

HEART

HEALTH & EDUCATION ADVICE & RESOURCE TEAM

Helpdesk: Measuring the quality and performance of healthcare providers in conflict settings

Date: 1st June 2016

Query: How can the quality and performance of healthcare providers best be measured in conflict settings where access is limited, such as in Syria?

Purpose: To guide DfID's health programme monitoring efforts, including by identifying some suitable quality indicators.

Table of contents

Table of contents	1
1. Overview	1
2. Table of possible measures of quality	3
3. Current context of healthcare in Syria	4
4. Macro-level indicators.....	6
5. Quality in areas of active conflict	7
6. Quality in refugee-hosting areas.....	13
7. Mental health	14
8. Other relevant examples	16
9. Further resources	20
10. References	20
11. Additional information	22

1. Overview

The purpose of the review was to provide a summary of possible indicators which might be used to measure the performance and quality of healthcare in conflict-affected settings. There is considerable guidance on measuring access, availability and quantity of health provision in these settings, but much less on whether this care is sufficient or effective. This review identifies and summarises some indicators which have been used or are suggested as appropriate.

Quality of care in humanitarian contexts is under-studied (Kersten et al. 2013). It is both difficult to define and difficult to measure (Kersten et al. 2013). Definitive quality of care indicators would be correct diagnosis and treatment, rates of survival after treatment, and patient satisfaction, among others. These are difficult or impossible to track in these contexts. However, proxy indicators such as mortality rates and time spent on consultation with the patient may be effective to assess quality.

In general, all indicators used should be SMART: Specific (what and who); Measurable; Appropriate; Realistic (achievable); Time bound. The literature commonly makes a distinction between performance/process indicators, and impact/outcome indicators. Process indicators

are usually somewhat easier to track, but the literature emphasises that outcome indicators must be considered as well.

Pavignani and Colombo (2009) suggest healthcare indicators in fragile and conflict affected states (FCAS) should be grouped under structural, process and outcome domains (p.196):

- **Structural aspects** refer to the inputs absorbed in the production of health services. They include the conditions of the workplace, staff qualifications, available equipment and drugs. The structural aspects of healthcare delivery are the most easily studied.
- **Process aspects** refer to the way available inputs are transformed into health activities, such as correct diagnosis and treatment, patient compliance, case fatality, success rate, staff competence, work organisation, incentives, information to the public, perceptions of care.
- The **outcomes** of health care are the ultimate quality criterion. Unfortunately, their study is technically demanding and usually expensive. Moreover, their interpretation is fraught with difficulties. Long-term outcomes are particularly difficult to assess in unstable environments, where few or no variables can be controlled. Measures of outcomes of health care are therefore scarce in distressed health sectors.

The literature is quite consistent on which indicators are feasible and reliable in FCAS. The most agreed-on predictors of quality of care are:

- Number of **outpatient consultations** per person per year
- Number of **consultations per clinician** per day
- **Time spent** on patient consultation and counselling

Where medical facilities are scarce and distrusted, attendance of patients once or more per year may indicate trust in the quality of services provided. The longer a clinician can spend with a patient (ideally more than 10 minutes), the more likely the treatment will be appropriate and effective, and that the patient will feel that they have been given sufficient attention and treated with respect. In counterbalance, the clinicians therefore need to have a manageable caseload (fewer than 50 appointments per day) in order to provide quality services.

A final standard indicator is the **Case Fatality Ratio** (CFR) for the most common diseases. This is a direct measurement of the efficacy of treatment.

This review focuses on the current crisis in Syria, and its surrounding refugee-hosting countries. There is not much rigorous peer-reviewed evidence on healthcare in Syria (Sen & Al-Faisal, 2013), and so this report relies on documentation from humanitarian agencies. Most guidance is macro-level and provides conceptual clarity over the principles of engagement in fragile states, rather than the micro-level indicators. The focus tends to be on macro indicators such as prevalence of disease or vaccination, not on the micro-level indicators for each health facility. National aggregates have limited utility, as different regions and groups can have dramatically different outcomes (Haar & Rubenstein, 2012). Programme evaluations would provide the micro-level information, but there are few evaluations conducted of humanitarian and emergency programmes, and many do not publish their methodology and list of indicators. Thus there is a gap in the knowledge base. Nonetheless, there are examples drawn from best practice guidelines, one-off evaluations, and from other FCAS, which provide detailed lists of indicators. These look at areas of active conflict, refugee hosting areas, and post-conflict areas. The most relevant existing practice seems to be the WHO Health Resources Availability Mapping System (HeRAMS) project, which regularly tracks the status of healthcare facilities in Syria, which can provide proxy information on how well-equipped and what capacity the facilities have.

The literature shows that very often in FCAS there is a one-off team sent in to evaluate a health facility, rather than regular statistics collection by the facility staff. Many of these evaluations have been conducted in Syria, demonstrating that it is possible to do so. Local, rapidly trained staff can be as effective as high-level researchers, and may have more access into insecure areas. Ongoing difficulties are that performance tends to improve when providers know they are being observed; and patient satisfaction is an unreliable measure in this context, as there may be a fear that expressing dissatisfaction will result in the termination of services (Edward et al., 2011).

The literature draws out two specific areas of healthcare: maternity health and mental health. In general, the literature is quite gender-sensitive, and recommends that all indicators are disaggregated by sex.

2. Table of possible measures of quality

The bold entries denote the indicators most closely related to quality of care.

Domain	Sample indicators	Where used	Reference
Structural			
Availability of equipment	Blood pressure apparatus; nebulizers; fetoscopes; suction machines; ORS packets; anti-allergic; NSAIDs; local anaesthesia; disinfectants; antiseptics; antidotes; anti-fungal medication; ophthalmic preparations; IV fluid; gastrointestinal; anti-diabetics tablets; ENT preparations; essential psychotropic medications	Syria; Afghanistan; Guidelines	WHO (2012); Haar & Rubenstein, 2012; IASC (2007); Edward et al. (2011):
Availability of drugs	Drug supply ; Monthly follow-up on drugs consumption; Knowledge of drug stock at the facility; Essential drugs list being used and respected; Facilities without stock-out of drugs	Syria	HeRAMS
Accessibility	Distance of PHC from patients; safety of travel; public transportation	Syria	WHO (2012)
Basic services	Availability of water and electricity	Syria	WHO (2012)
Infrastructure	Level of damage	Syria	HeRAMS
Human resources	Staff training and ongoing support; knowledge of protocols; qualifications; coverage by speciality; workload; satisfaction; salary payments current	Guidelines; Syria; Afghanistan	Pavignani and Colombo (2009); HeRAMS; IASC (2007); Edward et al. (2011):
Process			
	Admissions	Syria	HeRAMS
	Time spent on patient consultation and counselling	Afghanistan	Edwards et al. (2011)
	Number of outpatient consultations per person per year	Syria; Afghanistan; Guidelines	HeRAMS; HRI; Edward et al. (2011)
	Number of consultations per clinician	Guidelines	HRI

	per day		
	Patient satisfaction	Guidelines	Pavignani and Colombo (2009)
Community perceptions	Information to the public; equity of treatment; corruption; dignified and compassionate treatment by staff	Lebanon; Guidelines	Integrity Research and Consultancy, (2014); IASC (2007)
Patient involvement	Participatory M&E	Guidelines	IASC (2007)
Accountability	Mechanisms for reporting abuse/exploitation; informed consent; confidentiality	Guidelines	IASC (2007)
Reproductive health	Number of reported rape cases; coverage of supplies for standard precautions; coverage of HIV rapid tests for safe blood transfusion; condom distribution rate; coverage of clean delivery kits; availability of clinical management of rape survivors	Jordan; Guidelines	Krause et al., (2015); IAWG
	Success rates	Guidelines	Pavignani and Colombo (2009)
	Treatment adherence	Guidelines	Pavignani and Colombo (2009)
	Vaccination rates	Syria	HeRAMS
	Deaths in the facility	Syria; Guidelines	HeRAMS; Pavignani and Colombo (2009)
Coordination of services	Referrals; steering group; sharing of information	Guidelines	IASC (2007)
Outcomes			
Mortality	Case Fatality Ratio (CFR) for most common diseases; Neonatal deaths; Maternal mortality; Crude Mortality Rate	Guidelines; FCAS	HRI; WHO; Haar & Rubenstein, 2012; Kherallah et al., 2012
Infectious diseases	Vaccination coverage; Disease prevalence; Polio cases	Syria; FCAS	Haar & Rubenstein, 2012; Kherallah et al., 2012; Taleb et al., 2015
	Maternal near-miss	Iraq	Jabir et al., 2013

3. Current context of healthcare in Syria

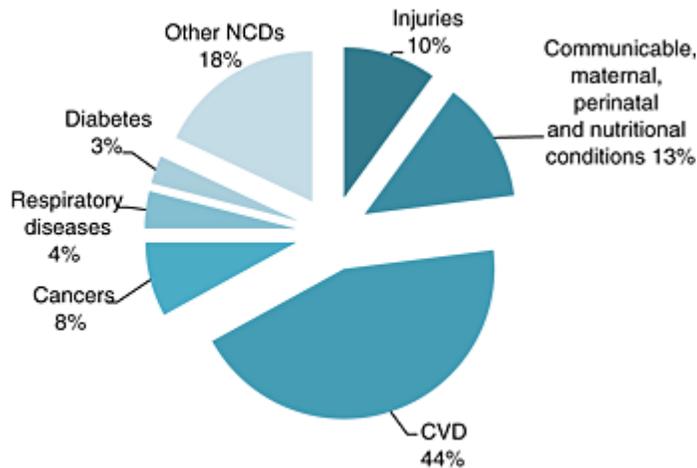
Pre-conflict

General health indicators in the Syrian Arab Republic were quite positive before the onset of conflict (Kherallah et al., 2012). In 2009, life expectancy was 73 years; infant mortality 18 per 1000 live births; under-five mortality 21 per 1000 live births; maternal mortality 52 per 100,000 live births, and 77 per cent of mortalities were caused by non-communicable

diseases (NCDs) (Kherallah et al., 2012). There was a rising incidence of chronic conditions and NCDs, with the poorest and most vulnerable at greatest risk (Sen & Al-Faisal, 2013). This is typical of the epidemiological transition, where NCDs overtake the incidence of infectious diseases (Taleb et al., 2015).

Figure 1 shows the pre-existing burden of disease in Syria as recorded by the WHO in 2008:

Proportional mortality (% of total deaths, all ages)*



NCDs are estimated to account for 77% of all deaths

Proportional mortality of Syria. World Health Organization Country Profiles, Syria (2008). NCDs, noncommunicable diseases; CVD, cardiovascular disease

Source: Sen & Al-Faisal, 2013: 293

This state of background good health has helped many refugees maintain relatively high standards of general health (Healy & Tiller, 2013).

Syria had a strong tradition of public healthcare with an emphasis on primary care and prevention (Sen & Al-Faisal, 2013). The public system mostly provided primary care services, with the private sector covering most of the advanced care services (Taleb et al., 2015). Since 2005, there has been an increase in private health provision within Syria as part of a market liberalisation process advocated by the EU (Sen & Al-Faisal, 2013). There was a largely unregulated expansion of private health providers, resulting in inequitable access and potentially unsafe care (Kherallah et al., 2012). Before the onset of conflict, there were concerns about the quality of care offered by private providers (Sen & Al-Faisal, 2013). The expansion of private services resulted in increased out-of-pocket expenditures for patients, with the poorest least able to access healthcare (Sen & Al-Faisal, 2013). Austerity measures, price increases and job losses meant that access to healthcare became out of reach of more people (Sen & Al-Faisal, 2013).

During conflict

Within Syria during the crisis, healthcare is affected by the destruction of infrastructure; deterioration of water and sanitation provision; overcrowding; maintenance and repair shortages for equipment; lack of drug resupply; and injury, death, or exodus of staff (Kherallah et al., 2012). Up to 70 per cent of medical personnel have left Syria (Taleb et al., 2015). More than half the health facilities and ambulances have been destroyed or seriously damaged, which also creates a fear in patients of attending medical facilities (Taleb et al., 2015). There are severe shortages of staff and medicines, with the Syrian pharmaceutical

industry only able to produce 10 per cent of its market needs (Taleb et al., 2015). An overarching narrative of this crisis has been attacks on hospitals and medical staff, which severely compromises the ability of the existing system. Pre-existing conditions and mental health needs are being neglected due to an emergency focus on acute injuries and communicable disease (Taleb et al., 2015). NCDs and chronic conditions are not prioritised in the situation of conflict, and many Syrian patients are not receiving regular care, with the associated decline in prognosis (Taleb et al., 2015).

Of the 2.6 million Syrian refugees, Lebanon is hosting around 1 million, Turkey 0.7 million, Jordan 0.6 million and Iraq 0.2 million (Taleb et al., 2015). In Lebanon, most refugees have been settled throughout the country while in Jordan and Turkey most refugees are living in camps (Taleb et al., 2015). Among the refugees, many have chronic diseases and pre-existing conditions which are going untreated due to the strain on resources.

4. Macro-level indicators

The general assessment of the quality of healthcare provision can be broadly measured through macro-level indicators such as outbreaks of vaccine-preventable diseases; outbreaks of food and water-borne diseases; morbidity and mortality rates; permanent disabilities; complications and excess mortality in those with chronic diseases due to suspension of treatment (Kherallah et al., 2012). The most likely causes of non-violent war-related death during conflicts are infectious disease; decline of preventative measures (e.g. vaccinations, clean water); and shortages of medicines and supplies (Haar & Rubenstein, 2012). Monitoring these indicators should give some broad sense of the quality of healthcare being provided to non-combatants.

The Middle East has been mostly free of polio since the 1990s, but the interruption of regular vaccination programmes has seen an increase in the number of polio cases (Taleb et al., 2015). Vaccination coverage in Syria stood at 60 per cent in 2012 and there were 26 confirmed cases of polio in 2014 (Taleb et al., 2015). Measles, hepatitis A and typhoid are also increasing (Taleb et al., 2015).

The WHO's regular Global Health Observatory database¹ has only tracked a few health indicators for Syria in recent years:

- Prevalence of HIV among adults aged 15-49
- Total fertility rate (per woman)
- Number of neonatal deaths (thousands)
- Neonatal mortality rate (per 1000 live births)
- Maternal mortality
- Malaria – cases/deaths
- Polio cases
- Number of radiotherapy units
- Population age and location (rural/urban)
- Expenditure on health

This suggests that these statistics are the only ones which can be feasibly collected on a large scale in Syria under the current conditions.

The SPHERE minimum standards² in disaster response contain no specific guidelines on monitoring quality of care.

1 <http://apps.who.int/gho/data/node.country.country-SYR?lang=en>

5. Quality in areas of active conflict

IASC (2007) note that in emergency contexts the highest standards of monitoring and evaluation may not be possible, and that indicators should be chosen on the basis of what is feasible, powerful and easily assessed. A small number of manageable indicators may be better than a large number. Nonetheless, disaggregation by age, gender and location should be achieved wherever possible. Indicators should be taken before and after the intervention, or over a period of time, in order to assess change.

Pavignani and Colombo (2009) provide a practical briefing for analysts of healthcare in conflict. Their assessment of quality of care suggests indicators should be grouped under structural, process and outcome domains (p.196):

- **Structural aspects** refer to the inputs absorbed in the production of health services. They include the conditions of the workplace, staff qualifications, available equipment and drugs. The structural aspects of healthcare delivery are the most easily studied. The value of these indicators is mainly negative, in the sense that the absence of basic inputs suggests inadequate quality, whereas their presence does not ensure it. In many cases, expressing the availability of basic inputs as proportions of healthcare delivery points endowed with them is preferable to using averages. For example, the finding of 60 per cent of primary health care (PHC) facilities lacking a functioning sphygmomanometer is more telling than stating that the average PHC facility is equipped with 0.8 sphygmomanometers.
- **Process aspects** refer to the way available inputs are transformed into health activities. They depend on a host of factors, including staff competence, work organisation, incentives, and information to the public. Whether a certain condition is correctly identified, the right treatment is prescribed, the patient complies with instructions, drugs and vaccines are properly stored, all fall within this group. Additionally, patient perceptions of care belong to this category. The majority of process indicators are collected through direct observation and interviews. Routine information systems produce some process indicators, like case fatality rates, or the success rate of a treatment schedule. Given the shakiness of routine figures, considerable caution is needed before related process indicators are retained as reliable.
- The **outcomes** of health care are obviously the ultimate quality criterion. Unfortunately, their study is technically demanding and usually expensive. Moreover, their interpretation is fraught with difficulties. Long-term outcomes are particularly difficult to assess in unstable environments, where few or no variables can be controlled. Measures of outcomes of health care are therefore scarce in distressed health sectors.

Many of the indicators collected in FCAS fall under the structural aspect. These can serve as proxies for the quality of care, e.g. number of hospital beds available will indicate whether everyone who needs inpatient care will receive it.

The Humanitarian Response Initiative has a registry of suggested indicators for use in humanitarian contexts³, developed by UN OCHA and conforming to the IASC guidelines. This set of indicators is widely used across humanitarian contexts as it is supported by the UN system. For measuring the quality of health care, they suggest:

2 <http://www.sphereproject.org/handbook/>

3 <https://www.humanitarianresponse.info/en/applications/ir>

	Number of consultations per clinician per day	Case Fatality Ratio (CFR) for most common diseases	Number of outpatient consultations per person per year (attendance rate or consultation rate)
Description	Measure for the workload and proxy indicator of the quality of care.	Probability of dying as a result of a given disease. Is a result of a mixture of disease severity and quality of health care.	Proxy indicator for accessibility and utilisation of health services that may reflect the quality of services. It does not measure the coverage of this service, but the average number of visits in a defined population.
Unit of Measurement	Individual	Individual	Individual
Denominator	Number of full-time equivalent clinicians in the outpatient department in the same health facility x number of working days in the same health facility in period of analysis	Total number of cases related to the disease in the same administrative or health area and the same time period	The total population for the same administrative or health area
Numerator	Number of outpatient consultations in a given health facility during a given period of time	Total number of fatalities related to the disease in a defined administrative or health area in a given time period	The number of visits to health facilities, i.e. all public and private health facilities and mobile clinics, for ambulant care in a defined administrative or health area during a year
Threshold	< 50 consultations per clinician per day Follow-up of trends	Cholera : 1 per cent or lower; Shigella dysentery : 1 per cent or lower; typhoid : 1 per cent or lower; meningococcal meningitis : varies, 5-15 per cent; malaria : varies, aim for <5 per cent in severely ill malaria patients; measles : varies, 2-21 per cent reported in conflict-affected settings, aim for <5 per cent. Follow-up of trends	> = 1 new visit/person per year. Follow-up of trends
Data Sources	Numerator: routine health facility reporting system Denominator: health statistics	Numerator: health facility based surveillance; routine health facility reporting system Denominator: health facility based surveillance; routine health facility reporting	Numerator: routine health facility reporting system Denominator: administrative boundaries; health areas boundaries; population per administrative area;

		system	population per health areas
--	--	--------	-----------------------------

Other health indicators can be downloaded for the website.

The WHO HeRAMS project⁴ provides a useful and regularly updated source of information on the status of health services and facilities. It started reviews in Syria in 2014⁵. Snapshot reviews are produced every month, while annual reviews give more details. While it does not identify indicators for quality of care, it provides a comprehensive picture of the functionality of the facility, which can be used as proxies for quality of care.

In summer 2015 (WHO 2015) the data were collected by health facilities and sent to a group of 18 NGOs, reaching 254 health care facilities over six weeks. The NGOs checked and input the data into the electronic system. The indicators used were:

Health Facility Condition

- Level of damage by governorate
- Level of damage by type of health facility

Functionality Status of the health facility

Support by partners

Support by partners by governorate

- Main source of medicine for the facility
- Consultation costs
- Treatment procedures costs
- Drug costs

Infrastructure of the facility

- Main source of water
- Type of water network
- Functionality of the water supply system
- Availability of chlorine tablets for 30 days
- Accessibility of toilets and washing facility
- Functionality of the water disposal network
- Sanitation removal
- Solid Waste Management
- Source of electricity
- Telephone network availability
- Internet access
- Functionality of the cold chain

Accessibility of the health facility

Human Resources Availability

- Distribution of health workforce (N=4984)
- Coverage by specialty

Activity in the Health Facility

- Outpatient consultations
- Admissions
- Number of children having received DTP3 through EPI
- Vaccination through EPI
- Vaginal deliveries

4 Health Resources Availability Mapping System: <http://www.who.int/hac/herams/en/>

5 <http://www.emro.who.int/syr/herams/herams.html>

- C-sections
- Major surgeries
- Minor surgeries
- Dialysis
- Deaths in the facility
- Referrals inside Syria
- Referrals to Turkey
- Drug Availability at the Health Facility**
 - Drug supply
 - Monthly follow-up on drugs consumption
 - Knowledge of drug stock at the facility
 - Essential drugs list being used and respected
 - Facilities without stock-out of drugs
- Services delivered in the health facility**
 - Availability of Outreach Services
 - Availability of Surgery Services
 - Availability of Child Health Services
 - Availability of Management of Communicable Diseases Services
 - Availability of Maternal and New-born Health Services
 - Availability of Management of Clinical Management of Rape Services
 - Availability of Mental Health Services
 - Availability of Environmental Health Services
 - Availability of Hospitalization Services
 - Density of hospital beds
 - Availability of Basic Emergency Obstetric Care services
 - Availability of Comprehensive Emergency Obstetric Care services
 - Availability of Clinical Management of Rape and Post-Exposure Prophylaxis Services
- Equipment Availability and Functionality**
 - Laboratory Equipment
 - Dentistry Equipment
 - Dentistry Equipment
 - Diagnostic Devices
 - Operating Equipment
 - Curative Devices
 - Essential Equipment

In 2012, the WHO produced a rapid assessment of the functionality of 342 primary health care centres and 38 hospitals in 7 affected provinces in Syria (WHO, 2012). Their main findings show the extent of damage, equipment needs, and accessibility. The indicators they used to track these issues are:

Accessibility

- Distance of PHC from patients
- Safety of travel
- Public transportation

Services

- Availability of water and electricity

Equipment

Blood pressure apparatus; nebulizers; foetoscopes; suction machines; ORS packets; anti-allergic; NSAIDs; local anaesthesia; disinfectants; antiseptics; antidotes; anti-fungal medication; ophthalmic preparations; IV fluid; gastrointestinal; anti-diabetics tablets; and ENT preparations.

Pavignani and Colombo (2009) provide further specific indicators for the efficiency and effectiveness of healthcare in conflict (not necessarily the quality of care):

Staff workloads
 Bed Occupancy Rate
 Financial Implementation Rate, by source
 TB Treatment Success Rate
 Inpatient Case Fatality Rate for selected conditions
 Proportion of post-operative infections after elective surgery
 Proportion of rational prescriptions within a sample
 Patient compliance
 User satisfaction

A study in Baghdad used the 'maternal near-miss' indicator to measure quality of care (Jabir et al., 2013). A maternal near-miss case is defined as "a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy". In many places, the improvement of healthcare means that maternal mortality has decreased, and the number of those with life-threatening complications who are treated and discharged home exceeds the number of those who die (Jabir et al., 2013).

In Baghdad, the maternal near-miss rate was examined in six public hospitals by six coordinators who were given a two-day training course. They collected data daily through hospital records or staff interviews while the women were still in hospital. The specific indicators used were:

Maternal Near Miss (MNM)	A woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy.
Maternal Death (MD)	Death of a woman while pregnant or within 42 days of termination of pregnancy or its management, but not from accidental or incidental causes.
Live Birth (LB)	The birth of an offspring, which breathes or shows evidence of life.
Severe maternal outcome (SMO)	A life-threatening condition (i.e. organ dysfunction), including all maternal deaths and maternal near-miss cases.
Women with life-threatening conditions (WLTC)	All women who either qualified as having maternal near miss or who died. It is the sum of maternal near miss and maternal deaths.
Maternal Near Miss Ratio (MNMR)	The number of maternal near miss cases per 1,000 live births.
Severe Maternal Outcome Ratio (SMOR)	The number of women with life threatening conditions per 1,000 live births. This indication gives an estimation of the amount of care and resources that would be needed in an area or facility.
Maternal Near Miss Mortality Ratio	The ratio between maternal near-miss cases and maternal deaths. Higher ratios indicate better care.
Mortality Index	The number of maternal deaths divided by the number of women with life threatening conditions, expressed as a percentage. The higher the index the more women with life-threatening conditions die (low quality of care), whereas the lower the index the fewer women with life-threatening conditions die (better quality of care).
Perinatal outcome indicators	(e.g. perinatal mortality, neonatal mortality or stillbirth rates) in the context of maternal miss could be useful to complement the quality of care evaluation.
Hospital Access Indicators:	
The following indicators are used to explore the access to the facility in	· <i>SMO12</i> : Cases presenting the organ dysfunction or maternal death within 12 hours of hospital stay

terms of functioning referral systems.	· <i>Proportion of SMO12 cases among all SMO cases</i>
	· <i>Proportion of SMO12 cases coming from other facilities</i>
	· <i>SMO12 mortality index</i> : The number of SMO12 cases divided by the number of all SMO cases expressed as a percentage.
Intra-hospital Care:	
The following indicators are used to explore access to quality care in the facility:	· <i>Intra-hospital SMO</i> : Cases presenting the organ dysfunction or maternal death after 12 hours of hospital stay.
	· <i>Intra-hospital SMO rate (per 1000 live births)</i> : The number of intra-hospital SMO cases per 1000 live births.
	· <i>Intra-hospital mortality index</i> : The number of intra-hospital SMO cases divided by the number of all SMO cases expressed as a percentage.
	· <i>ICU admission rate</i> : The number of women admitted to ICU among total number of women giving birth.
	· <i>ICU admission rate among women with SMO</i> : The number of women with SMO divided by the ICU admissions among total number of women giving birth.
Process Indicators:	
The following indicators are used to assess the coverage of selected evidence-based interventions used for prevention and treatment of the main causes of maternal deaths.	· <i>Prevention of postpartum haemorrhage</i> : The number of women who received a single dose of oxytocin divided by the number of all women giving birth (vaginal delivery + caesarean section)
	· <i>Treatment of severe postpartum haemorrhage</i> : The number of women with severe PPH who received therapeutic oxytocin divided by the number of all women with postpartum haemorrhage.
	· <i>Eclampsia</i> : The number of women with eclampsia who received magnesium sulphate divided by the number of all women with eclampsia.
	· <i>Prevention of severe systemic infections/sepsis</i> : The number of women having a caesarean section and receiving prophylactic antibiotics divided by the number of all women having caesarean sections.
	· <i>Treatment of severe infections and sepsis</i> : The number of women with severe systemic infections or sepsis who received IV antibiotics divided by the number of all women with severe systemic infections or sepsis.
	· <i>Foetal lung maturation</i> : The number of women having a live birth after 3 hours of hospital stay and receiving corticosteroids for foetal lung maturation divided by all women having a live birth after 3 hours of hospital stay.

IASC (2007) strongly suggests that monitoring and evaluation should be as participatory as possible, including the discussion of results. Taleb et al. (2015) concur, and add that refugees in neighbouring countries should be involved as well, as there is likely to be a long period of movement across borders before people permanently resettle. IASC (2007) recommends that information should be distributed in appropriate languages to affected populations, coordination bodies, governments and service providers.

The ongoing nature of the conflict in Syria makes it difficult to produce long-term plans or to establish proper benchmarks (Taleb et al., 2015). The changing demographics and mobility of people means that establishing indicators which will remain relevant is a difficult task. Taleb et al (2015) recommend continuing assessment.

6. Quality in refugee-hosting areas

The types of care provided in hosting communities may be quite different from those in conflict zones.

In Lebanon, which has been hosting a large number of Syrian refugees, International Alert commissioned research on how well the primary healthcare sector was operating in a conflict sensitive manner (Integrity Research and Consultancy, 2014). The issues of concern around the quality of care were the increasing pressure on services; Lebanese hostility towards Syrians; perceptions of unfair privileging of Syrian patients; segregation according to nationality, fear of Syrian patients bringing infectious diseases; and the competence and attitudes of staff.

The issues were measured by 34 key informant interviews and 31 focus group discussions in eight PHC. Perception surveys may not be possible in more directly conflict-affected areas, but can be conducted in more stable areas. The indicators were:

Community perceptions

Perceptions of the 'other' group – measures of tolerance/ competition

Understanding of UN healthcare subsidy system (can people explain what is covered and what isn't?) – relates to both Syrians and Lebanese

Fear over spread of communicable diseases

Concerns over corruption (is healthcare considered just or equitable? Do people trust the system?)

Assessment of quality of medical service (for example experience of 'disgust' from others)

Where a PHC has implemented mitigation measures then gather user feedback on the relevance and value of that mitigation measure in preventing tension

PHC data: to include both PHCs that are part of the UNHCR response, and those that are not

Actual number of violence incidents in the PHC

Actual number of complaints and categorisation of these

The Minimum Initial Service Package (MISP) for Reproductive Health in Crisis Situations is a product of the Inter-agency Working Group (IAWG) on Reproductive Health in Crises. It aims to outline the activities necessary for minimum standards of reproductive health for displaced populations. The key indicators are:

Indicator	Type	Description	Formula	Units	Standard
Number of Reported Rape Cases	Impact	Number of rape cases reported to health facilities within a time period	Number of rape cases reported to health facilities/ time period	Time period for reporting to be set locally	
Coverage of Supplies for Standard Precautions	Output	The percentage of health delivery sites with sufficient supplies to ensure standard precautions can be practiced	Number of health service delivery points with adequate supplies to carry out standard precautions/number of health service delivery points × 100	/100 health service delivery points	100% of health facilities have adequate supplies to carry out standard precautions

Coverage of HIV Rapid Tests for Safe Blood Transfusion	Output	The percentage of referral hospitals that have sufficient HIV rapid tests to ensure all blood destined for transfusion is screened	Number of hospitals with sufficient HIV rapid tests to screen blood for transfusion /number of health service delivery points x 100	/100 health service delivery points	100% of health facilities have adequate supplies to carry out standard precautions
Condom Distribution Rate	Outcome	Rate of condom distribution among the population	Number of male condoms distributed /total population/ month	/person/ month	0.5 condoms / person / month
Coverage of Clean Delivery Kits	Output	Rate of distribution of clean delivery kits among pregnant women in their third trimester	Number of clean delivery kits distributed / Estimated number of pregnant women x 100/month	%	100%
Availability of clinical management of rape survivors	Output	Percentage of health facilities with clinical management of rape survivors, including EC, PEP and presumptive STI treatment	Number health facilities offering clinical management of rape survivors / all health facilities x 100	%	

The MISP was evaluated in Zaatri camp and Irbid City in 2013 (Krause et al., 2015). The evaluators conducted 11 key informant interviews, 13 health facility assessments (HFAs), and focus group discussions (14 groups; 159 participants) through purposive sampling. The key informant interviews were conducted in English with managers, physicians and nurses and recorded by handwritten notes during the interview. The HFA consisted of semi-structured interviews with physicians, managers, and nurses, conducted in English and use of a standardised checklist of equipment and supplies. FGDs were held in private rooms within health clinics in the camp and in private rooms hosted by local organisations in Irbid City.

7. Mental health

Mental health is frequently under-resourced in emergency settings, yet a large number of people have severe mental health needs, ranging from pre-existing conditions to trauma and psychosocial needs.

The Inter-Agency Standing Committee has released guidelines on providing mental health and psychosocial support (MHPSS) in emergency settings (IASC, 2007). They do not provide a comprehensive list of indicators, but a selected sample to measure the quality of mental health provision includes:

Coordination of MHPSS services	An MHPSS coordination group is established at the local and/or national level, integrating actors from various sectors, including health, protection and education.
	Organisations design their assessments taking into account and building upon the psychosocial/mental health information already collected by other organisations.

	Assessment information on MHPSS issues from various organisations is collated and disseminated (e.g. by the coordination group).
Effective M&E	SMART process and outcome indicators are defined for mental health and psychosocial support programmes.
	Indicators are regularly assessed, as appropriate.
	Key stakeholders, including the affected population, are involved in all aspects of the M&E process, including the discussion of results and their implications.
Complying with human rights	Mental health and psychosocial programmes comply with international human rights standards and are designed with a view to protecting the population against violence, abuse and exploitation.
	Training for staff of psychosocial and mental health programmes contains a focus on human rights.
	Appropriate mechanisms for the monitoring and reporting of instances of abuse and exploitation of civilians are established.
Staff conduct	Each organisation has systems in place to inform all staff of the minimum standards of behaviour expected.
	Communities being served by humanitarian actors are informed about the standards and about ways in which they can safely raise concerns about possible violations.
	Agencies have staff trained and available to undertake investigations of alleged violations, within a reasonable timeframe.
Staff knowledge of MHPSS	Content of training seminars is based on needs assessment.
	Aid workers in all sectors can participate in brief and relevant orientation seminars providing essential functional knowledge and skills about mental health and psychosocial support.
	Trainers have prior knowledge and skills in related work.
	Training is followed up by field-based support and supervision.
	General health staff know how to protect and promote their patients' rights to dignity through informed consent, confidentiality and privacy
	General health staff are able to give psychological first aid (PFA) to their patients as part of their care.
	General health staff make appropriate referrals to (a) community social supports outside the health system, (b) trained and clinically supervised community workers (support workers, counsellors) attached to health services (if available) and (c) clinicians trained and supervised in the clinical care of mental health problems.
Indicators for severe mental disorders	Number of primary health care (PHC) workers trained and supervised, number of training hours, number of on-the-job supervision sessions.
	Essential psychotropic medications in each therapeutic category (anti-psychotic, anti-Parkinsonian, anti-depressant, anxiolytic, anti-epileptic) are purchased and sustainable supply lines are established.
	Number and types of mental health problems seen in PHC clinics and other mental health services.
	Number of referrals made to specialised mental health care.

The way patients are treated can make a significant difference to their wellbeing (IASC, 2007). IASC recommends encouraging staff behaviour which is compassionate, emotionally supportive and respectful.

8. Other relevant examples

In Afghanistan, the health system was rebuilt with relative success in the 2000s after the collapse of the Taliban (Newbrander et al. 2014). Newbrander et al. (2014) examine the implementation of the Basic Package of Health Services (BPHS). The BPHS draws on experience in previous conflicts, and provides an essential package of health interventions to address the most pressing needs in that context, delivered through mainly through government-contracted NGOs.

The BPHS was monitored with a health management information system which provided routine statistics, and a separately contracted third party annually collected 29 key performance indicators, using a balanced scorecard system. The indicators were collected through 5,500 patient observations and exit interviews and 1,500 provider interviews in more than 600 facilities selected by stratified random sampling in each province (Edward et al., 2011). 25 facilities were reviewed in each province, and in total the sample represented around 50 per cent of the functional health facilities in Afghanistan. The indicators are shown in the table below (the results are redacted for clarity):

Table 2. National score by performance domain and indicator for 28 provinces from 2004 to 2008.

BSC Domains	Training in the past year
	HMIS use index ^a
	Clinical guidelines index ^a
	Infrastructure index ^a
<i>Domain A: patients and community</i>	Patient record index ^a
Overall patient satisfaction	Facilities with TB registers
Patient perception of quality index ^a	<i>Domain D: service provision</i>
Written <i>shura-e-sehie</i> activities	Patient history and physical exam index [†]
<i>Domain B: staff</i>	Patient counseling index ^a
Health worker satisfaction index ^a	Proper sharps disposal
Salary payments current	Average new outpatient visit per month (BHC > 750 visits)
<i>Domain C: capacity for service provision</i>	Patient consultation time (≥ 10 min)
Equipment functionality index ^a	BPHS facilities providing ANC
Drug availability index ^a	Delivery care according to BPHS
Family planning availability index ^a	<i>Domain E: financial systems</i>
Laboratory functionality index (hospitals and CHCs) ^a	Facilities with user fee guidelines
Staffing index ^a	Facilities with exemptions for poor patients
Provider knowledge score	<i>Domain F: overall vision</i>
	Females as percent of new outpatients
	Outpatient visit concentration index ^a
	Patient satisfaction concentration index ^a

^aAggregate of individual indicators.
^{*} $p < 0.05$.
^{**} $p < 0.001$.
^{***} $p < 0.0001$.
 CHC, comprehensive health center.
 doi:10.1371/journal.pmed.1001066.t002

Source: Edward et al. (2011): 5.

Edward et al. (2011) highlight that time spent on consultation and counselling the patient is a significant predictor of the quality of care.

It is important to ensure the scorecard is not just used to measure performance, but to improve it. The results should be disseminated to policymakers but also to the frontline providers in accessible formats, to help them address performance where possible.

The scorecard has been adopted by the government of Afghanistan and it has helped contribute to an evidence-based decision-making culture (Edward et al., 2011). It has helped enhance transparency and encourage a culture of accountability, as well as improving health outcomes. Limitations of the scorecard are that performance tends to improve when providers know they are being observed; and that there was no way to assess the accuracy of diagnosis or treatment. Patient satisfaction is also an unreliable measure in this context, as there may be a fear that expressing dissatisfaction will result in the termination of services. Scorecards of specific health centres are unlikely to feed into larger-scale assessments of the macro state of healthcare, as they do not measure impact at the population level, e.g. mortality rates.

As well as health outcomes and the above annual data, an evaluation (Newbrander et al. 2014) used the following health system indicators to assess the effectiveness of the BPHS:

Service delivery

Assessing the availability of services is a function of the number and types of health facilities and actual utilisation:

- number of active health facilities (health sub-centres, basic health centres, comprehensive health centres and district hospitals)
- number of active health posts (community-level care)
- total patient visits per month (health facilities and health posts)
- average number of people receiving health services daily through clinics and direct outreach workers per health facility.
- maternal mortality ratio
- total deliveries at health facilities
- women of childbearing age receiving a second dose of tetanus toxoid (TT2)
- under-five mortality rate
- infant mortality rate
- children under one year of age receiving a third dose of diphtheria, pertussis and tetanus (DPT) or Pentavalent vaccine (Penta3).
- health facilities providing Directly Observed Treatment, Short Course (DOTS) services against tuberculosis.

Health workforce

Cultural factors prevent women from being seen by a male health worker in several areas of Afghanistan. Hence, the number of female health workers is critical to make health services accessible to women:

- number of active female CHWs
- female CHWs as a percentage of total CHWs
- percentage of BPHS and EPHS facilities with at least one female health worker.
- midwives per 10,000 population (to measure births attended by a skilled birth attendant)

Information

Availability of key health management information is crucial to a well-functioning health system. One aspect of a good HMIS is the percentage of service delivery points regularly submitting information. The indicator used is: percentage of BPHS facilities reporting information.

Medical products, vaccines and technologies

Even with increased access to health services, essential medicines and supplies must be available when patients are seen:

- percentage of BPHS facilities with at least one essential drug stock-out
- annual expenditure for drugs and contraceptives in 13 provinces.

Financing

Sufficient and regular financing is necessary for a health system to perform well. The extent to which a country commits its own resources to health reflects the priority of health, so they looked at the proportion of the total development resources expended by the Afghan Government for health:

- health expenditure as a percentage of the gross domestic product
- the national development budget devoted to health
- contributions of donors to the health sector compared to the government's annual expenditure on health

Leadership and governance

Governance is the ability of the health system to respond to the needs of different population groups at various levels of the health system. They measured leadership and governance with several proxy measures:

- Central: coordination mechanisms for the Ministry of Public Health and its partners
- Provincial: submission rate for minutes of meetings of Provincial Health Coordinating Committees
- Community: number of Family Health Action Groups established and number of health *shura* meetings held. At the community level, community *shuras* (committees) provide leadership and support to all health-related activities in the community. The *shuras* select, support and supervise the CHWs in the community; encourage families to use preventive health services; and provide leadership in promoting new behaviours, such as use of contraception. The emergence of Family Health Action Groups, collaborating with the CHWs, has also been important in shaping health actions and interventions at the local level in Afghanistan.

Finally, another study on the BPHS identified that using local teams to evaluate was just as effective as more highly-trained survey teams (Rowe et al., 2014). A standard team consisted of Afghan health professionals who had plenty of experience in survey data collection, who had two weeks of training on survey tools, field testing and exams. The local teams consisted of three to five teachers who resided in the catchment area of the health facility but stated they had no relationship with the workers of that facility. They each had three days of intensive training on data collection techniques, hospital equipment, and were given a field test and an exam. The local teams produced the same results as the standard teams, and had considerably higher access into insecure areas.

The indicators used to assess the Afghan healthcare facilities were (Rowe et al., 2014):

Based on patient-provider observation:

- Patient record
- Patient history and physical exam
- Patient counselling
- Appropriate exam duration

Based on patient exit interview:

- Patient satisfaction
- Patient perceptions of quality

Based on health worker interview:

- Health worker satisfaction
- Salary payment current

Provider knowledge: vaccination
 Provider knowledge: integrated management of childhood illness
 Provider knowledge: reproductive health

Based on facility record audit:

Drug availability
 Family planning availability
 Health management information systems use
 Clinical guidelines
 General infrastructure
 Proper sharps disposal
 Outpatient service utilisation
 Facilities providing antenatal care
 Delivery care according to national guidelines
 Females as proportion of new outpatients
 Service utilisation
 Tuberculosis register

A systematic review has collected all the tools specifically used for health facility assessment in low and middle income countries (Nickerson, et al. 2014). The only one specific to FCAS is the HeRAMS, described above. Nonetheless, the indicators used in LMICs may also prove to be useful in conflict-affected contexts. They have a great deal of consistency across the different frameworks used. The indicators are arranged by the authors into the WHO's six building blocks of health systems:

Health systems building blocks	Assessment domains and sub-domains identified
1. Leadership/Governance	Ownership/management of facility
2. Health Care Financing	Financing of facility
	User fees charged/cost of service
3. Health Workforce	National health professions/cadres of workers
4. Medical Products, Technologies	Basic equipment
	Diagnostic/imaging services
	Laboratory services
	Pharmacy
	Essential medicines
5. Information and Research	Nutrition
	Service utilisation
	Disease registers
	Caseload data
	Mortality data
	Vital statistics
	Evidence-based guidelines
Continuing medical education	
6. Service Delivery	Basic structural components
	Identification as a health facility
	Bed census
	General clinical services
	Non-communicable diseases
	Child health
	Outpatient Department/emergency room
	Dental/oral health
	Communicable diseases
	HIV/AIDS
	Vaccines
Infection control	

	Cleaning/sterilisation
	Sexual and reproductive health
	Obstetric care
	Sexually transmitted infections
	Surgery
	Intensive care unit
	Disabilities and injury rehabilitation
	Mental health care
	Internal medicine
	Palliative care
	Mortuary
	Environmental health
	Nutrition

A systematic review provides analysis of the quality of care in primary health centres in the Eastern Mediterranean Region⁶ (Saleh et al., 2015). While this is not conflict-specific, it does show which indicators are appropriate and feasible for the region:

- Resource availability
- Patient–provider relationship
- Patient satisfaction
- Provider satisfaction
- Quality indicators
- Clinical practice
- Access and continuity of care
- Patient safety/medical errors

More than half the articles reviewed clinical practice, while the most commonly tracked disease was diabetes.

9. Further resources

- Syrian International Coalition for Health: <http://ghef.org/ch/sich/>
- Syrian American Medical Association: <https://www.sams-usa.net>
- Physicians for Human Rights: <http://physiciansforhumanrights.org/>
- Humanitarian Response Indicators Registry: <https://www.humanitarianresponse.info/en/applications/ir>

10. References

Edward, A., Kumar, B., Kakar, F., Salehi, A. S., Burnham, G., & Peters, D. H. (2011). Configuring balanced scorecards for measuring health system performance: evidence from 5 years' evaluation in Afghanistan. *PLoS Med*, 8(7), <http://dx.doi.org/10.1371/journal.pmed.1001066>

Haar R.H. & Rubenstein, L. S. (2012). *Health in Postconflict and Fragile States*. USIP SPECIAL REPORT. https://www.usip.org/sites/default/files/SR_301.pdf

⁶ Afghanistan, Bahrain, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Somalia, South Sudan, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen

Healy, S. & Tiller, S. (2013). *A review of the humanitarian response to the Syrian refugee crisis in Jordan, 2012-13. Analysis of the emergency response capacity of the humanitarian system – Case study 3*. MSF.

http://www.msf.org.uk/sites/uk/files/jordan_case_study_final_external_0.pdf

IAWG. (2010). *Inter-agency Field Manual on Reproductive Health in Humanitarian Settings*. Inter-agency Working Group on Reproductive Health in Crises.

<http://www.iawg.net/IAFM%202010.pdf>

Integrity Research and Consultancy (2014). *Conflict Sensitivity Institutional Capacity Assessment. Primary Healthcare Sector in Lebanon*. International Alert.

<http://www.alnap.org/resource/13063>

Inter-Agency Standing Committee (IASC) (2007). *IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings*. Geneva: IASC.

http://www.who.int/mental_health/emergencies/9781424334445/en/

Jabir, M., Abdul-Salam, I., Suheil, D. M., Al-Hilli, W., Abul-Hassan, S., Al-Zuheiri, A., ... & Souza, J. P. (2013). Maternal near miss and quality of maternal health care in Baghdad, Iraq. *BMC pregnancy and childbirth*, 13(1), 1. <http://www.dx.doi.org/10.1186/1471-2393-13-11>

Kherallah M, Alahfez T, Sahloul Z, Eddin KD, Jamil G. (2012). Health care in Syria before and during the crisis. *Avicenna J Med*, 2:51-3.

<http://www.avicennajmed.com/text.asp?2012/2/3/51/102275>

Krause, S., Williams, H., Onyango, M. A., Sami, S., Doedens, W., Giga, N., & Tomczyk, B. (2015). Reproductive health services for Syrian refugees in Zaatri Camp and Irbid City, Hashemite Kingdom of Jordan: an evaluation of the Minimum Initial Services Package. *Confl Health*, 9(Suppl 1), S4. <http://www.dx.doi.org/10.1186/1752-1505-9-S1-S4>

Newbrander, W., Ickx, P., Feroz, F., & Stanekzai, H. (2014). Afghanistan's Basic Package of Health Services: Its development and effects on rebuilding the health system. *Global public health*, 9(sup1), S6-S28. <http://dx.doi.org/10.1080/17441692.2014.916735>

Nickerson, J. W., Adams, O., Attaran, A., Hatcher-Roberts, J., & Tugwell, P. (2014). Monitoring the ability to deliver care in low-and middle-income countries: a systematic review of health facility assessment tools. *Health policy and planning*, czu043.

<http://dx.doi.org/10.1093/heapol/czu043>

OECD. (2015). *Health at a Glance 2015: OECD Indicators*. OECD Publishing, Paris.

http://dx.doi.org/10.1787/health_glance-2015-en

Pavignani E, Colombo S. (2009). *Analysing disrupted health sectors: a modular manual*. Geneva, Switzerland: World Health Organization.

http://www.who.int/hac/techguidance/tools/disrupted_sectors/adhsm_en.pdf

Rowe, J. S., Natiq, K., Alonge, O., Gupta, S., Agarwal, A., & Peters, D. H. (2014). Evaluating the use of locally-based health facility assessments in Afghanistan: a pilot study of a novel research method. *Confl Health*, 8(1), 24. <http://dx.doi.org/10.1186/1752-1505-8-24>

Saleh, S., Alameddine, M., Mourad, Y., & Natafqi, N. (2015). Quality of care in primary health care settings in the Eastern Mediterranean region: a systematic review of the literature. *International Journal for Quality in Health Care*, 27(2), 79-88.

<http://dx.doi.org/10.1093/intqhc/mzu103>

Sen, K., & Al-Faisal, W. (2013). Reforms and emerging noncommunicable disease: some challenges facing a conflict-ridden country—the case of the Syrian Arab Republic. *The International journal of health planning and management*, 28(3), 290-302. Chicago. <http://www.dx.doi.org/10.1002/hpm.2193>

Taleb, Z. B., Bahelah, R., Fouad, F. M., Coutts, A., Wilcox, M., & Maziak, W. (2015). Syria: health in a country undergoing tragic transition. *International journal of public health*, 60(1), 63-72. <http://www.dx.doi.org/10.1007/s00038-014-0586-2>

WHO (2012). *Syrian Arab Republic Unrest. Situation Report # 7*. WHO. http://www.emro.who.int/images/stories/eha/documents/Sitrep_7_for_the_Web.pdf

World Health Organization. (2015). *Health Resources Availability Mapping System (HeRAMS)*. Health Facilities Report. <http://www.alnap.org/resource/21604>

11. Additional information

Author

This query response was prepared by **Evie Browne**

Contributors

Rosamund Southgate, MSF UK
Krista Armstrong, ICRC
Shannon Doocy, Johns Hopkins University
Gilbert Burnham, Johns Hopkins University
Leonard Rubenstein, Johns Hopkins University
Adam Coutts, University of Cambridge
Adrienne Fricke, Consultant

About Helpdesk reports: The HEART Helpdesk is funded by the DFID Human Development Group. Helpdesk reports are typically based on 3 days of desk-based research per query and are designed to provide a brief overview of the key issues, and a summary of some of the best literature available. Experts may be contacted during the course of the research, and those able to provide input within the short time-frame are acknowledged.

For any further request or enquiry, contact info@heart-resources.org

HEART Helpdesk reports are published online at www.heart-resources.org

Disclaimer

The Health & Education Advice & Resource Team (HEART) provides technical assistance and knowledge services to the British Government's Department for International Development (DFID) and its partners in support of pro-poor programmes in education, health and nutrition. The HEART services are provided by a consortium of leading organisations in international development, health and education: Oxford Policy Management, CfBT, FHI360, HERA, the Institute of Development Studies, IPACT, the Liverpool School of Tropical Medicine and the Nuffield Centre for International Health and Development at the University of Leeds. HEART cannot be held responsible for errors or any consequences arising from the use of information contained in this report. Any views and opinions expressed do not necessarily reflect those of DFID, HEART or any other contributing organisation.

