

Evidence on efforts to mitigate the negative educational impact of past disease outbreaks

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Question

What evidence exist regarding efforts to mitigate the secondary impact of past disease outbreaks and associated response on the education sector?

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The K4D helpdesk service provides brief summaries of current research, evidence, and lessons learned. Helpdesk reports are not rigorous or systematic reviews; they are intended to provide an introduction to the most important evidence related to a research question. They draw on a rapid desk-based review of published literature and consultation with subject specialists.

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1. Summary

This rapid review focusses on efforts to mitigate the educational impact of previous disease outbreaks, concentrating on school-age learners. It follows two companion papers that reviewed broader secondary effects and attempts to mitigate them (Rohwerder, 2020; Kelly, 2020). It aims to inform the education sector's responses to the COVID-19 crisis, although there are important differences between previous disease outbreaks and the COVID-19 situation. For instance, unlike Ebola, transmission of COVID-19 is asymptomatic, and the outbreak is global.

The following questions are out of scope, but may warrant future exploration:

- *Bi-directional Analysis: What evidence exists regarding the education sector's efforts to mitigate the primary impact of disease outbreaks?*
- *Transferability Analysis: Of the existing evidence regarding efforts to mitigate the impact of other emergencies (conflict and natural disasters) on the education sector, what is most relevant, transferrable and adaptable to disease-related emergencies?*

Given that the focus is on Lower to Middle Income Countries (LMICs), the vast majority of the literature relates to the Ebola outbreak of 2014-15. Although meta-analyses show how school closures impacted on disease control, literature on the secondary impacts of, for example, H1N1 either does not focus on education, or instead analyses educational impact and mitigating measures in high income countries only (Vynnycky et al, 2013)¹.

This review finds a limited range of quantitative evidence on the educational impact of disease outbreaks, and minimal evidence on mitigation measures or their impact. Although several 'lessons learned' documents include guidelines and recommendations (and now complemented by many education-focused COVID-responsive blogs), this review finds that these are rarely based on evidence of impact of particular interventions, or on evidence of the impact of different approaches to action, co-ordinations, funding or prioritisation.

The companion reviews found that education is not the only sector to experience this evidence gap. As DFID's Business Case for its MAINTAINS research programme suggests, 'DFID country programmes are increasingly focusing on how to build more shock-responsiveness in to their programmes... However, there has been no systematic learning from existing shock-responsive programmes, nor are there plans to evaluate whether the systems that have been put in place work'. (DFID, 2018). This lack of robust evaluation, whilst understandable in both crisis and recovery contexts, renders the task of initiating an evidence-based educational response to COVID-19 in LMICs more challenging.

Despite these gaps, lessons can be learnt from how various interventions have: negotiated fluid political economies; been attuned to cultural and social factors; been highly adaptive when supported by donor flexibility; and been based on integrated responses and multi-sector collaboration and integration. Based on the literature reviewed by this study, all interventions that demonstrated impact included some aspect of psycho-social support in their programming.

The review found four particular evidence gaps: First, how distance learning materials can support learners who do not have access to family members with the skills or time to help them.

¹ The report's rapid online searches targeted only papers in English. There may be additional literature in Chinese, Mandarin or Vietnamese that offers additional evidence on the educational impact of SARs/H1N1.

Second, a gap in the use of screen or internet-enabled technologies to support alternative education. Third (and related), a gap in remote teacher training and development during school closures. Finally, the review analysed gender and equity issues but did not find any literature that explored disability. The education in emergencies literature has an emerging evidence base across all four themes within refugee education contexts, but has not yet learnt from or applied this evidence to disease outbreak situations.

2. The Educational Impacts of Disease Outbreaks

ACAPS' analysis of the secondary humanitarian impacts of a large-scale Ebola outbreaks includes a categorisation of educational impacts (ACAPS, 2016). This report has adapted this model as follows²:

Causes of Problem	Problem	Secondary Impacts	Outcome
<ul style="list-style-type: none"> <input type="checkbox"/> School closures <input type="checkbox"/> Diversion of resources and teachers <input type="checkbox"/> Lack of at-home educational materials 	Reduction in availability of education services	<ul style="list-style-type: none"> ® School drop outs ® Children at higher risk of abuse ® Loss of confidence and self-esteem ® Loss of quality teaching and learning 	<p>SLOWER PROGRESS OR REDUCTION IN LEARNING OUTCOMES</p>
<ul style="list-style-type: none"> <input type="checkbox"/> Restriction of movements <input type="checkbox"/> Reduced financial resources 	Reduction in access to education services		
<ul style="list-style-type: none"> <input type="checkbox"/> Lack of reliable information on progress of disease and school reopenings <input type="checkbox"/> Fear of school return and emotional stress caused by outbreak <input type="checkbox"/> New financial hardships leading to difficulties with paying school fees, or children taking up employment <input type="checkbox"/> Stigmatisation of those affected (including pregnant girls and new mothers) 	Reduction in utilisation of schools		
<ul style="list-style-type: none"> <input type="checkbox"/> Lack of maintenance of schools <input type="checkbox"/> Lack of teacher training during crisis 	Lack of quality appropriate education		

Source: Author's own, data taken from ACAPS (2016)

² This model is likely to be developed further in future DFID K4D work.

Informed by but not following the categorisation above, this section summarises the secondary impacts of Ebola on the education sector.

Approximately 5 million children missed school during the Ebola outbreak (Fisher et al, 2018). The overall loss of learning hours per-pupil has been estimated at 486 for Guinea, 582 for Liberia, and 780 for Sierra Leone (Statista Research Department 2015). In the Democratic Republic of Congo (DRC), parents removed children from school in advance of closure for fear of infection (Alcayna-Stevens 2018). In addition to school closures, restrictions on public gatherings reduced children's opportunities for play and socialisation (Fisher et al, 2018).

During and after closures, many teachers' roles are diverted towards disease control and social mobilisation activities. During the Ebola outbreak in Sierra Leone, this was estimated at 7000 teachers. In Liberia 5,884 teachers – about 18% of all teachers - were involved in health awareness and social mobilisation workshops (Santos and Novelli, 2017). In the DRC, UNICEF trained a small number of women, including teachers, as psycho-social assistants (Alcayna-Stevens, 2018).

Schools and their non-teaching resources are also diverted towards additional or alternative activities. During the Ebola outbreak in Sierra Leone and Liberia, schools were used as focal points and data points to address and understand the infection rates (World Bank, 2020). Schools were given additional responsibilities around disease-related student and teacher learning, provision and distribution of WASH and other materials to mitigate transmission in and beyond schools (USAID, 2020). School sites were turned into community- based care centres in Sierra Leone , sometimes leading to resentment from teachers and pupils (Oosterhoff et al, 2015).

There is no evidence that public school teacher salaries were affected during the Ebola crisis, although some teachers are affected stigmatisation when schools re-open. Some teachers in private schools, especially Liberia, did lose employment. Many others sought additional employment during school closures to make up for other losses in family or community earnings (Global business coalition, 2014). However, many teachers who were reassigned to support disease control faced stigmatisation, and in some cases, suspension from work due to fear of Ebola (ACAPS, 2016). The reported numbers of teacher deaths was low – eight in Sierra Leone.

Along with other disease controls, school closures can have a negative impact on children's physical and mental health (Wang et al, 2020; Brooks et al, 2020). Children, especially those quarantined suffered from social isolation and post- traumatic stress (UNESCO, 2020; Wang et al. 2020). In Sierra Leone, children reported greater levels of corporal punishment from parents, as well as greater personal and family frustration (The Alliance for Child Protection in Humanitarian Emergencies, 2018). Children also reported higher levels of isolation and lower levels of happiness (Fisher, 2018).

Child protection challenges increase as a result of school closures and the overall crisis. During the Ebola crisis, more than 30,000 children were orphaned in the three most-affected countries - Guinea, Liberia and Sierra Leone (UNDP, 2015 b). When children were separated from their parents, or move to different locations due to changes in family circumstances, this put them at risk of various forms of abuse (Fraser, 2020). In the Democratic Republic of Congo risks for children from violence increased (Hall, 2019).

School closures and the other impacts of disease outbreaks have a disproportionately negative impact on the learning, safety and wellbeing of the most vulnerable children in the poorest families. As well as being more likely to die or have a family member die, they are likely to be learning less, eating less, and subject to other safeguarding issues and risky behaviour (World Bank, 2020; WHO, 2009). During the Ebola crisis, such pupils suffered more from the removal of in-school resources (such as school feeding programmes) and in-school safety (for instance, from sexual exploitation) (The Alliance for Child Protection in Humanitarian Emergencies, 2018; UNESCO 2020; UNICEF, 2017). The increase in home and community violence, child exploitation and labour, reported on by all NGOs, disproportionately affected the most vulnerable children (Hird et al, 2016). Vulnerable children in Sierra Leone reported on new pressures to supplement family income, and that school closures had led to a growth in child exploitation (Fisher et al, 2018). Children in Sierra Leone also described the need to take on new roles and responsibilities to supplement household income and reported a direct correlation between school closure and increases of child labour and exploitation (CERA, 2015).

Female pupils also bear a greater negative cost of outbreaks. During Ebola and other disease outbreaks such as Cholera, increases in sexual exploitation, sexual abuse, teenage pregnancy and early marriage occurred across all countries affected by Ebola (Denny, 2015; UNDP, 2015b; Fraser, 2020). In West Africa, the closure of schools for the Ebola epidemic exposed girls to sexual exploitation and violence (Christian Aid et al, 2015). In addition, school closure and the subsequent reduced access to sexual and reproduction health information and services can lead to increased risky behaviour (Fisher et al, 2018). Disease in a family often forces girls to drop out of school due to the need to earn, or to care for family members (CARE, 2020). This can in turn lead to sexual exploitation. In terms of accessing educational materials during times of school closure distance learning solutions, whether low or high tech, often indirectly discriminate against girls due to power dynamics within families.

During recovery a number of challenges emerge to ensure children return to school regularly or at all, and to avoid increases in dropout rates. Following the Ebola outbreak, fear and stigmatisation had a negative impact on re-enrolment rates (UNESCO 2020). In Sierra Leone, around 8,000 'Ebola orphans' faced particular difficulties in returning, and many more faced stigmatisation through parental loss, or through surviving the disease themselves (Government of Sierra Leone, 2015). Girls who became pregnant during Ebola were often stigmatised (Minor, 2017). In Liberia, confused communication over re-opening dates had a negative impact on initial re-enrolment (ACAPS, 2016). In addition, in-school social distancing-related policies sustained during recovery (where followed) reduced the recommended number of students per class, leading to further drop out or increased admissions to private schools, as did some increased migration to the cities, where there was limited capacity in public schools (Santos & Novelli, 2017).

Across all countries impacted by the Ebola outbreak, schools that had been closed or had been sequestered for disease control purposes faced damage and maintenance issues (ACAPS, 2016). When school rebuilding took place, pressure was applied by funders and government to 'focus on quantity, not quality' (Adams, Lloyd and Miller, 2015 p40).

At a system level, school closures and disease-focused reprioritisation can hinder the progress of education reform. Following the Ebola outbreak, in Liberia, the seven-month closing of schools led, in effect to two years-worth of children applying simultaneously to sit West African Examinations Council exams during 2016 (Santos and Novelli, 2017). Overall, the negative educational impact of Ebola was exacerbated and amplified by existing systemic

weaknesses in all affected countries' education systems. 'Poor linkages between the health and education sectors contributed to the delayed reopening of schools, though safe and equipped schools could play a critical role in preventing the further spread of Ebola, protecting children and youth and catalysing social and economic recovery' (UNDP, 2015 p14).

Although the literature generally concurs with ACAP's assessment that 'knowledge loss, reversal in literacy and interruption of the development of children was the main consequences of school closures' there is no empirical evidence that learning outcomes suffered as a result of the Ebola outbreak (ACAPS, 2016 p29). To date, no work has been done, for instance through EGRA, to establish the impact of Ebola, or the impact of recovery-related interventions on learning outcomes. New baseline data was not established.

3. Mitigations and their impact

In the face of significant health and economic challenges, evidence suggests that education is rarely prioritised in mitigation responses. Overall, 11% of UNICEF's budget for Ebola was spent on education with an additional 11% for child protection. This compares to 35% for health, and 17% for WASH (UNICEF, 2017). While this allocation supported the re-opening of over 24,000 schools, the review asserted that 'UNICEF's response neither promptly nor adequately addressed Ebola's secondary humanitarian consequences and specific effects on children (UNICEF, 2017, p5).

Education responses can suffer from a lack of integration with broader responses. In Sierra Leone, the Education in Emergencies Taskforce did not include any formal linkages with other responses and was poorly resourced by donors in comparison with other aspects of the response (Folan, 2015; Hird et al, 2016). Sierra Leone's decentralised education structure also contributed a policy-to-implementation gap, leading to a less coherent, uncoordinated educational response. The recovery plan deliberately addressed some of these inter-sectoral weaknesses (Folan, 2015).

A recent blog on managing education systems during COVID 19 suggests that governments and donors should consider how non-fixed costs can be redeployed to 'keep education moving' (Mundy & Hares, 2020). However, in the rapid onset of the Ebola crisis, redeployment of resources appeared only to take place from education to health, rather than within education.

The research synergies and programmatic linkages between education in emergencies and education in disease outbreaks remains weak. The INEE minimum standards, whilst written with conflict and natural disaster in mind rather than disease outbreaks, provide potentially relevant frameworks for prioritisation and implementation. However, this review found no documentation of whether these standards have been used to inform responses to disease outbreaks. In addition, there remains a lack of empirical evidence on the educational impact of applying one or more of these standards to emergency situations (INEE, 2014).

This report divides mitigation responses into three categories: amelioration, reparation and preparation. Whilst there is some overlap between these categories (and successful strategies may deliberately initiate interventions that span all three), they enable a partly-chronological account of responses.

Amelioration: Crisis responses while most or all schools are closed

Minimal evidence exists on approaches to support at-home learning through the distribution of paper materials, or the impact of these approaches.

- One summary of responses to the Ebola crisis mentioned the initiation of 'Reading for Breakfast', community reading clubs and Book Chains, supported by book provision (Hird, 2016).
- PLAN's quarantine packages for families included materials for games and learning (Platt and Kerley, 2016).
- The only evidence that this report found of schools or districts lending books, textbooks or writing materials to children and families was framed in negative terms: Children reported that learning materials allocated to them for home learning were often used by other family members for other activities (ACAPS, 2016).

Lower-tech solutions, especially radio broadcasts, were used across all countries affected by Ebola, with some demonstration of impact.

- Building on approaches in conflict situations (for instance, the BBC's collaboration with Radio Education for Afghan Children), an estimated 1 million children impacted by the Ebola outbreak were reached through radio education (UNICEF, 2017). Although UNDP recommended the continuation and extension of radio education programmes across all three countries, it is unclear whether this occurred (UNDP, 2015).
- The Emergency Radio Education Programme, commissioned by the Sierra Leonean Ministry of Education, Science and Technology (MEST) provided programming in core academic subjects across age groups. Focus groups-based evaluation reported that, whilst participants felt that the programmes did not adequately compensate for the loss of access to schools and teachers, it helped sustain a connection to education. However, rural areas suffered from poor signal and battery power, and there were issues in terms of home languages and comprehension (World Bank, 2016).
- In Guinea, twenty-one radio stations broadcasted both general education programmes and Ebola Awareness information (Ebola Response, 2015). Radio broadcasts were also trialed in Liberia but there is also no evidence on usage or impact (EDC, 2014).
- One existing programme was rapidly adapted to incorporate radio-based learning opportunities. In Kailahun, one of the poorest districts in Sierra Leone, with very high infection rates, an existing project 'Getting Ready for School' rapidly redesigned itself to become a radio programme *Pikin to Pikin Tok* (Child to Child Talk). Delivered by a partnership between UK-based Child to Child and local NGO Pikin-To-Pikin. 36 existing 'young facilitators' created content in three languages. Radios were distributed to another 252 facilitators who created listening groups. Overall, the programmes reached an audience of 137,000. Working with national agencies and local leaders ensured strong buy-in at all levels, and that the content was gender-responsive. The final evaluation showed high levels of child engagement, and strong agreement from adults that the programming had contributed to children's learning (Institute for Development, 2016).

Children could also recall many of the key messages from the programmes. The programming has continued since the conclusion of the project in 2016, with radios allocated to re-opened schools (Barnett et al, 2018).

This *Child to Child* case study has potential broader lessons in that it ‘illustrates how investment in smaller organisations, already operating successfully and which have built relationships of trust with their communities and authorities, can produce results during and after a humanitarian crisis (Barnett et al, 2018). It required flexibility from donors, adaptiveness from programme implementers and other stakeholders, and high levels of user voice, especially from children themselves. A key lesson learnt was the challenge in adapting monitoring and evaluation targets and processes so that the impact could be fully understood.

There is very limited evidence that online learning, screen or mobile-phone based technologies played a role in supporting at-home learning.

- Save the Children’s review of education technology in school systems facing protracted situations or crises, including post-conflict, found that the general dearth of high-quality impact evidence, especially in at-home interventions, is amplified in such contexts (Tauson and Stannard, 2018). This evidence gap appears equally true for programmes establishing proof of concept and programmes attempting to go to scale (Dahya, 2016; Carlson, 2013).
- Although the evidence base in these contexts is slowly improving, the understanding from this evidence base has not yet been specifically applied to education in disease outbreaks. One exception is the Rumie Tablet, designed for use in challenging contexts, with pre-loaded content, as well as software to track pupil progress (Dahya, 2016). Trialed by Learn Syria, the Rumie was implemented in Liberia as part of a trial across six countries in Africa and Haiti. After initial suspension of the programme in Liberia as a result of Ebola, additional funding enabled 500 tablets to be used by children from 2015-16. A small, mixed-methods evaluation showed positive results across five criteria (Increased efficiency of teacher planning Increased range of activities teachers could lead Increased participation of children Increased participation of parents Educational software improved teachers’ ability to teach effectively), with no significant differences in results between Liberia and other participating countries (Moon et al, 2016).

There is a stronger evidence base around the impact of more informal learning programmes – often adaptations of existing programmes - that include psychosocial support.

- UNICEF offered psychosocial support for 320,000 Ebola-affected children between 2014-2015 (UNICEF, 2017). Although output targets were exceeded, and existing programmes were effectively re-orientated to address Ebola-related issues, overall ‘child protection programmes struggled to address Ebola’s severe secondary effects on children – such as stigmatisation, increased teenage pregnancy and lack of appropriate care, family livelihoods and access to education’ (UNICEF, 2017 p5; United Nations Children’s Fund, 2016). Findings suggested that responses to future outbreaks needed greater prioritisation of children understanding and use of child-specific data, and the implementation of more effective Standard Operating Procedures.

- In Liberia, an already established peacebuilding education and advocacy programme re-assigned young volunteers to join the fight against Ebola, supporting both disease control and health education. When schools re-opened in 2015, 241 of the 300 volunteers were allocated to 83 public schools for a year. The evaluation, whilst not outcomes-focused, mined the perspective of the volunteers and their beneficiary communities. It found that the volunteers' input was welcomed by communities. Their pre-Ebola training and existing understanding of these communities' contexts were crucial to their successful deployment (Gercama & Bedford, 2015). Novelli's analysis suggested that 'the training and activation of ... volunteers should be regarded as one of the key successes of the PBEA project, and as an effective mechanism of informal education for peacebuilding, with clear impacts at individual, community and school/education system levels' (Santos and Novelli, 2017 p13).
- PLAN established 29 study groups for 330 affected children in Sierra Leone. Although no comparative data is available, the evaluation reported high rates of school return, progression to junior secondary school, and exam passes. Focus group discussions revealed an appetite from participants for these study groups to continue. The evaluation suggested that success was predicated on a cross-cutting, integrated approach that spanned child protection, psychosocial support and educational input, all focused on the most vulnerable groups (Platt and Kerley, 2016).
- Informed by similar interventions in emergency settings, one outcome evaluation of a community-based psychosocial arts programme for children during the Liberian Ebola epidemic demonstrated statistically 'significant decreases in reported [poor mental health] symptoms pre-to post-intervention and a significant difference in total symptoms over time' (Decosimo et al, 2019 p1; Ager et al, 2011).
- In Guinea, community watch committees, including village and religious leaders, youth and community workers, and teachers, led both contact tracing and support for affected families. Whilst they had no formal educational remit, this integrated, community-driven approach supported greater co-ordination across services (UNDP, 2015).
- Teachers were also involved in psycho-social support during and after school closures. In North Kivu in the DRC, school principals and teachers were also trained what the WHO has described as 'psychological first aid' (Bedford et al, 2018; WHO, 2014). Some analyses have recommended that all teachers should be trained to offer post-crisis psycho-social support (Alcayna-Stevens, 2018; Fisher et al, 2018).

The review found only one example of an approach that attempted to mitigate the educational or child protection impacts on female pupils.

- One gender-focused programme in Sierra Leone rapidly adapted during and after the crisis to become a one-hour daily life skills, sexual and reproductive health education and vocational learning class for 4,700 adolescent girls in villages, held in safe spaces. A randomised control trial (RCT) demonstrated that this programme successfully mitigated some of the secondary risks from the disease outbreak, especially around pregnancy and transactional sex. After the crisis, school enrolment rates fell by 16% in untreated (control villages), but in treated villages with the safe space intervention, the fall was only half this at around 8% (Bandeira et al, 2018).

There is no evidence of approaches that attempted to support parents to improve the educational or psycho-social support that they could offer to their children during school closures.

- Beyond supporting their children's learning, there is clear evidence parents and other family members play a key role in identifying and addressing any physical and psychological concerns about children during disease outbreaks (WHO, 2020). Parents can practice open communication and use the opportunities for more frequent interaction - 'With the right parenting approaches, family bonds can be strengthened, and child psychological needs met' (Wang, 2020, p946).
- Although it is likely that some existing family intervention programmes continued during Ebola, this review could not find evidence of how these programmes sustained and adapted to the crisis.

There is no evidence of approaches that attempted to support teacher training and professional development during school closures or on re-opening, beyond disease-related training.

- The increasing pervasiveness of internet-enabled devices means that technology-enabled professional development is making significant progress in low-income settings (McAleavy et al, 2018). While evidence is emerging on the efficacy of some professional learning programmes in protracted conflicts – for instance, *the IRC's Connect to Learn* (which includes a psycho-social element called *Healing Classrooms*), the potential of these programmes to transfer to disease-impacted contexts remains speculative and untested (Dahya et al, 2016).

One recommendation made in a recent COVID-related blog, that closing some parts of a school may help to contain the epidemic and reduce the negative consequences of full school closure' is based only on limited evidence from higher income countries (Minardi, Hares, and Crawford, 2020).

Reparation: Recovery responses when schools reopen

As part of its recommendations around 'restoring and strengthening capacity 'with a special focus on community-level systems', UNDP recommended that 'back-to-school' should be among the first priorities for the recovery of basic social services. This requires significant efforts in implementing safety protocols, investments in water supply and sanitary measures for schools, refurbishing of schools, teacher training and parental awareness, and psycho-social care' (UNDP, 2015a p10).

Understandably, much of the education-focused 'back to school' efforts prioritised mitigations of the primary impacts of any future outbreak: ensuring that schools are clean and disease-free, and are prepared to prevent disease spreading if future outbreaks occur. This included significant investments in WASH facilities, disease-related training for teachers and learning for pupils.

With donor support, several countries affected by Ebola attempted some system-wide recovery planning and implementation. However, as yet there is no clear evaluative evidence on the impact of these strategies.

- In Guinea, a post-crisis decree from the Minister of Education allowed children to start school at age 6 rather than seven, although there is no evidence on take up of this offer. The new sector plan for 2020-29 does not include mention of Ebola-related recovery or preparedness plans (Republique de Guinea, 2019).
- In Liberia, the World Bank supported the Ebola Recovery and Reconstruction Project ‘to minimise the impact of the epidemic on school-age children by safely reopening schools, motivating students and teachers to return to the classroom, and enhancing the quality of learning’ (Darvas 2017, p1). Other donors, including the European Union, also offered recovery-specific support (GPE, 2019).
- Sierra Leone’s ambition increase enrolment to above pre-Ebola levels, was built on three activities: Waive school and examination fees; school feeding for primary students; and community mobilisation and targeted support to vulnerable groups. The pressure to ‘make up for lost time’, also focused recovery priorities on a small set of activities to accelerate learning: improved syllabi and teacher training; classroom upgrades; continuing the radio programmes; and solar kits for rural schools (Government of Sierra Leone, 2015).

Although the UNDP recommended that all countries affected by Ebola prioritised community engagement and awareness campaigns to improve school return rates, there is limited evidence on the different approaches used or the effectiveness of these approaches (UNDP, 2015).

- UNICEF’s evaluation stated that its destigmatisation programmes and WASH support for schools played a part in encouraging learners back to school (UNICEF, 2017).
- In Sierra Leone, a well-communicated focus on improving in-school hygiene practices – including training teachers – appeared effective in encouraging parents to ensure their children return as soon as schools reopen (Powers 2016). This enabled schools to open in advance of Ebola being completely eradicated.
- Lamoure and Juillard’s education-specific recommendations include a call to respond to parental fears or struggles to pay for school fees (Lamoure and Juillard, 2020). The waiving of school fees was also recommended for Liberia, but it is unclear whether this occurred (UNDP, 2015). An evaluation of the USAID Ebola cash transfer programme for 120,000 households in Liberia and Sierra Leone found that, as the programme progressed, transfers were increasingly spent on non-food items, including schooling (Guluma, 2018). In focus group discussions in both countries, payment of school fees was one of the top three financial priorities. Although it was recommended that the government paid school fees for survivors and children of victims in the DRC, it is unclear whether this was enacted (Alcayna-Stevens, 2018).

Although it has been suggested that ‘a protective response is to allow for automatic promotion (in K-12 education) while ensuring earmarked places and remediation for disadvantaged populations in future admissions processes’, it is unclear whether any governments did this following any disease outbreaks (Mundy & Hares, 2020).

Sierra Leone's targeted efforts to prevent drop-out amongst Ebola orphans and survivors appear to have been effective.

- With support from donors, the Government of Sierra Leone set an ambition that no orphans or survivors miss out on education, ensuring both access and preventing discrimination. According to its most recent sector plan, no one has yet claimed to be out of school because of Ebola (Government of Sierra Leone, 2018).

Despite some policy challenges around the re-enrolment of pregnant girls and new young mothers, gender-responsive recovery interventions had positive impacts.

- Re-enrolment of girls in Sierra Leone may have been negatively affected by government reaffirmation of a policy, as schools were reopening, that 'visibly pregnant' girls would not be allowed to return (Bandiera et al, 2018). Although an alternative 'bridging system' was introduced, 'at best, this bridging system varied in effectiveness, and did nothing to help pregnant girls and an alternative way to take national exams (Bandiera et al, p9).
- Within DFID's overall recovery programme in Sierra Leone, the provision of special needs education for pregnant girls, supported by a comprehensive teacher training programme, was especially effective with enrolment targets for pregnant girls and for out of school and vulnerable children exceeded by over 50%. Overall, the education-focused element of the recovery programme also increased engagement from other community members (DFID, 2016). Similarly, as part of efforts to tackle gender-based violence and support pregnant teenage girls, the UNDP created safe spaces for 10,000 vulnerable girls, including mentoring by older girls, support for first-time young mothers, and counselling on sexual and reproductive health (UNDP, 2015a).
- The United Nations Population Fund supported 18,000 pregnant girls after Ebola, through special school provision and childcare (UNFPA, 2015)
- CARE's analysis of gender in the Ebola outbreak includes recommendations to 'encourage and embed child-friendly innovations', and 'bolster community resilience through key entry points such as schools' (Kapur, 2020).

Reparation offered opportunities to reinforce and recalibrate learning priorities.

- Sierra Leone implemented a shorter curriculum to be covered in two shorter academic years, more appropriate to the learning levels of students and capacities of teachers (World Bank, 2016). Data on the impact of these changes is not available. In Guinea, UNDP recommended that students about to sit exams were offered additional support, although there is no evidence on whether this occurred (UNDP, 2015).
- In Sierra Leone, a new teacher development programme - allocating in-service teachers to support illiterate or poorly trained teachers in rural schools - was positioned as an 'Ebola recovery support unit to schools/teachers' (Government of Sierra Leone, 2015 p51).

- Overall, the ‘paradigm change’ that was observed in the health policies of countries affected by Ebola does not appear to have occurred in any of the education systems affected by disease (Delamou, Delvaux, et al., 2017).

Preparation: mitigating the educational risks of future outbreaks

Lessons learnt from H1N1 informed the planning of education in refugee communities but did not influence countries’ preparedness for the Ebola Crisis. During the 2009 H1N1 epidemic, The UNHCR’s epidemic preparedness and response (EPR) projects helped to ensure no outbreak in refugee communities, and no school closures. Since then, it has documented and supported operational preparedness for epidemics in 22 countries (UNHCR, 2010).

Only Sierra Leone appears to have systematically incorporated post-Ebola preparedness into its education planning. A key target in its most recent plan is to ‘develop an emergency preparedness and response plan, handbook, and phone directory to be available in 75% of schools, ensuring readiness to act in the case of emergency (GOSL, 2018 pV).

The efficacy of a number of guidance documents and recommendations created as a result of Ebola (all of which include education) will be tested through the COVID-19 crisis. The Coronavirus, whilst different in nature, will stress test both the extent to which countries affected by previous outbreaks are better prepared as a result, and the utility of the post-Ebola guidance documents and frameworks (ACAPS, 2016; ALNAP, 2020; UNICEF, 2020).

Some of the data strengthening activities precipitated by the Ebola Crisis, as well as having a positive impact during recovery, may help to mitigate the educational impacts of COVID 19.

- Crises such as a disease outbreak can provide a moment of opportunity for an enhanced focus on technology-enabled aspects of system strengthening. This can include data collection, communications with teachers and families, and money transfers for teacher salaries (Dahya, 2016).
- UNICEF increased their use of a number of technology-enabled applications to support real-time monitoring and partner reporting (UNICEF 2017). However, as well as overall weaknesses in management systems to fully utilise the potential of this data, these applications were not used to develop an improved understanding of education impact.
- As part of *Leh Wi Learn*, and informed by the use of real time data in the Ebola Crisis, a consortium of NGOs developed situation rooms in national and local offices, using data from mobile phones in schools. Although there has been improved understanding of this data, this has led to limited amounts of data-informed actions as a result. This nonetheless shows the value of a ‘culture of data’, established during the crisis, sustained beyond, and possibly vital for any future disease outbreak (DFID, 2017). The Liberian Government used FHI360’s K-Mobile program to support data collection on schools as part of its recovery plan (Dahya, 2016). Evaluative evidence is not available.

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