**Distribution Agreement**

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Allison Snyder Date

# The Impact of the 2018-2020 Ebola Epidemic in DR Congo on Access to Family Planning and Post Abortion Care Services, a Mixed Methods Analysis

By

Allison Snyder
Degree to be awarded: MPH

Rollins School of Public Health Executive Master of Public Health Program
Prevention Sciences

_____
Rebecca Upton, PhD, MPH
Committee Chair

_____
Elizabeth Noznesky, MA, MPH
Committee Member

# The Impact of the 2018-2020 Ebola Epidemic in DR Congo on Access to Family Planning and Post Abortion Care Services, a Mixed Methods Analysis

By

Allison Lynn Snyder

B.S. International Affairs
Florida State University, 2009

Thesis Committee Chair: Rebecca Upton, PhD, MPH

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health, 2020

## Abstract

The Impact of the 2018-2020 Ebola Epidemic in DR Congo on Access to Family Planning and Post Abortion Care Services, a Mixed Methods Analysis

By Allison Snyder

**Objective:** This study aims to evaluate the impact of the 2018-2020 Ebola epidemic in DRC on access to and utilization of sexual and reproductive health services, with a focus on family planning (FP) and post abortion care services (PAC).

**Design:** Mixed methods study, including an analysis of primary qualitative data (key informant interviews (KII) and focus group discussions (FGD)) from care providers and women community members in North Kivu DRC, plus an analysis of secondary program data from CARE International's SAFPAC initiative.

**Methods:** 10 KII and 12 FGD were conducted with 130 total participants. Data were analyzed in MAXQDA and major themes were identified. Secondary program data containing monthly totals of women who utilized FP and/or PAC services at identified SAFPAC supported health facilities in 3 health zones in North Kivu, DRC (Butembo, Kayna and Lubero) from 2017 through 2020 were analyzed to identify trends.

**Results:** FGD and KII feedback indicated that FP and PAC use dropped significantly during the EVD epidemic in the health zones in question. However, SAFPAC initiative health facility data on FP and PAC use indicated that use of the services remained relatively stable, with slight drops in FP use and a more significant drop of PAC use in Butembo, the health zone hardest-hit by the EVD epidemic. Interview and discussion participants shared that fear and rumors were the main drivers of decisions around seeking SRH care during the epidemic.

**Conclusion:** A mixed methods approach to this topic is extremely valuable in order to understand the nuance and complexity of the challenge. Overall, SRH services continued through the course of the EVD epidemic, with only slight reductions in numbers of women accessing the services via the SAFPAC initiative. One of the most important findings regarding mitigation planning/techniques to ensure continued access to SRH services in epidemic settings is to involve local organizations and leaders in community outreach and sensitization efforts.

# The Impact of the 2018-2020 Ebola Epidemic in DR Congo on Access to Family Planning and Post Abortion Care Services, a Mixed Methods Analysis

Allison L. Snyder

Emory University Rollins School of Public Health

Author Note

Please direct correspondence to: allison.snyder@emory.edu

Acknowledgements

I would first like to acknowledge the data collection team, led by Eric Mukama, based in Goma, DRC. Without the valuable qualitative data the team collected, this work would not have been possible. Thank you for going into areas with ongoing Ebola transmission and conflict to conduct focus groups and interviews and for the valuable transcripts you provided. I would also like to thank the study participants, 120 men and women (mostly women) who shared their thoughts and opinions openly.

To the thesis committee, Elizabeth Noznesky and Rebecca Upton for their guidance, insights and patience during the past year working together to bring this from an idea to a complete thesis/manuscript. Thank you both for all of your help.

To my family and colleagues who saw my attention divided and time consumed with countless hours of data analysis and writing. Thank you for your support and understanding.

And finally, thanks to the CARE SAFPAC initiative for inviting me into your program data and providing information and insights along the way.

## Table of Contents

# The Impact of the 2018-2020 Ebola Epidemic in DR Congo on Access to Family Planning and Post Abortion Care Services, a Mixed Methods Analysis

## Chapter I: Introduction

### Introduction and Rationale

Emerging infectious disease outbreaks can have widespread effects on individuals and entire communities and countries, with their impacts ranging from death to a breakdown of entire health systems. The Ebola virus has done just this, most recently in the Democratic Republic of Congo (DRC) with an outbreak that lasted from August 2018 to June 2020 (*WHO | Ebola Virus Disease*, n.d.). Ebola Virus Disease (EVD) is a devastating illness, and along with dangerous physical health effects it spreads fear, the combination of which can have serious impacts on the health system in Ebola-affected areas. The impact of an EVD outbreak on sexual and reproductive health (SRH) services is of concern, and at the time this research began, had not been well studied, particularly not in the DRC context. However, in late 2019 and early 2020 two highly relevant reports were published that help further the understanding of gender components in EVD outbreaks in DRC, and the impacts of EVD outbreaks on sexual and reproductive health (SRH) in DRC. Thus, the research and results shared here are meant to complement and expand upon these two reports and further the growing evidence base.

The areas of interest for this work are located in eastern DRC, in the North Kivu province (for this research, data was analyzed from 3 health zones in the province: Butembo, Kayna, and Lubero). This province, along with neighboring South Kivu and Ituri provinces, has been marred by conflict over the past two plus decades. The protracted and still ongoing conflict has its origins in the 1994 Rwandan genocide, when Rwandan Tutsi refugees and Hutu genocidaires alike moved across the border into DRC (*Violence in the Democratic Republic of Congo | Global*

*Conflict Tracker*, n.d.). These conflict-zone provinces border Uganda, Rwanda and Burundi, and the geopolitical and conflict situation in the area is complex and, at times, dangerous. The conflict setting is one of the reasons that the focus on SRH rights and services needs to be carefully considered in this region and particularly in hyper-vulnerable times, such as during an EVD epidemic or other infectious disease outbreaks. These geopolitical challenges are also one of the reasons that CARE's Supporting Access to Family Planning and Post Abortion Care (SAFPAC) initiative operates in North Kivu.

CARE's SAFPAC initiative aims to reduce unintended pregnancies and deaths from unsafe abortion by increasing access to: quality family planning (FP), safe abortion (SAC), and post-abortion care (PAC) services for women and girls in settings of protracted or chronic crisis and SRH services in line with the Minimum Initial Service Package for Reproductive Health in Crisis Settings (MISP) during acute humanitarian emergencies. SAFPAC supports government primary health centers and referral facilities to provide facility-based FP/PAC/SAC services (the initiative does not provide community-based delivery of services, like distribution of contraceptives or condoms). The SAFPAC initiative seeks to better understand the impacts of the current EVD outbreak in North Kivu, DRC on its SRH programming to ensure that women and girls have continued access to lifesaving family planning and post abortion care services during current and future EVD outbreaks. SAFPAC DRC operates in many of the health zones in North Kivu that had confirmed EVD cases during the 2018-20 epidemic. The SAFPAC program serves vulnerable women and girls, including displaced individuals who are at risk of increased suffering and death if they are not seeking care due to fears surrounding an EVD epidemic, interruption of service availability, and/or other barriers. It is important to the initiative, as well as the communities at risk, to understand the impact of the latest EVD outbreak on the

availability and utilization of family planning and post abortion services, so the program can address issues in real time and work towards mitigating them when possible. Understanding past outbreak and emergency situations and their effects is also crucial for planning future response, resilience, and mitigation strategies.

The EVD outbreak created an urgent need to explore the impact of the outbreak on routine (and emergency) health services, such as those offered by the SAFPAC initiative. Previous research in Liberia as well as SAFPAC DRC staff experience to date has shown that during an EVD outbreak community members may be less likely to seek or be able to access routine health services (McQuilkin et al., 2017). Additionally, preliminary research on the recent EVD outbreak in DRC indicates that there has been widespread mistrust and misinformation that could impact the ways in which individuals access healthcare services (Vinck et al., 2019). EVD outbreaks and epidemics don't only affect personal behavior; the entire health system can be impacted, leading to service interruptions or delays that prevent women who would like to seek SRH services from being able to. Research to date has shown a decline in use of family planning and other SRH services during EVD and other infectious disease outbreaks, the potential consequences of which are unintended pregnancies and increased maternal morbidity and mortality.

**Problem Statement**

There is a need to understand the impact of the Ebola epidemic on access to family planning (FP) and post-abortion care (PAC) services in North Kivu province, DRC, so that programs and health facilities3 that provide FP and PAC can strengthen their approach and be prepared to provide timely and appropriate care to women and girls in need of FP and PAC

services during a public health emergency like an EVD outbreak/epidemic, or another emergency situation.

**Purpose Statement**

This research seeks to evaluate the impact of the 2018-2020 Ebola epidemic on access to and utilization of FP and PAC services provided by primary health facilities supported by CARE's SAFPAC initiative services in 2 health zones in North Kivu province, DRC, in order to make recommendations for ensuring the continuity of access to essential sexual and reproductive health (SRH) and other primary health services for women and girls, particularly in a disease outbreak/epidemic context. This was accomplished by analyzing key informant interview (KII) and focus group discussion (FGD) transcripts and secondary program data. The secondary program data used for analysis includes routinely collected health data around patient visits, type of care received, and patient demographics, etc. and was provided by the SAFPAC initiative. Over many years the SAFPAC initiative has built a robust system for routinely collecting, analyzing and using service delivery data to improve service delivery that involves community stakeholders as well as service providers and health officials.

**Research Questions**

Specific research questions include:

1. Did women access and/or utilize family planning services during the EVD epidemic (why or why not)?
2. Did women access and/or utilize post abortion care during the EVD epidemic (why or why not)?
3. What impacted women's decisions to seek/not seek SRH services?

4. Was there an interruption in the availability of SRH services during the EVD epidemic (focus on FP and PAC services)?
5. What are some proposed mitigation techniques to prevent interruption of SRH services during an infectious disease outbreak (focus on FP and PAC services)?

**Significance Statement**

This thesis research provides an in-depth examination of the impact of the recent EVD epidemic in DRC on family planning (FP) and post abortion care (PAC) services. Other recent research in the area has included these services as part of their analysis; this work should be complementary and provide a deeper examination of FP and PAC services specifically. The use of qualitative research in this study adds to the richness of the analysis and discussion. 120 women community members were interviewed in focus group discussions (FGD), and their insights and experiences are significant when examining the impact of the EVD epidemic. The addition of interviews with health care workers (10 participants) and long-ranging secondary program data provides a comprehensive overview of FP and PAC services in the health zones of interest. This work is significant due to its narrow focus and rich data, and is expected to be of importance to the SAFPAC initiative and others working in SRH in DRC and other EVD endemic areas.

**Definition of Terms**

**Abortion:** Provoked or spontaneous termination of a pregnancy (for the purposes of this research, provoked and spontaneous abortions are grouped together, unless otherwise specified)

**Epidemic:** a disease that affects a large number of people within a community, population, or region

**Outbreak:** a greater-than-anticipated increase in the number of cases of an endemic disease

**Family Planning:** Contraceptives to prevent pregnancy (must be voluntary and confidential)

**Post-Abortion Care:** Part of emergency obstetric care to evacuate uterine contents after a miscarriage or unsafe abortion

**Health Facility:** For the purposes of this research, any health facility that provides SRH services (may also be called clinic or health center)

**Ebola Virus Disease:** (also called Ebola hemorrhagic fever) A highly infectious disease that causes severe bleeding, organ failure, and can lead to death (other symptoms can include headache, fever, chills, muscle aches, and internal bleeding)

**Ebola Treatment Center:** Health facilities established specifically to treat Ebola cases

**Abbreviations**

DRC – Democratic Republic of Congo

ETC – Ebola Treatment Center

EVD – Ebola Virus Disease

FGD – Focus Group Discussion

FP – Family Planning

IRB – Institutional Review Board

KII – Key Informant Interview

LARC – Long-acting removable contraception

PAC – Post Abortion Care

SAFPAC - Supporting Access to Family Planning and Post-Abortion Care (Initiative)

SRH – Sexual and Reproductive Health

WHO – World Health Organization

# Chapter II: Review of the Literature

## Introduction to the Literature

Though growing, the evidence base around sexual and reproductive health (SRH) in Ebola and other infectious disease epidemic scenarios is relatively small and relatively recent. The Ebola Virus Disease (EVD) epidemic in West Africa prompted a handful of research studies during the final waves and aftermath of the outbreak, some of which focused on maternal and child health concerns, with brief inclusions of family planning (FP), post abortion care (PAC) and other sexual and reproduction health (SRH) services. Programs and organizations working in SRH in hard-hit outbreak and epidemic areas are examining these important topics in an effort to understand impacts and plan for mitigation. Therefore, heightened focus is being applied to this intersection of SRH and infectious disease outbreaks, and new reports and publications are emerging. Some of the findings are specific to a given context, and data availability and quality pose some barriers to generalizability. However, existing evidence shows that infectious disease outbreaks, and EVD outbreaks in particular, have a negative impact on SRH, including access to FP and PAC. EVD is so relevant to SRH services because the case definition and the side effects of the disease can be closely intertwined with normal physiological functions (i.e.: bleeding) as well as obstetric emergencies such as spontaneous abortion. The case definition for EVD includes “spontaneous abortion” and “unexplained bleeding,” and this can have major impacts on women and girls (McKay et al., n.d.).

## Learning from Past Experiences

EVD outbreaks and epidemics pose a serious threat to already vulnerable health systems. Experiences from the 2014-16 West Africa EVD epidemic show that the disease can have impacts on every corner of the health system, including SRH service availability, access, and

utilization. The West African experience, and past experience in DRC, also shows that vulnerable health systems are prone to significant impacts in an outbreak or epidemic scenario, and that the effects can be far-reaching, beyond merely the direct effects and/or mortality caused by the outbreak disease. Increases in morbidity and mortality caused by a variety of conditions were seen in the West Africa EVD epidemic.

An analysis of the impact of the 2014-16 West Africa EVD epidemic on maternal mortality found that both the number of in-hospital deliveries and C-sections substantially declined shortly after the onset of the EVD outbreak (Brolin Ribacke et al., 2016). These findings likely indicate that many women were likely to have died due to the reduced access to appropriate care during childbirth (Brolin Ribacke et al., 2016). The authors went on to note that future research in EVD affected settings should focus on the entire health system and the indirect effects of the health system breakdown as a result of an epidemic/outbreak.

Another study conducted in 2015 examined the malaria morbidity in Guinea, Liberia, and Sierra Leone during the EVD epidemic in all countries, and found that untreated malaria cases as a result of reduced health-care capacity probably contributed substantially to the morbidity caused by the Ebola crisis (Walker et al., 2015). Malaria is a leading cause of death in Malaria-endemic areas, and in the midst of an EVD epidemic Malaria patients were likely unable to or unwilling to seek/receive appropriate treatment.

In an editorial in Retrovirology, that was published in 2014, early in the West Africa Ebola outbreak, EVD and HIV were compared and the potential impacts of EVD on HIV morbidity and mortality were presented. It was noted that a shift on the part of the health system to Ebola response is understandable but it compromised HIV control measures such as HIV

testing, HIV treatment, treatment as prevention, and prevention of mother to child transmission, and HIV services were further compromised by fear of EVD (Wainberg & Lever, 2014).

In an editorial drafted in 2015 to the West African Ebola SHS Network Coordination Committee, author Bernard Taverne affirmed that because of rapid and globalized information exchange that there can be deeply entrenched rumors and conspiracy theories about a disease before there are even any confirmed cases in an area (Taverne et al., 2015). He also points out that pre-existing social determinants of health such as the community and social context, the healthcare system, and economic stability can determine the affected country/area's vulnerability to an epidemic and that it is necessary to involve social scientists early in an outbreak/potential epidemic setting to aid in the response and preparedness (Taverne et al., 2015). EVD epidemics do not occur in a bubble; the impact of the virus is modified by socio-cultural, political and economic factors. In context of conflict and political crisis, as in Eastern DRC, there is already suspicion of the state/government and foreign actors. EVD makes it worse leading to conspiracy theories, rumors and general lack of trust in government response.

Experience from these past epidemics has shown that in the midst of an EVD outbreak, there are barriers to women's ability to seek and receive family planning, post abortion care, and other SRH services. Research conducted during and in the wake of the large Ebola outbreak in West Africa in 2014-16 demonstrated a decline in women accessing obstetric and gynecological care (Jones et al., 2016). One study concluded that before the EVD outbreak, Sierra Leone had a positive trend in terms of access to obstetric care but the improvement seen in the first half of 2014 was abruptly halted by the EVD outbreak (Brolin Ribacke et al., 2016). A systematic review of publications resulting from the West Africa EVD epidemic found that utilization of maternal health services decreased during the outbreak, including a change in family planning

and antenatal and postnatal services (Ribacke et al., 2016). Some areas saw a decrease in the utilization of family planning services specifically (most notably in Guinea), while other areas did not see a significant change. (Ribacke et al., 2016).

Research from Liberia indicated that as a result of lack of access to family planning services during the EVD outbreak in 2014-16, there were as many as 1.2 million unplanned pregnancies (McQuilkin et al., 2017). This research found that women who sought obstetric and gynecological care during the epidemic were often unable to access it, at that women in urban settings had the most challenges, with only approximately 25% of people who sought care actually able to receive it (McQuilkin et al., 2017). In another review of the impact of the West Africa EVD epidemic on SRH services, researchers discovered that family planning distribution declined by 65 percent in Liberia and 23 percent in Sierra Leone at the peak of the epidemic (Bietsch et al., 2020). This long-ranging study tracked FP distribution numbers for years after the EVD epidemic as well and found that in each country, 2 years after the epidemic the FP distribution numbers were around 30% higher than they had been pre-epidemic, and the authors note that this is a lesson in resilience (Bietsch et al., 2020). On the other hand, a study focused on a rural health area in Sierra Leone found that during the 2014-16 EVD epidemic, community level family planning distribution was only affected at the beginning of the epidemic with a small decrease in service utilization (Quaglio et al., 2019).

**DRC Context**

Ebola is not a new disease to DRC; the country has dealt with waves of outbreaks for nearly 30 years. However, the 2018-2020 outbreak (which grew into an epidemic rather quickly) was the largest to date, and it occurred in some areas of the country that have been embroiled in conflict and war for many years, and where Ebola had not been experienced previously. This

epidemic was the 10th in the country and officially (per the WHO) lasted from August 1, 2018 to June 25, 2020. The epidemic was declared a "public health emergency of international concern" by WHO on July 17, 2019. Through the course of the epidemic, there were reports of the ongoing conflict in the area being felt acutely in Ebola affected areas, and even reports of violence towards health workers and Ebola response efforts. Reports and interviews with community members have shown a low degree of trust between the community and the national government (and anyone associated with them) on top of conflict spurred by armed groups in the region (Moran, 2018).

These conflict and crisis settings in DRC are one of the areas that the Supporting Access to Family Planning and Post Abortion Care (SAFPAC) initiative operates. The SAFPAC initiative demonstrated that extending access to a wide variety of contraceptive methods, including long-acting reversible methods (LARC), is feasible in crisis-affected countries by focusing on best practices such as competency-based training, supply chain support, systematic supervision, and community mobilization (Curry et al., 2015). SAFPAC's main approaches are: 1) improving provider skills & attitudes through training, assessment and coaching; 2) continuous quality improvement through systematic supportive supervision and data for decision making; 3) ensuring a continuous supply of contraceptives, medicines and medical supplies; 4) community engagement to reduce demand-side barriers to seeking care; and 5) strengthening accountability of health system to the communities they serve.

SAFPAC interventions at the community level are essentially based on community dialogue conducted by community facilitators trained and supervised by the project team anf include awareness-raising via radio, participatory theater and songs, and reflective community dialogues that address negative attitudes and social norms that prevent women and girls from

using family planning and post abortion care services. The initiative also works closely with religious leaders across Christian and Muslim faiths not only to raise awareness about services, clarify myths, and share information about the benefits of family planning for women and their families but also to reinforce a woman's right to access health services (Curry et al., 2015). SAFPAC also supports and operates in health facilities to provide family planning and post abortion care services. In the 3 health zones supported by the SAFPAC project in North Kivu Province, the initiative supports 11 health structures in Kayna, 10 health structures in Lubero and 12 health structures in Butembo. Many of the health facilities in question are small with only 1 or 2 staff trained on FP/PAC, including health centers, referral health centers and general referral hospitals. The SAFPAC initiative has been operating in the area for many years and has established relationships in the community, but there was a deep mistrust of authority and spread of misinformation in the midst of the EVD epidemic that had the potential to undermine existing health services (in addition to service interruptions caused by EVD response implications, etc.). A 2018 survey of community members in Butembo and Beni health zones in North Kivu, DRC (early in the EVD epidemic) found that only 31% of individuals sampled trusted that local authorities represent their interest, and that 25% of respondents believed that the EVD outbreak was not real (Vinck et al., 2019b).

**The latest EVD outbreak in DRC, and its impact on SRH**

At the time this research project was developed, health zones where the SAFPAC initiative operates were just beginning to see confirmed EVD cases. Two extremely relevant reports on SRH and gender, respectively, during the Ebola epidemic in North Kivu, DRC were produced in 2019, during the data collection and analysis phase of this research. The first report, produced by the International Rescue Committee (IRC) takes a broader view of SRH impacts as

a result of the EVD epidemic. Their mixed methods analysis found that visits for FP, vaginal bleeding and abortions (spontaneous and induced) remained constant through the course of the epidemic in 5 health zones in North Kivu (IRC, 2019). They also stated that the interactions between SRH and EVD are not always obvious, and can be pervasive and highly complex (IRC, 2019). These interactions, as seen in other EVD outbreaks as well, can range from increased stigma around bleeding to delays and interruptions in service availability to women managing abortions at home in order to avoid being sent to an Ebola treatment center (ETC) (IRC, 2019).

The potential of being sent to an ETC and/or being labeled a suspected EVD case during the triage process was mentioned many times in the IRC report, via interviews with community members, as something that caused great fear. According to the IRC report, triage is defined as "the process whereby trained health care workers ask questions and screen people entering the health facility to identify those that meet the [EVD] case definition. This tends to take place in a specially built space at the entrance to health facilities" (IRC, 2019). The case definition for EVD during an outbreak/epidemic is very broad, so anyone experiencing non-specific symptoms like headache, fever, chills, or bleeding may have been routed through the triage process. Conducting the triage process and making decisions about a person's health status is stressful and challenging for both the patient and the health care provider (IRC, 2019). Additionally, most reproductive health life-saving interventions include handling blood or bodily fluids from patients whose Ebola status is often unknown and health staff often do not have access to appropriate protection.

In addition to the complex intersection of SRH and EVD, there was a gender component to the EVD epidemic in DRC that is very important to acknowledge. The majority of EVD fatalities consisted of women (56%) and children (28%) and men accounted for only 11% of fatalities (Care International & Kapur, 2020). This 2019 study led by CARE International found

that due to social and community factors, such as taking on a larger share of domestic chores and traveling for food and water, and increased exposure to sexual exploitation or abuse, women and girls were at a greater risk of contracting EVD (Care International & Kapur, 2020).

**Summary of current problem and study relevance**

The literature and past experiences show that there are many risks around sexual and reproductive health during an Ebola outbreak or epidemic. Experiences range from mild to major impacts on women's ability to seek and receive SRH care, and recommendations from past research nearly all point to the need for SRH to be a part of early outbreak response planning to ensure that women can access the crucial and at times lifesaving services offered by SRH providers and facilities.

The following research, conducted in 2019 and 2020, takes a close examination of family planning (FP) and post abortion care (PAC) in 3 health zones in North Kivu, DRC where there were confirmed EVD cases during the 2018-2020 epidemic. This mixed methods analysis examines the motivations and concerns of women who may need to access SRH services along with the insight and experiences of health care providers; routine health facility data was also analyzed to ascertain what changes, if any, there were to the use of FP and PAC services during the EVD epidemic. This work will add to the evidence base around the potential impact(s) of EVD on SRH.

## Chapter III: Contribution of the Student

This research project idea was proposed by the director of the Supporting Access to Family Planning and Post-Abortion Care (SAFPAC) initiative at CARE USA. The SAFPAC director explained the need that the initiative faced in the midst of the Ebola epidemic to better understand the impacts on access to and utilization of sexual and reproductive health services, so that findings could be fed into programmatic response and planning. I developed this idea into a thesis proposal and agreed to work with the SAFPAC team to design and conduct the project.

Since this project entailed primary data collection, I sought approval from Emory's Institutional Review Board (IRB). As part of the IRB submission process, I developed a complete social-behavioral study protocol, including informed consent forms and processes, and key informant interview (KII) and focus group discussion (FGD) guides (consent forms and interview guides were all translated into French). I am listed as the principal investigator for this work, with SAFPAC team members Elizabeth Noznesky and Eric Mukama as listed external collaborators. In December 2019, the study was classified as "exempt" by Emory IRB.

In December 2019 SAFPAC initiative staff based in Goma, DRC, traveled to the two study areas and conducted the qualitative data collection (via KIIs and FGDs). The team was led by Eric Mukama, SAFPAC Emergency Advisor, who was deployed to Butembo to initiate CARE's response to the EVD outbreak. Dr. Mukama was on the ground from the very early days of the EVD outbreak in the area, and therefore h1ad good sense of impact on SRH and when services were most likely to be disrupted. The data collection team, using the consent forms and interview guides I developed, recorded the interviews in Swahili and French, and transcribed the conversations in French. I translated all qualitative data from French to English, and generated 22 transcript files that were then imported into MAXQDA for analysis. I developed a code book,

with 7 major codes and 70 sub codes, and coded the entire data set, then conducted a complete analysis of the major themes and findings. Secondary program data, primarily descriptive statistics that include totals of how many women accessed SRH various services offered by the SAFPAC initiative, were provided by the SAFPAC team, and I developed charts and interpreted the data in the context of the qualitative data analysis and results.

Finally, I prepared the first draft of all sections of the manuscript for publication. The draft manuscript (and associated thesis chapters) were provided to the SAFPAC collaborators for review and input. We intend to submit the manuscript to Global Health: Science and Practice for publication. I also plan to conduct a presentation of the findings with the SAFPAC team and am sharing all data and analysis components with the team via a shared Dropbox folder.

## Chapter IV: Journal Article Manuscript

### Title Page for Manuscript

The Impact of the 2018-2020 Ebola Epidemic in DR Congo on Access to Family Planning and Post Abortion Care Services, a Mixed Methods Analysis

Authors: Allison L. Snyder (Emory University Rollins School of Public Health), Elizabeth Noznesky, MA, MPH (CARE USA), Eric Mukama Kambale (CARE DRC)

Please direct correspondence to: allison.snyder@emory.edu

Key message: Ebola outbreaks can cause interruptions in sexual and reproductive health access and utility, the effects of which are compounded by fear among community members. Early incorporation of SRH into outbreak and emergency response planning is key to ensuring access to SRH services.

**Abstract**

**Objective:** This study aims to evaluate the impact of the 2018-2020 Ebola epidemic in DRC on access to and utilization of sexual and reproductive health services, with a focus on family planning (FP) and post abortion care services (PAC).

**Design:** Mixed methods study, including an analysis of primary qualitative data (key informant interviews (KII) and focus group discussions (FGD)) from care providers and women community members in North Kivu DRC, plus an analysis of secondary program data.

**Methods:** 10 KII and 12 FGD were conducted with 130 total participants. Data were analyzed in MAXQDA and major themes were identified. Secondary program data containing monthly totals of women who utilized FP and/or PAC services at identified SAFPAC health centers in 3 health zones in North Kivu, DRC, from 2017-2020 were analyzed to identify trends.

**Results:** FGD and KII feedback indicated that FP and PAC use dropped significantly during the EVD epidemic in the health zones in question. However, SAFPAC initiative facility data on FP and PAC use indicated that use of the services remained relatively stable, with slight drops in FP use and a more significant drop of PAC use in Butembo, the health zone hardest-hit by the EVD epidemic. Interview and discussion participants shared that fear and rumors were the main drivers of decisions around seeking SRH care during the epidemic.

**Conclusion:** A mixed methods approach to this topic is extremely valuable in order to understand the nuance and complexity of the challenge. Overall, SRH services continued through the course of the EVD epidemic, with only slight reductions in numbers of women accessing the services via the SAFPAC initiative. One of the most important findings regarding mitigation planning/techniques to ensure continued access to SRH services in epidemic settings is to involve local organizations and leaders in community outreach and sensitization efforts.

## Introduction

There is a need to understand the impact of the Ebola epidemic on access to family planning (FP) and post-abortion care (PAC) services in North Kivu province, DRC, so that programs and clinics that provide FP and PAC can strengthen their approach and be prepared to provide timely and appropriate care to women and girls in need of FP and PAC services during a public health emergency like an EVD outbreak/epidemic, or another emergency situation. This research seeks to evaluate the impact of the 2018-2020 Ebola epidemic on access to and utilization of FP and PAC services provided by primary health facilities supported by CARE's SAFPAC initiative services in 3 health zones in North Kivu province, DRC. This was accomplished by analyzing key informant interview (KII) and focus group discussion (FGD) transcripts and secondary program data, provided by the SAFPAC initiative.

Emerging infectious disease outbreaks can have widespread effects on individuals and entire communities and countries, with their impacts ranging from death to a breakdown of entire health systems. The Ebola virus has done just this, most recently in the Democratic Republic of Congo (DRC) with an outbreak that lasted from August 2018 to June 2020 (*WHO | Ebola Virus Disease*, n.d.). Ebola Virus Disease (EVD) is a devastating illness, and along with dangerous physical health effects it spreads fear, the combination of which can have serious impacts for the entire health system in Ebola-affected areas. Ebola is endemic to DRC and the country has dealt with waves of outbreaks for nearly 30 years. The 2018-2020 outbreak was the largest to date, and it occurred in some areas of the country that have been embroiled in conflict and war for many years. This outbreak was the 10$^{th}$ in the country and lasted from August 1, 2018 to June 25, 2020. The outbreak was declared a "public health emergency of international concern" by WHO on July 17, 2019.

The areas of interest for this work are located in eastern DRC, in the North Kivu province (for this research, data was analyzed from 3 health zones in the province: Butembo, Kayna, and Lubero). This province, along with neighboring South Kivu and Ituri provinces, has been marred by conflict over the past two plus decades. These conflict-zone provinces border Uganda, Rwanda and Burundi, and the geopolitical and conflict situation in the area is complex and, at times, dangerous. The conflict setting is one of the reasons that the focus on SRH rights and services needs to be carefully considered in this region and particularly in hyper-vulnerable times, such as during an EVD epidemic or other infectious disease outbreaks. These geopolitical challenges are also one of the reasons that CARE's Supporting Access to Family Planning and Post Abortion Care (SAFPAC) initiative operates in North Kivu.

CARE's SAFPAC initiative aims to reduce unintended pregnancies and deaths from unsafe abortion by increasing access to: quality family planning (FP), safe abortion (SAC), and post-abortion care (PAC) services for women and girls in settings of protracted or chronic crisis and SRH services in line with the Minimum Initial Service Package for Reproductive Health in Crisis Settings (MISP) during acute humanitarian emergencies. SAFPAC supports government primary health centers and referral facilities to provide facility-based FP/PAC/SAC services (the initiative does not provide community-based delivery of services, like distribution of contraceptives or condoms). The SAFPAC initiative seeks to better understand the impacts of the current EVD outbreak in North Kivu, DRC on its SRH programming to ensure that women and girls have continued access to lifesaving family planning and post abortion care services during current and future EVD and/or other infectious disease outbreaks. SAFPAC DRC operates in 4 of the health zones in North Kivu with confirmed EVD cases (3 of which were included for analysis in this research). In Butembo and Kayna health zones in North Kivu, DRC, SAFPAC operates in

12 health centers/facilities in each zone. In Lubero health zone in North Kivu, DRC, SAFPAC operates in 10 health centers/facilities. Many of the health facilities in question are small with only 1 or 2 staff trained on FP/PAC. The SAFPAC initiative has been operating in the area for many years and has established relationships in the community, but there was a deep mistrust of authority and spread of misinformation in the midst of the EVD epidemic that had the potential to undermine existing health services (in addition to service interruptions caused by EVD response implications, etc.). A 2018 survey of community members in Butembo and Beni health zones in North Kivu, DRC (early in the EVD epidemic) found that only 31% of individuals sampled trusted that local authorities represent their interest, and that 25% of respondents believed that the EVD outbreak was not real (Vinck et al., 2019).

Previous research in Liberia as well as SAFPAC DRC staff experience to date has shown that during an EVD outbreak community members may be less likely to seek or be able to access routine health services (McQuilkin et al., 2017). Additionally, preliminary research in the recent EVD outbreak in DRC indicates that there has been widespread mistrust and misinformation that could impact the ways in which individuals access healthcare services (Vinck et al., 2019a). EVD outbreaks and epidemics don't only affect personal behavior; the entire health system can be impacted, leading to service interruptions or delays that prevent women who would like to seek SRH services from being able to. Research to date has shown a decline in use of family planning and other SRH services during EVD and other infectious disease outbreaks, the potential consequences of which are unintended pregnancies and increased maternal morbidity and mortality.

Existing evidence shows that infectious disease outbreaks, and EVD outbreaks in particular, have a negative impact on SRH, including access to FP and PAC. EVD is so relevant

to SRH services because the case definition and the side effects of the disease can be closely intertwined with normal physiological functions (i.e.: bleeding) as well as obstetric emergencies such as spontaneous abortion. The case definition for EVD includes "spontaneous abortion" and "unexplained bleeding," and this can have major impacts on women and girls.

Experience from these past epidemics has shown that in the midst of an EVD outbreak, there are barriers to women's abilities to seek and receive family planning, post abortion care, and other SRH services. Research conducted during and in the wake of the large Ebola outbreak in West Africa in 2014-16 demonstrated a decline in women accessing obstetric and gynecological care (Jones et al., 2016). One study concluded that before the EVD outbreak, Sierra Leone had a positive trend in terms of access to obstetric care, but the improvement seen in the first half of 2014 was abruptly halted by the EVD outbreak (Brolin Ribacke et al., 2016). A systematic review of publications resulting from the West Africa EVD epidemic found that utilization of maternal health services decreased during the outbreak, including a change in family planning, antenatal, and postnatal services (Ribacke et al., 2016). Some areas saw a decrease in the utilization of family planning services specifically (most notably in Guinea), while other areas did not see a significant change (Ribacke et al., 2016).

Research from Liberia indicated that as a result of lack of access to family planning services during the EVD outbreak in 2014-16, there were as many as 1.2 million unplanned pregnancies (McQuilkin et al., 2017). This research found that women who sought obstetric and gynecological care during the epidemic were often unable to access it, at that women in urban settings had the most challenges, with only approximately 25% of people who sought care actually able to receive it (McQuilkin et al., 2017). In another review of the impact of the West Africa EVD epidemic on SRH services, researchers discovered that family planning distribution

declined by 65 percent in Liberia and 23 percent in Sierra Leone at the peak of the epidemic (Bietsch et al., 2020). This long-ranging study tracked FP distribution numbers for years after the EVD epidemic as well and found that in each country, 2 years after the epidemic the FP distribution numbers were around 30% higher than they had been pre-epidemic, and the authors note that this is a lesson in resilience (Bietsch et al., 2020). On the other hand, a study focused on a rural health area in Sierra Leone found that during the 2014-16 EVD epidemic, community level family planning distribution was only affected at the beginning of the epidemic with a small decrease in service utilization (Quaglio et al., 2019).

In an editorial drafted in 2015 to the West African Ebola SHS Network Coordination Committee, author Bernard Taverne affirmed that because of rapid and globalized information exchange that there can be deeply entrenched rumors and conspiracy theories about a disease before there are even any confirmed cases in an area (Taverne et al., 2015). He also points out that pre-existing social determinants of health such as the community and social context, the healthcare system and economic stability can determine the affected country/area's vulnerability to an epidemic and that it is necessary to involve social scientists early in an outbreak/potential epidemic setting to aid in the response and preparedness (Taverne et al., 2015). EVD epidemics do not occur in a bubble; the impact of the virus is modified by socio-cultural, political and economic factors. In context of conflict and political crisis, as in Eastern DRC, there is already suspicion of the state/government and foreign actors. EVD makes it worse leading to conspiracy theories, rumors and general lack of trust in government response.

In addition to the complex intersection of SRH and EVD, there was a gender component to the EVD epidemic in DRC that is very important to acknowledge. The majority of EVD fatalities consisted of women (56%) and children (28%) and men accounted for only 11% of

fatalities (Care International & Kapur, 2020). This 2019 study led by CARE International found that due to social and community reasons, such as taking on a larger share of domestic chores and traveling for food and water, and increased exposure to sexual exploitation or abuse, women and girls were at a greater risk of contracting EVD (Care International & Kapur, 2020).

The literature and past experiences show that there are many risks around sexual and reproductive health during an Ebola outbreak or epidemic. Experiences range from mild to major impacts on women's ability to seek and receive SRH care, and recommendations from past research nearly all point to the need for SRH to be a part of early outbreak response planning to ensure that women can access the crucial and at times lifesaving services offered by SRH providers and facilities.

The following research, conducted in 2019 and 2020, takes a close examination of family planning (FP) and post abortion care (PAC) in 3 health zones in North Kivu, DRC where there were confirmed EVD cases during the 2018-2020 epidemic. This mixed methods analysis examines the motivations and concerns of women who may need to access SRH services along with the insight and experiences of health care providers; routine health facility data was also analyzed to ascertain what changes, if any, there were to the use of FP and PAC services during the EVD epidemic. This work will add to the evidence base around the potential impact(s) of EVD on SRH.

**Methods**

This mixed methods study includes an analysis of secondary program data (provided by CARE's SAFPAC initiative), and qualitative analysis of key informant interviews (KII) and focus group (FGD) transcripts, conducted for this work. Primary data collection of the qualitative data was conducted in December 2019, and the results were analyzed in 2020. Data collection

was initially planned for November 2019, but insecurity in the region, due to conflict in EVD affected areas, prevented the team from being able to conduct the data collection until a month later. Participation in this study was designed to be of minimal risk to participants. KII participants were asked to discuss their work and observations, and were never asked to reveal personal or identifiable information. Focus group discussion participants were at a slightly higher risk since anonymity within the discussion group was not possible. Participants were briefed about the content and objectives of the FGD and had the opportunity to volunteer to participate or choose not to. Interviews and group discussions were confidential and participants were asked to sign a consent form prior to the interview, as evidence of their consent to participate. Participants were also able to determine whether or not the interview was recorded. This research involved individuals who are not fluent in English. Materials were translated into the languages spoken by participants (French and/or Swahili). English versions of the data collection instruments (including interview guides and informed consent forms) are included in the Appendix.

The use of qualitative research in this study adds to the richness of the analysis and discussion. 120 women community members, ages 19-45, were interviewed in focus group discussions (FGD), and their insights and experiences are significant when examining the impact of the EVD epidemic. The addition of interviews with health care workers and long-ranging secondary program data provides a comprehensive overview of FP and PAC services in the health zones of interest. This work is significant due to its narrow focus and rich data, and is expected to be of importance to the SAFPAC initiative and others living and working in DRC and other EVD endemic areas.

With the aim of understanding the impact of the 2018-2020 Ebola epidemic in North Kivu, DRC, 2 health zones with confirmed EVD cases were selected as qualitative data collection sites: Lubero and Butembo Health Zones. Within each health zone, villages/communities where the SAFPAC initiative was being implemented were selected as KII and FGD locations. Data collection sites included Kasalala, Lubero City, Makasi, and Mama Musay.

KII participants included individuals working in Lubero or Butembo Health Zones in sexual and reproductive health (SRH). A total of ten participants participated in KIIs, including SAFPAC initiative staff; local and district level health officials; healthcare providers at the SAFPAC health facilities; and members of a women's rights organization. Focus group discussions (FGD) were held with community members living in the catchment areas of SAFPAC-supported health facilities. Targeted FGD participants were female community members between the ages of 19 and 45 years (women of reproductive age, minus minors) residing in Lubero or Butembo Health Zones, who use or might use SAFPAC PAC and/or FP services. Participants were able to provide their input on the effect the Ebola outbreak has had/is having on access to SAFPAC SRH services. The SAFPAC initiative regularly conducts community dialogues on access to and demand for sexual and reproductive health services in the community, so community members were comfortable with this format and it was the most appropriate way to collect their input. Participants were selected based on their interest and availability and individuals who did not wish to participate were excluded. 10 KIIs and 12 FGDs (total of 120 FGD participants) were conducted in total (5 KIIs in each health zone and 6 FGDs in each health zone).

SAFPAC staff, based in Goma, DRC conducted interviews and facilitated focus groups, and transcribed the interview and discussion transcripts, and translated them into French in December 2019. Routine secondary program data was provided by the SAFPAC initiative, covering the period of 2017 to 2020. This data includes routine service delivery data from primary health facilities (e.g. # new FP users by method, by location/health center; # of PAC clients by location/health center).

Analysis of primary data included translating the KII and FGD transcripts from French to English, using the online translation tool DeepL (https://www.deepl.com/en/translator). The 22 transcripts were imported into MAXQDA for analysis. A first round of memoing was conducted and a comprehensive code book with 7 high-level codes and 70 sub-codes was developed based on the memos (full code book included in the Appendix). A thorough coding of the qualitative data was then conducted, resulting in 2008 total codes for the data set. The qualitative analysis was driven by the research/analysis questions for the study:

1. Did women access and/or utilize family planning services during the EVD epidemic (why or why not)?
2. Did women access and/or utilize post abortion care during the EVD epidemic (why or why not)?
3. What impacted women's decisions to seek SRH services?
4. Was there an interruption in the availability of SRH services during the EVD epidemic (focus on FP and PAC services)?
5. What are some proposed mitigation techniques to prevent interruption of SRH services during an infectious disease outbreak (focus on FP and PAC services)?

Analysis of secondary SAFPAC initiative data included a review of monthly health facility data from January 2017 to April 2020. These data were aggregated by health zone, in order to analyze the trends of the health zone as a whole over the 3+ years in question. Butembo health zone is comprised of 12 health facilities where SAFPAC operates, Kayna health zone has 11 SAFPAC health facilities, and Lubero health zone has 10. SAFPAC health facility data on number of new family planning users and number of long-acting removable contraception (LARC) was analyzed to assess the use of family planning (FP) services. Monthly totals of women who came to the health centers/facilities for post abortion care (PAC) were analyzed to assess the use of PAC services. See figures 1 and 2 for FP and PAC graphs.

A thesis paper presenting the findings will be shared with the SAFPAC initiative for review and feedback and the main findings will be shared with SAFPAC initiative staff and stakeholders in DRC in July and August 2020. All data collection and analysis were done in coordination with the SAFPAC initiative.

## Results

### Access to and utilization of family planning (FP) services during the EVD epidemic

*"It was Ebola who made the fence. If it ends, people will use FP like they used to."- FGD participant, Butembo health zone*

Accounts from the FGD and KII participants indicate that women largely avoided going to the health facility for family planning (FP) services during the Ebola epidemic. There were a few mentions of women continuing to use FP services and FP services continuing to be offered, but the majority of study participants stated that women were either not interested in or able to seek FP services during the outbreak. As one FGD participant stated, "it was Ebola who made the fence. If it ends, people will use FP like they used to." A KII participant who works with a

local women's association also noted that "at the level of the health centers, no one showed up to seek [family planning]."

Stated barriers to accessing FP services were, according to FGD participants, and reinforced by KII participants: fear of the triage process and possibly being transferred to an Ebola Treatment Center (ETC) as a suspect EVD case, fear of contracting Ebola at the health facility, distrust of health care providers, and inability to access services (primarily due to service interruption and delays in being seen at health facilities). Some women and health care providers mentioned that women sought contraceptives at pharmacies in order to avoid going to health facilities, others seemingly ceased their use of FP methods during the outbreak or reverted to abstinence and/or condom use. The major themes around barriers to accessing FP services were the same in each health zone.

Bleeding as a side effect of family planning methods was a clear source of fear for women. As one FGD participant stated, "The bleeding that is the side effect of FP was scary [and] the population was discouraged, afraid to go to the health center." Other FGD participants shared examples of women who would stay home if they were experiencing bleeding, unless or until their symptoms worsened. Fear around bleeding and being potentially treated as a suspected EVD case and routed to the ETC came up in every FGD, and nearly every KII. As one KII participant, an NGO worker, explained, "cases of bleeding related to the side effects of FP methods have been equated with suspected Ebola cases in line with the definition of unexplained bleeding, this has negatively impacted our services."

The fear that women in these Ebola-affected communities had around the triage process at health centers and potentially being routed for care at an ETC is well described in this statement from an FGD participant: "Another thing, the fear of going to the hospital was due to

the fact that once you are brought to the ETC, you will be dead, you will leave the hospital as a corpse. So we were afraid, eeh, when you are afraid, you get the drugs at home. Go to the hospital, eeh, you'll be taken to the ETC."

In addition to fear of being sent to an ETC and subsequent potential death, the discussions in each FGD indicated that there were countless rumors that drove fear and mistrust within the community. Rumors and fear are the preeminent underlying themes from all 22 discussions/interviews that were conducted for this research. Some rumors appeared to be false or exaggerated, others were grounded in personal anecdotes and experiences. Fear was seen across the board, including fear of known health care providers, as well as fear on the part of the health provider. Many FGD participants mentioned that even if women did go to the health center for FP services, "the providers were afraid to touch the clients because they thought you were contaminated." This was a general comment shared by multiple study participants, and not only linked to providers avoiding touching individuals who were bleeding and/or a suspected EVD case.

Both KII and FGD participants explained that people who were avoiding the health facilities were occasionally using pharmacies and traditional healers for care (for everything from illness to FP methods): "People bought FP methods from pharmacies, but those who went to the health center did not pay, it was free." As this FGD participant explained, even when it came at an added cost, some women purchased FP methods at the pharmacy instead of going to the health center. In addition to seeking FP services outside of the health center, some FGD participants shared anecdotes about people abstaining from sex and/or using condoms as a preferred FP method during the epidemic. One FGD participant from Lubero health zone even shared that "some men travelled during the epidemic period under the pretext of avoiding

pregnancy for their wives, because people were afraid to use FP methods, and also having pregnancy during the epidemic was another problem."

Even though responses from FGD and KII participants indicated that the majority of people were avoiding health centers and not seeking FP services during the Ebola epidemic, there were many mentions of a small proportion of women who continued to access the services from a health center. For those women (FGD participants) who reported continued use of FP services, the enabling factors they mentioned seemed to stem from advanced education and sensitization to the potential benefits of FP use. They shared advice and information indicative of advanced understanding of family planning. As one FGD participant stated, "women continued to use the family planning service since there were others who said that I want to give birth after the epidemic, I must use a family planning method to avoid pregnancy."

Review of SAFPAC initiative facility data indicates that FP use remained relatively steady in Lubero and Kayna health zones, and only decreased marginally in Butembo health zone during the EVD epidemic period in the areas: September 2018 through March 2020. SAFPAC data ranging from January 2017 to April 2020 includes the number of women each month who accessed the SAFPAC supported health facility to utilize long-acting reversible contraception (LARC) along with the number of new FP clients accessing the clinic each month. SAFPAC defines a new FP user as a client who requests the service for the first time, or who changes FP methods, or who renews the use of a contraceptive method at the end of the duration of action of another previously used FP method. New FP use and LARC use trends were complementary, so for the purposes of this analysis they were combined into one graph (figure 1) and analyzed in tandem. Number of users for SAFPAC FP services were tracked at each clinic and aggregated into monthly totals for each health zone.

Butembo and Lubero health zones, where qualitative data collection for this research took place, were included for analysis of SAFPAC initiative data, as was Kayna health zone. Kayna health zone is another SAFPAC initiative area in North Kivu, bordering Lubero health zone, and was initially selected as an EVD naïve health zone comparator. However, a review of WHO EVD data indicated that Kayna had nearly as many EVD cases as Lubero health zone; both zones had very low case numbers over the course of the epidemic: 29 and 34, respectively (see table 1 for EVD data from WHO). Butembo, on the other hand, was an early EVD hotspot and had a higher number of cases than Kayna or Lubero. According to WHO data, Butembo health zone had a total EVD case number of 302.

As seen in Figure 1, there was a slight drop in FP use at the health zone level in Butembo after the first confirmed EVD case, though it was not extreme. All 3 health zones saw a drop in FP use in December 2018 followed by a sharp spike in use in January 2019. This is possibly explained by underlying conflict/insecurity that impacted use at the end of 2018, in addition to the impacts of the EVD outbreak, then a push for people to use SRH services, which was met by acceptance and an uptick in use. After the January 2019 spike in FP use, the numbers of users fell again over the early part of 2019, which was also a time when the EVD epidemic was spreading to more communities (including some in Kayna and Lubero health zones). In mid-2019 FP use numbers began to slowly climb in Butembo and Lubero, whereas Kayna experienced a decline and plateau in FP use. Around the time of the qualitative data collection, FP use was at a 6-month high in Lubero health zone, and Butembo health zone had just experienced a small spike in use.

A closer examination of the 4 health facilities that served the areas/communities in which the focus groups and key informant interviews were conducted, Figures 2 - 5, indicate again that there were drops in FP use in Ebola affected areas, most notably at the Mama Musayi health

facility in Butembo health zone. All-time monthly lows (in the 2017 through 2020 time-frame) in FP use were seen at each health facility examined: M. Musayi, Makasi, Kasalala, Lubero Cite. The SAFPAC FP use trends are in line with what FGD and KII participants shared, and particularly when we examine the specific facility-level data, there is a noticeable drop in FP use, as the FGD and KII participants indicated.

**Access to and utilization of post abortion care (PAC) during the EVD epidemic**

*"During the epidemic, if a pregnant woman had an abortion, providers said it was Ebola, and women were very afraid."- FGD participant, Lubero health zone*

Concerns around post abortion care (PAC) were similar to those with family planning (FP), and many barriers to PAC utilization explained by FGD and KII participants were around fear of the triage process and possibly being transferred to an ETC as a suspect case. An additional barrier to women seeking PAC services was the association of abortion with Ebola. As highlighted in the discussions around FP, any bleeding was classified as a suspect Ebola case, but in the instance of spontaneous abortion, there was even greater suspicion and likelihood that a patient could be transferred to an ETC. Ebola infection has been shown to cause spontaneous abortion in pregnant women, so women in this situation during the epidemic had the added fear of wondering if they had been infected with Ebola and that was the cause of their spontaneous abortion, or if it was caused for other reasons (Mupapa et al., 1999). As one FGD participant shared, "during the epidemic, if a pregnant woman had an abortion, providers said it was Ebola, and women were very afraid."

A local health official explained that the triage processes created during the EVD epidemic were a significant barrier to patients and a source of anxiety and fear. They mentioned that they "have created triages that do not exist, for example at the level of the health center, and

when you come for another problem, you want to come only for Post Abortion Care for example, you are afraid because there is a form that we are going to complete and if there is a sign (of Ebola) that appears… you will be assimilated as a case of Ebola too." This health official explicitly mentioned the fear and problems this caused within the community, and that the new/unusual triage processes were a direct contribution of the EVD response.

Focus group discussions around post abortion care were overwhelmingly centered on bleeding and the reality that all bleeding (associated with FP side effects, threatened spontaneous abortion, bleeding during pregnancy, and post abortion (spontaneous or provoked)) was equated to Ebola during the epidemic. As multiple FGD participants shared, "The women who had abortions were afraid to go to the hospital because of blood, they will take me to the ETC, so [Ebola] affected [SRH]." Other women pointed out that "if someone has had an abortion and there is bleeding that is mistaken for the sign of Ebola, you are considered to be an Ebola carrier." Health care providers and NGO workers shared similar experiences. One leader of a local women's association explained that "[Ebola] affected the SRH because we didn't go to the health centers anymore and we didn't trust the nurses anymore, we were afraid. If you have a gynecological problem, you already know that the person who has an abortion has signs that you immediately link to Ebola. And then we're afraid, it affects the SRH."

Through the KIIs, health providers noted that "FP and PAC cases were very rare during the epidemic period," which is in line with the responses and feedback from FGD participants. However, the "epidemic period" is not well-defined and could mean any segment of, or the entire time period between September 2018 to the time of the interviews (Dec 2019). Review of SAFPAC initiative facility data indicates that use of PAC services remained relatively stable in Lubero health zone, but saw a significant drop in Butembo health zone. Kayna health zone had

sharp spikes and drops throughout the EVD epidemic time period, but that mimicked the PAC data from prior to the EVD outbreak as well.

PAC use data is quite different from the FP use data. First, the services themselves are different. PAC is associated with an obstetric emergency, and typically occurs after a woman experiences a spontaneous abortion (can also be after an unsafe abortion/provoked abortion). Therefore, use of PAC services are based on acute needs. FP services, on the other hand, are generally routine and preventive. Second, while FP side effects can include heavy vaginal bleeding, PAC always includes bleeding, often in an emergency context, and is therefore extra sensitive in an EVD outbreak setting. Finally, the numbers of women seeking these 2 SRH services are on completely different scales. Monthly FP use is in the thousands and high hundreds in each health zone; PAC use ranges from 0 to 34 people in a given health zone using the service each month. It is also important to note that PAC has been more stigmatized than FP services, even prior to the EVD outbreak.

As shown in figure 6, PAC use in Kayna health zone varied widely from month to month, but only dipped below 15 PAC users/month on 3 occasions. Lubero and Butembo health zones had less extreme month to month variation in PAC use, but the two health zones are still fairly unique from each other and from Kayna. PAC use in Lubero health zone remained relatively steady from 2017 through 2020, hovering around 15 PAC users per month in the health zone. Butembo health zone had far fewer PAC users over the course of 2018 and it appears that PAC use dropped significantly after the area began to have confirmed EVD cases. PAC use in Butembo remained at all-time lows throughout 2019, but have appeared to increase in 2020.

The PAC use trend seen in Butembo reflects much of what FGD and KII participants shared in the qualitative interviews – that PAC use stopped during the Ebola epidemic. However,

it is clear that PAC use continued in Kayna and Lubero health zones despite EVD. Figure 7, which depicts a closer examination of the specific health facilities that serve the communities where the qualitative data was conducted show similar trends. In these 4 health facilities, the two in Butembo health zone saw essentially no PAC use during the epidemic period in the health zone; in the two health facilities in Lubero health zone, however, PAC use persisted.

**Interruptions in the availability of SRH services during the EVD epidemic**

*"We don't have enough time to receive clients but people are really asking a lot about FP methods" – Health provider, Butembo health zone*

FGD participants reported interruption in FP services, noting that even if they did attempt to visit a health facility to access FP services that they would not find available providers to help them. Lack of availability of providers and delays in appointment times/longer wait times than normal were all reported throughout the FGDs. However, there was a small segment of FGD and KII participants who noted that SRH persisted during the EVD epidemic, noting that "Ebola cannot stop us from using FP," and "people were welcomed, well cared for [at the health center] and you were asked to go home to make others aware that the care was continuing normally." One KII participant, a health provider in Butembo, summed up what many others were saying: "we don't have enough time to receive clients but people are really asking a lot about FP methods."

It is clear from the KII reports that any service interruption in FP, PAC, and other SRH services was due to health care providers being diverted to EVD response, and to time-consuming triage and protective measures, which meant that the remaining care providers had to see a reduced number of patients. One FGD participant shared that "as far as family planning is concerned, you can't bring yourself to plan the birth; it's true that there were family planning

methods, but we don't know anymore, Ebola has already stopped all services; Maybe when [the Ebola responses workers] will leave, the services will start." FGD participants also noted long wait times and FGD and KII participants alike noted that during the EVD response it was common for SRH clinics/health centers to have reduced hours and reduced capacity for which to provide the community ongoing health services.

As one local health official from Butembo reported, "the epidemic affected our work because the epidemic, when it started, came in a vertical way, so the agents who came to accompany the (EVD) response in the health zone, they took all the providers away from us, so all the providers left towards the response and the services suffered at the [health centers]."

**Drivers of women's decisions to seek SRH services**

*"As a result of fear, people stopped coming to the health facilities." – FGD participant, Lubero health zone*

As explained in the context of accessing FP and PAC services, fear and rumors were the main drivers in women's decisions to seek or avoid SRH services during the Ebola epidemic. FGD participants shared many examples of women seeking SRH services/treatment at pharmacies and/or with traditional healers instead of visiting the health center. FGD participants explained that "as a result of fear, people stopped coming to the health facilities," and "fear made people go to the pharmacy for treatment." There were some mentions of women seeking care from (presumably) known and trusted health care providers directly via home visits or via circumventing triage procedures, and also anecdotes shared of instances when opinions were divided within the family (with one spouse wanting to seek care at a health facility and another wanting to avoid it).

FGD participants shared the following rumors: “people used to say that it was a disease that people in Ebola had their breasts, tongues and genitals removed, and people were very afraid of this disease” – FGD participant, Lubero; “people said that contraceptive methods were not like they used to be, during the Ebola epidemic, people believed that the FP methods were rigged, mixed with the Ebola virus to exterminate women” – FGD participant, Lubero; and “There were rumors about the [EVD] vaccine that once you vaccinate, you can't have children, and in the same vein, it was said that the methods of FP are to exterminate the population” – KII participant, Butembo. Other rumors shared by participants included questioning whether Ebola is real, and/or stating that it is not; questioning where the disease came from (from plants, from other areas, airborne infection from the government, etc.); saying that Ebola is a political tool; saying that Ebola is intentional and designed to exterminate the population; and rumors around the Ebola vaccine (that it can’t be trusted and that health workers and community members are offered different versions). One rumor that may or may not have been rooted in truth, and that came up in various FGD conversations and interviews was: “rumors say that health workers have had a lot of money during this epidemic” – KII participant, Butembo.

The rumors shared during the FGD and KII discussions range from sounding quite far-fetched, to potentially true. It is clear that rumors of all kinds were pervasive during the EVD epidemic and were a likely contributor to women’s decision-making around seeking SRH services.

**Possible long-term impacts of the EVD on SRH**

*“Long-term consequences will include clients' reluctance to adhere to certain FP methods for fear of unexplained bleeding.”- Local health officer, Lubero health zone*

When asked about their expectations for SRH services after the end of the Ebola epidemic, participants were nearly all positive. Most FGD participants stated that they will resume seeking FP and PAC services as normal, and their comments were fairly optimistic. One FGD participant shared that "people will resume the correct use of FP and PAC services because fear will end, collaboration between the community and providers will resume."

However, some women did indicate lingering fears around lasting effects of Ebola and/or FP side effects, and KII participants had some concerns about various potential long-term impacts. Most KII participants shared concerns regarding the long-lasting potential for sexual transmission of EVD by Ebola survivors. Other anticipated long-term impacts that were shared by KII and FGD participants include unwanted pregnancy and other FP-related side effects, and possible lingering fear and mistrust/rumors. One health provider explained many of these potential consequences: "The persistence of the epidemic of EVD following sexual transmission by [EVD] survivors. Unwanted pregnancies as a result of the decline in the use of FP services. Recourse to unsafe abortions due to fear of going to facilities, maternal deaths are likely to increase." In regards to potential long-term effects of rumors and fear, one local health officer noted that "long-term consequences will include clients' reluctance to adhere to certain FP methods for fear of unexplained bleeding."

**Proposed mitigation techniques**

*"We are going to increase community awareness after Ebola, for a good use of services. We're going to strengthen family planning education in the community."- Health care provider, Lubero health zone*

KII participants were asked directly about what they thought could be done to minimize the impact of the outbreak/epidemic on SRH. Overall their comments centered on community

outreach and education and awareness raising and sensitization. There were multiple mentions of the involvement and leveraging of local organizations to ensure sustainability of outreach efforts. Churches were another noted community infrastructure that should be partnered with for education and awareness raising efforts. One local health provider affirmed: "We are going to increase community awareness after Ebola, for a good use of services. We're going to strengthen family planning education in the community."

FGD participants also mentioned some examples of missed opportunities for outreach and community sensitization efforts, such as having too few sensitizers and having foreign response teams and sensitizers that did not speak the local language. FGD and KII participants all called for early and often sensitization at the community level, involving community members and local leaders. In one KII, a local leader called for "continued awareness-raising in focus groups at the level of specific groups [and] interpersonal sensitization in the community to get the message across." Another KII participant from Lubero shared that they "will first consider involving local organizations that can plan activities for the sustainability of outreach when the response teams leave. Then we can plan projects at the level of NGOs working in health…" While there were no specific mentions of which organizations to involve in sensitization and outreach efforts, there was clear recommendation to work at the local level first.

## Discussion

### Key findings

Focus group discussions (FGD) and key informant interviews (KII) brought to light very important concerns, fears, and rumors that were present in communities during the EVD epidemic. There were concerns about a woman being labeled as a suspected EVD case if she went to the health center due to vaginal bleeding, fears of contracting EVD at the health center or

Ebola treatment center if she were to be transferred, fears and rumors that health care providers may intentionally or unintentionally infect patients with EVD if they sought care, even for routine SRH services.

Based on FGD and KII feedback alone, one may be led to believe that use of family planning (FP) and post abortion care (PAC) halted during the EVD epidemic, but SAFPAC initiative facility data, aggregated at the health zone, showed that use of all services continued throughout the epidemic. There were notable reductions in use of FP and PAC in Butembo, the health zone of focus for this research that was hardest-hit by the EVD epidemic, particularly in the two health facilities that serve the communities where the qualitative data collection took place, but use of these services in Lubero and Kayna health zones persisted. The two health facilities in Lubero health zone that were more closely examined did experience all-time monthly lows in their FP use during the epidemic period, but use continued overall and the general trend lines of FP use from 2017 through 2020 were slightly positive.

It is extremely valuable to take a mixed methods approach to an issue such as this. As seen in the analysis of data for this work, if someone were to look solely at the SAFPAC initiative facility data they may not get the full picture of what was occurring in communities at the time of the EVD epidemic and would think that the effect of the epidemic on SRH was mild. Likewise, were we to only analyze FGD and KII accounts we may interpret participant responses as a complete halt in SRH services use due to the EVD epidemic. The truth lies somewhere between these two extremes, and the mixed methods approach used here enables us to get a more complete understanding of this complex challenge.

Women, via FGD, mentioned that they were afraid to seek FP services. However, SAFPAC FP use data shows that many women continued to seek the services throughout the

outbreak. This could be explained by women experiencing fear but continuing to seek services regardless due to its perceived or understood importance (preventing unwanted pregnancy, etc). Self-care was an emerging theme from the data, and FGD participants also mentioned that they went directly to pharmacies to seek care, including contraceptives. This could signify that women valued FP methods and the ability to plan their pregnancies, and despite fears of health centers and health care providers they were going to continue with their desired FP methods. Overall the data, both qualitative and quantitative, show that the women included in this research will largely continue using FP services even in outbreak/epidemic settings.

Post abortion care (PAC), understandably, had a significant association with fear during the EVD epidemic. Any bleeding during the EVD epidemic was treated as a suspected EVD case. If a woman is presenting with a suspected abortion (miscarriage), gynecological/obstetric care may not be the first service she's offered. The EVD triage process would route a bleeding woman for additional examination, possibly to an Ebola treatment center (ETC). The fact that gynecological care was unable to remain separate from the EVD triage process may have been a disservice to women in the community. It would require more capacity, but a more nuanced approach wherein gynecological and obstetric emergencies were initially routed away from the EVD triage and examined first by SRH experts would likely be more responsive to the needs of women in the community.

Interruption in service delivery for SRH services was a large theme in the qualitative data, with many accounts of health providers being diverted to EVD response and therefore being pulled away from ongoing and routine health services. This is likely unavoidable in an outbreak or epidemic setting, but there may be ways to strengthen the health system and plan for this in advance of a health emergency occurring. The health system, and partners and

organizations working with health care providers should be designed to be able to handle emergencies and not have all healthcare providers be diverted to each emergency. EVD is a highly infectious and very deadly disease, so the response may suit the threat in this case, but interruption of ongoing health services can have lasting effects throughout the population and those should be of high consideration when conducting emergency planning.

**Limitations**

The qualitative data (KII and FGD transcripts) underwent 3 language changes: interviews and discussions were conducted in Swahili, transcribed in French, and translated into English. This presents a potential limitation when conducting qualitative analysis. While we are confident that the major themes were well represented in the data set, specific wording syntax and nuance may have been lost in translation.

North Kivu, DRC was in the midst of an Ebola epidemic and there was insecurity in the region during the planned data collection period. This led to delays in conducting the data collection and shortened the time period for collecting the data. Additionally, this meant that the data collection team was not able to be joined by the project P.I. Ongoing conflict in the area also posed challenges for the study team and could have impacted study results.

Discussing sexual and reproductive health (SRH) in any context can be culturally challenging, particularly in the focus group discussion setting. However, the SAFPAC initiative regularly hosts discussions with community members so this type of forum was not new to the community members involved. Results from community members may have varied from what was shared in the FGD if women were instead interviewed one on one, but in general it seems that FGD participants shared their honest feedback during the discussions.

**Conclusion**

It was clear from the KIIs and FGDs that rumors and fear were fast-moving and far-reaching during the Ebola epidemic, and a focus on sustained community outreach is one way to combat that cycle in future outbreaks. Potential mitigation techniques could include reducing impacts on the health centers; diverting FP services to pharmacies or health posts; and having a more sensitized approach to PAC and/or women with vaginal bleeding so they receive gynecological care as a first step and are carefully examined before being flagged as a potential EVD case. Organizations and health providers in EVD affected (and/or infectious disease outbreak) areas could also work with local actors to conduct awareness raising & behavior change activities. This work should happen early and often; preparedness is key for ensuring access to SRH services in a public health emergency.

The findings from the work need to be considered within the complex landscape of the communities of interest. The study team only had access to SAFPAC initiative data, and while that data is fairly complete, it does not extend beyond the SAFPAC supported health facilities. In the FGDs women mentioned seeking contraceptives and other care at pharmacies instead of health facilities; we have no way of knowing how many women sought FP services that way and if that would make up for the decreases in FP use at the health facilities. Similarly, SAFPAC initiative staff heard anecdotal evidence of women traveling to non-EVD affected health facilities to seek care, and we have no way of knowing the extent to which this occurred.

As noted in the limitations, ongoing conflict and insecurity in the area may have had an impact on the results and conclusions for this research. In insecure settings it may be hard to draw discrete conclusions about motivations/impacts and be able to attribute them only to one external impact (the EVD outbreak, in this scenario). We know from past research that the

impacts of conflict and insecurity can be pervasive in affected communities. Additionally, external programmatic factors were perhaps not fully considered in this research and need to be more closely examined. The incorporation of review of monthly SAFPAC DRC status reports, for example, has the potential to add richness and nuance to the analysis and understanding of the full picture of what was happening each month in the SAFPAC supported health facilities.

Some of the findings from this research apply and can be adapted to fit many different disease/outbreak/emergency settings. DRC experiences frequent cholera and measles outbreaks, and the findings here may have relevance in those settings as well. Ebola is also endemic to DRC and while there have been great strides made in Ebola control efforts (including the introduction of a vaccine) the area may experience future EVD outbreaks. Additionally, this analysis was conducted during the 2020 COVID-19 pandemic, and there are many parallels to the two epidemic settings so that findings may be applied to each. One of the most important lessons from the KII and FGD feedback is to work with local organizations and leaders as the first component of any response or mitigation effort.

**Recommendations**

Additional research on this complex topic is warranted and recommended, particularly mixed methods study designs and more advanced surveying of study participants. It would be useful to know if women who hold and/or perpetuate rumors are the same women who are continuing to seek care, etc. Infectious disease outbreaks and epidemics will continue to occur, and it is important to understand their impacts so that ongoing and routine health services and the health system can be adequately prepared for future outbreaks. Local organizations and leaders should be involved in community outreach and education and outbreak and emergency planning. The SAFPAC initiative should also continue strengthening ties with their local partners to ensure

they are prepared and have a strong community network in the event of a future outbreak/emergency.

Based on the findings from this research and emerging complementary research findings, the SAFPAC initiative and others working in SRH in DRC may consider exploring some of the following proposed mitigation techniques as part of their emergency planning: reducing the impact(s) on health facilities by ensuring that staff remain as available as possible throughout an outbreak situation, diverting FP services (namely, contraceptive distribution) to pharmacies or non-health-facility distribution posts, and having a more sensitized approach to PAC and/or women with vaginal bleeding so they receive gynecological care as a first step and are carefully examined before being flagged as a potential EVD case.

**References**

Bietsch, K., Williamson, J., & Reeves, M. (2020). Family Planning During and After the West African Ebola Crisis. *Studies in Family Planning*, *51*(1), 71–86. https://doi.org/10.1111/sifp.12110

Brolin Ribacke, K. J., Van Duinen, A. J., Nordenstedt, H., Höijer, J., Molnes, R., Froseth, T. W., Koroma, A. P., Darj, E., Bolkan, H. A., & Ekström, A. M. (2016). The impact of the West Africa Ebola outbreak on obstetric health care in Sierra Leone. *PLoS ONE*, *11*(2), 1–12. https://doi.org/10.1371/journal.pone.0150080

Care International, & Kapur, N. (2020). *Gender Analysis: Prevention and Response to Ebola Virus Disease in the Democratic Republic of Congo*. *January*, 1–47.

Curry, D. W., Rattan, J., Nzau, J. J., & Giri, K. (2015). Delivering high-quality family planning services in Crisis-Affected Settings I: Program implementation. *Global Health Science and Practice*, *3*(1), 14–24. https://doi.org/10.9745/GHSP-D-14-00164

IRC. (2019). *Not All That Bleeds is Ebola*. https://doi.org/10.2307/3420407

Jones, S. A., Gopalakrishnan, S., Ameh, C. A., White, S., & Van Den Broek, N. R. (2016). 'Women and babies are dying but not of Ebola': The effect of the Ebola virus epidemic on the availability, uptake and outcomes of maternal and newborn health services in Sierra Leone. *BMJ Global Health*, *1*(3). https://doi.org/10.1136/bmjgh-2016-000065

McKay, G., Black, B., Janvrin, A., & Wheeler, E. (n.d.). *Sexual and reproductive health in Ebola response: a neglected priority - Humanitarian Practice Network*. Retrieved July 6, 2020, from https://odihpn.org/magazine/sexual-and-reproductive-health-in-ebola-response-a-neglected-priority/

McQuilkin, P. A., Udhayashankar, K., Niescierenko, M., & Maranda, L. (2017). Health-care

access during the Ebola virus epidemic in Liberia. *American Journal of Tropical Medicine and Hygiene*, *97*(3), 931–936. https://doi.org/10.4269/ajtmh.16-0702

Moran, B. (2018). Fighting Ebola in conflict in the DR Congo. In *Lancet (London, England)* (Vol. 392, Issue 10155, pp. 1295–1296). NLM (Medline). https://doi.org/10.1016/S0140-6736(18)32512-1

Mupapa, K., Mukundu, W., Bwaka, M. A., Kipasa, M., De Roo, A., Kuvula, K., Kibadi, K., Massamba, M., Ndaberey, D., Colebunders, R., & Muyembe-Tamfum, J. J. (1999). Ebola Hemorrhagic Fever and Pregnancy. *The Journal of Infectious Diseases*, *179*(s1), S11–S12. https://doi.org/10.1086/514289

Quaglio, G., Tognon, F., Finos, L., Bome, D., Sesay, S., Kebbie, A., Di Gennaro, F., Camara, B. S., Marotta, C., Pisani, V., Bangura, Z., Pizzol, D., Saracino, A., Mazzucco, W., Jones, S., & Putoto, G. (2019). Impact of Ebola outbreak on reproductive health services in a rural district of Sierra Leone: A prospective observational study. *BMJ Open*, *9*(9). https://doi.org/10.1136/bmjopen-2019-029093

Ribacke, K. J. B., Saulnier, D. D., Eriksson, A., & Schreeb, J. von. (2016). Effects of the West Africa Ebola virus disease on health-care utilization - A systematic review. *Frontiers in Public Health*, *4*(OCT). https://doi.org/10.3389/FPUBH.2016.00222

Taverne, B., Akindes, F., Berthe, A., Bila, B., Caremel, J. F., Desclaux, A., Dagobi, A. E., Egrot, M., Fournet, F., Houngnihin, R., & Taverne, B. (2015). Preparing for Ebola outbreaks: Not without the social sciences! In *Global Health Promotion* (Vol. 22, Issue 2, pp. 5–6). SAGE Publications Ltd. https://doi.org/10.1177/1757975915582298

Vinck, P., Pham, P. N., Bindu, K. K., Bedford, J., & Nilles, E. J. (2019a). Institutional trust and misinformation in the response to the 2018–19 Ebola outbreak in North Kivu, DR Congo: a

population-based survey. *The Lancet Infectious Diseases*, *19*(5), 529–536. https://doi.org/10.1016/S1473-3099(19)30063-5

Vinck, P., Pham, P. N., Bindu, K. K., Bedford, J., & Nilles, E. J. (2019b). Institutional trust and misinformation in the response to the 2018–19 Ebola outbreak in North Kivu, DR Congo: a population-based survey. *The Lancet Infectious Diseases*, *19*(5), 529–536. https://doi.org/10.1016/S1473-3099(19)30063-5

*Violence in the Democratic Republic of Congo | Global Conflict Tracker*. (n.d.). Retrieved June 13, 2020, from https://www.cfr.org/global-conflict-tracker/conflict/violence-democratic-republic-congo

Wainberg, M. A., & Lever, A. M. (2014). How will the ebola crisis impact the HIV epidemic? In *Retrovirology* (Vol. 11, Issue 1). BioMed Central Ltd. https://doi.org/10.1186/s12977-014-0110-z

Walker, P. G. T., White, M. T., Griffin, J. T., Reynolds, A., Ferguson, N. M., & Ghani, A. C. (2015). Malaria morbidity and mortality in Ebola-affected countries caused by decreased health-care capacity, and the potential effect of mitigation strategies: A modelling analysis. *The Lancet Infectious Diseases*, *15*(7), 825–832. https://doi.org/10.1016/S1473-3099(15)70124-6

*WHO | Ebola virus disease*. (n.d.). Retrieved June 14, 2020, from https://www.who.int/csr/don/archive/disease/ebola/en/

## Tables and Figures

### Table 1

Cumulative Ebola Virus Disease (EVD) Cases

| | Butembo Health Zone | Kayna Health Zone | Lubero Health Zone |
|---|---|---|---|
| **EVD Cases Aug-18** | 2 | - | - |
| **EVD Cases Sep-18** | 2 | - | - |
| **EVD Cases Oct-18** | 9 | - | - |
| **EVD Cases Nov-18** | 32 | - | - |
| **EVD Cases Dec-18** | 18 | - | - |
| **EVD Cases Jan-19** | 46 | - | - |
| **EVD Cases Feb-19** | 58 | 5 | - |
| **EVD Cases Mar-19** | 83 | 5 | - |
| **EVD Cases Apr-19** | 107 | 8 | 4 |
| **EVD Cases May-19** | 154 | 8 | 4 |
| **EVD Cases Jun-19** | 231 | 8 | 13 |
| **EVD Cases Jul-19** | 248 | 8 | 28 |
| **EVD Cases Aug-19** | 266 | 9 | 33 |
| **EVD Cases Sep-19** | 285 | 26 | 33 |
| **EVD Cases Oct-19** | 286 | 28 | 33 |
| **EVD Cases Nov-19** | 288 | 28 | 33 |
| **EVD Cases Dec-19** | 288 | 28 | 33 |
| **EVD Cases Jan-20** | 298 | 28 | 33 |
| **EVD Cases Feb-20** | 301 | 28 | 33 |
| **EVD Cases Mar-20** | 302 | 28 | 33 |
| **EVD Cases Apr-20** | 302 | 29 | 34 |

*Note*: EVD case number data was selected from weekly WHO EVD situation reports for North Kivu (available here: https://www.who.int/ebola/situation-reports/drc-2018/en/). The totals in this table reflect the number of total EVD cases in each Butembo, Kayna and Lubero health zones. The EVD epidemic was officially declared over by the WHO in June 2020.

**Figure 1**

SAFPAC Initiative New Family Planning (FP) and Long-Acting Removeable Contraception (LARC) Users; Butembo, Kayna and Lubero Health Zones, January 2017 to April 2020

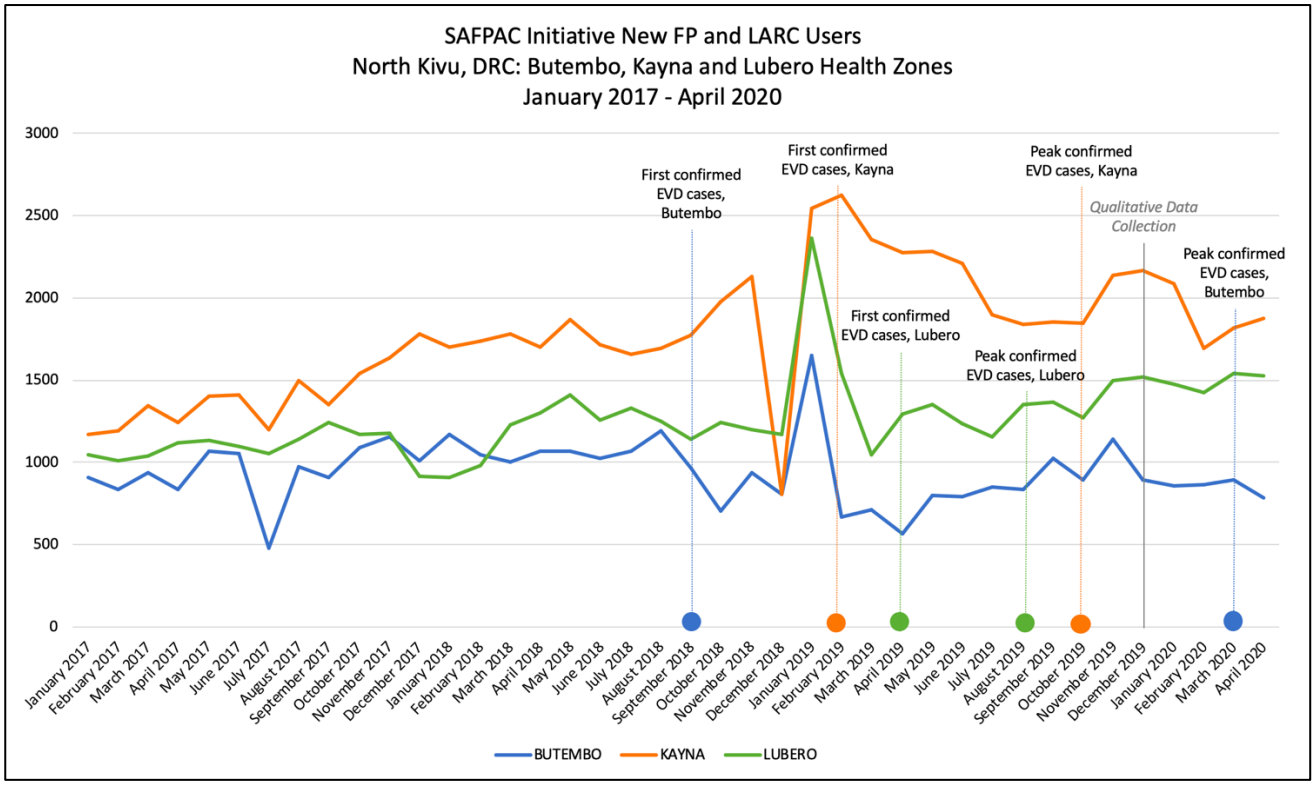



*Figure 1*. Total number of new FP and LARC users each month at all SAFPAC supported health facilities in each health zone. Data provided by SAFPAC initiative.

**Figure 2**

SAFPAC Initiative New Family Planning (FP) and Long-Acting Removeable Contraception (LARC) Users; Mama Musayi health facility, Butembo health zone, January 2017 to April 2020

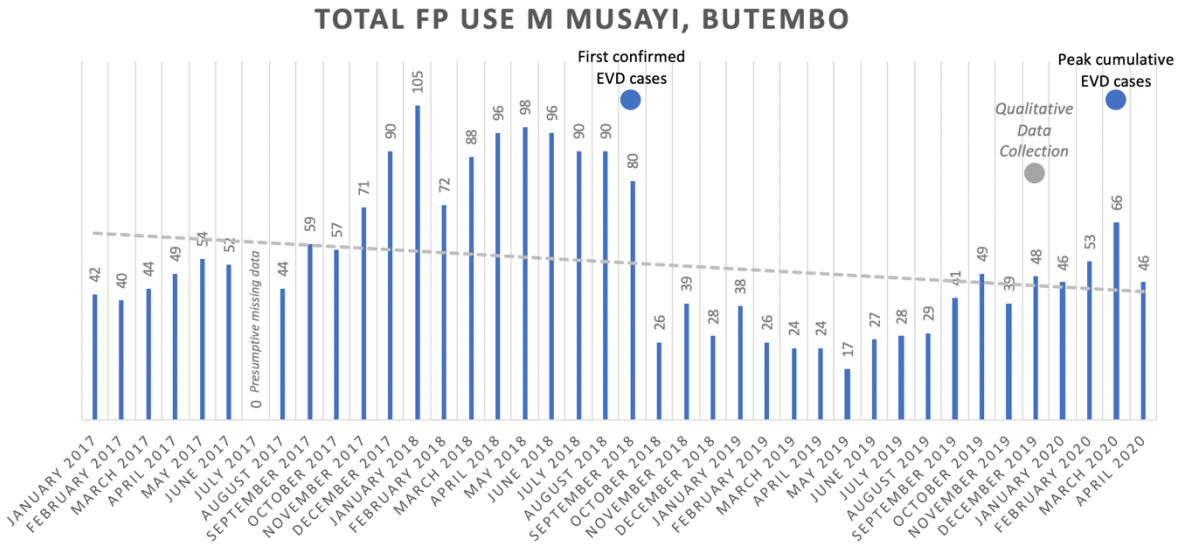


**Figure 3**

SAFPAC Initiative New Family Planning (FP) and Long-Acting Removeable Contraception (LARC) Users; Makasi health facility, Butembo health zone, January 2017 to April 2020

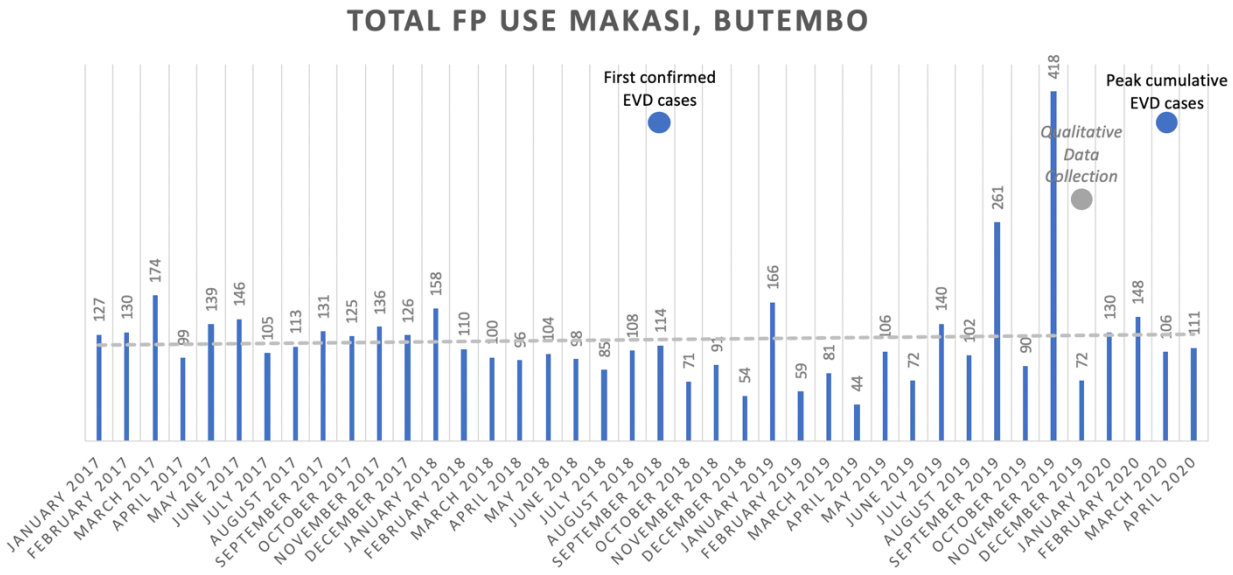


**Figure 4**

SAFPAC Initiative New Family Planning (FP) and Long-Acting Removeable Contraception (LARC) Users; Kasalala health facility, Lubero health zone, January 2017 to April 2020

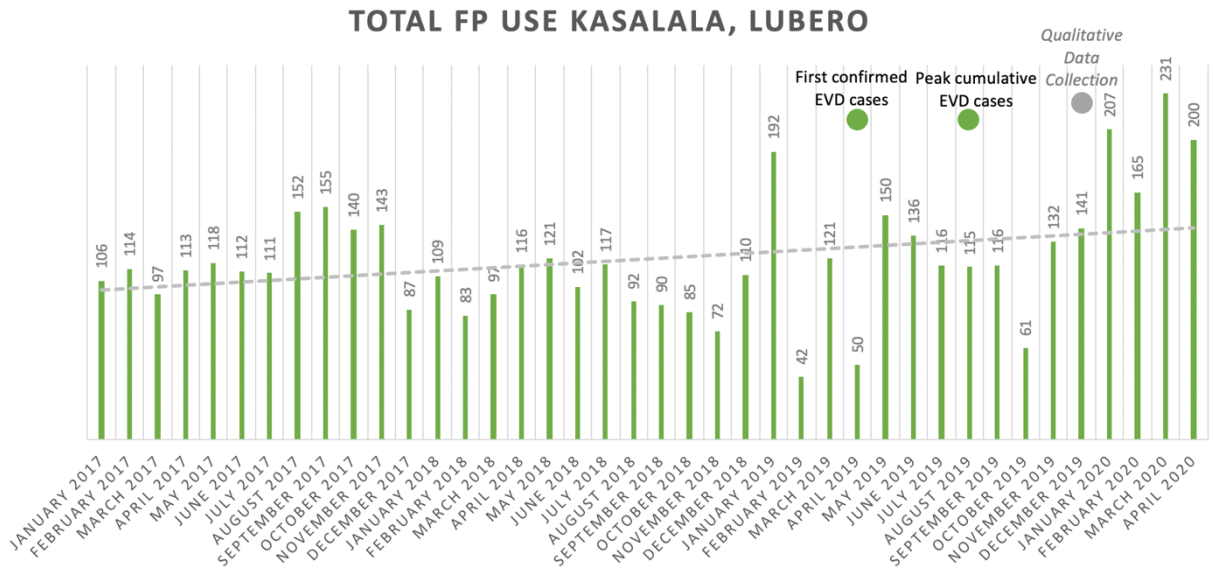


**Figure 5**

SAFPAC Initiative New Family Planning (FP) and Long-Acting Removeable Contraception (LARC) Users; Lubero Cite health facility, Lubero health zone, January 2017 to April 2020

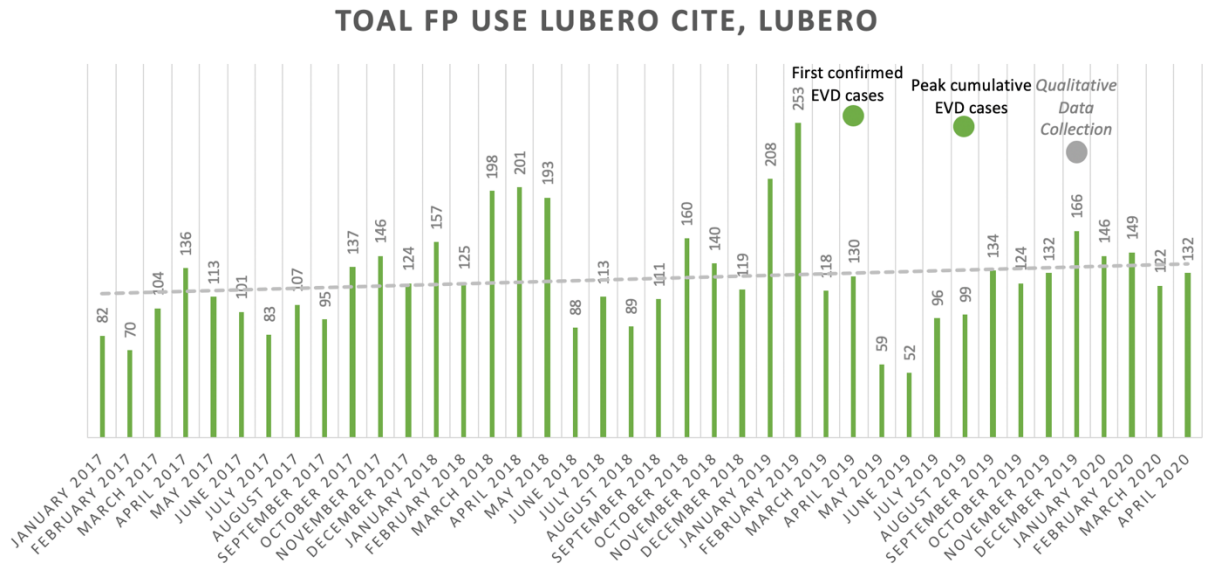


**Figure 6**

SAFPAC Initiative Post Abortion Care Users; Butembo, Kayna and Lubero Health Zones, January 2017 to April 2020

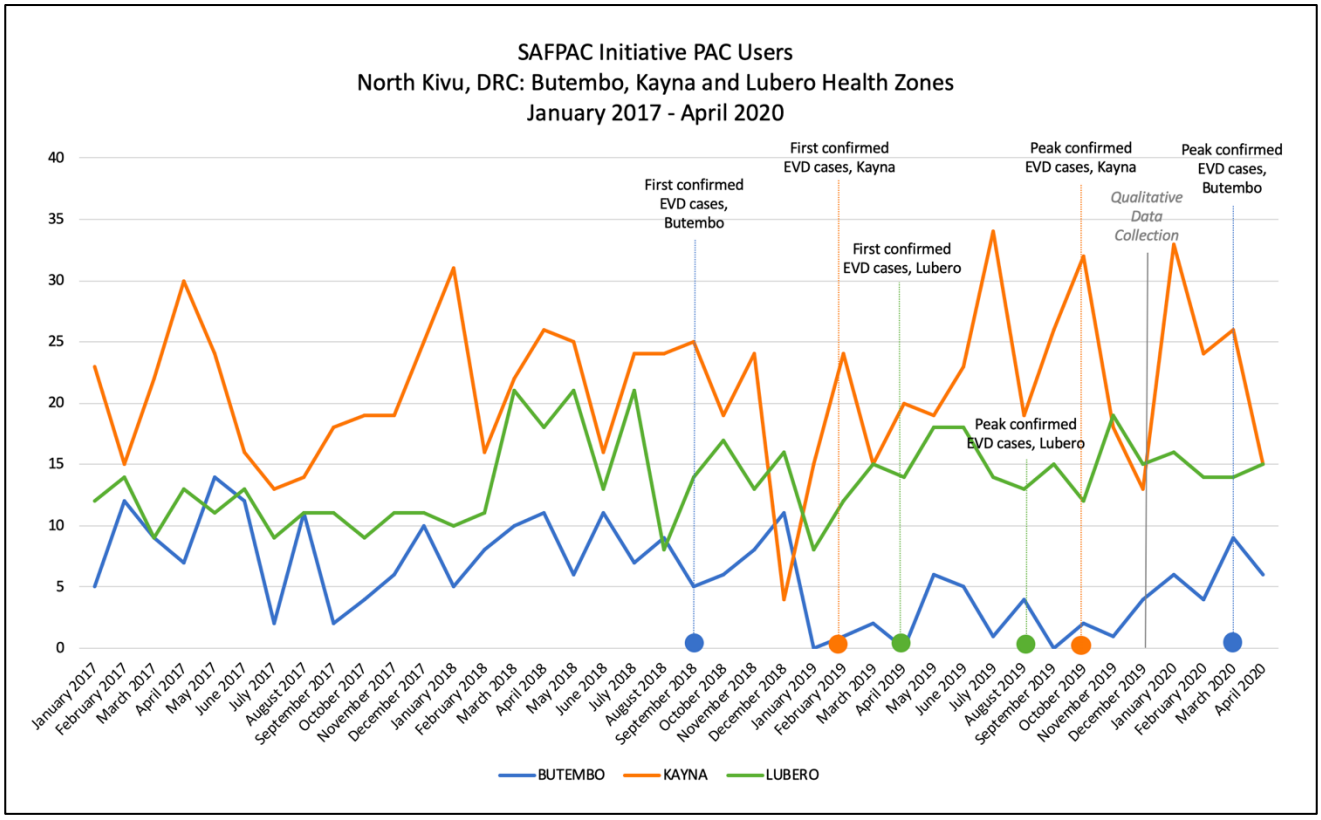
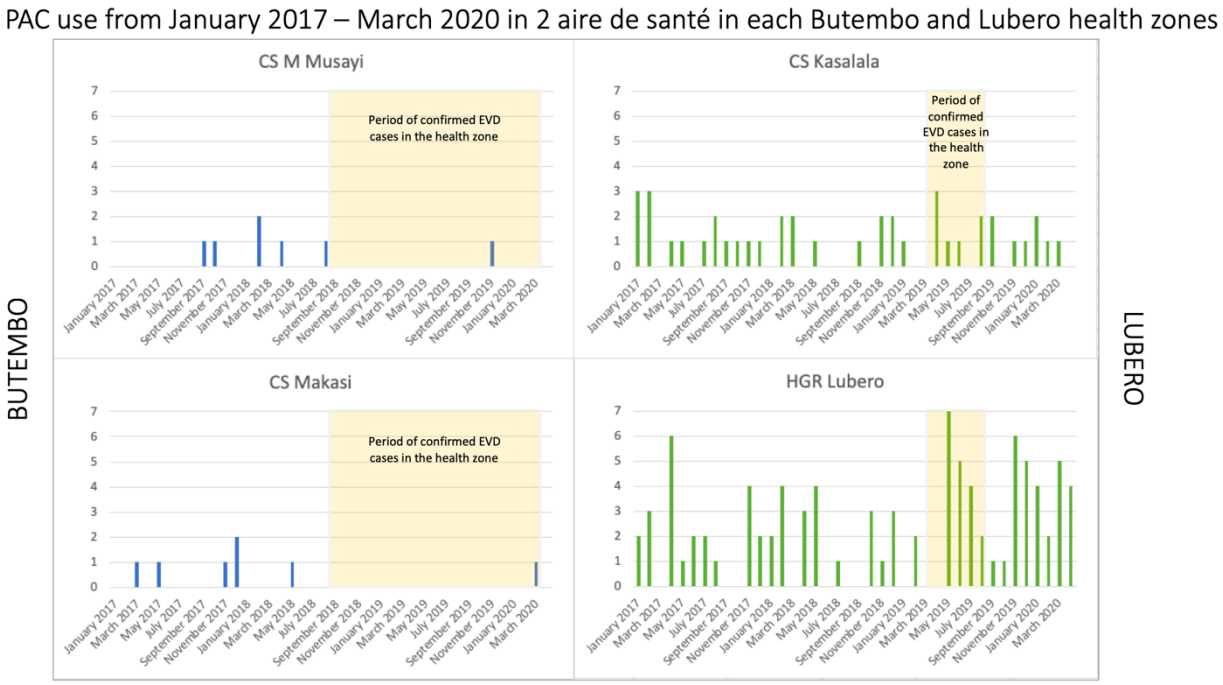



*Figure 6.* Total number of PAC users each month at all SAFPAC supported health facilities in each health zone. Data provided by SAFPAC initiative.

**Figure 7**

SAFPAC Initiative Post Abortion Care Users; Mama Musayi and Makasi health facitities, Butmebo health zone and Kasalala and Lubero Cite health facilities, Lubero health zone, January 2017 to April 2020



## Chapter V: Public Health Implications

The findings from this study will help the SAFPAC initiative plan for future health emergencies and/or outrbeaks/epidemics in areas where the initiative operates. Similarly, these findings will add to the growing knowledge base of impacts of sexual and reproductive health in Ebola epidemic settings. The findings are most relevenat to Ebola, but can also be applied more broadly to other disease outbreak settings.

# Appendix

## I. Qualitative Analysis Code Book

| Code | Sub Code | Description |
|---|---|---|
| **Behavioral** | | Behavioral influences and responses to the Ebola epidemic, utilizing health services, and adapting to recommended behavioral changes |
| Behavioral/ | Behavior change | Examples or mentions of changes in SRH and/or infection prevention behavior as a result of EVD epidemic and associated impacts |
| Behavioral/ | Behavior men | Examples or mentions of male-specific behaviors |
| Behavioral/ | Behavior women | Examples or mentions of female-specific behaviors |
| Behavioral/ | Access HC | Behaviors around or associated with accessing health centers |
| Behavioral/ | Avoid HC | Behaviors around or associated with avoiding health centers |
| Behavioral/ | Handwashing | Behaviors around or associated with handwashing |
| Behavioral/ | Handwashing resistance | Behaviors around or associated with resistance to handwashing |
| **Community** | | Community factors, context, and impacts, associated with the EVD outbreak and SRHR |
| Community/ | Fear | General mentions of fear that are not directly associated with conflict, decision to seek health services, or health related issues and factors |
| Community/ | Children | Impacts or considerations directly related to children |
| Community/ | Church | Examples or mentions of churches and their role in the community |
| Community/ | Burial | Examples or mentions of burial and mourning practices |
| Community/ | Advice | Advice among community members and/or advice given to EVD-impacted communities |
| Community/ | Awareness | Awareness-raising efforts and impacts at the community level |
| Community/ | Education/Outreach | Education and outreach efforts and impacts at the community level |
| Community/ | Radio | Radio as a part of the community and source of information |
| Community/ | Rumors | Rumors at the community level and/or associated impacts |
| Community/ | Sensitization | Community sensitization efforts and/or associated impacts |

| | | |
|---|---|---|
| Community/ | Information | Information at the community level |
| Community/ | Lockdown | Examples or mentions of lockdowns within the community |
| Community/ | Optimism | Examples or mentions of optimism within the community |
| Community/ | Outsider influence | Examples or mentions of visitors, foreigners, and/or outsider influence within the community |
| Community/ | Post-epidemic | Post-epidemic plans, impacts, predictions within a community context |
| Community/ | Social impacts | Examples or mentions of social impacts related to the EVD epidemic and associated impacts on the health system, community social structure, etc |
| **Conflict** | | Conflict, violence, police and military presence, political discourse and social fractions related to the EVD epidemic |
| Conflict/ | Fear | Fear around, as a result of, or a contributing factor to conflict |
| Conflict/ | Attacks | Attacks on health care workers and others |
| Conflict/ | Political | Using EVD for political gain; political messaging around EVD as a contributor to conflict |
| Conflict/ | Military/police | Military and/or police presence related to EVD outbreak |
| Conflict/ | Safety | Examples or mentions of safety and safety concerns related to conflict |
| **Decision** | | Decision to seek services (primarily SRHR services) |
| Decision/ | Fear | Fear as a component of decision to seek services |
| Decision/ | Rumors | Rumors as a component of decision to seek services |
| Decision/ | Trust | Mentions of trust or distrust as a component of decision to seek services |
| Decision/ | Access HC | Decision to access services at health centers |
| Decision/ | Avoid HC | Decision to not access services at and/or avoid health centers |
| **Health system** | | Related to the broader health system in DRC, North Kivu, and the respective health zones of focus |
| Health system/ | Breakdown of system | Examples or mentions of breakdowns of the health system (failures, interruptions, issues, etc) as a result of the EVD epidemic |
| Health system/ | Burden on system | Examples or mentions of breakdowns of the burdens on the health system as a result of the EVD epidemic |
| Health system/ | Health worker | Health worker factors, examples, and/or impacts within the health system context |
| **Medical** | | Related to medical events or health-related |

| | | |
|---|---|---|
| Medical/ | Bleeding | Medical and/or health related, mentions blood or bleeding specifically |
| Medical/ | Death | Medical and/or health related, mentions death or dying specifically |
| Medical/ | Birth | Medical and/or health related, mentions child birth specifically |
| Medical/ | Abortion | Medical and/or health related, mentions abortion or spontaneous abortion specifically |
| Medical/ | Ebola | Medical and/or health related, mentions EVD specifically |
| Medical/ | Fear | Fear related to medical and/or health related issues and factors |
| Medical/ | Health | Broad mentions of health and/or preventive health factors |
| Medical/ | Sick | Broad mentions of illness |
| Medical/ | EVD side effects | Medical and/or health related, mentions Ebola side effects specifically |
| Medical/ | EVD long term effects | Mentions potential long-term Ebola effects specifically |
| Medical/ | EVD Vaccine | Mentions of the Ebola virus vaccine |
| Medical/ | FP side effects | Examples or mentions of family planning method(s) side effects; not necessarily Ebola-related |
| Medical/ | Rumors | Examples or mentions of medical/health related rumors or mistruths |
| Medical/ | Unsafe abortion | Medical and/or health related, mentions unsafe abortion specifically |
| Medical/ | Unwanted pregnancy | Medical and/or health related, mentions unwanted pregnancy specifically |
| Medical/ | Natural methods | Medical and/or health related, mentions natural family planning methods specifically |
| Medical/ | Sexual health | Medical and/or health related, mentions sexual health specifically |
| **Providers** | | Health care providers (doctors, nurses, midwives, lay workers, NGO staff) within SRH and EVD contexts |
| Providers/ | PPE | Examples or mentions of health providers use of personal protective equipment |
| Providers/ | Triage | Examples or mentions of different triage processes at health care facilities during the EVD epidemic |
| Providers/ | Time | Time and wait time implications as a result of the EVD epidemic |
| Providers/ | Trust | Trust or distrust of health providers (on the part of the patient) |

| | | |
|---|---|---|
| Providers/ | Work environment | Work environment implications for health providers |
| Providers/ | Household visits | Examples or mentions of health providers making house visits to patients |
| Providers/ | Money | Example or mentions of money, salary, payment and other associated factors for health providers |
| Providers/ | Incentives | Example or mentions of non-monetary incentives for health providers |
| **Services** | | Health services; such as routine/ongoing health services, family planning and post abortion care services, or emergency services |
| Services/ | FP | Family planning health services |
| Services/ | PAC | Post-abortion care health services |
| Services/ | ANC | Antenatal care health services |
| Services/ | Routine | Routine health services |
| Services/ | Emergency | Emergency health services |
| Services/ | Health center | Services available at the health center |
| Services/ | ETC | Mentions of Ebola treatment center services |
| Services/ | Interruption | Examples and mentions of interruption of health services |
| Services/ | Free treatment | Examples and mentions of interruption of free treatments/health services |
| Services/ | Pharmacy | Services/health care/treatment sought at a pharmacy |
| Services/ | Traditional healer | Services/health care/treatment sought at a traditional healer (eg. fetish) |
| Services/ | No impact | Examples or mentions of no impacts to health services in light of the EVD epidemic |
| Services/ | Incentives | Examples or mentions of incentives to seek care (particularly at ETC) |

## II. Key Informant Interview Questions:

*(Assumes that the language will be adjusted appropriately during translation (this will be verified by the PI) also assumes that it's ok to speak openly about Ebola). KIIs were conducted in French. These questions are intended for SAFPAC program staff and healthcare providers.*

1. Explain your job - your role and responsibilities.
    a. How long have you lived in the community?
    b. How would you characterize your role within the community?
2. How has the outbreak affected your work?
3. How has the current Ebola outbreak affected service delivery?
4. What changes (if any) have you noticed among your colleagues as a result of the Ebola outbreak?
5. What changes (if any) have you noticed in service utilization as a result of the Ebola outbreak?
6. What changes (if any) have you noticed in your interaction with communities as a result of the Ebola outbreak?
7. How do you think the current Ebola outbreak has affected SRHR services?
    a. Explain its effect/potential effect on specific services
8. What long-term consequences, if any, do you foresee for peoples' sexual and reproductive health as a result of the outbreak?
9. Explain what you think can be done to mitigate these consequences.

## III. Focus Group Discussion Questions:

*(Assumes that the language will be adjusted appropriately during translation (this will be verified by the PI) also assumes that it's ok to speak openly about Ebola). FGDs were conducted in Swahili*

1. Explain the general impact of Ebola on your community
2. What are your main concerns during the Ebola outbreak?
    a. What are your main concerns during the Ebola outbreak related to sexual and reproductive health?
    b. How has the Ebola outbreak affected behaviors related to SRH?
3. How has the Ebola outbreak affected how your use of sexual and reproductive health services, like family planning services? Probe for:
    a. decision to seek services;
    b. choice of who provides health service (public/private/traditional healer/ drug shop);
    c. ability to get to health center (transport/security);
    d. ability to be served after arriving at the health center (presence of health worker; supplies, etc);
    e. ability to afford services
    f. satisfaction with services received
4. If the Ebola outbreak prevented you from seeking or getting services, how did this affect you?
    a. How has the outbreak prevented people in the community from seeking or getting services?
5. How has the Ebola outbreak affected how you feel about health workers and health facilities?
6. After the Ebola outbreak is over, how do you think you will use family planning/PAC services?