from Ebola in Eastern Democratic Republic of the Congo

<https://gh.bmj.com/content/6/8/e006736.full>

For more information, please contact

Simone Carter scarter@unicef.org

Manager- Social Sciences Analysis Cell – CASS Integrated Outbreak Analytics - IOA UNICEF Public Health Emergencies

Stephie Meskia smeskia@unicef.org

Knowledge Management Officer UNICEF Kinshasa

This case study is the result of a collaboration between the UNICEF Regional Office for West and Central Africa and the COVID-19 PME Working Group (New York).