

RESEARCH ARTICLE

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# Humanitarian health programming and monitoring in inaccessible conflict settings: a literature review

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## Abstract

Increasing global conflicts and risk to humanitarian aid workers have necessitated innovative approaches to deliver humanitarian assistance. Remotely managed operations aim to continue the provision of services where grave risk to expatriate staff and restrictions by authorities inhibit access. This review of peer-reviewed and gray literature identified these remote approaches and collated lessons learned and best practices for humanitarian health programming and monitoring in inaccessible conflict settings. Analysis identified key principles, including the importance of capacity building and frequent communication, comprehensively assessing and addressing the risks to national staff, increasing monitoring and evaluation efforts despite difficult conditions, and planning for the possibility of a transition to remote programming and having an exit strategy to prevent falling into the remote operations trap. Evidence on how to effectively carry out remote operations is limited; rigorous documentation and evaluation of remotely managed humanitarian operations are required to further build the evidence base.

**Keywords:** Remote management, Remote operations, Inaccessible, Conflict, Emergency, Program, Monitor

## Background

While the end of the Cold War saw a decline in conflicts affecting multiple countries, since 2013 there has been a rise in both number of conflicts and battle casualties (Gates et al. 2016). Humanitarian aid workers have been increasingly targeted in conflict; there were 190 attacks on aid workers in 2014, resulting in 121 deaths. This is three times the 2004 number of 63 incidents (with 56 deaths) (Aid Worker Security Database 2014). International actors are often preferred as kidnapping victims as they provide both a higher ransom and a more visible political statement (Stoddard et al. 2009). Adherence to humanitarian principles and relying on the strategy of “acceptance” no longer ensure safe access for humanitarian actors (Cunningham 2017; Donini and Maxwell 2013). The need to maximize the safety of staff results in reduced access for humanitarian programming and monitoring. This access is further limited by restrictions imposed by both governments and non-state actors

seeking to exercise control over territories (Stoddard et al. 2010).

When the risk to international organizations working in conflict zones becomes too great or access is severely restricted, they are often left no other choice than to remove themselves from the situation. Retreat to fortified compounds or withdrawal from the field results in significant gaps in programs and services, as well as a growing divide between international organizations and local communities (Duffield 2012). This has a harmful effect on local populations who are forced to remain without any support. To address this gap, international organizations may turn to remote management of programs. Remote management has previously been defined as “the withdrawal of senior international or national humanitarian managers from the location of the provision of assistance or other humanitarian action which represents an adaptation to insecurity and a deviation from ‘normal’ programming practice ” (Donini and Maxwell 2013, p. 384). Remote programming aims to continue the provision of services while operating under the assumption that local actors, through their greater

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knowledge of local context and acceptance in the community, and with the continued support from international organizations, are able to provide services at a reduced level of risk than that faced by international staff (Donini and Maxwell 2013; Kalkman 2018). In some situations where grave risk prevents access for expatriate staff from international organizations and national staff from national and international organizations, remote programs are executed and managed by local actors from communities.

This review was conducted in response to an urgent request from the Global Health Cluster to provide evidence on health and nutrition programming and monitoring in inaccessible conflict-affected areas and aims to identify these remote approaches, collating lessons learned, and best practices. While humanitarian programming and monitoring in inaccessible areas has been required in several recent conflicts, it has largely been governed by trial and error due to lack of comprehensive instruction and detailed strategy. The increasing use of remote operations has shifted the perception of risk and has normalized remote approaches to some extent. This has led to novel challenges and can maintain or widen the divide between aid agencies and recipients (Andersson and Weigand 2015; Duffield 2012; Fisher 2017; Kalkman 2018). This review hopes to inform the creation of formal evidence-based guidance to support future humanitarian initiatives in these settings.

## Methods

This literature review was completed in two parts: a systematic review of peer-reviewed published articles and a search of gray literature sources. Both parts were completed using consensus methodology by two independent researchers from the United Nations Children's Fund (UNICEF) and the US Centers for Disease Control and Prevention (CDC).

## Inclusion and exclusion criteria

English language articles published in peer-reviewed journals between January 1, 1990 and March 1, 2016 (inclusive) were included. Included studies met the following criteria: described real-world humanitarian operations delivering health and nutrition interventions, and took place in an inaccessible location in conflict or natural disaster. Humanitarian programming in natural disasters was included with the aim of identifying novel strategies that could be translated to an inaccessible conflict setting; however, none were identified. Exclusion criteria were as follows: technology or methods described as having a potential humanitarian application but not yet implemented (including simulations), technology or methods used in an inaccessible development context (rather than in response to an emergency),

studies with no specific intervention or outcomes, studies that examine preparedness or resilience not linked to response, and review papers; however, references of review papers were screened for primary data sources. Given the burgeoning nature of this field and the limited published literature on the topic, all study designs were considered.

## Systematic review of published peer-reviewed literature

### Search strategy and results

One search string (Table 1) was entered into six search engines: PubMed, Scopus, MEDLINE/Ovid, Web of Science, Cochrane, and EMBASE. All search results were exported to the online systematic review organizer Covidence. Then, 1853 titles and abstracts were screened, followed by the full text screening of 63 studies. References of all 63 studies that progressed to full text review were also screened to identify primary sources.

Fourteen papers were identified as meeting all criteria and included in this review (Fig. 1). The breakdown by study design was as follows: four retrospective analyses of programs, one retrospective analysis of populations, five descriptive case studies, one case series, two cross-sectional surveys, and one before-and-after study.

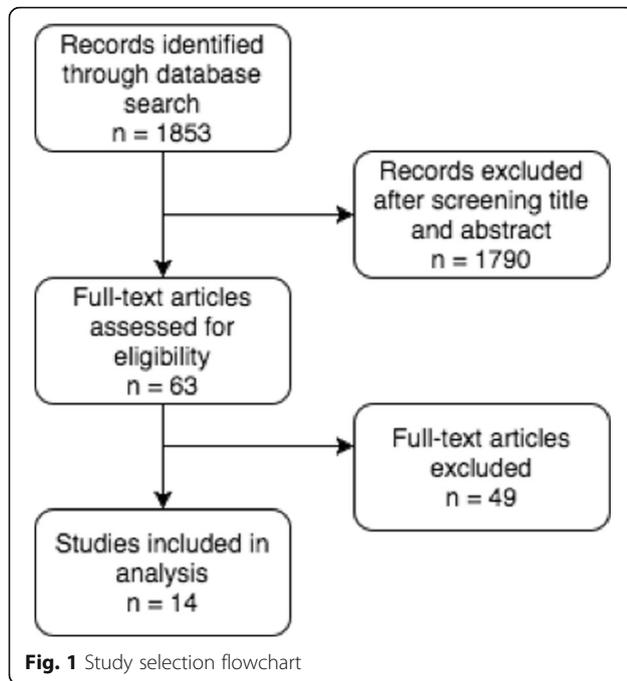
### Quality assessment

A checklist adapted from the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) criteria was used for quality assessment of observational studies, resulting in a rating of high, moderate, or low quality (Blanchet and Roberts 2015). The one qualitative study (Kevany et al. 2014) was assessed using the Critical Appraisals Skills Programme (CASP) checklist (CASP 2013), with a score of 1–4 considered low, 5–8 moderate, and 9–10 (out of 10) high. The case series study (Shanks et al. 2012) was assessed using the NIH Quality Assessment Tool for Case Series (NIH 2014), with a score of 1–3 considered low, 4–6 moderate, and 7–9 high (out of 9). Given the lack of a validated tool, the quality of descriptive case studies could not be formally assessed.

Upon quality assessment, two studies were found to be low, six were moderate, and one was high; five studies were not assessed due to the lack of an appropriate validated tool. Assessment was performed in order to draw conclusions about the quality of the current evidence; given the limited number of published studies, none were excluded based on rating. A table summarizing the

**Table 1** Peer-reviewed literature search strings

1. (humanitarian OR crisis OR conflict OR disaster) AND (remote OR inaccessible) AND (Health OR nutrition OR polio OR wash OR trauma OR obstetric)



articles included and their corresponding quality assessments can be found in Table 2.

## Review of gray literature

### Search strategy and results

The gray literature search included all sources that were not published in peer-reviewed journals, some examples of document types are organizational guidelines, programming notes, program evaluations, presentations, and meeting notes. In addition to a Google search, a call for resources was sent out to humanitarian organizations, with additional contacts obtained via snowball sampling. Contacts were asked to provide any gray literature sources pertaining to humanitarian programming and monitoring in inaccessible areas from their organization or elsewhere. References of documents received were also screened for additional primary sources.

Two researchers screened all resources and consensus was reached on which were relevant and would be included. Then, 131 total documents were reviewed using the same inclusion and exclusion criteria as the peer reviewed literature, with 55 documents proceeding to in-depth analysis and included in the final report. The main reasons for exclusion were documents pertained to emergency settings but did not specifically discuss operations in inaccessible contexts within these settings, documents cited longer term development interventions that were not immediate aid relief, and documents outlined remote operations but not within emergency settings.

## Analysis

Both researchers performed thematic analysis independently. Documents were reviewed and coded based on a defined set of codes created following the initial review; code conflicts were discussed until consensus on which code to include was reached. For example, after a document was reviewed and manually coded by reviewers 1 and 2 independently, it was exchanged between the reviewers who then compared codes and noted discrepancies. The reviewers then met online using a videophone application to review and reach consensus on all discrepancies. Examples and excerpts were then grouped into themes and included in the relevant sub-sections of the final report.

## Results

### Causes and motivators of remote operations

The main causes of reduced access include general insecurity or a specific security incident, and restrictions on the movement of aid workers imposed by authorities in power. Additional factors that contribute to limited access include weak international support or pressure to negotiate access with host states, tendency toward risk avoidance over risk management, and poor infrastructure requiring expensive airlift capacity (Stoddard et al. 2006).

Several studies identified factors that need to be considered when determining whether to switch to remote operations. The first is the level and predicted length of insecurity; if the security risk is perceived as temporary, it may be more feasible to close the program and resume when the setting has become secured. The size of the program must be considered, with large programs harder to hand over than smaller programs. This may cause an organization to reduce services and hand over a scaled-back version of the program in order to maintain presence in a location. Feasibility also plays a role in choosing to operate remotely; activities for certain sectors can be more or less feasible based on security or capacity of local staff (for example, highly insecure road travel may make distribution of food aid less feasible). Feasibility will also be governed by an organization's operational history in a specific context. This ties into context considerations where the range, quality, and capacity of local partners must be considered, as well as their ability to operate freely in a region. Finally, the level of vulnerability and need is also a major consideration when debating the shift to remote programming, with organizations frequently opting to provide a program with reduced quality, monitoring and impact, rather than no support at all (Rogers 2006; Stoddard et al. 2006; Stoddard et al. 2010).

The primary benefit of remote programming and monitoring is the continuation of assistance, services,

**Table 2** Summary of peer-reviewed articles

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
CDC 2008	WHO	Progress towards poliomyelitis eradication—Pakistan and Afghanistan 2007	Afghanistan and Pakistan, ongoing conflict	Large-scale house-to-house supplementary immunization activities (SIAs) with oral polio vaccine - 4x national immunization days - 7x subnational immunization days	Interrupt transmission of WPV in Pakistan and Afghanistan	Descriptive case study	- Post-SIA coverage below district average - Suboptimal coverage in insecure and remote areas in both countries - Up to 20% of children missed in areas of southwest Afghanistan - In 2007, Afghanistan and Pakistan reported 17 and 32 cases of confirmed polio, respectively	- Extensive cross border movement necessitating SIA synchronization - Indirect contact with anti-government groups in an attempt to cease hostilities; increased areas accessible to vaccinators - Support from tribal and religious leaders, and local communities necessary for reaching insecure areas	N/A
Balfour 2015	UNICEF Somalia	CLTS in fragile and insecure contexts	Somalia, ongoing conflict	Community-led total sanitation	Improve sanitation access in rural areas and small towns and describe adaptations necessary to adjust to insecure setting	Descriptive case study	Initially ineffective; gaps and barriers to CLTS approach identified during training of implementers in 2014 - Training in 2015 (emphasis on NGOs that stay in communities for) - Decentralized approach allowed implementation in presence of weak central government	- Implemented by local NGOs because of their access to communities in conflict-affected areas - The development of adapted, contextual-specific protocols essential for effective rollout in fragile contexts - Involvement of key traditional and religious leaders found to be critical during triggering and implementation	N/A
Bharti et al. 2015	Part of the human mobility mapping project	Remotely measuring populations during a crisis by overlaying two data sources	Côte d'Ivoire, internal political conflict 2010–2012	Nighttime lights satellite imagery and mobile phone call detail records (CDRs) - Compared composited stable nighttime lights values from 2012 and 2010, the density of phone towers present, and the density of SIMs - Assessed average population size and dynamic changes	Rapid, large-scale measures of displaced populations and movement	Retrospective analysis	- Agreement in average measures of population sizes - Able to obtain measurements in long- and short-term population dynamics by using two sources	CDRs did not provide long-term data on population movements, a pre-conflict baseline or movement across national boundaries - Satellite images did not provide high-resolution mobility traces and were sensitive to environmental factors - Used two complementary data sets to overcome the	Low

**Table 2** Summary of peer-reviewed articles (Continued)

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
Chu et al. 2011	MSF	Providing surgical care in Somalia: a model of task shifting	Somalia, ongoing conflict	across spatial and temporal scales Task shifting - Expat presence ended Jan 2008 due to increased insecurity - Surgical program run remotely by coordination team in Nairobi; visit site 2x/year to ensure standards being met - Services provided by one Somali doc with surgical skills (trained under expat surgeon for 2 years), one surgical nurse, and one anesthetic nurse - Surgical consult available by email	Continue provision of surgical care by local doctors and nurses following evacuation of expatriate staff	Before and after study	- 2086 operations were performed between Oct 2006 and December 2009 - After Jan 2008, all procedures (1433) were performed by non-surgeons (doctor with surgical skills and surgical nurse) - Peri-operative mortality was lower when procedures were performed by non-surgeons (0.2%, 2 cases) between 2008 and 2009, versus 2006–2007 when surgeons were present (1.7%, 6 cases, $P < 0.001$ )	limitations of each; strongest correlation in economic regions (not administrative regions with varying wealth) - Low rates of spinal anesthesia due to lack of training of anesthetic nurse (most general anesthesia); extra training for Somali staff required - Videoconferencing would be beneficial	Moderate
Enkel et al. 2015	- MSF - Vienna University of Technology (TUW) - International Institute for Applied Systems Analysis (IIASA)	Food security monitoring via mobile data collection and remote sensing: results from the Central African Republic (CAR)	CAR, violent conflict	Mobile data collection and remote sensing - SATIDA COLLECT: android application that facilitates rapid and simple data collection - Local CHWs working with MSF used mobile data collection application on smart phones to conduct nutrition assessments and interviews in the local language - Inputs from satellite derived drought indicators	Collect information about socio-economic vulnerabilities related to malnutrition, access to resources and coping capacities using smart phones; to capture local conditions as situations evolve on the ground (early warning related to food insecurity)	Cross-sectional survey	- May 2015: households consumed 0.9 meals per day; average household size was more than nine people; despite this, children between 6 and 59 months were not malnourished - Satellite-derived information about rainfall/soil moisture conditions and the Standardized Precipitation Evapotranspiration Index confirmed that the food insecurity situation in 2013/2014 was related to violent conflicts rather than to a climatic shock	- Recording the location of assessments via the smart phones' GPS receiver enabled analysis and display of coupling between drought risk and impacts (direct link to satellite derived info) - Complementary use of information from satellites and SATIDA COLLECT can support the translation of early warnings into action, reducing false alarms and strengthening disaster preparedness	Low

**Table 2** Summary of peer-reviewed articles (Continued)

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
Kevany et al. 2014	The global fund - Afghanistan Ministry of Health - National Malaria and Leishmaniasis Control Programme (NMLCP)	Global health diplomacy investments in Afghanistan: adaptations and outcomes of global fund malaria programs	Afghanistan, ongoing conflict	Adaptation of global fund-supported malaria treatment and prevention programs: 1- amendment of educational materials for rural populations 2- religious awareness in gender groupings for health educational interventions 3- recruitment of local staff, for quality assurance and service delivery 4- alignment with diplomatic principles and avoidance of confusion with broader strategic and military initiatives 5- amendments to program "branding" procedures	- Ensure security of staff - Improve local acceptability, coverage, and service utilization	Qualitative study and retrospective program evaluation	- Service utilization improved access of service delivery in insecure regions - Temporal association noted between intervention and improved uptake of nets - Intervention implementation and safe passage for program staff facilitated by negotiations with community elders - Prestige and acceptability of international donor activities were observed to improve	- Successful adaptation of interventions to insecure regions may help build international presence in otherwise inaccessible areas, which would, in turn, be impossible without appropriate adjustments to program design, selection and delivery - Must maintain explicit distinctions between development, military and political agendas	Moderate
Lee et al. 2006	Backpack Health Worker Team (BPHWT)	Mortality rates in conflict zones in Karen, Karenni, and Mon states in eastern Burma	Burma (Myanmar), ongoing conflict	- Cluster surveys conducted by indigenous mobile health workers - Interviewed heads of households over 3 month time periods in 2002 and 2003	Estimate mortality rates in conflict-affected areas in eastern Burma in-accessible to international organizations	Cross-sectional mortality survey	Completed surveys from 1290 (64.5%) households in 2002 and 1609 (80.5%) households in 2003. - Estimates of vital statistics for 2002 and 2003 respectively: infant mortality rate: 135 (95% CI 96–181) and 122 (95% CI 70–175) per 1000 live births; under-five mortality rate: 291 (95% CI 238–348) and 276 (95% CI 190–361) per 1000 live births; crude mortality rate: 25 (95% CI 21–29) and 21 (95% CI 15–27) per 1000 persons per year	- No other governmental or international organizations working with this population from within Burma. - Use of indigenous mobile health workers provides means of measuring health status among populations normally be inaccessible due to conflict; advantages: familiarity with local communities, are highly trusted by the villagers, and visit communities in the course of their normal work - Low response likely underestimated mortality	Moderate

**Table 2** Summary of peer-reviewed articles (Continued)

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
Mahn et al. 2008	- Back Pack Health Worker Team (BPHWT) - Karen Department of Health and Welfare (KDHW) - Local ethnic organizations - Regional and international partners	Multi-level partnerships to promote health services among internally displaced in eastern Burma	Burma (Myanmar), civil conflict and government restrictions	Cross-border local-global partnerships - BPHWT indigenous health workers travel to villages to provide general medical, maternal, and child health care; provide education workshops - BPHWT partners with KDHW, village leaders and village health volunteers, Burma Medical Association, the National Health and Education Committee, the Mae Tao Clinic, the Center for Public Health and Human Rights at the Johns Hopkins Bloomberg School of Public Health - International NGOs provide technical support - Twice annually, BPHWT team leaders cross from Burma into Thailand to program's administrative headquarters, to resupply, receive training, and compile collected health information	Provide critical health services to IDPs in eastern Burma	Descriptive case study	In 2005: - HWs had 95% diagnosis accuracy and 85% treatment accuracy for common illnesses - Treated nearly 78,000 cases throughout their IDP service areas - Administered nearly 43,000 doses of Vitamin A, as well as deworming treatments, to children and postpartum women - The local-global partnership was able to provide care to in-accessible IDPs	Key factors contributing to their success: - Local access - Multi-ethnic collaboration - Coordination (of who delivers what services, supply procurement and delivery, etc.) - Standard data collection; information used for advocacy	N/A
Martinez-Garcia 2014	MSF	A retrospective analysis of pediatric cases handled by the MSF tele-expertise system	28 countries, conflict or unstable locations	Telemedicine - three telemedicine networks combined into single multilingual system, <a href="http://telemed.msf.org">telemed.msf.org</a> - Case-coordinator	Provide specialized pediatric medical consultations in remote areas	Retrospective program analysis - Pediatric cases referred to MSF telemedicine	- Mean rating for the quality of information provided by the referrer was 2.8 (on a scale from 1 (very poor) to 5 (very good)); mean rating for		Moderate

**Table 2** Summary of peer-reviewed articles (Continued)

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
Mattli and Gasser 2008	ICRC	A neutral, impartial and independent approach: key to ICRC's acceptance in Iraq	Iraq, ongoing conflict	receives referral and allocates to specialist; individual case follow-up (progress report) automatically requested from referrers since Oct 2013 - Reinforced assistance programs through remote-control mechanisms: work with trusted implementing partners, periodic short visits by ICRC expatriate staff - Moved staff to Amman, Jordan and kept only a core staff in Iraq - Remote-control for WASH: mobilization of network of local contractors and consultants working with ICRC engineers - New operational framework in 2006: • Minimized movements to reduce staff exposure • Increased networking to promote acceptance	- Implement programs of increasing scope and size and build acceptance through networking and communication with low-visibility presence - Increase level of competence and responsibility of ICRC local staff	platform from April 2010 to March 2014 inclusive - 467 cases total, 48 then randomly selected	Descriptive case study	- 2.7 million people directly benefitted from ICRC W&S activities in 2007 - In 2007, 54 water and sanitation projects were carried out under direct ICRC supervision and 78 projects under remote control Keys to the success of the remote-control model: - Highly experienced, motivated and committed ICRC Iraqi employees; - Strong collaboration with and ownership by local authorities; - An extensive network of local contractors/consultants throughout the country; - Strong control mechanisms for needs assessment and project design, implementation, monitoring and evaluation - Downside: limited contacts, limited capacity for coordination	N/A
Richard et al. 2009	- Karen Department of Health and Welfare (KDHW) - Back Pack Health Worker Team (BPHWT)	Essential trauma management training: addressing service delivery needs in active conflict zones in eastern Myanmar	Myanmar, civil conflict	Trauma management program - 4-6-day trauma course for health workers - Part of CBO-run health system providing care for approximately 250,000 IDPs and war-affected residents	Improve the capacity of indigenous health workers to deliver effective trauma care	Retrospective analysis of program	- Since 2000, around 300 health workers have received Training - Between June 2005 and June 2007, more than 200 patients recorded in the trauma patient registry; majority were victims of weapons-related trauma.		Moderate

**Table 2** Summary of peer-reviewed articles (Continued)

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
Shanks et al. 2012	MSF	Treatment of multidrug-resistant tuberculosis in a remote, conflict-affected area of the Democratic Republic of Congo	DRC, ongoing conflict	<ul style="list-style-type: none"> <li>Remote support of non-TB clinicians by TB specialist via mobile phone</li> <li>Use of simplified monitoring protocols</li> <li>Addressed stigma to support adherence</li> </ul>	Provide remote support from TB specialist to non-TB clinicians using simplified monitoring protocol	Case series	<ul style="list-style-type: none"> <li>Trauma victims treated by health workers survived in 91% of cases</li> <li>Able to successfully treat patients with simplified protocol</li> <li>All three DR-TB patients completed treatment</li> </ul>	<ul style="list-style-type: none"> <li>Standardized forms helpful in maintaining overview of treatment despite multiple staff changing; however, susceptible to transcription error</li> <li>Communication between treating staff and headquarters was a challenge</li> </ul>	Moderate
Tong et al. 2011	MSF	Challenges of controlling sleeping sickness in areas of violent conflict: experience in the Democratic Republic of Congo	DRC, violent conflict	HAT detection and treatment campaign	Targeted medical interventions to address operational and medical challenges of managing HAT in conflict areas	Descriptive case study	<ul style="list-style-type: none"> <li>2007: 46,000 screened and 1570 treated for HAT</li> <li>2009: 2 centers forced to closed due to insecurity; reopened early 2010</li> <li>Complexity of HAT diagnosis and treatment prevented any emergency handover to local partners; operations suspended</li> <li>2010: 770 patients treated</li> </ul>	<ul style="list-style-type: none"> <li>Active screening and follow up compromised in conflict</li> <li>Community awareness and acceptance necessary for health program</li> <li>Displacement potentially creates new foci of transmission in previously cleared areas</li> <li>Insufficient international support and funding</li> </ul>	N/A
Zachariah et al. 2012	MSF	Practicing medicine without borders: tele-consultations and tele-mentoring for improving pediatric care in a conflict setting in Somalia?	Somalia, ongoing conflict	<ul style="list-style-type: none"> <li>Tele-consultations and tele-monitoring</li> <li>To support Somali clinicians when expatriate staff were no longer able to be physically on site</li> <li>Specific risk criteria requiring mandatory referral defined</li> <li>Consultations with specialist in Nairobi scheduled every afternoon- "Tele-mentoring"</li> </ul>	Improve quality of pediatric care in remote conflict setting	Retrospective analysis of program data with historical control (2010 data prior to implementation of telemedicine)	<ul style="list-style-type: none"> <li>Of 3920 pediatric admissions, 346 (9%) were referred for telemedicine.</li> <li>In 222 (64%) children, a significant change was made to initial case management</li> <li>In 88 (25%), a life-threatening condition was detected that had been initially missed</li> <li>Adverse outcomes fell from 7.6% in 2010 (without telemedicine)</li> </ul>	<ul style="list-style-type: none"> <li>Held meetings with community elders to raise awareness and understanding of new technology; led to acceptance of technology in community with cultural beliefs that negate the use of cameras</li> <li>Reasons clinicians found it to be of high value: helped to improve recognition</li> </ul>	High

**Table 2** Summary of peer-reviewed articles (Continued)

Author	Organization	Title	Location and type of crisis	Intervention	Goal of intervention	Study design	Results	Additional details	Quality
				(education) also provided by specialist			to 5.4% in 2011 (with telemedicine); 30% reduction, odds ratio 0.70, 95% CI 0.57–0.88, $P = 0.001$ - All 7 clinicians involved rated it to be of high value	of risk signs (7/7), improved management protocols and prescription practices (6/7), built a relationship of solidarity through direct contact with distant specialist colleagues (5/7)	

and flow of funding. It allows the retention of local knowledge, making it easier to return to traditional programming when access is restored, and provides opportunities for closer community involvement and local ownership. Remote operations increase the capacity of field staff, which contributes to sustainability. Additionally, the continued visibility of an organization will increase local acceptance of both current and future programming (Kjaerum 2015; Stoddard et al. 2006). Despite these benefits, programming and monitoring quality, neutrality, and impartiality tend to suffer with lack of international non-governmental organization (INGO) or international organization (IO) presence and all options for keeping staff on the ground should be considered prior to moving to remote operations as a last resort (Stoddard et al. 2006; UNHCR 2016). The potential benefits and challenges of shifting a program to remote mode require full consideration to inform the decision; challenges and considerations will be discussed in detail below.

#### **Traditional modalities of remote operations**

The literature identified four modalities of remote programming that exist on a spectrum, varying by depth of roles and responsibilities of both international and local staff. They are:

1. Remote control: commonly a reactive stance (action in response to a situation that has already occurred) and a last resort with the least amount of delegation of authority to field staff, and little capacity development or skills transfer (GOAL 2016; Hansen 2008b; Zyck 2012).
2. Remote management: a reactive stance with some delegation of authority to national implementers, moderate investment in capacity building, and procedures in place for better monitoring and quality. Assumes that decision-making and authority will revert back to internationals following restoration of security (GOAL 2016; Hansen 2008b; Zyck 2012).
3. Remote support: a proactive strategy (action in preparation for a situation that has yet to take place) with full investment in national staff capacity building, mentoring, and planning for eventual full handover of authority (GOAL 2016; Hansen 2008b; Zyck 2012).
4. Remote partnership: a proactive strategy where equal partnership is fostered with a local partner that already has significant internal capacity, and therefore does not require capacity development support from the international organization. The international organization supports via administration, resource mobilization, and

advocacy, while the operational partner focuses on context and implementation (GOAL 2016; Hansen 2008b; Oxfam International and Merlin 2009; Zyck 2012).

A summary of remote operation modalities is presented in Table 3. This table is a synthesis of the resources cited and describes trends and qualities in relation to the other modalities; the descriptions are not intended to be absolute. The modality chosen for a specific operation will be based not only on desired characteristics (such as flexibility, quality, or sustainability) but will also be constrained by available resources and collaborations.

#### **Other remote approaches**

Other remote approaches include community partnership arrangements, government partnership arrangements, and outsourcing to commercial contractors; however, no reports analyzed their implementation in detail, preventing their inclusion in Table 3.

#### **Remote operations challenges, considerations, and approaches**

Analysis of the studies identified a number of factors that must be considered when implementing remote operations, including the need to maintain humanitarian principles; the selection and capacity of, and the communication, trust, and sustainability within partnerships; coordination and collaboration among stakeholders; acceptance of the intervention by both implementers and beneficiaries; risks and risk management, especially those associated with local actors; advocacy; monitoring and evaluation methods and technological support; preventing the “remote operations trap”; and the need for planning and guidance. These will be discussed in turn below.

#### **Need to maintain humanitarian principles**

The humanitarian principles of humanity, neutrality, impartiality, and independence (OCHA 2012) are necessary to ensure the safety of staff and communities. However, they are difficult to maintain during remote operations. Many IOs give little consideration as to whether or not local partners seek to uphold these principles (Stoddard et al. 2006). Neutrality can be affected through partnering with military forces to deliver aid (Polio Oversight Board 2014; UNICEF EMOPS 2011c), while impartiality can be compromised by religious, ethnic, or political dynamics that put pressure on local staff (Belliveau 2013; Stoddard et al. 2010). One example of compromised humanitarian principles was the UNICEF operation in Afghanistan between 2007 and 2010. Military partners were relied upon to access southern

**Table 3** Summary of remote operation modalities (Hansen 2008b; Oxfam International and Merlin 2009; Stoddard et al. 2006; Zycyk 2012)

	Remote control	Remote management	Remote support	Remote partnership
Nature	Reactive	Reactive	Proactive	Proactive
International staff authority	High/complete	Moderate	Low	Low/none
National staff authority	Low/none	Moderate	High	High/complete
National staff capacity development	Little	Moderate	Full	Unnecessary
Longitudinal monitoring	Little	Some	Full	Full
Flexibility	Little	Some	Very	Very
Quality	Low	Moderate	High	High
Sustainability	Low	Moderate	High	High
Time-line	Short term	Medium term	Long term	Long term
Vulnerable to staff turnover	High (Minimal local capacity development increases vulnerability to turnover)	High	Low (investment in local staff capacity development limits turnover)	Low (highly developed local organizations limits turnover)
Required experience in context and infrastructure by local organization	Minimal	Some	Yes	Yes
Potential benefits	- Continuity of program - Better initial oversight given primarily controlled by international organization	- Continuity of program - Better initial oversight given primarily controlled by international organization - Capacity building	- Continuation of program long term, sustainable - Tailored to changing context	- Continuation of program long term, sustainable - Tailored to changing context
Potential weaknesses	- Communication problems - National staff bear much of responsibility and risk with little authority - Unsustainable	- Communication problems - National staff bear much of responsibility and risk with little authority	- Corruption risk - Lack of oversight - Scarcity of experienced national staff	- Corruption risk - Lack of oversight - Scarcity of experienced national staff - Reduced funding due to donor reluctance

provinces and meetings with populations and stakeholders were held in military-controlled Provincial Reconstruction Team facilities; while this was the most feasible option at the time, it severely compromised their stance as an impartial and neutral actor (UNICEF EMOPS 2011a). Ensuring national and local staff have a sound understanding of humanitarian principles is necessary for programming and monitoring to be delivered in keeping with global standards (Egeland et al. 2011).

Some discussion posits that while impartiality and neutrality are important in these contexts, the core principle that deserves emphasis is the humanitarian imperative: the need to get critical assistance to those in need regardless of the method. This argument implies that a “by any means necessary” approach should be favored over attempts to maintain humanitarian principles in these settings (Stoddard et al. 2010).

### Partnerships

Several studies described the necessity of effective partnerships supported by clearly delineated responsibilities,

a defined supervision structure with a variety of focal points, and transparent policies that allow all parties to make informed choices and adequately fulfill their roles (IMC 2016b; Stoddard et al. 2006). Four sub-themes emerged throughout the partnership discussion, these are selection, capacity, communication and trust, and sustainability.

**Selection** Selecting a suitable partner to implement remote operations requires protocols and checks in place to ensure partners have sufficient capacity and experience in the context, and are not influenced by alternate agendas (Stoddard et al. 2010). Hiring third party accounting firms, deferring to community elders, and identification through contacts have all been described as potential partner selection methods (Howe et al. 2015). Ultimately, selection must be transparent and benefits from more active recruitment methods such as consulting local experts and utilizing pre-conflict networks (UNICEF EMOPS 2011b).

**Capacity** Several studies consider building the capacity of local staff important to ensuring the fidelity of remote

operations, autonomy, and project ownership. While training needs (operational methods, security protocols, etc.) and methods (planned site visits, staff secondments, etc.) are varied and complex, these studies emphasize that training should be prioritized before remote operations take effect, acknowledge cultural and linguistic differences, and include follow-up and feedback to ensure retention and continuous improvement (GOAL 2016; Jansury et al. 2015; Stoddard et al. 2010). National staff can be experienced, and assuming all nationals require training can create an unequal relationship and should be avoided (Collinson and Duffield 2013). While capacity building is important, it is a long-term goal that can also lead to a short-term loss in efficiency; this trade-off requires consideration and needs to be evaluated against the urgency and needs of the context (UNICEF EMOPS 2012).

**Communication and trust** Building trust is considered key for partnerships and intrinsically linked to communication, a crucial trust-building strategy when working remotely; useful trust building mechanisms include maximizing face-to-face contact, regular sharing of ideas and information, enhanced interactions (for example, videoconferencing), transparent decision making, and joint agenda setting, among others (Anonymous 2015; Balslev-Olesen and Hüls 2011; GOAL 2016; Howe et al. 2015; Norman 2012). Communication strategies should specify the frequency, mode, and type of information to be shared (GOAL 2016). A minimum level of face-to-face contact between senior staff and implementers is required to build trust and capacity.

**Sustainability** Sustainability is a growing concern where national staff is relied upon to deliver services for increasing lengths of time. Prioritizing the sustainability of local partners involves focusing on operational and organizational capacity building of entire institutions, supporting long-term projects, providing core funds, and supporting alliances among local groups, thereby building a strong civil society (Howe et al. 2015). Sustainability is also supported by rapid decentralization to skilled staff and flexibility in rapidly changing contexts, versus hierarchical management structures and procedures (Hansen 2008b).

A 2006 dissertation paper that examined cases in a number of countries highlighted both the advantages and disadvantages of partnerships that relied on communities to implement projects in Uganda. An anonymous NGO developed program activities and implementation time lines with community representatives in a neighboring town. Community members implemented the program (with some private contractors) and documented implementation using field journals and digital

photographs. The NGO supported the community implementers with supplies, training, and regular guidance and feedback following review of documentation. The community was aware that the NGO would be monitoring activities, and independent monitors from the communities were recruited to triangulate information. A change in the security situation, which permitted the NGO to visit the project area with government escorts, found that this monitoring system was unreliable. Work was of poor quality and in some cases not carried out at all, despite payments being made and verification of the work by the NGO's national staff. Community members were found to be providing information that they thought the NGO wanted to hear, instead of reporting on the realities on the ground (Rogers 2006).

#### **Coordination and collaboration**

Coordination and collaboration are considered essential to ensuring cohesive remote programming; however, certain coordination structures can also compromise an organization's independence and capacity. Structures should be rooted in the cultural context, with coordinating bodies and leadership carefully selected to promote neutrality and local ownership (Stoddard et al. 2010). There is a need for coordination mechanisms and standards to be adapted to the realities of operating in conflict contexts, and to improve the efficacy of the cluster approach for remote programming (UNICEF EMOPS 2011a). Good practices exist, but are generally confined within an organization and need to be shared (Norman 2012).

One example of effective coordination is the *shura* (council) system in Afghanistan developed by Tearfund to mimic the local decision-making structure based around group consultation. Following insecurity that forced coordination activities to relocate from Kandahar to Kabul, the lack of an expatriate program manager was feared to unleash tribal differences among Afghan staff members. In an attempt to preempt these tensions from causing problems, a *shura* was developed with the five program heads from the Kandahar office, each taking turns to coordinate the *shura*; all other staff members were invited to participate in deliberations as well. The inclusiveness to all opinions and lack of one controlling member helped to manage conflict and tensions between staff and prevented fraud or corruption as all members worked together and monitored each other. While this process was slow to develop and resulted in slow decision making initially, it was important given the cultural context and demonstrated respect for local governance mechanisms. The *shura* system led to programming that was highly accepted by the community, well-coordinated, and fairly implemented, while building sustainable local capacity and ownership (Souness 2011; Stoddard et al. 2010; UNHCR 2014; Zyck 2012).

### **Acceptance**

Acceptance is important to ensure the fidelity, execution, and uptake of remote operations; activities need to be accepted by both the national/local staff implementing them and the communities they aim to serve, with program ownership strongly linked to program success (Belliveau 2013). Acceptance is both a security measure and used to eventually regain access (Souness 2011; Steets et al. 2012). However, it should never be solely relied upon to reduce security risk.

Regular contact and participatory management styles that include national staff in decision making increase trust and acceptance by local staff, while selecting culturally appropriate staff, using diaspora nationals, and community outreach and participation increase beneficiary acceptance (Oxfam International 2007; Rogers 2006; Stoddard et al. 2006). The fundamental prerequisite to acceptance is competent and committed humanitarian programming with tangible results (Egeland et al. 2011).

### **Risks and risk management**

**Risks to local actors** Remote operations involve the transfer of risk from international to local actors, who are assumed to be at lower risk for targeting and therefore safer when implementing (GOAL 2016; Hüls 2011). This is often a false assumption as they face unique threats that are often not acknowledged in security assessments (Egeland et al. 2011) and may accept a greater degree of risk than is deemed appropriate (Stoddard et al. 2006). Additionally, local actors are infrequently present at trainings on security, and are often left with minimal security-related equipment when expatriates evacuate (Collinson and Duffield 2013).

Mitigation of this risk can be achieved via conducting thorough risk assessments (GOAL 2016; UNHCR 2016), preparedness planning that decentralizes authority and transfers security equipment to nationals (Stoddard et al. 2006), (Schreter and Harmer 2013), capacity building on security issues and protocols, and additional monitoring and triangulation with community members for risk updates (GOAL 2016; Norman 2011; Stoddard et al. 2010).

**General risks** General risks in remote operations are many and include inadequate and poor quality information management, credibility, communication, coordination, monitoring, and programming; inciting conflict; casualties and fatalities; insufficient impact; limited or no program expansion or adaptation; compromised neutrality and impartiality; corruption and fund diversion; and reduced advocacy or speaking out on behalf of affected populations (Belliveau 2013; Rivas 2015; Stoddard et al. 2006; Stoddard et al. 2010). Risks can also vary

depending on which staff are removed from the program; removal of only expatriate staff may expose them to higher risks when visiting, and may expose national staff to higher risks when they are absent, due to lack of security infrastructure. Removal of nearly all staff may be more acceptable but can reduce program quality and place more risk on the beneficiary when accessing assistance (Stoddard et al. 2006). These risks are exacerbated by inadequate risk perception and a decreased sense of urgency from remote managers who lose touch with the situation on the ground (Cunningham 2016; GOAL 2016). Policies need to be implemented that acknowledge the realities of fraud and corruption on the ground.

General strategies for reducing risk include building strong relationships with communities, strategic coordination with partners, and detailed monitoring, among others (GOAL 2016; UNICEF n.d.). Additionally, donor and organizational reporting requirements need to ensure they do not put national staff at increased risk and clear contingency plans are required prior to deterioration in security in order to maximize risk management (Howe et al. 2015; UNICEF EMOPS 2012).

### **Advocacy**

Advocacy is thought to suffer in remote operations, as it is highly dependent on the presence of international staff. The legitimacy of the message is directly related to presence in the field, and cannot be substituted by that of local NGOs (LNGOs), who usually do not have the same influence as their international counterparts. Remote operations were found to weaken protection activities in Afghanistan that were dependent on advocacy from INGO/IOs (Stoddard et al. 2010). Communication and advocacy efforts are also critical to the re-enforcement of community ownership and program acceptance, thus despite the restrictions, they should be increased when shifting to remote operations (UNICEF EMOPS 2011a). UNICEF Iraq found that implementing partners could be used to deliver messages on the ground. However, policy and decision messaging had to come from UNICEF directly to be effective (UNICEF EMOPS 2011b).

### **Monitoring and evaluation**

Accountability in remote operations is multifaceted and includes both upward accountability to donors and downward accountability to beneficiaries. It is a crucial component of risk mitigation and management, with increased monitoring and reporting requirements than traditional programming due to the lack of field presence and direct oversight by INGO/IOs. Accountability is further compromised by limited opportunities for data collection, poor quality data and inaccurate information,

lack of monitoring skills and capacity of local staff, lack of good baseline data for performance indicators, issues with safely sharing information, rapid aid influxes that necessitate immediate action and prevent monitoring and evaluation (M&E) from being built in at the onset, and difficulty gaining support from local staff who may feel money is better spent on delivery of aid (Jansury et al. 2015; Norman 2011, 2012; Rivas 2015; Souness 2011; Zyck 2012). One study found that only 8 out of the 20 INGO/IOs interviewed had an organizational M&E framework (Norman 2011).

**Upward accountability** Upward accountability to donors is the focus of the majority of monitoring activities (Stoddard et al. 2010). However, donor expectations are often not well-suited to fragile settings, can increase risk to local partners (Howe et al. 2015), and can detract needed funds from programming; increased flexibility and realism is required (Rivas 2015; UNICEF EMOPS 2011a).

**Downward accountability** Downward accountability to beneficiaries ensures target population needs are being met and aid is delivered equitably and as intended. However, it is often forgotten by organizations (Faubert et al. 2010; GOAL 2016). Methods for monitoring of downward accountability include beneficiary rapid assessment surveys (IOM 2008), feedback forms (GOAL 2016; Oxfam International 2007; Rivas 2015), hotlines (UNHCR 2014), meetings and discussions with communities (Rivas 2015; Souness 2011), systems of complaints redress (GOAL 2016; Norman 2012; Stoddard et al. 2010), structures that promote beneficiary participation (Norman 2012), and prioritizing beneficiary accountability within senior management (Kjaerum 2015).

**General methods** A clear plan for M&E must be designed; monitoring in remote operations may need to be more intensive and can require significant resources and tools beyond those used in direct management settings (GOAL 2016). Several general methods exist to support internal and external M&E initiatives in remote operations; internal M&E is considered less rigorous than external due to reduced transparency, neutrality, objectivity, and impartiality (Jansury et al. 2015).

Internal monitoring methods include having clear monitoring and reporting structures delineated in advance (CDC 2016; GOAL 2016; Stoddard et al. 2010), specific monitoring capacity within an organization, and regular communication, written reports, and strict deadlines for field staff (Rogers 2006; Stoddard et al. 2010). External monitoring methods include contracting local firms for independent third party monitoring (Balslev-Olesen and Hüls 2011; Egeland et al. 2011; IOM 2008;

Rivas 2015; Stoddard et al. 2010; UNICEF 2016; UNICEF EMOPS 2011b), cross checking information with field and community contacts (Balslev-Olesen and Hüls 2011; ECHO 2013; Egeland et al. 2011; GOAL 2016; Schreter and Harmer 2013; Stoddard et al. 2010; UNICEF 2016), and sharing monitoring capacity with other organizations (UNICEF EMOPS 2012).

**Technological support** Technology has been employed in a variety of facets to enable electronic or web-based monitoring (Balslev-Olesen and Hüls 2011; GOAL 2016; Howe et al. 2015; Schreter and Harmer 2013; UNICEF EMOPS 2012). Examples include mobile phone monitoring applications, satellite imagery, barcode tracking systems, and mapping software, among others. Further research and investment in data collection and analysis, and communications technology is required with the aim of streamlining its incorporation across programs.

Save the Children Somalia experimented with simulated technical field visits to provide support to their nutrition operations in Hiran, Somalia; the first visit was completed over Skype in October 2015. The objectives were to monitor the nutrition programs and verify their existence, assess quality against benchmarks, identify gaps and areas for capacity development, and motivate the field teams via establishing rapport. Standards and benchmarks were agreed upon and the field team provided electronic evidence (scanned patient cards and stock records, focus group discussion notes, completed checklists, photographs, etc.) for the international staff to review prior to the call. The call then allowed for a joint review of the documents with the field, provision of feedback, and development of an action plan. A recent simulated field visit found that the mean upper arm circumference measurement was performed incorrectly and outpatient cards were improperly filled out, indicating further training was required. They were also able to assess the site via photographs, noting the buildings did not provide a shaded waiting area for mothers and lacked adequate furniture. The lessons learned from this process include prior preparation and extensive communication is required to ensure a complete set of documents is delivered for assessment, taking representative photographs is a skill that must be taught, quality checklists were very useful, and strict discipline was required to set aside uninterrupted time to complete the visit. However, the utility of this process remains in question given the limited control over what the team chooses to present (Zikusooka et al. 2015).

#### **The “remote operations trap”**

The “remote operations trap”<sup>1</sup> refers to the inability to transition back to a traditional management mode after a program has been implemented remotely for some

time (ECHO 2015; Stoddard et al. 2010). This is caused by a number of factors and effects including reduced ground-level information, less credibility of the agency, and increased risk for local partners. One NGO reported that after a year of programming remotely in Somalia, national staff became identified as decision makers and resource handlers and threats against them increased (Stoddard et al. 2009); this made it more difficult for them to reengage later by traditional means. Additional contributors to the resistance to returning to regular operating mechanisms are the potentially outdated perception of dangerous areas and risk secondary to a loss of familiarity with the operating environment, a protection-oriented security culture, security costs allocating resources away from more comprehensive programming, and bureaucratic inertia (Kjaerum 2015; Stoddard et al. 2010). The best way to avoid the remote management trap is continuous reassessment and a pre-planned exit strategy.

#### **Planning and guidance**

There is a significant need for proactive planning and guidance on when to employ remote methods, how to operate effectively remotely, and when to exit remote operations. While considering the potential need for remote operations early in every program would be ideal, most agencies lack specific criteria to assess risk and guide these transitions (including an exit strategy) (Stoddard et al. 2006), plans for potential partnerships, and appropriate situation specific risk transfer practices to support decision making (Collinson and Duffield 2013), resulting in them often being used as a last resort. Guidance should cover all these topics, include indicators and checklists, and be integrated into the initial program planning documents in order to promote considered phasing into and out of remote operations (IMC 2016b; Steets et al. 2012; UNHCR 2016; UNICEF EMOPS 2011c). When original remote operation guidance has not been produced, adapting protocols to the new context must be prioritized; it should not be assumed that strategies outlined for regular operations would be appropriate in an inaccessible conflict setting (Zyck 2012). It is up to donors to provide flexible funding that is able to adapt to changes in implementation secondary to insecurity (Oxfam International 2007).

#### **Discussion**

The descriptive nature of the literature and the focus on defining concepts highlights that this field is in a relatively nascent stage. This review provides conceptual background and definitions that will aid in future discussions of remote operations using a common understanding and language. The themes identified in this review are consistent with those of other reviews and critical

reports (Donini and Maxwell 2013; Kalkman 2018). The information in this review provides a foundation of examples of and lessons learned from experiences with remote operations in conflict-affected areas. This review is distinct from other review articles on remote operations (Donini and Maxwell 2013; Rivas 2015) as it employed robust systematic review methods and performed an extensive search of both peer-reviewed and gray literature. Together, this approach gathered a vast collection of experiences, methods, tools, and lessons learned from a variety of organizations, resulting in findings and conclusions that aim to limit bias and have broad relevance. The collection of tools that have been developed for remote programming and monitoring should also be helpful to other stakeholders as they work to develop their own tools.

The literature demonstrates that although many organizations are participating in remote programming or monitoring, few have documented their experiences so that lessons learned can be disseminated to other organizations or stakeholders. Of the documentation that exists, case studies were the predominant form of literature available; the lack of rigorous operational research measuring robust outcomes limits the ability to draw strong conclusions on the effectiveness of different approaches. The imbalance between peer-reviewed and gray literature sources demonstrates that while some organizations are documenting their work for internal review, despite their potential external utility, they face barriers in publishing these more experiential reports for a wider audience. More comprehensive tools, such as evidence-based best practice guidelines, remain difficult to create for a number of reasons, including the near impossible conditions that surround robust outcome data collection in insecure environments and the context-specific nature of many interventions that limits the ability to draw generalizable conclusions.

The nature of the remote operations model is wrought with difficult circumstances that demand frequent sacrifice, making the creation of and adherence to rigorous guidelines difficult. Despite this, there are a number of key principles that can be taken away from this review. The importance of capacity building and effective communication is crucial to develop trust between partners when working remotely. Capacity building and increasing partnerships with local staff have been found to be a benefit of remote operations but are also an essential component of risk mitigation in this setting (Donini and Maxwell 2013). The assumption that national staff are at a reduced risk is often false; the threats faced by national staff must be comprehensively assessed and addressed. This should be completed before the implementation of remote operations and ensure that national and local staff have a greater part in decision-making (Kalkman

2018). M&E methods must be reinforced and may require more intensity and resources than in direct management settings. And finally, planning remains crucial for all phases of remote operations, from creating contingency plans to support regular programs in the event a transition to remote operations is required, through to exit planning to guide the transition back to standard program methods and ensure they are not remotely managed for longer than necessary.

The movement toward the localization of humanitarian action supports the shift toward a more balanced humanitarian system where national and local actors are valued, supported, recognized, and reinforced by donors and INGOs. Remote operations have overlap with and can learn from localization principles and methods, such as prioritizing partnership management, supporting and strengthening the capacity of local and national organizations, and updating INGO policies and procedures to reinforce accountability, among others (Emmens and Clayton 2017).

#### Limitations of the literature

This review of gray and peer-reviewed literature on humanitarian health programming and monitoring in inaccessible conflict settings highlighted many themes and issues spanning multiple domains: humanitarian principles, partnerships, risks, advocacy, accountability, the “remote operations trap,” and planning and guidance. While thorough in its analysis of content, one of the main limitations found throughout this review was that the literature focused on INGO/IO perspectives, with little information on the experiences of other players including national and local staff, religious and community-based organizations, and communities themselves. While remoteness from national and local partners is a defining characteristic of remote operations, their experience and perspective are invaluable and can greatly inform future guidelines and operations (Kalkman 2018).

The literature was also focused on service delivery and lessons learned but lacked detail on how interventions were implemented, what gaps need to be filled, and how they would have liked to do things differently, making it difficult to replicate these efforts and to think critically about which strategies were effective or how they could be improved. There is also limited discussion of the needs of the population or incorporation of a human rights framework, or of ethical issues other than risk transfer, such as confidential beneficiary data management, appropriate engagement strategies in high-risk environments, and the dissemination of monitoring data (Rivas 2015).

An additional limitation was the general lack of discussion on the costs of remote operations; specifically,

what is sacrificed and lost when one is forced to program or monitor remotely. Only one peer-reviewed study reported on these drawbacks, citing limited coordination capacity resulting from reduced contact with local implementers (Mattli and Gasser 2008) and while it was mentioned in the gray literature, the responses were based more on observation than rigorous analysis. Further examination of the potential losses in program quality and fidelity are necessary to obtain a complete picture that can then be fully addressed; this cost-benefit analysis is an important avenue for future research in this field.

The majority of documents pertaining to this subject were neither published nor peer-reviewed and within the peer-reviewed literature, over one-third of the studies were case studies. This is consistent with other reviews which found most of the humanitarian evidence is from programmatic evaluations or reports, rather than peer-reviewed articles or academic studies (Krystalli 2017). Further, the majority of the documents found were descriptive in nature, with no quantitative assessments of the impact on program processes or health outcomes, demonstrating the difficulty of collecting high-quality data in remotely operated humanitarian emergencies. A major difficulty in conducting reviews of evidence from humanitarian settings is the convention of only including rigorous evidence-based studies and discounting studies that do not conform to these strict criteria (Krystalli 2017). Additionally, a lack of detail was prevalent throughout the literature, which was often attributed to organizations not wanting to discuss specific methods for fear of increasing security risk. In addition to the lack of rigorous research and evaluation of remote operations, there is an absence of guidelines or recommendations on best practices. Although some tools exist and are shared in this review, there do not seem to be any harmonized tools that reflect the variety of experiences or that have been vetted by the different agencies working in the field. As the evidence base for remote programming and monitoring is extremely limited, further information is needed on all aspects of this field of work (Donini and Maxwell 2013), including piloting and validating guidelines and tools and incorporating areas of operational research from the onset of remote programming and monitoring activities (Table 4).

#### Limitations of this study

A limitation of this review is the focus on remote programming and monitoring for health-specific interventions. While there are many principles and findings that can apply to other types of humanitarian interventions, generalizability remains restricted.

**Table 4** Summary of gray literature articles

Author	Organization	Title	Location	Program details	Type of paper	Results
Schreier and Harmer 2013	Humanitarian Outcomes	Delivering aid in highly insecure environments: A critical review of the literature 2001–2012	n/a	n/a	Literature Review	<p>Literature highlights a range of good practices in remote management, including:</p> <ul style="list-style-type: none"> <li>- Establishing highly localized, and static, staffing which may involve an increase rather than a decrease of national staff because reduced mobility results in the need for more staff in more places</li> <li>- The use of diaspora nationals as international staff</li> <li>- “Soft” remote management which involves senior international staff having a regular, but not full-time, presence</li> <li>- Methods to enhance accountability and mitigate quality deficits for remote programming, such as web-based monitoring and project verification through third-party triangulation</li> </ul> <p>Literature suggests that good practice in preparedness and planning involves decentralizing organizational authority. This can bring benefits for improved internal monitoring, beneficiary accountability and acceptance, thereby increasing staff security.</p> <p>Literature falls short in documenting and providing guidance on implementing program by remote management, particularly to ensure greater preparedness and planning; patchy literature, need for guidance on good practice; lack of evaluations, especially in WASH and protection; limited sharing of knowledge on targeting.</p>
Stoddard et al. 2006	Center on International Cooperation	Providing aid in insecure environments: trends in policy and operations	n/a	n/a	Humanitarian Policy Group (HPG) Report Qualitative study	<ul style="list-style-type: none"> <li>- Remote management = devolution of responsibility to local actors</li> <li>- Other factors that can limit access to those in need, which are not necessarily related security conditions: <ul style="list-style-type: none"> <li>1- Poor infrastructure requiring expensive airlift capacity</li> <li>2-Political and military controls on movement</li> <li>3- Weak international support</li> <li>4- Shift from refugee to internal displacement situations → complex aid efforts that require political negotiations with host state</li> </ul> </li> </ul> <p>Motivators to consider remote management:</p> <ol style="list-style-type: none"> <li>1- Insecurity; if temporary may close program and resume thereafter</li> <li>2- Size of program: less likely to hand over large program; need to maintain presence for solidarity/visibility encourages remote management</li> </ol>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
Stoddard et al. 2009		Providing aid in insecure environments: 2009 Update. Trends in violence against aid workers and the operational response	n/a	n/a	HPG Policy brief Qualitative study	<p>3- Sector and feasibility of what you are trying to do (if goods will be secure, if subcontractor has the capacity to move them, etc.)</p> <p>4- Level of vulnerability and need</p> <p>5- Context: range of local partners, quality of national staff, capacity to operate in a region</p> <ul style="list-style-type: none"> <li>- "Soft services" more easily undertaken by local entities (psychosocial) than infrastructure or food aid</li> <li>- Benefits: avoids complete closure, allows funding to continue to flow, security environment can be better upon re-entry because local knowledge has not been completely lost, opportunity for closer community involvement</li> <li>- Challenges: establish trust with local staff; cultural and linguistic differences need to be acknowledged in training and support → mobile/email helps, need to prevent overreliance on tech; difficulty maintaining strategic direction due to inability to conduct needs assessments or measure impact</li> <li>- Challenge: tendency to maintain status quo instead of responding to acute issues; movement and access restrictions, low-profile security approach, cautious remote managers, coordination challenges</li> <li>- Challenges: accountability, advocacy strategies, staffing capacity</li> <li>- Most agencies do not have set criteria to assess risk or to guide the decision to shift to remote management; most guidelines and practice do not fully take into account the unique threats, incentives and circumstances faced by national staff</li> <li>- International agencies need to increase efforts to ensure security of all levels of staff equally, assessing each level's unique risks and having transparent policies that accommodate them</li> <li>- Kidnapping of aid workers has increased by over 350% in the past three years,</li> <li>- Remote management effects that make it difficult to shift back to regular programming: reduced ground-level information, less credibility and trust in the agency, increased risks for local implementing actors</li> <li>- National staff requires specific security measures that are proportionate to, but not the same as, those provided to international staff.</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Collinson and Duffield 2013	Paradoxes of presence. Risk management and aid culture in challenging environments.	Humanitarian Policy Group Global Insecurities Centre	n/a	n/a	Commissioned report	<ul style="list-style-type: none"> <li>- Security incidents not documented as systematically for nationals, partly because the risk to the organization varies (different insurance policies and liability).</li> <li>- UN Office for the Coordination of Humanitarian Assistance (OCHA) developed tracking system to monitor and report access constraints; being piloted in six insecure contexts.</li> <li>- Lack of common framework to support decision making</li> <li>- Local staff's ability to assess risk can be influenced by financial or other competing priorities and incentives that encourage risk-taking; distinct threats rarely acknowledged and have less access to security measures, information, and support</li> <li>- Pervasive levels of distrust: distrust between people within agencies, between agencies, between agencies and their alleged "beneficiaries"; due to distance, differences in pay, lack of local presence or contact with local people</li> </ul>
Rivas 2015	- Integrity research and consulting - Axiom M&E - UK AID	No Longer a Last Resort: A Review of the Remote Programming Landscape	Somalia, Kenya	n/a	Literature review (Part of a DFID evaluation)	<ul style="list-style-type: none"> <li>- Remote programming is no longer temporary or a last resort, becoming long term</li> <li>- Literature focuses on international organizations: little information on the experiences of other bodies</li> <li>- Talk of risk transfer but not other ethical problems, such as: the transfer of beneficiary data to third parties, appropriate engagement strategies in high-risk environments, and how monitoring information is used.</li> <li>- Most common risks: inadequate information management/credibility/quality, corruption, inciting conflict, casualties and fatalities, insufficient impact, poor monitoring, informal taxation, security challenges, and fund diversion</li> <li>- Most common monitoring methods: third party monitoring, beneficiary feedback forums, evaluations and independent analysis, and community meetings</li> <li>- Donor accountability expectations often unrealistic in these contexts; donor flexibility and realism required</li> <li>- Best practices include: remote management planning; on the ground networks to</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
(SAVE), S. A. i. V. E 2016		Briefing Note, April 2016	Afghanistan, Somalia, South Sudan, Syria	3 year research program exploring effective response delivery amid high insecurity	Briefing note Mix-methods study (850 interviews with aid actors, 4000 surveys of affected people)	<p>enable accountability; third party M&amp;E; capacity building focusing on tech support, problem solving, and management skills</p> <ul style="list-style-type: none"> <li>- Planned site-visits from remote management promote local capacity and autonomy, coordination, information-sharing, and trust</li> <li>- Aid agencies tend to cluster in safer areas; presence can be deceptively shallow</li> <li>- Local beneficiaries reported that aid received was often not what was most needed</li> <li>- Concessions included: Paying for access and granting concessions are commonplace, yet generally taboo as subjects of discussion. Practices include paying money at checkpoints and; paying unofficial taxes; altering targeting criteria; employing local militia; and avoiding some areas so as not to antagonize local authority, armed actor or dominant community; zero tolerance on corruption policies are unrealistic in war zones</li> <li>- Many humanitarian actors are uncertain about whether or how to engage with non-state armed actors; local staff need specific skills in negotiation, context, and networking</li> <li>- 3 methods to tackle access constraints: persuade controllers to allow more access, mitigate and manage security risks to continue assistance, remote management</li> <li>- There is widespread agreement that the task of negotiating humanitarian access with non-state armed groups should be left to implementing organizations.</li> <li>- DG ECHO should consider seven key issues. First, organizations must avoid undue risk transfer to field staff, partners and beneficiaries. Second, partners proposing remote approaches should describe how they intend to build acceptance. Third, they need to specify the level of experience and technical capacity of responsible field staff. Fourth, where projects are implemented in volatile areas, organizations should have contingency plans for how to switch to remote mode when access deteriorates. Fifth, monitoring procedures have to be adapted to the challenges of remote management. Sixth, DG ECHO should give precedence to organizations that have located senior staff as close as security conditions permit to</li> </ul>
Streets et al. 2012	Global Public Policy Institute (GPPi)	Evaluation and review of humanitarian access strategies in DG ECHO funded interventions	n/a	n/a	Literature Lirt review + qualand Qualitative study (388 interviews)	

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Stoddard et al. 2010	Humanitarian Outcomes	Lessons and challenges in remote management of humanitarian operations for insecure areas	Afghanistan case study with comparisons to Iraq, Somalia, Sri Lanka, and Sudan	n/a	Report for Center of International Cooperation Mixed methods study (58 interviews field visit to Afghanistan and desk review)	<p>the proposed area of intervention. Finally, DG ECHO should give precedence to organizations that seek to deliver outputs directly or limit the chain of sub-contractors for project implementation.</p> <ul style="list-style-type: none"> <li>- DG ECHO needs to improve its ability to monitor projects directly. It should recruit senior staff who can more easily "blend in" with the respective local environment and who are less encumbered to travel by administrative restrictions.</li> <li>- These approaches entail risks that need to be carefully reviewed in each case by DG ECHO and partners. Remotely managed operations can bring about a loss of control and oversight. Further, remote approaches potentially lead to a transfer of risk to national staff and recipients</li> <li>- Switch to remote mode can reduce project complexity and quality; should be a last resort</li> <li>- The most successful examples of remote management found involved coordination structures rooted in the local context, with potential for building sustainable local capacity</li> <li>- NCCI (NGO coordinating committee in Iraq) Field focal point network: 24 LINGOs across country, share security/political info, receive training on how to collect/disseminate info, advocacy, rights/law; share info and experiences with other LINGOs; civil society empowerment</li> <li>- Shura system developed with heads of program and all nation staff members: each member coordinated council for 1 month in absence of expatriate, permanent coordinator eventually agreed on; shura members involved in all important decisions; downside: slow to develop, slow decision making</li> <li>- Potential pitfalls: remote management trap, risk transfer to nationals with few resources and training; reduced program quality and effectiveness; reduced efficacy and accountability; impartiality of local actors</li> <li>- Need better/more differentiated risk assessment for national staff, capacity building on implementation and security, and coordination structures rooted in local context</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
Herbert 2013	GSDRC	Remote management of projects in fragile states	n/a	n/a	Helpdesk research report	<ul style="list-style-type: none"> <li>- Reasons for shift to remote mode: security, political, solidarity, visibility, develop capacity of local actors, donor support, sustainability</li> <li>- Factors that govern shift: range of local partner organizations, quality of national staff, and their freedom and capacity to operate in a given country or region</li> <li>- Despite being considered temporary, few organizations have exit strategy or criteria to guide shift back from remote management</li> <li>- Remote management trap shaped by:               <ul style="list-style-type: none"> <li>potentially outdated perception of no-go areas, cost pressures, need to follow protective stance of other organizations, bureaucratic inertia</li> </ul> </li> <li>- Risk issues: transferred to national staff, may change after internationals leave and difficult to assess remotely</li> <li>- Management and communication in remote operations are helped by face-to-face interactions; important for trust</li> <li>- Methods to mitigate quality deficits: clear procedures and instructions for monitoring and reporting; maintain regular communication between field staff and external managers; bring implementers to remote area regularly for discussion and planning; spot checks; crosscheck information with other field contacts; third party monitoring; and ensure beneficiaries know what they should be receiving</li> <li>- Guidelines for improving RM: plan for it, adopt a long-term view, develop practical and policy guidance, avoid risk transfer, invest in relationships with local staff/partners and community authorities prior to shift, coordinate policy development, and share lessons learned among agencies and donors</li> <li>- Key factors that can foster success in remote management projects include: acceptance of activities by local communities; effective staff recruitment, training and retention; flexibility in programming and budgeting; proximity to beneficiaries; visibility; mobility; and effective preparation for fast changing environments</li> <li>- Relied on military partners to access southern provinces; impartiality issue</li> <li>- Selection of credible and competent partners was critical; local accounting party hired to</li> </ul>
UNICEF EMOPS 2011a	UNICEF	Unicef and Remote Programming: Afghanistan case study	Afghanistan	n/a	EMOPS guidance on remote programming background papers Case study	

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
UNICEF EMOPS 2011b	UNICEF	UNICEF and Remote Programming: Iraq case study	Iraq	<ul style="list-style-type: none"> <li>- Gradual shift to remote mode triggered by 2003 Canal Hotel bombing; relocated to Amman</li> <li>- Remote management intensified from 2008 to 2009 as security deteriorated</li> </ul>	<p>EMOPS guidance on remote programming</p> <p>background papers</p> <p>Case study</p> <p>Qualitative</p>	<p>assess all potential and current partners (skills and finances)</p> <ul style="list-style-type: none"> <li>- Kandahar risk: had to transfer funds to the government to manage long term capacity strengthening initiatives; government known to be corrupt yet were unable to monitor government activities</li> <li>- Used remote monitoring capacity of WFP; joint monitoring reduced costs</li> <li>- Need to consider effective cluster approach in remote programming</li> <li>- Communication and advocacy efforts should be strengthened when moving to remote programming; critical to pro-actively re-enforce community ownership and acceptance of the program</li> <li>- Need for constructive dialog with donors to establish realistic benchmarks</li> </ul> <p>2004—3rd party monitoring contract signed w Iraqi company (Al-Sami); monitors recruited from communities and able to move around without incident; group assigned to each sectorial priority</p> <p>2006—monitors role expanded and became facilitators, duties included: service delivery, program planning and coordination with government and other partners;</p> <ul style="list-style-type: none"> <li>- Remote mode did not result in increased collaboration between the UN system; cluster system not inclusive to NGOs</li> <li>- Partnerships: must ensure transparency in selection and terms of employment, involve contractors in planning, and maintain single point of contact</li> <li>- Communication and Advocacy: implementing partners can be used in practical advocacy on the ground, however policy decision and messaging has to remain within UNICEF control</li> </ul>
UNICEF EMOPS 2011c	UNICEF	UNICEF and Remote Programming: Pakistan case study	Pakistan	<p>2009 move to remote mode following kidnapping</p>	<p>EMOPS guidance on remote programming</p> <p>background papers</p> <p>Case study</p>	<ul style="list-style-type: none"> <li>- KPK and Federally Administered Tribal Areas (FATA) highly volatile; 2010 remote program in these regions in response to floods</li> <li>- Program criticality exercise conducted prior to shift; resulted in decreased activities with a focus on immunization</li> <li>- Conducted orientation sessions on remote operations to build partner capacity, however, largely learning by doing</li> <li>- Removed all logos</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
UNICEF EMOPS 2011d	UNICEF	UNICEF and Remote Programming: Somalia case study	Somalia: protracted crisis with annual flood cycles		EMOPS guidance on remote programming background papers Case study	<ul style="list-style-type: none"> <li>- Third party monitoring found program to be below standard; resultantly, invested in national capacity building, coaching, and training</li> <li>- Issues: involvement of military to deliver aid, low collaboration between UN system, lack of formal guidance and checklists to guide programming</li> <li>- Need for flexible program policy and procedure in changing environment</li> <li>- Presence over 18 years, strong partnership with local NGOs and government allows maintenance of good delivery in reduced access settings</li> <li>- Efficacy and security may be enhanced by a UNICEF system that works closely with that of the other humanitarian agencies, rather than being locked into UNDSS structures</li> <li>- Issues with large Nairobi-based remote support center: indecisive culture, processes dominate over results and diverts resources from field offices, habit of risk avoidance rather than management, have prevented seizing access opportunities and new implementation modalities</li> <li>- Opportunity to build independent monitoring system through partners and contractors was not seized when local access would have allowed negotiations; resulted in poor feedback on aid delivery and reliance on external partners to set up smaller/weaker monitoring structures (accountability and reputation risk)</li> <li>- Lessons: stay focused/do not stretch too thin; be decisive and use strategic opportunities; try new delivery methods; unite and have sectors work together; regular and honest dialog with partners and donors builds trust</li> </ul>
Belliveau 2013	MSF	"Remote management" in Somalia	Somalia	<ul style="list-style-type: none"> <li>- Remote mode following 2008 roadside bomb and deaths of 3 MSF employees</li> <li>- Country management team in Nairobi</li> <li>- 2 new hospital wards opened</li> </ul>	Humanitarian Practice Network Paper	<ul style="list-style-type: none"> <li>- International staff benefits: bring outside experience and technical skills, increased legitimacy of advocacy, increased ability to resist local pressures for resource diversion</li> <li>- Risks of remote mode: reduced control over resources, declining quality, limited or no program expansion or adaptation, increased risk to national staff, potential loss of impartiality and ability to witness/speak out on behalf of affected population</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Howe et al. 2015	Tufts University	Breaking the Hourglass: Partnerships in Remote Management Settings—The Cases of Syria and Iraqi Kurdistan	Turkish-Syrian border 2013	Remote operations from outset in Syria due to government regulation	Historical analysis Qualitative study (123 interviews with 46 organizations)	<ul style="list-style-type: none"> <li>- Key concepts of model: centralized decision making, micro-management and cross-checking, support and training (increased frequency and wider range)</li> <li>- Local administration or community elders aid recruitment of unskilled workers to ensure appropriate clan balance and deflect potential dissatisfaction</li> <li>- External evaluation concluded that strong remote management procedure and extra scrutiny work well, no systematic leakage or noticeable corruption, high standard of stock management and financial control</li> <li>- Success due to: rigorous control system, competence of national field staff, their familiarity with MSF's principles and ways of working, high degree of national staff ownership</li> <li>- Access dependent on local networks and reputations; partners identified through contacts, coordination meetings with LNGOs, and LNGOs who reached out to INGO (passive and bias toward LNGOs with skills and contacts, active methods of recruitment preferred)</li> <li>- Techniques for capacity building: trainings, workshops, partnership focal points, staff secondments, pilot projects</li> <li>- Innovative M&amp;E approaches: call centers, GPS shipment tracking, debriefing meeting with local partners; local methods: photos and videos of distributions, web-based remote project monitoring, daily verbal reports, peer observations; 3rd party monitoring = gold standard</li> <li>- Donors can prioritize longer-term sustainability of local partners via: organizational and operational capacity building, a focus on the capacity of the institution, supporting longer-term projects, providing core funds, and supporting alliances among local groups</li> <li>- Trust building key for local partnerships; build trust via: regular in-person meetings, transparent decision-making, robust feedback mechanisms, joint agenda setting, and openness to partner perspectives</li> <li>- Need to prioritize security for both nationals and internationals with clear contingency plans and ensuring local security costs are included in budget</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Same study		Syria case	n/a	Modes employed: direct implementation fully or partially by INGOs with hired Syrian staff; Sub-contract, short term and logistical (ex distribution of food aid); Partnerships		<ul style="list-style-type: none"> <li>- Inability to engage in coordinated response led to disharmonized approach to working with small pool of organizations; negatively affected the absorptive capacity of local organizations and ultimately compromised humanitarian activities</li> <li>- Partner selection is two-way street; INGOs need to have good relationships with reputable partners if they want to be chosen by INGOs in future</li> <li>- INGOs prefer tailored smaller trainings on mutually selected topics; dedicated focal point person can help to address local partners' needs</li> <li>- Issues with third party monitoring: resource intensive, expensive, repeated use of same firm can compromise objectivity and neutrality, firm accountable to same organization that hired them (limits objectivity)</li> <li>- Donor requirements can be security risk and prohibitive to programming; to provide international organizations with beneficiary lists from under-siege area, local partners were obliged to pay smugglers to move people and documentation across siege lines</li> <li>- Sustainability in the face of donor withdrawal: INGOs switched to less capital-intensive activities when access reduced, diversified, and approached other donors for funding</li> <li>- Lack of INGO support of core costs (operating salaries) of local partners inhibits trust and sustainability</li> </ul>
Same study		Iraqi Kurdistan Case	n/a	n/a		<p>LNGO coping strategies to withdrawal: dormancy, downsizing (reliance on volunteers), private sector and income generation,</p> <ul style="list-style-type: none"> <li>- Use of diaspora returnees; advantages: technical skills and more acceptable than westerners; disadvantages: resented by locals for large salaries and being out of touch with realities on the ground</li> <li>- Have pulled away from conventional coordination mechanism (cluster system) to work independently: some cases improved access but no understanding of what other actors are doing or common standard for dealing with demands</li> <li>- 2007–2008 development of OCHA joint</li> </ul>
Hammond and Vaughan-Lee 2012	HPG ODI	Humanitarian space in Somalia: a scarce commodity	Somalia	- Remotely managed out of Nairobi or Mogadishu since late 90s; increased when security risks significantly increased in 2007–2009	Working Paper	

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
IMC 2016a	IMC	Details from IMC Somalia Programming (e-mail)	Somalia	n/a	Email communication	<p>operating principals for Somalia: never formally operationalized; likely worried that if they followed international humanitarian standards would not be able to operate</p> <ul style="list-style-type: none"> <li>- Increase beneficiary access via: mobile teams, community messaging advertising service availability, demand generation via "spreading word" (discharging patients with literature and simple repeatable messaging), used Community Health Committees (elected respected volunteers) as bridge between IMC and community</li> <li>- Used nearly 100% local staff with appropriate clan-balance; resulted in good local perception and minimal bribes at check points, confiscations, raids, and threats</li> <li>- M&amp;E methods: spontaneous visits and planned-capacity-building-visits, third party monitoring</li> <li>- Transparency: shared reports with employees to validate work and justify visits</li> </ul>
IOM 2008	IOM	Programme Management by "Remote Control"	Iraq	<ul style="list-style-type: none"> <li>- Remotely managed from Amman</li> <li>- At least 2 implementing partners per program</li> </ul>	Book chapter	<ul style="list-style-type: none"> <li>- Coordination with government of Iraq and international community via IDP working group (NGOs, NCCI, UN) to avoid duplication</li> <li>- Types of monitoring used: direct by IOM staff traveling to sites; IOM staff and third party; IOM-contracted external consultants; monitoring of NGO-implemented projects by external organizations who visit every 2 weeks</li> <li>- Monitoring procurement system has several filters: program unit goes through checks, logistics unit that double checks prices/contract terms/authenticity of requests, also do unannounced spot checks</li> </ul>
Kjaerum 2015	Danish Refugee Council	Remote Management in Humanitarian Operations: Lessons learned from Libya and beyond	Libya	<p>12 month Armed Violence Reduction program in Sabha</p> <p>Remotely managed from July 2014 to today from Tunisia</p>	<p>Evaluation and Learning Brief</p> <p>Qualitative study</p>	<ul style="list-style-type: none"> <li>- No remote management contingency plan despite ongoing tensions in country prior to planning, resulted in standstill of project activities during shift</li> <li>- Capacity issue: several activities required presence of international technical expert and were canceled; trainings by local staff (non-experts) not well received</li> <li>- Bunkerisation contributes to beneficiary mistrust and remote management trap</li> <li>- Benefits of remote mode: increased local ownership, decision making, increased capacity/sustainability of field staff; continued engagement builds trust among communities/</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
Cunningham 2016	MSF	Emergency Gap Series 02: To Stay and Deliver? The Yemen Humanitarian Crisis 2015	Yemen 2015	Managed from Amman	Qualitative study	<p>stakeholders making it easier to shift back to normal operations</p> <ul style="list-style-type: none"> <li>- Need for country offices to develop remote management plans, training plans for national staff, and assessment of key operational gaps that would occur following shift to remote mode</li> <li>- Remote managers had inadequate risk perception and decreased sense of urgency to the needs on the ground</li> <li>- Locus of security decision-making misplaced: decision making should be in hands of operational managers rather than security personnel</li> <li>- Dependence on the UN for logistics is major issue: locks INGOs into decisions made, or not made, by UN, and affects INGO independence, capacity, and mindset</li> </ul>
Hansen 2008b	NGO Coordination Committee in Iraq	Operational Modalities in Iraq	Iraq	n/a	Briefing paper	<ul style="list-style-type: none"> <li>- Need for acceptance: achieved over time through dialog and staff actions</li> <li>- Need for flexibility: rapidly changing context; rapid decentralization to skilled field staff gives more options for continuing programming</li> <li>- Need for proximity to victims: increases quality of humanitarian data, safe access, aid effectiveness</li> <li>- Need for visibility: necessary for acceptance in long term but jeopardizes effectiveness short term</li> <li>- Need to expand operations: expansion should be gradual and controlled in order to groom partners without becoming a target; sudden increase in resources interferes with team dynamics and contributes to loss of control on how they are used</li> </ul>
Hansen 2008a	NGO Coordination Committee in Iraq	Adapting to Insecurity in Iraq	Iraq	n/a	Briefing note	<ul style="list-style-type: none"> <li>- Withdrawal of international staff and mobility constraints on national staff result in incremental increases in geographic and psychological gaps between beneficiaries and providers</li> <li>- Flexible management where remote managers play supporting role to skilled teams; authority delegated to field staff to make decisions about operations and safety</li> <li>- Identification at distributions via removable signage or via media useful for building reputation of organization and acceptance</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Oxfam International and Merlin 2009	NGO Consortium	Remote Programming Modalities in Somalia	Somalia (Insecurity and drought)	Remotely managed from Nairobi or Hargeisa	Discussion paper	<ul style="list-style-type: none"> <li>- Remote control used for distribution of goods; issues: inflexible, limited delegation of authority, increased local staff security risks, loss of access to adequate information about need and context</li> <li>- Remote support: national managers receive additional training that enables handover; senior staff well respected, good relations with communities and decision-making autonomy. Issue: working through specific institutions can be seen as taking sides and has potential to increase security threats</li> <li>- Remote partnership: strong risk management needed, funding an issue due to donor reluctance, limited number of sufficiently strong partners</li> <li>- M&amp;E needs: minimum set of clear simple indicators for basic standards; transparency with donors about challenges; build capacity to collect data; verification mechanisms: staff visits, activity monitoring, third party monitoring; triangulation and communications technology</li> </ul>
Polio Oversight Board 2014	PGEI	Decision Paper: Strengthening Program Leadership & Management in Pakistan	Pakistan	n/a	Decision paper	<ul style="list-style-type: none"> <li>- Primary strategy: negotiated access with community/religious leaders, military/law enforcement, and armed groups</li> <li>- Used military and law enforcement protected vaccination campaigns</li> <li>- Increased acceptability via community engagement via media, interpersonal communication</li> </ul>
Jeene 2014	Save the Children	Integrated Community Case Management In a Pastoral Society	Karkaar region, Puntland State, Somalia	- ICCM around watering points serving small settled and large transient populations - Remotely managed from Kenya	Case study with Survey data	<ul style="list-style-type: none"> <li>- High staff turnover and long vacancies contributed to supply chain disruptions and stock outs</li> <li>- Long time to take action when supply chain failed; need for improvement in quality of support systems</li> <li>- Issues: increased cost and reduced effectiveness</li> </ul>
UNHCR 2014	UNHCR	Remote Management in High-risk Operations Good Practice and Lessons Learned	Somalia	Multiple programs	Case study Qualitative study	<ul style="list-style-type: none"> <li>- UN country team formed Risk Management Unit: maintains directory of aid and local actors; monitors and analyzes financial programmatic and reputational risks to advise operations of all agencies</li> <li>- Facilitating face-to-face meetings with local actors and beneficiaries helps to maintain closeness and supervision</li> <li>- Transparent reporting raised credibility among donors</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Same study			Iraq			<ul style="list-style-type: none"> <li>- Considered unacceptable in remote mode, resulting in suspension or closure of program: direct payment (material or cash) for access to people in need; payment of taxes, registration fees, any form of payment to armed groups; transfer of humanitarian goods to any party to the conflict for distribution</li> <li>- Recruited and trained national NGOs, vetted using US Provincial Reconstruction team and others' lists of partners</li> <li>- Established Project Tracking Database: GPS encrypted and time-stamped digital photographs taken by local partners to monitor programs; data uploaded and payments tied to photographic evidence. Issues: costly, labor intensive, constant maintenance required</li> </ul>
Same study			Afghanistan			<ul style="list-style-type: none"> <li>- Worked closely with Shuras (councils) and Community Development Committees to ensure fairness in implementation of shelter assistance and income generating activities. Ensured local ownership, accountability, checks and balances, but decision making and local capacity building were slow</li> <li>- M&amp;E methods: beneficiary hotlines, informal contacts with other agencies, implementing partners; changed monitoring partners every 2 months to avoid conflict of interest and collusion</li> <li>- Community outreach team with mullah established by an INGO to build relations, discussed similarities between Islamic teachings and ICRC code of conduct</li> <li>- Triangulating monitoring techniques by one NGO: used vendors, local government officials, and community members to monitor project outputs and quality</li> </ul>
Same study			Pakistan			<ul style="list-style-type: none"> <li>- Negotiated with local tribes to deliver aid to remote communities, raised visibility and built confidence with locals</li> <li>- Methods to address fraud: complaint mechanism for refugees; implementing partner selection and performance review committee; grievance committee of field staff; multi-function team to assess implementing partner processes on procurement, recruitment, and financial monitoring</li> </ul>

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Same study			Syria			<ul style="list-style-type: none"> <li>- Relies on local staff and created networks of volunteers to assist with operations</li> </ul>
UNICEF 2016	UNICEF	(Unofficial title: Syria and Yemen lessons learned)	Syria	n/a	E-mail correspondence	<ul style="list-style-type: none"> <li>- Inaccessible/armed group controlled areas: programs planned and developed jointly with implementing NGOs and local communities.</li> <li>- M&amp;E via third party monitors who provide weekly reports, data, and photos; telecommunication with inside informants; reports from UN humanitarian convoys when allowed access</li> <li>- Community midwives in isolated conflict areas set up make shift primary care clinics in their homes; UNICEF supported with provision of supplies</li> <li>- Empowered female health worker in conservative communities</li> </ul>
Same study			Yemen			<ul style="list-style-type: none"> <li>- Prepositioning of emergency supplies supports efforts in hot-spots</li> <li>- Donors must provide flexible emergency programming and overcome reluctance to fund remotely managed programs</li> <li>- Strategies: using local contact networks to map security situation; making sure staff working in particularly sensitive areas are from appropriate religious, cultural, or geographic background and have experience in insecure environments; and keeping low profile (operating in unmarked vehicles, varying routines; not using permanent offices where possible, and restricting accumulation of assets)</li> <li>- One NGO relied on personal contacts in different project locations to monitor, evaluate, assess impact of the projects; included surveys of beneficiaries</li> <li>- Previously established relationships with locals leaders and communities enabled rapid assessments and monitoring</li> </ul>
Oxfam International 2007	NCCI Oxfam	Rising to the humanitarian challenge in Iraq	Iraq	n/a	Briefing paper	<ul style="list-style-type: none"> <li>- Permanent transit teams (PPT) established at entry points of inaccessible area to vaccinate children coming and going</li> <li>- At least one district polio officer employed in all conflict affected districts for surveillance and case response vaccinations</li> <li>- Partnered with NGOs that have access to inaccessible areas for delivery of vaccine and campaign monitoring</li> </ul>
Afghanistan, M. o. P. H. o. t. I. R. o 2015	Ministry of Public Health Afghanistan	Annual Report 2015 Polio Eradication Initiative Afghanistan	Afghanistan	n/a	Government report	

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
Rogers 2006	University of York	Accessing the Inaccessible. The Use of Remote Programming Strategies in Highly Insecure Countries to Ensure the Provision of Humanitarian Assistance. Iraq: A Case Study	Afghanistan	Program assisted returnees to build a shelter	Master's Thesis Case study	<ul style="list-style-type: none"> <li>- Negotiated through partners (such as ICRC) for full access in high-risk areas</li> <li>- Process of transitioning to remote mode: held meeting with community members and supporters; outlined teachings of Qur'an linked to humanitarianism</li> <li>- Close relationship with communities and operational history increased acceptance</li> <li>- Unannounced monitoring visits when security improved; no major problems identified, beneficiaries and community members did not report any problems when interviewed individually</li> <li>- Highly experienced Afghan staff, without whom operation would have been suspended</li> <li>- Community representatives worked in collaboration with the agency to develop program activities and timelines for implementation; guidance on activities provided through use of field journals by community members implementing the work and digital cameras to record activities.</li> <li>- NGO visited once a week when security improved; found that work was not being completed as expected by community or contractors</li> <li>- Independent members of community used for monitoring and triangulation; monitoring system proved to be unreliable as they provided information that they thought agency wanted to hear, not reality</li> <li>- Lack of face-to-face contact led to misunderstandings and difficulty maintaining relationships</li> <li>- Need more support departments centralized in Iraq to improve function, coordination, and coherence</li> <li>- Trainings included: security related courses, administration, project management, finance and conflict resolution; better when shadowed international staff</li> <li>• Length of operational history in country enabled agencies to move from more directive remote control strategy to more supportive role</li> <li>• Strong understanding and awareness of local culture and religion required</li> <li>• Greater use of participatory management</li> </ul>
Same study			Northern Uganda Case study	IDP camps		
Same study			Iraq Remote programming since 2004	Remotely managed from Jordan		

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Faubert et al. 2010	UNDP	Assessment of Development Results. Evaluation of UNDP Contribution Somalia	Somalia	Remotely managed from Nairobi	Evaluation report	<p>styles is required</p> <ul style="list-style-type: none"> <li>- Insufficient written institutional guidance for programs operating in complex circumstances; country office not proactive enough in seeking guidance and tapping institutional resources.</li> <li>- Strategic partnership agreement developed with Bureau for Crisis Prevention and Recovery (BCPR), providing resources and technical support</li> <li>- Increased exposure to operational risks regarding effectiveness, cost efficiency, and accountability</li> <li>- High travel and per diem costs for limited staff visits; setting up expensive network of NGOs; and liaising with Somali partners; administrative costs need to be more clearly defined and planned</li> </ul>
Anonymous 2015	Anonymous	Remote Partner Management—Monitoring and Accountability Systems for Limiting Aid Diversion	Syria, Lebanon, Egypt, Iraq, Sudan	n/a	Qualitative study 12 interviews with staff	<ul style="list-style-type: none"> <li>- Syria: local groups provide support in inaccessible areas (monthly monitoring reports)</li> <li>- Iraq: involved both IDPs and their host communities in planning and implementation of interventions; eased tensions between the communities and increased uptake of services</li> <li>- Egypt: deployed Syrians as outreach workers to do referrals and spread awareness; good entry point into Syrian community in Egypt and cultivated trust with community members.</li> <li>- Capacity of local partners quite low, need to invest a lot in training</li> </ul>
Zyck 2012	n/a	Remote Control Project Management	Afghanistan	n/a		<ul style="list-style-type: none"> <li>- Need for remote mode contingency plan which can be activated when designing programs in order to account for required simplification</li> <li>- Need to develop accountability networks: establish relationships with stakeholders that can independently verify projects; and build partnerships for third party monitoring and evaluation</li> <li>- Need to build capacity of local partners to enable daily decision making</li> <li>- Need for coordination to share good practices and lessons learnt</li> <li>- Issues with M&amp;E: site visits rare, external monitors not given accurate information, local staff require training on monitoring and</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
Benini et al. 2016	ACAPS	Information gaps in multiple needs assessments in disaster and conflict areas	Syria	Syria Needs Assessment Project 2012	Report	<ul style="list-style-type: none"> <li>reporting, lack of independent beneficiary feedback mechanisms</li> <li>- In situations of lack of access and patchy indicators, severity of situations and quality of assessment information best measured on simple ordinal scales; assessment gaps and priorities established by comparing the values of governorates, districts, etc. on these scales.</li> <li>- Assessment information allows for prioritization</li> </ul>
IFRC 2016	IFRC Global fund	Central African Republic and RAMP How technology is transforming health facility reporting in a complex operating environment	CAR	RAMP mobile phone reporting system throughout country	Report	<ul style="list-style-type: none"> <li>- RAMP is a monitoring and evaluation tool using mobile phones and simple to use pre-designed forms</li> <li>- Health care workers trained to send routine health data from health centers via mobile phones</li> <li>- Rapid field intelligence and communication resulted in the expansion of malaria services, prevented stock outs, allowed for monitoring of malaria prevalence and trends</li> </ul>
CDC 2016	CDC	CDC remote monitoring summary	Variety of countries	n/a	Excel spreadsheet (unpublished)	<ul style="list-style-type: none"> <li>- Staff required training due to varying capacities and some hired due to bureaucratic/political reasons rather than skill or abilities</li> <li>- Due to lack of commitment from lead agency, surveillance staff did not receive salaries or funds to carry out activities, and system could no longer function.</li> <li>- Within survey duplication and duplication over time between repeated surveys should be checked for potential fraud; pre-programmed algorithms are an essential tool in detecting survey quality consistently and rapidly</li> <li>- WhatsApp allowed for daily communication with teams in Syria; however, communication of more technical concepts was challenging</li> <li>- Ensuring data quality was the biggest challenge; training and working with staff prior to data collection helps to ensure quality and consistency of data</li> </ul>
Balslev-Olesen and Hüls 2011	IRC Thailand Burma Border Consortium	Consultancy: Strengthening Monitoring in Eastern Burma Final Report	Eastern Burma	n/a	Independent evaluation (18 interviews)	<ul style="list-style-type: none"> <li>- Regular and strategic surveys have allowed remote managers to be less cautious; sets programming in reality</li> <li>- Strong community connections resulted in strong participatory planning, implementation, and monitoring</li> <li>- Recommendations: systematic but voluntary horizontal data exchange, support partners</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
IRC n.d.	IRC	Project for Local Empowerment (PLE) REMOTE MONITORING	Eastern Burma	SHIELD program - 6 local partners - Thai based office	PowerPoint presentation	with common standard in collecting monitoring info; consistent and regular mechanisms for client/community feedback; cross-monitoring; common protocols and global standards; consistently analyze and correlate data; harmonized and coordinated in house support for monitoring; training on humanitarian principles and sample techniques to monitor performance against principles; direct investment in M&E - M&E methods used currently: web-based (project activities verified through visual evidence, geo-referenced), quality assurance teams (national staff traveling to monitor program activities, indicator-based terms of reference); triangulated local monitoring; third party monitoring - Challenges: log books sent to Thai based office, some missing, several languages and format (could not be reviewed from all ethnic health organizations) - Lessons learned: need for multi-lingual data entry staff, standardized case definitions, and check-lists for log book review; activities should not be donor driven; need to strengthen technical support to partners via team of experts; program implementation team and monitoring team should be separate but work closely
Jansury et al. 2015	International Business & Technical Consultants Inc. (IBTCI) George Washington University	Findings in Monitoring and Evaluations Practices During Humanitarian Emergencies	n/a	n/a	Situational analysis Literature review Interviews	- Challenges: lack of good baseline data for performance indicators make it difficult for third party evaluators to measure impact; rapid influxes of aid required prohibit M&E practices from being built in from onset; explaining to local staff why M&E is necessary; coordination difficult due to distrust between orgs and lack of transparency (duplication of efforts and hard to ensure accuracy) - Internal M&E tends to be less rigorous than external consultants, increased transparency and therefore legitimacy - Building local capacity (ideally prior to emergency) leads to trust and more autonomy by implementing partners - Need to mainstream M&E and incorporate into planning phase
Zikusooka et al. 2015	Save the Children	Simulated Technical Support Visit to Inaccessible locations in somalia	Somalia	Simulated field visit Oct 2015	PowerPoint presentation	- Aims: provide support to inaccessible program, monitor nutrition program and verify existence, assess program performance against quality

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Souness 2011	Tearfund	Monitoring & beneficiary Accountability in Remote Managed Locations An assessment of Tearfund's Monitoring & accountability practices (a part of larger Tearfund report, below)	Kandahar, Afghanistan	Relocated coordination to Kabul in 2008 following kidnapping of expat NGO worker	Independent assessment Qualitative study (interviews, observations, document analysis)	<p>benchmarks, identify gaps and areas for capacity development; connect with field teams</p> <ul style="list-style-type: none"> <li>- Methodology: minimum standards/quality benchmarks agreed → documents and photos provided by field (photos with GPS encryption, scans of patient cards and stock records, etc.) → Skype/phone calls with field → joint review of documents with field → feedback and action planning</li> <li>- Analysis: was card filled in correctly? Was correct amount of meds provided? Was follow-up tracked correctly? Etc.</li> <li>- Lessons learned: prior prep required to ensure complete set of supporting documents are received; must train team to take quality photos; discipline required to set up uninterrupted time to complete whole process</li> </ul> <p>- 3 types of monitoring in Kandahar: direct monitoring in the field, operational monitoring and report, and activities to build M&amp;E capacity</p> <ul style="list-style-type: none"> <li>- M&amp;E methods: field data collection, monitoring by Afghan Kabul-based specialists; beneficiary feedback, stories of transformation (collected by field staff), monthly program reports, project evaluations, office Shura, weekly progress reports, peer monitoring</li> <li>- Reliance on national staff resulted in lower quality reporting</li> <li>- Recommendations: establish clear methodology; improve rigor of qualitative and quantitative methods, KAP survey to track changes over time; peer monitoring</li> <li>- M&amp;E officer mentors project managers and trains staff to build capacity in monitoring</li> <li>- Strong relationships with communities and acceptance necessary for security during field visits</li> <li>- Allowing field staff and communities to tell their stories is important method of monitoring; mixed-method monitoring required</li> <li>- Remote Monitoring issues: quality, ensuring rigorous monitoring system, reduced regularity of visits to implementation areas, inaccuracy of project data and reporting, limited capacity of staff, weak technical oversight of implementation, poor communication between head office and field, increased risk</li> </ul>
Norman 2011	Tearfund	Effective Monitoring and Beneficiary Accountability Practices for Projects Implemented Remotely in Insecure Environments (Interim report)	Afghanistan, Pakistan, Somalia, Sudan, South Sudan	Programs implemented in 42 locations that use some remote mode approach	Qualitative Study (Interviews and focus groups with 28 organizations)	

**Table 4** Summary of gray literature articles (Continued)

Author	Organization	Title	Location	Program details	Type of paper	Results
Norman 2012	Tearfund	Monitoring and accountability practices for remotely managed projects implemented in volatile operating environments (final report)	Afghanistan, Iraq, South Sudan, Pakistan, Sudan, Sri Lanka, Somalia,	Programs implemented in 42 locations that use some remote mode approach	Qualitative Study (Interviews and focus groups with 28 organizations)	<p>to staff and beneficiaries, increased pressure on local staff, increased risk of corruption and fraud</p> <ul style="list-style-type: none"> <li>- Existing good practice confined to single org and not shared</li> <li>- Remote Project monitoring good practice recommendations: limiting size and scope of programs, building positive community relationships, targeted recruitment of local recruitment, capacity building of local staff, regular face-to-face meetings, promoting organization values, developing a remote management strategy, building micro-management approaches to monitoring, ensuring dedicated monitoring and evaluation capacity, developing an M&amp;E framework, investing in information and communication technologies, peer-monitoring, beneficiary led monitoring, increasing collaboration between humanitarian and development communities</li> <li>- Essentials for beneficiary accountability good practice: establishing and delivering on commitments, staff competency, sharing information, participation, handling complaints, learning and continual improvement</li> </ul>
ACF 2015	Action Contre la Faim	Be prepared to switch to remote operations	n/a	n/a	Power point presentation	<ul style="list-style-type: none"> <li>- Lessons learned: focus on building staff capabilities, build relationships with community stakeholders, simplify reporting, transfer reporting responsibility to field staff, formalize current/target roles and responsibilities for all activities</li> <li>- Better communication with field: promote proactive regular timely communication, make remote supervisors liable to field staff as well, prove utility of monitoring systems to field staff by providing timely meaningful data interpretation, regularly contact all staff to boost morale, communicate face-to-face as much as possible</li> </ul>
ECHO 2013	ECHO	Instruction note for ECHO staff on Remote Management	n/a	n/a	Organizational guidance note	<ul style="list-style-type: none"> <li>- Building acceptance among governments, non-state authorities, and beneficiaries is most sustainable and effective way of gaining and maintaining access</li> <li>- Crosschecking local staff assessments through trusted third parties is essential</li> <li>- Recruit national partners with experience, train and build capacity</li> <li>- Minimum face-to-face contact between senior staff and field staff/beneficiaries required</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
IMC 2016b	IMC	Field practices for remote management	n/a	n/a	Email correspondence	<ul style="list-style-type: none"> <li>- Monitoring mechanisms: photo, telephone complaint system for beneficiaries, triangulation, peer monitoring, third party monitors</li> <li>- Communication: maintain regular communication by whatever means possible, designate field focal point, communicate value of work to team</li> <li>- Contingency planning: ensure there is one for both foreseen challenges and potential emergencies</li> <li>- Training and capacity building: ensure tools and support to implement activities is provided beforehand, training of trainers with key field staff</li> <li>- Data and information management: triangulate info, third party monitors, explore mobile technologies, develop strong protocols</li> <li>- Personnel structure: ensure clear field supervision with specific focal points</li> <li>- Policies and procedure: have written procedures on which to conduct internal training prior to deployment</li> <li>- National partners: consider working with national NGOs early, have a list of vetted partners</li> </ul>
Egeland et al. 2011	OCHA	To Stay and Deliver Good practice for humanitarians in complex security environments	Field research in: Afghanistan, DRC, occupied Palestinian territories, Pakistan, Somalia, Darfur, Sudan		Desk review and qualitative study (255 interviews, 1100 national staff surveyed)	<ul style="list-style-type: none"> <li>- Remote management good practices: invest in highly localized field staff, recruit staff in consultation with communities, web-based monitoring, quality assurance teams for accountability, third party monitoring, triangulated local monitoring</li> <li>- Methods to build acceptance: outreach teams, community memorandums of understanding that stipulates its role in program, local broadcasting and published materials, community co-ownership, positive associations with trusted entities, ongoing local consultations</li> <li>- Recommendations: address gaps to mitigate risk and ensure duty of care to national staff, ensure strong cooperation that meets the needs of partners, ensure deployed staff understand humanitarian principles and organizational policies, share good practices and lessons learned</li> </ul>
UNHCR 2016	UNHCR	Remote management in high security risk operations	n/a	n/a	Part of 4th edition of UNHCR Emergency Handbook	<ul style="list-style-type: none"> <li>- Guidelines: conduct thorough risk assessment considering needs of all parties, weigh whether partners fully understand and</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
UNICEF EMOPS 2012	UNICEF	Remote Programming in Humanitarian Action			Program guidance	<p>accept risks; build partnership networks</p> <ul style="list-style-type: none"> <li>- Monitoring guidelines: exploit tracking and information technologies; keep methods and messages simple; explore peer monitoring, monitoring by communities, national and local staff, local authorities, private companies, consultants, other agencies; set up clear and simple monitoring and reporting procedures; communicate frequently with partners</li> <li>- When regular programming starts, build on increased capacity of local partners and do not replace them with internationals</li> <li>- Risks: less able to monitor needs and understand local perspectives, assistance may not reach those on need, difficult to detect fraud, donors may be unwilling to fund due to lack of direct monitoring, UNHCR less visible in communities and among donors</li> </ul> <p>- Steps toward decision to switch to remote mode: security risk assessment, political context/conflict dynamics and stakeholder interests analysis, cost analysis or options, map non-security risks, exit strategies</p> <ul style="list-style-type: none"> <li>- Incorporate exit strategies into program management cycle; must reassess situation on ground to determine when to return</li> <li>- Implementing Remote programming: partner mapping and assessments of capacity and position in conflict should inform partner selection</li> <li>- Must engage partners in security management and planning activities, budget for appropriate logistical and security communication, and establish clear procedures for reporting security incidents</li> </ul>
ECHO 2015	ECHO	ECHO's Approach to Remote Management	n/a	n/a	Organization guidelines	<p>ECHO funding for actions involving remote management is based on seven questions:</p> <ul style="list-style-type: none"> <li>- Is there an access problem due to security or administrative obstacles?</li> <li>- Does the proposed action include acceptance-building measures?</li> <li>- Is it a direct life-saving action or an action aimed at preserving livelihoods?</li> <li>- Have all possible measures been taken to reduce the risk of losing the lives of those undertaking the work on the ground?</li> <li>- What is the source of the needs assessment in a remotely managed action?</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
GOAL 2016	GOAL	Remote Management Guidance v0.4 DRAFT	General, examples in Sudan and Syria	n/a	Draft guidance document	<ul style="list-style-type: none"> <li>- Have robust systems been put in place to allow staff on the ground to provide all of the relevant information to those who are ultimately responsible for the management and the quality of the action?</li> <li>- Are monitoring arrangements adapted for remote management?</li> </ul> <p>GOAL uses seven minimum criteria when determining whether to use remote management:</p> <ul style="list-style-type: none"> <li>- Access restrictions or the risk to staff in the project area is unacceptable</li> <li>- Risk faced by staff or partners is acceptable to the organization and individuals implementing the activities</li> <li>- Context analysis and needs and security assessment justify remote management</li> <li>- Sufficient capacity among staff and/or partners to deliver the program (or training to build capacity)</li> <li>- Program activities can be implemented following humanitarian principles</li> <li>- GOAL provided added value to meeting the humanitarian needs</li> <li>- Minimum standard of monitoring can be implemented</li> <li>- Strategies for mitigating risks: planning, risk analysis, program and policy adaptation, prioritizing staff training and development, increasing resources for monitoring and evaluation, clear communication and strong information management tools, and community accountability procedures to strengthen acceptance and program support</li> </ul>
Hüls 2011	n/a	Remote Management of Humanitarian Assistance	n/a	n/a	Essay	<ul style="list-style-type: none"> <li>- Risks include: shifting risk to local staff, reduced quality assurance and timely action, decreased knowledge transfer to local staff,</li> <li>- Methods of risk mitigation: third party monitoring or verification, information and communication technology, community involvement</li> </ul>
UNICEF n.d.	UNICEF	Compendium of best practices: UNICEF approach to Comprehensive Risk Management and Due Diligence in Complex and High Threat Environments	n/a	n/a	Minimum standards guideline	<p>The Minimum Components of the Comprehensive Risk Management Approach:</p> <ul style="list-style-type: none"> <li>- Assessing the non-security risks for UNICEF programs;</li> <li>- Linking security planning with the SRA and the inter-agency program</li> <li>- Comprehensive multi-source monitoring with capacity to triangulate and analyze</li> </ul>

**Table 4** Summary of gray literature articles (*Continued*)

Author	Organization	Title	Location	Program details	Type of paper	Results
Bally et al. 2005	European Space Agency, Directorate of Earth Observation Programmes	Remote Sensing and Humanitarian Aid—A life-saving combination	n/a	n/a	Review article	<p>information</p> <ul style="list-style-type: none"> <li>- Internal management measures such as training, partner screening, audit and risk management working group</li> <li>Additional components of risk management may include:               <ul style="list-style-type: none"> <li>- Capacity building for staff, partners, facilitators and contractors</li> <li>- Agreeing on and implementation of common UN risk management tools</li> <li>- Conflict sensitive programming</li> <li>- General strategies for reducing residual risk: building stronger community relationships, actively managing security risks, weighing short versus long-term risks, coordinating with and gaining support of partners, employing qualified staff, and ensuring records on all decisions are maintained</li> </ul> </li> <li>- European Space Agency is utilizing satellite imagery to assist the European Community Humanitarian Office to obtain information regarding the impact and needs of both slow and sudden onset humanitarian emergencies: development of a database for use in GIS, up-to-date topographic maps for responders, identifying appropriate locations for camps and fulfilling camp-setting criteria, and aiding food and supply distribution</li> <li>- Satellite imagery also used to identify hidden water sources and site new camps, and estimating available wood and allocating cooking fuel resources</li> </ul>
Meier 2011	n/a	New information technologies and their impact on the humanitarian sector	Haiti earthquake, Russia forest fires, Libya humanitarian crisis, Somalia complex emergency	Crisis mapping and digital volunteer networks	Review article—case studies	<ul style="list-style-type: none"> <li>- Article focuses on use of information and communication in Haiti, Russia, Libya and Somalia, particularly crisis mapping and crowd-sourcing information</li> <li>- There are still concerns over the ethical and security concerns of mapping user-generated content during conflict, the liability of volunteers, data protection protocols, verifying information in real time, and the capacity of humanitarian organizations to respond to all information added to the maps</li> </ul>

## Recommendations

Despite this major drawback in evidence quality, it is important to acknowledge that emergency conflict settings, especially those that are inaccessible, are not conducive to data collection generally, with randomized controlled trials being especially difficult. This is true for a number of reasons including security concerns, ethical considerations, limited resources, and the urgency with which humanitarian aid needs to be delivered, and remains one of the core challenges to improving the evidence needed to improve remote operations. Nevertheless, rigorous data collection and reporting, using both qualitative and quantitative methods, needs to become commonplace in humanitarian emergencies; it is required, not only to share lessons learned but also to promote critical analysis of methods, create best practice guidelines, and root humanitarian action firmly in evidence.

Implementation studies are urgently needed to identify factors that make certain remote programming and monitoring activities more effective than others, and what factors hinder their success. Implementation science methods that collect process and outcome indicators while taking a detailed look at settings and constraints can be used to elucidate what can and cannot be replicated through a variety of humanitarian conflict settings and assess key issues such as cost and sustainability.

Qualitative studies focusing on beneficiary and national/local staff perspectives are required to ensure that remote humanitarian programming is tailored to the true needs of the affected population and designed with the implementers' and affected populations' preferences in mind. Incorporating implementer perspectives from program onset not only facilitates efficient delivery but also highlights their value, potentially contributing to a more equitable distribution of power.

Finally, rigorous research and evaluation of remote programs should be undertaken to answer questions such as:

- What are the best practices that should be adopted by agencies carrying out remote operations?
- How effective are various remote operations interventions, guidelines, and tools when implemented in different contexts?
- What are feasible and effective methods of monitoring and evaluating remote programs?
- What are the key criteria for vetting local partners or local staff to help ensure adherence to humanitarian standards?
- What are the critical needs and challenges identified by local partners implementing programs in conflict settings? What support is needed from their remote partner?
- What is the assessment of remote interventions from the point of view of the affected populations?

## Conclusions

This review highlights the paucity of evidence on how to effectively carry out remote programming and monitoring. Considering the increasingly challenging environments in which humanitarian actors are working, there is an urgent need for evidence-based guidelines and tools. We can identify key principles for operating remotely, including the importance of capacity building and frequent communication, comprehensively assessing and addressing the risks faced by national staff, increasing the intensity and resources of M&E efforts despite the difficult conditions, and planning for the possibility of having to move to remote programming and having an exit strategy to prevent falling into the remote operations trap. To further build the evidence base, we encourage those implementing remote programs to rigorously document and evaluate their work and to share the findings. The current climate of increasing conflicts and risk to humanitarian aid workers necessitates evidence-based strategies to ensure both the safety of those delivering aid in these harsh conditions and that quality programming reaches those they are there to serve.

## Endnotes

<sup>1</sup>While this was originally referred to as the "remote management trap" in the literature, it has been changed to 'remote operations trap' to maintain consistency with the terminology used throughout this report.

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## Authors' contributions

SC and KC analyzed, interpreted, and synthesized the review data. SC and KC wrote the manuscript. SC, KC, and NM, read, edited, and approved the final manuscript.

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The authors declare that they have no competing interests.

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