Guiding Principles for Conducting Monitoring and Evaluation (M&E) for Medical Stability Operations (MSOs)

A product of

Navy Medicine’s Humanitarian Assistance/Disaster Response (HA/DR) Working Group’s Evaluation Committee
Acknowledgements

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Executive Summary

This document, "Guiding Principles for Conducting Monitoring and Evaluation (M&E) for Medical Stability Operations (MSOs)," provides mission planners, medical planners and force providers to Medical Stability Operations (MSOs) with the ability to rapidly define the outcomes, activities, measures of effectiveness (MOEs) and measures of performance (MOPs) for MSOs in support of Combatant Commander (CCDR) programs.

This document does not address the challenges of defining impacts or measures for theater objectives; it only addresses impacts and measures for health service support to these missions. This scope allows the Military Health System (MHS) to specifically focus on improving the quality of its support to stability operations.

This document also does not provide guidance on how to plan or execute an MSO; sufficient guidance already exists within the Navy and Joint arena on that topic. Instead, it presents the tools for incorporating effective measures within the existing MSO mission planning process.

Chapters 2 and 3 of this document present background information on the historical context of MSOs and how these missions support the larger strategic objectives of building partnerships and capacity within Host Nations. An essential lesson from this review is that the Military Health System (MHS) must shift from providing available direct care services to delivering health/public health services in support of international health goals, in partnership with the Host Nation and other stakeholders, in a manner that builds the capacity to sustain those services within the Host Nation.

Chapter 4 presents the monitoring and evaluation framework used to define the outcomes, outputs and measures in the document. Chapter 5 defines the impact, or desired effects, for all MSOs and Chapter 6 presents the outcomes associated with defined adaptive force packages, which contribute to that impact. Chapter 7 presents the recommended measures of effectiveness for MSOs in the long-term. An MSO can claim that its activities generally led to an improvement in the desired outcomes if and only if those activities met the following requirements:

- The completed activities were in support of a defined global or national health program;
- The activities performed during the MSO were conducted in collaboration with the Host Nation and other relevant agencies (such as WHO, USAID, and NGOs) as appropriate;
- The activities served to improve the capacity of the Host Nation and can be sustained by the Host Nation or other stakeholder.

Chapter 8 defines outputs for MSOs and Chapter 9 discusses redefining MSO activities in terms of their effectiveness in building partnerships or improving Host Nation capacity. Chapter 10 discusses how measures of performance are developed for MSOs, with specific measures of performance for each capability addressed in the appendices to this document.

Addressed throughout this document is the goal of conducting MSOs focused on building partnerships and capacity with Host and Partner Nations.

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1 PURPOSE AND SCOPE

This document, "Guiding Principles for Conducting Monitoring and Evaluation (M&E) for Medical Stability Operations (MSOs)," provides force providers, mission planners, and medical planners of Medical Stability Operations (MSOs) with the ability to rapidly define the outcomes, activities, measures of effectiveness (MOEs) and measures of performance (MOPs) for MSOs in support of Combatant Commander (CCDR) programs.

1.1 Defining Medical Stability Operations

The term ‘Medical Stability Operation,’ or MSO, is not yet clearly defined in doctrine; its current definition is expressed in the recent DoD Instruction 6000.16 and is defined as “military health support for stability operations,” where stability operations are defined as an “overarching term for various military missions.” There is no definitive agreement on the use of the term medical stability operations to refer to activities such as humanitarian assistance or disaster relief or for those activities often referred to as “medical diplomacy,” “building partner capacity,” or “cooperative health engagements.” None of these terms are exactly correct and some of them are open to misinterpretation. For example, “medical diplomacy” suggests the perception that a country may use medicine as a political/social means to an end solely based on self-interest. “Building partner capacity” can also be misinterpreted as the “egocentric U.S. government having all the answers – and nothing to learn.”1 “Medical Stability Operations” implies that the country may be in need of stabilization, which is often not the case, such as missions executed in Chile or Vietnam.”2

The exact scope of the term ‘Medical Stability Operations’ is currently under discussion; for now, this document will use the term MSO(s) to refer to the broad set of cooperative health engagement activities performed in support of building partnerships within a nation or region. Within the U.S. Navy, the programs Pacific Partnership (PP) and Continuing Promise (CP) are examples of such cooperative health engagements and are the focus of this document, although its recommendations can also be applied to other types of medical stability operations.

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2 Ibid.
1.2 Document Scope

This document is offered as a guide to aid planners, leadership personnel and assigned personnel in improving the quality of MSOs through the incorporation of effective measurement tools. The document focuses on the impact and measures for the health service support to these missions, allowing the Combatant Commands (COCOMs) to focus on assessing their theater and mission objectives. This allows Navy Medicine (or the Military Health System) to focus on improving the quality of its support to stability operations.

Both DoD and Navy leadership employ Adaptive Force Packaging (AFP) to ensure the right capability (e.g., trained personnel with appropriate equipment and supplies) is provided at the right time for a specific mission. For each adaptive force package typically deployed in support of an MSO, this document defines its associated outcomes, measures of effectiveness, activities, and measures of performance.

This document does not provide guidance on how to plan or execute an MSO; sufficient guidance already exists within the Navy and Joint arena on that topic (see Appendix A: References). Instead, it presents tools for incorporating effective measures within the existing MSO mission planning process. This document also does not define a mission assessment framework that requires comprehensive changes to existing mission objectives and/or planning processes; it presents a monitoring and evaluation framework that is congruent with existing MSO mission objectives and processes. As such, it is hoped that the principles and definitions in this document will allow medical and mission planners to immediately begin collecting meaningful data on the outcomes and performance of MSO missions, while working to develop more long-term objectives.

1.3 How to Use this Document

Naturally, the use of this document depends upon the user. Medical planners may apply the objectives and measures of effectiveness within this document to their on-going partnership programs, or as a reference for better understanding the efforts of specific mission areas. Mission planners or health/public health service leads may focus only on the appendices relevant to their efforts and can use the suggested activities and measures within those appendices as useful guides in planning their own efforts.

This document is intended as a guide, and is not prescriptive in any manner; users are free to implement (or not), as they choose.

1.4 Moving Toward Improved Measures

Many ‘measures of effort’ are described within this document and have not been replaced by activities and measures consistent with more elaborate monitoring and evaluation frameworks. This document is intended to be consistent with existing practices; sophisticated population health measures are simply not possible in a system that does not yet employ consistent terminology or processes in collecting data. As mission activities and data collection efforts become more defined and standardized, more sophisticated measures will be possible and – at that time – will be recognized as valid. Section 4 describes some of the challenges in constructing and collecting data on global health indicators.

The goal for this Handbook is to initiate the process of developing those sound, consistent processes so that the effectiveness of missions, services, and even individual interventions can be monitored and assessed across multiple missions over time.
2 The Strategic Context

This section draws upon chapters 1 and 2 of the draft document, "Bureau of Medicine and Surgery: Foreign Humanitarian Assistance Concept of Employment" (1 December 2010) for its summary of the strategic context for MSOs.

2.1 US Policy

There are three key U.S. policy documents that provide strategic guidance for MSOs: the National Security Strategy (NSS), the Department of State (DoS)/USAID Strategic Plan, and the Global Health Initiative (GHI).

The National Security Strategy of 2010 emphasizes "comprehensive engagement" with other nations around the world as a key element of its strategic approach. In addition, it stresses a "whole of government" approach to this engagement, a seamless integration of military and civilian capabilities. Key to this strategy is the "investment in the capacity of strong and capable partners."

The DoS/USAID Strategic Plan's strategic goals include two that are relevant to MSO missions: Strategic Goal #3, "Investing in People" and Strategic Goal #5, "Providing Humanitarian Assistance." "Investing in People" specifically endorses "improving global health, including child, maternal, and reproductive health; reducing disease, especially HIV/AIDS, malaria, tuberculosis, and polio; and increasing access to improved drinking water and sanitation services."

"Providing Humanitarian Assistance" notes DoD as a strategic partner in providing humanitarian assistance by "mobilizing large-scale logistical support in humanitarian emergencies; stabilizing countries affected by conflict, including providing security for the provision of humanitarian assistance; and providing humanitarian assistance in environments so insecure that civilian agencies are not able to operate."

The U.S. government is pursuing a comprehensive whole of government approach to global health through the GHI. The GHI objectives are to achieve significant health improvements by "creating effective, efficient and country-led platform[s] for the sustainable delivery of essential health care and public health programs."

2.2 DoD Guidance

The following guidance documents include DoD guidance for stability operations and the military health support to stability operations: the Quadrennial Defense Review (QDR), Joint Publications, such as the Joint Capability Areas, and DoD Instructions.

The 2010 QDR states that the U.S. military must be prepared to support the U.S. national goal of promoting stability in key regions by providing assistance to nations in need. One of the

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4 National Security Strategy, May 2010, pg 14
5 National Security Strategy, May 2010, pg 26
6 Department of State/USAID Strategic Plan FY 2007-2012, pg 22
7 Department of State/USAID Strategic Plan FY 2007-2012, pg 33
8 Implementation of the Global Health Initiative: Consultation Document, pg 3
recommendations of the QDR is to strengthen relationships with other Federal agencies, key
allies and partners abroad.

The Joint Capability Areas (JCA) include the capability 'Building Partnerships,' defined as the
"ability to set the conditions for interaction with partner, competitor or adversary leaders,
military forces, or relevant populations by developing and presenting information and conducting
activities to affect their perceptions, will, behavior, and capabilities."9

A variety of Joint Staff publications focus on differing elements of stability operations and
MSOs:

- JP 3-07.3 Peace Operations provides doctrine for planning and executing peace operations;
  updates to this document clearly identify peace operations as one type of stability operation.
- JP 3-07.6, "Joint Tactics, Techniques and Procedures for Foreign Disaster Relief," defines the
types of foreign humanitarian assistance operations and provides guidelines for the
organization and coordination of these missions at the Joint Task Force level.
- JP 3-08 Interagency, Intergovernmental Organization, and Nongovernmental Organization
  Coordination During Joint Operations (Volumes I & II). Volume I discusses the interagency,
targeted organization (IGO) and nongovernmental organization (NGO)
environment and provides fundamental principles and guidance to facilitate coordination
between the DoD, and other U.S. Government agencies, IGOs, NGO's, and regional
organizations. Volume II describes key U.S. Government departments and agencies, IGOs
and NGOs - their core competencies, basic organizational structures, and relationship (or
potential relationship) with the U.S. military.10
- JP 3-29 Foreign Humanitarian Assistance (FHA) re-states the DoS and DoD relationship
defined in the USAID Strategic Plan and identifies the three missions of medical forces
during Foreign Humanitarian Assistance (FHA) missions: force health protection, care for
disaster victims, and assisting in reestablishing indigenous public health resources and
institutions affected by the disaster.11
- JP 3-57 Civil-Military Operations, provides joint doctrine for the planning and conduct of
civil-military operations (CMO) by joint forces, the use of civil affairs forces, the conduct of
civil affairs operations, and the coordination with other capabilities contributing to the
execution of CMO to achieve unified action.12
- JP 4-02, Health Service Support, provides doctrine for the planning and execution of force
health protection and health service support at the operational level, throughout the range of
military operations.13

Two DoD Instructions (DoDI) directly address stability operations and MSOs: DoDI 3000.05,
Stability Operations (16 Sep 09), and DoDI 6000.16, Military Health Support for Stability
Operations (17 May 10). DoDI 3000.05 states that "stability operations are a core U.S. military
mission that the DoD shall be prepared to conduct with proficiency equivalent to combat
operations....DoD shall have the capability and capacity to “establish civil security and civil

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10 JP 3-08 Interagency, Intergovernmental Organization, and Nongovernmental Organization
  Coordination During Joint Operations (Volumes I & II), 17 Mar 06
11 JP 3-29, Foreign Humanitarian Assistance, 17 Mar 2009, pg I-1
12 JP 3-57, Civil-Military Operations, 8 Jul 08
13 JP 4-02, Health Service Support, 31 Oct 06
control; restore or provide essential services; repair critical infrastructure; and provide humanitarian assistance." DoD Instruction 6000.16 states that "MSOs are a core U.S. military mission that the DoD Military Health System (MHS) shall be prepared to conduct throughout all phases of conflict and across the range of military operations, including in combat and non-combat environments." Other relevant DoD Instructions or Directives include:

- DoDD 5100.46, "Foreign Disaster Relief," 4 Dec 75, assigns responsibilities for foreign disaster relief.
- DoDI 2205.02, "Humanitarian and Civic Assistance (HCA) Activities," 2 Dec 08. This instruction states that HCA missions may include "medical, surgical, dental, and veterinary care provided in areas of a country that are rural or are underserved by medical, surgical, dental and veterinary professionals, respectively, including education, training, and technical assistance related to the care provided." It also requires the Combatant Commander to monitor the effectiveness of these missions.

In addition, the Joint Capability Area, ‘Building Partnerships,’ defines building partnerships as “the ability to set the conditions for interaction with partner, competitor or adversary leaders, military forces, or relevant populations by developing and presenting information and conducting activities to affect their perceptions, will, behavior, and capabilities.” Communicating and shaping are identified as key skills for building partnerships, defined as presenting information to domestic and foreign audiences and conducting activities that will affect the perceptions, will, behavior and capabilities to further U.S. national security or shared global security interests.

2.3 Navy Policy

Corresponding Navy policy regarding MSOs has been expressed in several overarching documents:

- A Cooperative Strategy for 21st Century Seapower (CS21), released in 2007, describes six core capabilities that comprise U.S. maritime power and these capabilities include humanitarian assistance and disaster response;
- Navy Strategic Plan requires the Navy to conduct proactive humanitarian assistance; expand critical partner nations' capability and capacity to respond to disasters; and bolster the stability of these nations by providing humanitarian assistance;

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14 DoD Instruction 3000.05, Stability Operations, 16 Sep 09, pg 2
15 DoD Instruction 6000.16, Military Health Support for Stability Operations, 17 May 10, pg 1
16 DoD Instruction 2205.02, Humanitarian and Civic Assistance Activities, 2 Dec 08
• Naval Operations Concept 2010: Implementing the Maritime Strategy;\(^\text{17}\)

• Navy Medicine Strategic Plan recognizes humanitarian assistance capabilities as part of its Agile Forces strategic goal.

The Navy strategic plan, *A Cooperative Strategy for 21st Century Seapower*, adopts humanitarian assistance and disaster relief as one of six core capabilities of U.S. maritime power (document was signed by the Navy, Marine Corps and Coast Guard). The Naval Operations Concept 2010 states that “globally-distributed and regionally concentrated naval forces are ideally suited for humanitarian assistance and disaster response in the littorals where the preponderance of the world’s population resides.” The concept goes on to state that “proactive humanitarian assistance/disaster relief activities…enhance or restore critical host nation capacity, provide an opportunity to engage with a broader cross-section of the host nation’s population, and build relationships that serve to increase trust.”\(^\text{18}\)

Similarly, the Navy Medicine Strategic Plan incorporates medical support of humanitarian assistance and disaster relief into its vision statement. More specifically, its Tier 1 Goal, Agile Forces, states: *The Naval Forces will have the right capabilities to deliver consistent, appropriate, and timely health care services across the entire range of joint military operations.*\(^\text{19}\)

### 2.4 Theater Guidance

Theater guidance applies national guidance to specific regions and countries. Each Combatant Commander (CCDR) develops a Theater Campaign Plan (TCP), which operationalizes strategic guidance by linking activities to U.S. government policy and strategy. TCPs incorporate security cooperation activities as an important means to achieve theater objectives and end states. The growing importance of building partnerships with other nations and building the capacity of these nations is reflected in the TCPs of the various combatant commands.

Navy component commanders apply the Navy’s strategy for 21\(^{st}\) century seapower to the geographic combatant commanders’ theater campaign plans in order to provide administrative and operational direction to the fleet. This fleet guidance is promulgated as the Maritime Security Cooperation Plan (MSCP) and is issued by each Navy component commander. This plan contains the Navy’s theater, regional, and country-specific security cooperation objectives, which guide tactical-level activities with foreign nations.\(^\text{20}\)

### 2.5 Summary

Within the last few years, the U.S. government, DoD and the Navy have recognized humanitarian assistance as an essential element in building partnerships and capacities within other nations. Guidance from multiple levels directs that MSOs - which include humanitarian assistance - be directed at the strategic objectives of building partnerships and HN capacity. In addition, the guidance is clear that these MSOs must be able to assess their own effectiveness and improve the quality of their activities.

\(^{17}\) Chief of Naval Operations, “Naval Operations Concept: Implementing the Maritime Strategy,” 2010


\(^{19}\) Navy Medicine Strategic Plan, pp 15

3 From MEDCAP to MSO: Making the Case for Change

This section will describe the DoD's growing role in humanitarian assistance and trace some of the mechanisms the DoD uses to provide health/public health services in an MSO. The significant weaknesses of existing practices will be identified and discussed, leading to an understanding of what is needed in developing a monitoring and evaluation framework for MSOs.

3.1 The Growing Role of the Military in Humanitarian Assistance

In the civilian community, “humanitarian aid must be delivered to a crisis-affected population for the primary purpose of saving lives and alleviating suffering, and provided in accordance with the basic humanitarian principles.” This humanitarian aid can take the form of direct assistance, indirect assistance (such as transportation) and infrastructure support. Historically, much of the work of humanitarian assistance has been shouldered by civilian organizations, which are commonly categorized as follows:

- IGOs: international governmental organizations, such as the United Nations and the World Health Organization
- INGOs or NGOs: international non-governmental organizations, such as OXFAM
- PVOs: private voluntary organizations, such as Project HOPE
- U.S. governmental organizations, such as the U.S. Agency for International Development (USAID)

In the Department of Defense (DoD) – and in this document - the term ‘humanitarian assistance’ is used as an umbrella term that covers foreign humanitarian assistance, humanitarian and civic assistance programs, and disaster relief efforts. As stated in the USAID Strategic Plan, the DoD’s role in humanitarian assistance is to provide large-scale logistical support, stabilize countries affected by conflict, and provide humanitarian assistance in environments so insecure that civilian agencies are not able to operate (see Section 2.1).

The [MEDCAP] program’s objectives were to convince the people in the remote areas [of Vietnam] that the government was vitally interested in their welfare, encourage the Vietnamese public health agencies to cooperate with and include civic action in their rural health endeavors, and provide instruction to village health workers.

The first American MEDCAP teams arrived in Vietnam in January 1965. They arrived without adequate orientation on the environment, language, culture, and medical problems they would have to face. U.S. medical personnel were assigned to assist the Vietnamese medical personnel, and a 'bonus' side effect was the improvement of the image of the U.S. medical personnel.

Robert J. Wilensky, "Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War" (pg 53-54)

21 CDHAM, “Guide to Nongovernmental Organizations for the Military,” edited by Dr. Lynn Lawry, Summer 2009, p. 18
Civilian humanitarian assistance (HA) organizations, whether governmental non-governmental, are often on site and actively executing missions prior to the military's arrival in a region.\(^{22}\) The number has grown considerably since 1988, and the military's role in these activities has expanded as well. Operation Provide Comfort (Apr-Jul 1991) is one of the first examples of a U.S. military-led humanitarian assistance operation. In Operation Provide Comfort, the U.S. military led a coalition of nations in defending Kurds fleeing northern Iraq and provided humanitarian assistance to them, eventually transferring the latter function to the United Nations. Shortly after Operation Provide Comfort, the U.S. military participated in humanitarian assistance missions to Haiti, Somalia, Rwanda, and Bosnia.

### 3.2 Lessons Learned from Vietnam

Of course, the U.S. military has often provided healthcare to a host nation in a military context, such as through the Medical Civic Action Programs (MEDCAPs) conducted during the Vietnam War. MSOs around the world still use MEDCAPs and their analogues, DENCAPs and VETCAPs (for dental and veterinary civic action programs, respectively) to provide health care services to HN populations.\(^{23}\)

However, this delivery mechanism has suffered from several significant weaknesses first identified during the Vietnam War: a mismatch between strategic objectives and the delivery mechanism, poor coordination across multiple missions, and the use of measures of effort instead of measures of effectiveness to evaluate the programs. In addition, far too often the U.S. efforts did not succeed in improving the perception of the local populace in the HN capabilities, as U.S. services far exceeded and overshadowed HN capabilities.

The MEDCAP program developed during the Vietnam War suffered from unclear direction and multiple strategic goals. The basic intent of the original MEDCAP (later known as MEDCAP I) was "to establish and maintain a continuing spirit of mutual respect and cooperation between the Republic of Vietnam Armed Forces and the local people." The traditional MEDCAP might be counterproductive to the overall goal of creating confidence in the local government. It might foster a false impression about the local government's ability and desire to meet the populace's needs by building expectations that cannot be met after the departure of U.S. personnel (pg 111).

The perverse reality is that the program with the most significant public relations value (MEDCAP) was the least effective in providing long-lasting medical benefit. For the vast majority of the population, medical benefits were minimal and fleeting. While the local populace appreciated these benefits, they did not identify these medical efforts with the government of the Republic of Vietnam. Therefore, these efforts did little to further U.S. foreign policy objectives (pg 120).

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\(^{23}\) Center for Disaster and Humanitarian Assistance Medicine, "Measuring the Effectiveness of DoD Humanitarian Assistance," CDHAM Pub 02-03, pp 17.
and the civilian population."\textsuperscript{24} The leadership rapidly realized that American medical personnel
in uniform providing treatment to local populations could not achieve an improvement in the
image of the South Vietnamese Army and this program was later transferred to the Vietnamese.
With the large influx of American military into Vietnam in 1965, MEDCAP II was initiated
because of the increased availability of American medical personnel. The intent of MEDCAP II
was to "provide improved medical and surgical services, especially in the more remote areas of
Vietnam, Laos, and Thailand."\textsuperscript{25} However, the most frequent criticism of MEDCAP II was the
negligible medical value of the program. One end-of-tour report noted, "MEDCAP is one of the
[sic] outstanding goodwill pacification programs available. It is a poor medical program,"\textsuperscript{26} and
ultimately the MEDCAP program became
hostage to the goal of improving the image of
the American military.

Examples of MEDCAP Reporting
"Medical civic action program continues to
be highly effective with large numbers of
civilians treated throughout the Hop Tac
area" (pg 79).

July 1967: "...the regiment's emphasis on
MEDCAP showed positive results as the
number of patients treated increased fourfold.
A total of 299,971 patients were treated" (pg 80).

1968: "A total of 15,510 patients were seen
and treated in the formal MEDCAP plan of
the battalion" (pg 83).

"...generally all MEDCAP projects were quite
successful in that a great deal of medical aid
and medical supplies were dispensed to the
local populous [sic] who are always
enthusiastic in their gratitude." (pg 84).

Robert J. Wilensky, "Military Medicine to
Win Hearts and Minds: Aid to Civilians in
the Vietnam War"

\textsuperscript{24} Wilensky, Robert J., "Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War,"Texas
Tech University Press, Lubbock, Texas, 2004 pg 53.
\textsuperscript{25} Wilensky, Robert J., "Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War,"Texas
Tech University Press, Lubbock, Texas, 2004 pg 55.
\textsuperscript{26} Wilensky, Robert J., "Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War,"Texas
Tech University Press, Lubbock, Texas, 2004 pg 91.
\textsuperscript{27} Wilensky, Robert J., "Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War,"Texas
Tech University Press, Lubbock, Texas, 2004 pg 90.
\textsuperscript{28} Wilensky, Robert J., "Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War,"Texas
Tech University Press, Lubbock, Texas, 2004 pg 130.
MEDCAP missions taking place at that time. Finally, reports and evaluations of the program focused more on developing press material suitable for publication in hometown newspapers than on measures of program effectiveness. "Unit reports provided generalizations about the care rendered or the numbers of patients treated," and not about any long-term improvement in the stability of the South Vietnamese government. No attempt was made to evaluate the program in any meaningful manner and there is no substantiation for the generally positive conclusions reached in the various unit reports. As the war progressed, it became clear to unit commanders that their performance rating depended upon improving on their 'numbers;' whether those numbers dealt with numbers of patients treated or enemies killed in action.

3.2.1 The MEDCAP Today
The three weaknesses of the MEDCAP program discussed in the previous section are still relevant to current humanitarian assistance efforts. As discussed earlier (Section 1.1), the term MSO in this document refers to the broad set of cooperative health engagement activities performed in support of building partnerships and capacity within a nation or region. However, although the objectives of an MSO may focus on building partnerships or capacity, the direct patient care focus of the MEDCAP may not always be consistent with these goals. Today, individual MSO missions are planned and coordinated with the relevant agencies, but the outcomes and initiatives from one mission may not continue in the next mission; and there may be no integration with another mission in the same country sponsored by a different command. Finally, the measures used in today's missions are still 'measures of effort,' focusing on reporting the total numbers of patients treated instead of evaluating the outcomes of the mission.

Many experts in humanitarian assistance and humanitarian assistance participants have argued that DoD's priority in MSOs should shift from costly, short-term, direct patient care, towards projects that collaboratively build HN healthcare capacity and long-term capability, with an emphasis on improving the public health capacity of the HN. In the last few years, combatant commands have been working to address these issues.

Historically, DoD MSO projects have been "ad hoc, short-term, 1-time interventions, limited in their ability to show effectiveness."

Measures for impact assessment are rarely collected during DoD MSO, and when attempted, the measures are often limited to level of effort measures, such as the number of patients seen or the number of surgeries performed.

EJ Reaves, KW Schor, & FM Burkle, "Implementation of Evidence-Based Humanitarian Programs in Military-led Missions: Part I"

Of particular relevance to Navy Medicine are the humanitarian and civic assistance missions sponsored by the Southern Command (SOUTHCOM) and Pacific Command (PACOM).

3.3 Continuing Promise and Pacific Partnership

The humanitarian and civic assistance programs, Continuing Promise and Pacific Partnership, provide recent examples of MSOs in which the mission objectives are clearly focused on building partnerships and HN capacity. Both programs are aligned with the Combatant Command Theater Security Cooperation strategic framework and the objectives of these missions reflect that alignment.

Continuing Promise (CP) has been a SOUTHCOM Humanitarian Assistance initiative since 2007. Executed by Naval Southern Command (4th Fleet), CP missions have alternated between the USNS COMFORT and large deck amphibious ships such as the USS PELELIU or USS BOXER. The 2010 CP mission was executed on the USS IWO JIMA from July to October 2010 and provided humanitarian assistance to eight locations throughout the Caribbean and South America. The objectives of this most recent mission were:

- Ensure the forward defense of the U.S. by training U.S. personnel in a collaborative effort to provide humanitarian assistance;
- Encourage regional partnerships by fostering goodwill; enhancing the credibility of the U.S.; solidifying existing partnerships with key nations; and encouraging the establishment of new ones between/among nations, non-governmental (NGOs) and international organizations;
- Enhance regional stability and security by demonstrating U.S. commitment and support to Latin America and the Caribbean region by providing humanitarian assistance. Supporting partner nations’ efforts to build capacity to provide humanitarian assistance.

Pacific Partnership (PP) has been a PACOM Humanitarian Assistance initiative since 2006. Executed by the U.S. Pacific Fleet (PACFLT), PP missions have alternated between the USNS MERCY and large deck amphibious assault ships. The 2010 PP mission was executed on the USNS MERCY from May to September 2010 and provided humanitarian assistance to six Western Pacific nations in the pacific region.

The objectives for the 2008 PP mission were to:

- Strengthen the relationships with host and partner nations;
- Build partner capacity to conduct peace, stability, and consequence management operations;
- Build awareness and detection capacity of key countries to counter public health threats.

Now that these humanitarian and civic assistance missions are conducted as part of an on-going program, long-term cooperative engagement with HNs is possible. This allows for the sustainment of specific initiatives in HNs, from one mission to the next. The tables below describe the continuity of visits to HNs in the last five years.

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34 Briefing, CAPT Jim Terbrush, 4th Fleet Surgeon, "Continuing Promise Concept of Operations," 13 Oct 09
### Table 1: PP Engagements

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<tr>
<th>Country Visited</th>
<th>2006</th>
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These programs have made significant progress in moving from single shot, limited care events to a more strategic effort to develop partnerships and build HN capacity, as illustrated by the change in mission objectives over the years (See Section 14). However, the significant challenge of defining appropriate measures of effectiveness still remains.

3.4 Moving from Measures of EFFORT to Measures of EFFECTIVENESS

As with the MEDCAPs in Vietnam, current reporting mechanisms for MSOs consist of reporting 'measures of effort', such as the number of patients seen or the number of immunizations provided. The goal is to provide a succinct summary of all of the services provided during a mission - on a single briefing slide. The figure below illustrates the data reported during the 2008 Continuing Promise mission.

![Medical’s Return on Investment](image)

**Figure 1: Continuing Promise 2008, Pacific Phase (USS BOXER)**

There are several problems with reporting the results of MSO through these types of 'measures of effort,' and the primary weakness is that this type of reporting doesn't support or encourage building partnerships or capacity. Reporting only output data, such as the number of surgeries performed, focuses attention on the short-term, low-impact activities that can be performed during an MSO and omits any useful information on capacity-building activities, such as training other surgeons on specific issues, or other more substantively qualitative metrics. Often, the types of activities which produce this type of output data (easily summarized on a single briefing slide) reflect relatively high-cost, low-impact activities – the exact opposite of the partnership and capacity building activities indicated by the mission objectives.

Another significant issue with current MSO reporting is that the terminology used in these reports is not standardized; one mission may report "29,317 services" performed and another mission may report "80,000 visits" and the terms 'services' and 'visits' are not consistently defined.
The level and methodology by which this data is reported also does not allow any comprehensive analysis or benchmarking to be performed, preventing any meaningful improvement in mission performance. Reporting these types of measures of effort provides information on the number of patients ‘seen,’ but provides little to no information on what services were provided to the patients that may have improved the quality of their health. Without any information on the exact nature of the intervention provided to the patient(s) or information to track the longitudinal outcome of the intervention(s) on the patient or patient population, there can be no analysis of the effectiveness and impact of those interventions or comparison with international data on cost effective interventions, such as that presented in the WHO products, “Priorities in Health” and the longer “Disease Control Priorities in Developing Countries.”

A review of over a thousand reports from lessons learned and after action reviews (AARs) of humanitarian assistance/disaster relief missions from 1996 to 2007 revealed that the vast majority of these reports identified only measures of effort (or output data); suffered from a lack of a standardized data collection method; and focused on recording the scope of the mission effort instead of evaluating the effectiveness of the mission. What is needed is a framework that will support the development of measures of effectiveness which align with the COCOM’s end-state goal and ongoing analysis of the activities performed during an MSO.

3.5 Recognizing the HN Role

Key to the strategic goal of building partnerships is recognizing the existing capabilities and capacity of the HN. As the anecdote in the text box illustrates, the HN professionals often have talent, expertise, and knowledge that can serve as resources to the MSO team. In fact, one of the more successful Subject Matter Expert Exchange (SMME) topics is to ask the HN to brief the MSO team on their ‘Public Health Successes.’ This exchange provides the U.S.-centric team a great deal of information on how to be successful in the HN environment, and makes a dialogue possible with the HN.

A humanitarian assistance group showed up to teach hand hygiene to surgeons. A bit into the presentation, one of the surgeons stood up and said, “I was trained at Oxford, two of my colleagues did their residencies at Harvard, and one used to be on the staff at the Mayo Clinic. We do not need you to tell us about hand washing. What we need is a working generator so that we can sterilize our equipment.”

Anecdote from a Participant in MSO Missions

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This Handbook recommends activities and measures that will help transition from providing short-term direct care to longer-term interventions which improve population health and/or the HN capacity. By providing a ‘menu of services’ to a HN for review as part of the planning process, the mission planning team can allow the HN to select those activities which they consider to be of greatest value for the MSO mission.

3.6 Summary
In the last 40 years, the scope of the Navy’s operational spectrum has expanded to include stability operations, which encompasses humanitarian assistance and disaster relief. The DOD’s role in these missions has also grown and their significance in furthering DOD’s strategic goals has also increased.

At present, proven techniques of providing health/public health services to a Host Nation population are used in support of stability operations, but these activities may not always adequately support the ‘soft power’ goals of building partnerships and capacity in other nations. The DOD needs to develop a monitoring and evaluation framework that presents measures of effectiveness that allow commands to assess the activities and capabilities executed in any given MSO.
Establishing the Monitoring & Evaluation Framework

This section will present the monitoring and evaluation framework that will be used to define measures of effectiveness and performance for MSOs.

4.1 Many Monitoring and Evaluation Frameworks Exist

Developing operational assessments requires a monitoring and evaluation framework that links defined indicators, or measures, to defined outcomes and impacts. Multiple monitoring and assessment frameworks exist; a short list of those recommended for MSOs includes the following:

- U.S. Navy TACMENO 3-32.2-09, "Operational Assessment," July 2009

In these and multiple other references, a monitoring and evaluation framework is proposed and the user is left with the significant task of then applying the framework to develop appropriate measures and indicators. For MSO missions with durations greater than a year, applying a framework and defining indicators specific to the mission is appropriate. However, the majority of MSOs executed by DoD are short term missions, often less than two weeks in duration, and this technique is onerous for such missions. The goal of this document is to apply a results framework and define objectives and indicators that can be meaningfully applied to such missions to promote consistent and meaningful reporting of mission outcomes and effectiveness. Of course, if the COCOM has defined measures and indicators for a specific mission, these medical indicators would need to be adjusted to be consistent with the command guidance. This document will apply a results framework, as outlined in the RAND reference and described in the next section, to develop measures of effectiveness (MOEs) and measures of performance (MOPs) for MSOs.

The benefit of planning and executing humanitarian assistance projects within the logical framework is that the program defines the variables to be measured and their relationship to each other. The internal evaluation process links activities with effects. Organizations that have made a concerted effort to improve humanitarian performance, learn from past lessons, and embrace accountability have adopted the logical framework as central to their operations.

The logical framework process requires planners to formally state goals, objectives, outputs, activities, and inputs...

LTC Jeff Drifmeyer and COL Craig Llewellyn, "Toward More Effective Humanitarian Assistance," Military Medicine, March 2004
4.2 The Results Framework for MSOs

The results framework straightforwardly defines and relates the various concepts required for monitoring and evaluation; Figure 2 introduces an inputs-activities-output-outcome-impact relationship, based on a figure used in the RAND Handbook\textsuperscript{36} that will be used as the overall framework for monitoring and evaluating MSO missions. An example of dental services is used to illustrate this framework.\textsuperscript{37}

![Figure 2: Results Framework for Adaptive Force Packages](image)


\textsuperscript{37} NOTE: this figure has been changed slightly from its original depiction; the term 'Activities' is used instead of 'Processes' and the color scheme has been modified slightly, in order to improve the clarity of the current discussion. In addition, a medical example is used (providing dental services) instead of the original 'building a well' example.
USAID defines the concepts presented in this framework as follows:

- **Impact**: a result or effect that is caused by or attributable to a project or program. Impact is often used to refer to higher-level effects of a program that occur in the medium or long term, and can be intended or unintended and positive or negative.\(^{38}\)

- **Outcome**: a result or effect caused by or attributable to a project, program or policy. Outcome is often used to refer to more immediate and intended effects.\(^{39}\)

- **Output**: the products, goods and services which result from an intervention\(^{40}\)

- **Activity**: a specific action or process undertaken over a specific period of time by an organization to convert resources to products or services to achieve results.

- **Input**: resources provided for program implementation. Examples are money, staff, time, facilities, and equipment.\(^{41}\)

In military terms, impact is often described as 'end states' or 'effects.' The desired impact of both Continuing Promise and Pacific Partnership is to strengthen the relationships with host and partner nations. The health service support to these programs focuses on strengthening these relationships through the provision of healthcare, either through providing direct care to a population or by working with host and partner nations in enhancing the health system infrastructure, so these are known as the *health service support impacts*. The health service support impact directly supports to COMC strategic objectives.

Outcomes are more specific in nature than impacts; in this document, outcomes will be associated with adaptive force packages, so that there will be oral health outcomes, surgical care outcomes, and eye care outcomes.

Outputs will describe the capability-specific objectives for a single mission, and activities will be those actions or processes taken to achieve those outputs. For example, an output for a single mission might be to educate patients on oral hygiene; the activities in support of that output would include patient education sessions. Inputs will not be addressed in this document, as they are defined by the respective adaptive force packages. In this results framework, MOEs are indicators that measure outcomes and MOPs are indicators that measure outputs.

This document applies this results framework *only to the health service support impact, outcomes, and outputs*. The health service support impact is defined consistent with and in support of the combatant command strategic objectives recognizing that health is a means to support the combatant command's objectives. This approach will allow the Military Health System (MHS) to focus on improving health service support in support of stability operations across multiple commands, missions, and strategic environments. Again, this approach applies primarily MSOs of short duration; longer missions should develop indicators and measures specific to the mission.

In the following sections, the impact, outcomes, outputs and activities will be defined for MSOs.

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4.3 The Challenge of Measuring Global Health

4.3.1 Measuring Global Health Indicators

[Much of the material in this section is abstracted from a paper on Global Health Indicators in the Canadian Medical Association Journal].

The long-term goal for HCA mission and program monitoring and evaluation is to define and measure population health indicators that are relevant to mission and program performance. This section will provide a brief description of the key challenges for achieving this goal and explaining the approach for this document.

Defining and measuring valid population health indicators requires an understanding of:

- The nature of global health indicators
- The spectrum of information management capabilities around the world
- Challenges in collecting data to measure global health indicators
- Selecting good indicators
- Ensuring valid measurements of the indicators

Global health indicators can be divided into those that directly measure health (e.g., diseases, deaths, use of services) and indirect measures (e.g., social development, education and poverty indicators). The global health indicators used in developing countries for the most part address morbidity, mortality, and important precursors of both. In contrast, in developed countries a large proportion of the key health indicators reflect lifestyles and individual behavior, such as physical exercise, smoking, diet, or substance and alcohol abuse. Because of cost constraints and limited logistic capacity, few developing countries are able to maintain death, birth or disease registries. Data generated by health care institutions are more readily available and more frequently used; but must be viewed with caution because they are not representative of the general population. In developing countries, a minority of the population (typically urban, wealthy and better educated) use modern medical services. Furthermore, for several presenting health problems, only patients exhibiting the most severe end of the spectrum ever reach a health care facility.

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42 Larson, Charles; Mercer, Alan, “Global Health Indicators: An Overview,” Canadian Medical Association Journal, Nov. 9, 2004; 171(10)
Fortunately, alternative, technologically appropriate, affordable data collection methods have been adopted in many developing countries, including national demographic and health surveys, one-off ecologic or household surveys, multiple-indicator cluster surveys, verbal autopsies and demographic surveillance systems within selected populations. A combination of data from these sources is then used to assess the health status of the nation as a whole or regionally. Traditional evaluation mechanisms, which compare areas with and without a given health program, are no longer relevant now that many health programs are in effect in so many parts of the world.

What is needed is a focus on a few indicators that can be used to consistently evaluate HCA missions in least developed countries as well as in developing countries. Because of the severely restricted resources and capacities in these countries, there is a need to select a limited set of indicators that are clearly applicable to monitoring, decision-making and health policy, and to measure them well. Some examples of such indicators include: infant mortality rate, child mortality rate, maternal mortality rate, low birth weight, prevalence of anemia in women of childbearing age and health life expectancy (HALE). 43

These indicators all meet the following desired criteria:

- Definition. The indicator must be well defined, and the definition must be uniformly applied internationally;
- Validity. The indicator must be valid (it must actually measure what it is supposed to measure), reliable (replicable and consistent between settings) and readily interpretable;
- Utility. The indicator should provide information that is useful to decision-makers and can be acted upon at various levels (local, national and international).

The validity of published health statistics from developing countries is variable and extremely difficult to assess. Validity can be threatened in several ways. First, it is adversely affected by variations between countries in definitions of health and illness states, by the choice of easy-to-reach but usually unrepresentative populations for surveys, and by the underestimation or overestimation of denominators. Second, denominators tend to be based on the most recent census and the application of crude death and birth estimates; such data are often out of date and are vulnerable to manipulation. Third, numerators, such as the occurrence of an illness or health behavior, are also subject to multiple sources of error. They depend on a respondent’s capacity to understand the question and to recall an event or exposure, as well as a willingness to report what he or she recalls.

How can the validity and utility of global health indicators be improved? Countries and health care systems with restricted resources can consider several options, including:

- Measurement of a smaller number of indicators, specifically those with direct relevance to decision-making and high-priority health issues
- Use of more efficient sampling frames and procedures
- Continued refinement and validation of verbal autopsies
- Application of standard, internationally accepted definitions

43 Larson, Charles; Mercer, Alan, “Global Health Indicators: An Overview,” Canadian Medical Association Journal, Nov. 9, 2004; 171(10)
• Use of a district as the geographical unit of design, because this is the core administrative unit for government health and other programs in many countries

4.3.2 Strategy for Valid and Reliable Measurement of Indicators

A single HCA mission may include visits to multiple Least Developed Countries, Developing Countries, and Developed Countries. Given this disparity of capabilities, identifying and measuring global health indicators consistently across multiple countries presents a significant challenge. All too often, the countries for which the data is most useful are precisely those countries for which the data is not easily available. In addition, the purpose of measuring indicators is to guide – and correct, as necessary – health activities to ensure the maximum impact for the lowest cost.

The initial strategy proposed in this document is to use the WHO defined indicators and measurement data to assess program effectiveness, using measures of effectiveness (MOEs). As the programs continue to evolve and build solid relationships with HNs that provide access to valid and reliable measurement data, the same indicators could be used, but the measurements may be more specific to the performance of program and mission activities.

For measures of performance (MOPs), this document begins with many measures currently in effect – some of which are little more than ‘measures of effort,’ and not true measures of performance. But again, as the programs become more sophisticated in collecting valid data in partnership with the HN, these measures can continue to be refined to more accurately represent measures of health service performance during an individual mission.

For example, at present one MOP of a train-the-trainer course might be the number of HN trainers taught during a given visit to the country. Effectiveness data on how many additional people those trainers then taught over the next year is not available to the mission staff who provided the train-the-trainer instruction. However, additional missions that visit that HN in the future might be able to acquire that data, and the MOP for the first MSO mission could be improved with the additional data.

4.4 Objectives of Medical Stability Operations

This section will define the impact desired from health service support to stability operations, and this defined impact will then be applicable to all MSOs - where the impact, outcomes and measures have not been specifically defined already for that mission. This impact does NOT address the impact of the stability operation itself - only the impact desired from the medical portion of the mission. The impact will be defined in a manner that will be generally consistent with existing guidance and can be easily recognized as supporting the existing national, DoD, and theater guidance.

MSOs will strive to work in partnership with the HN, Partner Nations, and other relevant organization to improve global health, where WHO defines health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.’ The objectives for achieving this impact that are applicable to all MSOs (where the COCOM has not already presented specific and measurable MSO objectives) are:

• Support and strengthen the HN’s ability to reduce their burden of disease or injury
• Strengthen the HN's security forces/military and civilian health systems

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Victora, Cesar G; Black, Robert E, “Measuring Impact in the Millennium Development Goal Era and Beyond: A New Approach to Large-Scale Effectiveness Evaluations,” The Lancet, published online July 9, 2010 DOI:10.1016/S0140-6736(10)60810-0
In times of disaster, reduce the pain and suffering of the population and begin the process of recovery.

Improve the operational readiness of deployed U.S. military medical personnel.

These objectives are carefully crafted to meet multiple requirements. First, the above objectives are congruent with existing theater guidance of multiple combatant commands in that the objectives focus on building partnerships and capacity. The objectives focus the MSO on achieving long-term improvements in the health of the population and are possible only with an integrated, interagency approach.

The effectiveness of an MSO is measured against this defined impact; an effective MSO is only possible if the MSO selects activities which directly support the four objectives stated above, specifically: supporting existing international or national health programs in order to reduce the burden of disease and injury; conducting these activities in partnership with the HN (and other stakeholders); and in a manner that builds the capacity to sustain those activities within the HN.

Partnership means that MHS activities are conducted in partnership with the HN and the other relevant organizations operating in the area (NGOs, IOs, IGOs, and PVOs). Partnership requires establishing, expanding, and sustaining relationships with representatives from the HN and other organizations.

Strengthening the health system can only be done in partnership with the Host Nation and places the emphasis on capacity-building activities, instead of on those direct care activities which are limited in their value and effectiveness. An essential part of capacity building is building the human capital of a Host Nation by equipping health professionals with the understanding, skills, and access to information, knowledge, training, and strengthening of managerial systems that allow them to sustain and improve their health system.

The two objectives necessary to achieving the desired impact of improved health are 'Reducing the burden of disease and injury' and 'strengthening the HN’s health system.' These objectives are also explicitly stated goals of the WHO and USAID and ensures the objectives of an MSO are consistent with national and international public health goals. Both of these goals require that MSO activities focus on supporting existing national or international health programs that can be sustained by the HN.

This is especially important for missions of short durations, because such missions often “run the risk of manipulation by locals (the local elite gets to the front of the line) or incomplete...
coordination that increases the perceptions that the U.S. government is not listening to the needs of the local population.\textsuperscript{45} The optimal strategy for MSOs is for the DoD to cooperate with USAID and the relevant NGOs in supporting existing health initiatives, thus contributing to a long-term, synchronized U.S. government strategy using multiple, short-term missions. Finally, one of the explicitly stated objectives of the humanitarian and civic assistance mission is to "improve the operational readiness of deployed medical personnel."\textsuperscript{46} Naturally, a certain degree of competence and training is necessary prior to deployment, but many of these missions are also intended to improve the ability of military personnel to rapidly deploy and provide humanitarian assistance, when necessary.

\textsuperscript{45} Murphy, Sean; Agner, Dale, "Cooperative Health Engagement in Stability Operations and Expanding Partner Capability and Capacity," Military Medicine, Aug 2009, accessed from http://findarticles.com/p/articles/mi_qa3912/is_200908/ai_n35631111/?tag=content;col1 on 23 Dec 10

5 Defining Outcomes for Medical Stability Operations

This section will define a set of outcomes that can lead to the impact defined in the previous section; these outcomes are associated with the adaptive force packages, such as dental or eye care services. Associating the outcomes with defined adaptive force packages allows medical and mission planners to deploy a capability with an associated set of outputs, activities and measures for a given mission, ensuring a consistent set of processes for collecting and reporting of mission data.

5.1 Adaptive Force Packages

To achieve the impact defined in the previous section, a wide array of possible outcomes could be defined, each contributing to one or more of the objectives defined above. The outcomes proposed in this Handbook build upon Pacific Fleet's (PACFLT's) work in defining adaptive force packages in support of MSOs. PACFLT first developed, and BUMED later refined, a “Menu of Health/Public Health Services” common to MSOs, depicted in the Figures 5 and 6. As these health/public health services become defined adaptive force packages, each force package will have a set of outcomes, activities and measures associated with the package. For example, when mission planning directs that a “surgical package” is needed, then the surgical package will be deployed with pre-defined staffing, equipment, supplies – and outcomes, activities and measures. This will allow for consistent and sustained planning, executing and evaluating of MSOs.
The Menu of Health Services figure categorizes the types of activities encompassed by health services and differs slightly from the menu of health services developed by PACFLT in the following minor ways:

- It identifies the ancillary services of pharmacy, x-ray, lab and biomedical repair as support services subordinate to health services; the original menu of services identified these services as a separate, larger category;
- It moves optometry as a service equivalent to dental and surgical, due to its prominent value in MSO missions, and re-labels it as 'Eye Care';
The Menu of Public Health Services in the above figure categorizes the types of activities encompassed by public health services and differs from the original public health services menu developed by PACFLT in the following ways:

- Eliminated the two main categories under the Public Health Services, Veterinary and Preventive Medicine.
- Veterinary was further delineated into different types of animal care; veterinary public health support is common in many aspects of Preventive Medicine, so the veterinary category was renamed as “Animal Health” to include that category of public health and to allow for the presence of veterinary public health personnel on the other teams.
- The Infectious Disease category was renamed as Epidemiology and Disease Surveillance.
- The service “Food and Sanitation” was split into two different categories: “Sanitation” and “Food Safety and Security”.
- Water Quality is now known as “Drinking Water”.
- Environmental Engineering is now known as “Environmental Health”.

NOTE: As a result of conversations with BUMED Preventive Medicine and the DoD Veterinary Support Activity, March 2010.
Pest/Vector Control is now known as “Pest Management”
Infection Control was added
Each category of service, such as dental or animal health, supports the health/public health service support objectives by defining a coordinated set of activities, directed at achieving the stated outcomes.

5.2 Defining Outcomes
The categorization of health and public health services explained in the previous section sets the stage for defining the outcomes that could support the MSO health service support objectives.

Navy Medicine is re-tooling the traditional concepts of medical support to stability operations in order to achieve significant health improvements by supporting an effective, efficient, and HN-led platform for the sustainable delivery of essential health care and public health programs.

These health service support outcomes are generally applicable to all MSO missions; the outcomes would be relevant and applicable whenever their associated adaptive force package is deployed.

<table>
<thead>
<tr>
<th>Outcomes for MSOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improve oral health</td>
</tr>
<tr>
<td>• Reduce pain and suffering from injuries or emergent/existing conditions, especially in times of disaster through timely and appropriate surgical intervention</td>
</tr>
<tr>
<td>• Improve the treatment and management of infectious disease, focusing on TB, malaria, and HIV/AIDS</td>
</tr>
<tr>
<td>• Improve the health status of women</td>
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<tr>
<td>• Improve the health status of children</td>
</tr>
<tr>
<td>• Improve visual function and reduce preventable causes of blindness</td>
</tr>
<tr>
<td>• Optimize health by addressing the complex, interacting causes of poor human health: unsafe water, poor sanitation, food insecurity, and proximity between animals, humans, and the environment.</td>
</tr>
<tr>
<td>• Enhance HN Disaster Preparedness</td>
</tr>
<tr>
<td>• Develop the health infrastructure by improving HN capabilities to provide laboratory, imaging, pharmacy, and biomedical repair support.</td>
</tr>
</tbody>
</table>

These outcomes, like the health service support objectives, are defined from a strategic perspective and are the desired results over an extended period of time. Improving the health outcomes of a population and strengthening the health system of a HN are objectives that require sustained and consistent attention over a period of 5, 10 or even 25 years. The outcomes would be selected at a program level (for example, by Pacific Partnership or Continuing Promise) and the appropriate adaptive force packages would be deployed in multiple missions to support these outcomes.

These are not outcomes that can be achieved in a single 2-week visit of a hospital ship or during a 10-day veterinary assistance visit; these outcomes require a sustained, focused effort over
multiple missions over a period of time with ongoing contact. Measures of performance, discussed later, will address the performance of individual missions.

These outcomes were selected based upon current national and international global health initiatives sponsored by the U.S. Global Health Initiative, USAID, WHO and Millennium Challenge Corporation (MCC). These initiatives recognize that many of the diseases and health conditions that account for a large part of the disease burden in developing and less-developed countries are far less common in high-income countries.

Currently, eight diseases and conditions account for 29 percent of all deaths in low- and middle-income countries: TB, HIV/AIDS, diarrheal diseases, vaccine-preventable diseases of childhood, malaria, respiratory infections, maternal conditions, and neonatal deaths. As per current initiatives, the outcomes proposed for MSOs therefore focus on these specific issues.

As the quote to the right indicates, the challenge is to define health service support activities that provide long-lasting impact.

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Example of an Effective MSO

"The Brigade moved south to occupy the oil-rich city of Kirkuk. For the next 11 months, the 173d Bde participated in stability and support operations... Bde commanders ordered the medical element to deploy to host-nation clinics and provide health care to civilians. The 173d Medical Unit sought to achieve some measure of lasting improvement in community health and/or government.

For a variety of reasons, to include that measles vaccine coverage was below 50%, the Kirkuk Department of Health and the local NGOs identified a measles vaccination campaign as a logical, initial target of military-civic action.

It was important that the project be perceived as an inaugural event in a 'redefined' future. A significant goal was to prepare the DOH and the people of Kirkuk for the upcoming USAID and United Nations Children’s Fund-sponsored 'National Vaccination Days' to be held on the 22d day of each month, beginning in June 2003”

Richard Malish, John Scott & Burhan Omer Rasheed, "Military-Civic Action: Lessons Learned from a Brigade-Level Aid Project in the 2003 War with Iraq," Prehospital and Disaster Medicine

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6 Defining Measures of Effectiveness for Medical Stability Operations

Now that the MSO outcomes have been defined, the measures of those outcomes – measures of effectiveness or MOEs – can be defined.

The strategy for developing MOEs assumes that long-term, strategic measures of health outcomes should focus on the health status of the HNs, and that the assessment of that health status should be performed by internationally recognized agencies, such as WHO, USAID or UNICEF. This strategy is also emphasized by the NATO publication, Allied Joint Civil Military Medical Interface Doctrine (AJMED P-6), which recommends that measures of effectiveness correspond with the Millennium Development Goals and measures.

Measures of population health are extremely complex and require a great deal of information, validated in a variety of ways. One of the challenges to developing meaningful measures for stability operations is that relevant and meaningful measures often require obtaining baseline measurements, an identifiable denominator (such as the size of the target population) and knowledge of the outcomes from the services provided. This type of information is hard to acquire and requires frequent follow-up assessments.

The strategy recommended in this Handbook is to leverage the existing information collected by WHO, USAID, and other international agencies to measure the effectiveness of MSOs over an extended period of time. Whenever possible, the WHO measures are used, so as to enable building partnerships in the international arena.

To be clear, this Handbook is NOT recommending that DoD get into the business of measuring health indicators, Disability Adjusted Life Years (DALYS), or any of the other internationally accepted measures of health. Instead, it is recommending that DoD use existing international measure, such as WHO measures or measures associated with the Millennium Development Goals (MDGs).

The benefits of this approach include the following:

- Aligning the efforts of MSOs with national and international global health initiatives;
- Supporting a long-term perspective of MSOs, more consistent with the strategic objectives of COCOM Theater Security Cooperation Plans (TSCP);

Why should DoD measure the impact of humanitarian assistance (HA) programs?

- First, doing so can allow planners to make mid-course corrections on current projects, and it can provide them with information to improve the quality of future activities. By creating a feedback loop of lessons learned, the monitoring and evaluation (M&E) process in HA would improve efficiency and ensure that projects contribute to operational objectives.

- Second, collecting and sharing data would increase planners’ ability to deconflict activities with other agencies and NGOs.

- Third, data analysis helps to showcase quantifiable results, thereby minimizing the chances of negative press surrounding HA activities.

Colonel Eugene V. Bonventre, "Monitoring and Evaluation of DoD Humanitarian Assistance Programs"
Sustaining a focus on capacity building, recognized as an essential element of both stability operations and MSOs;

- Encouraging coordination between and among multiple MSOs, in order to achieve a profound impact over a longer period of time;
- Ensuring more effective coordination with USAID efforts
- DoD or mission staff are NOT responsible for collecting data on population health outcomes and measuring changes in population health.

The obvious disadvantage of this approach is that it does not allow a direct “cause-and-effect” relationship from a single MSO mission and any improvement in an MOE. Determining the population health outcome from a mission of short-term duration would be very difficult, if not impossible. Measures of effectiveness will therefore focus on long-term impact of multiple missions, and the measures of performance will focus on the achievements of a single mission. An MSO can claim that its activities generally led to an improvement in the desired outcomes if and only if those activities met the following requirements:

- The completed activities were in support of a defined, global or national health program;
- The activities performed during the MSO were conducted in collaboration with the HN and other, relevant agencies (such as WHO, USAID, and NGOs), as appropriate;
- The activities served to improve the capacity of the HN and can be sustained by the HN or other stakeholder.

With this discussion in mind, the proposed MOEs are provided below.
MSO Measures of Effectiveness (MOEs)

The Decayed, Missing and Filled Teeth Index (DMFT) index for 12 year olds (WHO database)

Reduction in the Disability Adjusted Life Years (DALYs) for the following causes (WHO Global Burden of Disease database):

- Injuries
- Maternal conditions (maternal hemorrhage and obstructed labor)
- Congenital abnormalities
- Cataracts

Incidence, prevalence, and death rates associated with tuberculosis, specifically:

- TB incidence rate per year per 100,000 population (MDG and WHO indicator)
- TB prevalence rate per 100,000 population (MDG and WHO indicator)
- TB death rate per year per 100,000 population (MDG indicator)

Incidence and death rates due to malaria, specifically:

- Malaria death rate per 100,000 population, all ages (MDG indicator)
- Notified cases of malaria per 100,000 population (MDG indicator)

Incidence, prevalence, and death rates due to HIV/AIDS, specifically:

- Percentage of people living with HIV/AIDS, 15-49 yrs old (MDG indicator)
- HIV prevalence rate, women 15-49 years old, in national based surveys (MDG indicator)
- Deaths due to HIV/AIDS per 100,000 population per year (WHO indicator)

Health Life Expectancy (HALE) at birth, in years, specifically:

- HALE at birth for females (WHO indicator)
- HALE at birth for males (WHO indicator)

Maternal mortality ratio (per 100,000 live births) (WHO and MDG indicator)

Child mortality, specifically:

- Children under 5 mortality rate per 1,000 live births (MDG and WHO indicator)
- Infant mortality rate (0-1 year) per 1,000 live births (MDG and WHO indicator)

Water and Sanitation, specifically:

- Percentage of deaths among children under 5 years of age due to diarrheal disease (WHO indicator)
- Proportion of the population using improved drinking water sources, rural (MDG and WHO indicator)
- Proportion of the population using improved sanitation facilities, rural (MDG and WHO indicator)
7 Defining Outputs for Medical Stability Operations

In previous sections, the discussion focused on programmatic concepts such as impact, outcome and measure of effectiveness. These terms refer to the objectives and measures associated with a theater or command level program that deploys multiple missions over an extended period of time, such as Pacific Partnership or Continuing Promise. This section, and the next two sections, will focus on the outputs, activities and measures of performance associated with a single mission.

In this document, outputs will refer to the mission readiness objectives of a specific mission or to the objectives of a specific adaptive force package for a given MSO in support of the stated MSO mission objectives. Mission objectives are often broad statements of intent; outputs are much more specific and apply to each event conducted during the mission, such as an individual MEDCAP.

Mission objectives are often broad statements of intent; outputs are much more specific and apply to each event conducted during the mission, such as an individual MEDCAP. Once the mission objectives have been defined, the medical planners will select the appropriate, supporting outputs, which will then drive the selection of the appropriate adaptive force packages and their supporting resources. In addition, the data collection needs will be defined for each output, meaning that if an output is identified for a mission, then the data collection and reporting requirements will also be pre-determined. Several humanitarian and civic assistance missions have cited data collection and measures as a significant mission issue; pre-defining outputs and their measures should significantly improve this issue and enhance the overall planning for an MSO.

Outputs should be defined to be "specific, measurable, achievable, relevant, and time-bound." An initial example of an output (outputs and measures for specific services are in the process of being developed) is to "optimize limited dental services (such as exams, extractions, etc) for two key target populations: youth and the elderly."

7.1 Mission Readiness Outputs

Mission readiness outputs, or those outputs specific to an individual mission that do not pertain to a specific health or public health service are in development at this time. Typically these would be outputs that could be generally applied to multiple missions that would support mission analysis and benchmarking of missions. Some examples of potential mission readiness outputs include:

- NGO Coordination: did the mission planners engage the appropriate NGOs in planning and developing the mission?
- NGO Performance: did the NGOs who agreed to support the mission provide the agreed upon staff and equipment for the mission?

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2008 Pacific Partnership Objectives
- Strengthen relationship with host and partner nations
- Build partner capacity to conduct peace, stability, and consequence management operations
- Build awareness and detection capacity of key countries to counter public health threats

_Briefing, Carl Nishioka, USPACFLT, "Pacific Partnership Planning: From the Beginning"

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• Mission Staffing: were all mission personnel identified and assigned to the mission in a timely manner?

7.2 Summary

Ideally, these mission readiness and health/public health outputs are identified and defined by subject matter experts (see the appendices of this document for the outputs, activities and measures defined to date); the medical planners will select the appropriate output after consultation with interagency partners and the HN. However, this does not preclude the definition of new outputs at any given time. Over time, each adaptive force package will include a set of defined outputs, supporting activities, measures of performance, and data collection and reporting processes that are pre-determined and available for any mission. This will support continual improvement processes across multiple missions and commands, enhancing the performance of the Military Health System (MHS) in its support of stability operations.
Redefining Activities for Medical Stability Operations

The previous sections present definitions for the impact, outcomes, outputs and MOEs to be used in the planning, execution, and reporting of future MSOs. This section focuses on the activities conducted during MSOs and how these activities need to be defined and evaluated with respect to their effectiveness in supporting the defined outputs and desired outcomes for MSOs. Now that a hierarchy of objectives has been defined, using the results framework, MSOs must employ those activities that are consistent with that framework and support the objectives. The challenge for MSO missions is to provide not just what services are available, but those services that are needed as defined by the HN and COCOM.

At present, most health service support activities in MSOs consist of direct patient care services, usually delivered through the vehicle of a MEDCAP, DENCAP or VETCAP. These direct patient care services are of value at the individual level, but may not assist the HN in performing and sustaining effective interventions that lead to long-term impact at the population level. In fact, by providing care at a level not sustainable by the HN, these programs can reduce the population’s confidence in their own government and run the risk of decreasing HN stability by the uneven allocation of services and the perception of favoritism.

An intervention is an activity using human, physical, and financial resources in a deliberate attempt to improve health by reducing the risk, duration, or severity of a health problem. The emphasis on a deliberate, systemic effort means that an intervention is not simply anything that improves health; for example, although breastfeeding protects infants’ health, it is not itself an intervention. In contrast, a program to encourage new mothers to breastfeed is an intervention. Similarly, providing vitamins to breastfeeding mothers is an activity that may improve the mother’s and child’s health, but it is not an intervention. A program that distributes vitamins at defined intervals to breastfeeding mothers is an intervention.

To allow MSOs to reach their full potential, the current activity focus (provide what services are available) must shift to an intervention focus (provide those services that are needed to improve the health of the HN population), and to do this, medical planning staffs need to communicate the value of these changes to the COCOM mission planning staffs. The international global health community has expended a great deal of effort in defining interventions and in studying what makes an intervention successful or cost-effective. This section will briefly review the nature of interventions.

Interventions can be directed against an injury or disease (such as trachoma, a bacterial infection of the eye), a condition associated with or deriving from a disease (such as blindness, which can result from trachoma), or a risk factor that makes the disease or condition more likely (such as...
the lack of hygiene that leads to trachoma). For example, the following interventions are known to be effective in reducing the burden of diarrheal disease in a local population:

- Encourage more hygienic feeding practices, such as programs that promote exclusive breastfeeding during a child's first 6 months of life;
- Improve feeding practices such as promoting education on hygienic food storage and preparation and providing vitamin A and zinc supplements;
- Provide rotavirus immunizations, as part of a national immunization program;
- Provide water storage and transport containers with small openings and educate the population on the use of these containers. One of the main causes for the spread of diarrheal disease is the practice of 'dipping' a container into stored water; containers with small openings force people to pour the water out (and keep hands out of the water);
- Improving diarrheal case management through education programs on the use of Oral Rehydration Treatments (ORTs).

Interventions can be categorized by their type, as follows:

- Product-intensive interventions involve the simple transfer of standardized technology to an individual or to an entire population (e.g., mass drug administration, immunizations, and mineral fortification);
- Service-intensive interventions include diagnostic and therapeutic health services usually provided not only in the clinic setting, but also in the home or at school. Examples range from primary care services, to surgical procedures, to treatment of communicable and non-communicable diseases;
- Behavioral change interventions are designed to induce or encourage an individual behavior change or habit modification to achieve specific health goals (e.g., the use of oral rehydration therapy to treat childhood diarrhea)
- Environmental control interventions target risks associated with the physical environment that are largely beyond the individual’s control. These interventions are focused on prevention and are used in conjunction with other treatments or alone when effective vaccines or other prophylaxes are unavailable.

For the most part, health service interventions form a web of services that work best when they are coordinated. Screening provides no benefits without subsequent treatment, referrals are no help without access to the required care, and treatment centers will be overwhelmed if essential preventive care is neglected.

Delivering coordinated health interventions requires participating with and contributing to the existing health system. Activities that support or augment existing national interventions are much more likely to improve the capacity of the HN and the health of the population over time. Health system development is a phased process, beginning with the use of institutions, resources,

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and staffing currently available to establish a platform for health care delivery. Over time, partnership with the HN allows for the expansion and augmentation of these interventions. All interventions are activities, but not all activities are interventions. In this document, the term activity is initially used because existing practices within MSOs do not yet employ interventions as a common practice; it will take time to shift from an activity focus to an intervention focus. Interventions are activities that can be implemented on a larger scale with the potential for national impact. Universal acceptance of this re-definition of health activities from short-term direct care to comprehensive impact on health and public health interventions through education, training, and development programs is a requirement for a successful MSO which supports the COCOM’s end-state goals.

The activities recommended in this document (see appendices for recommendations on the activities for individual services) have been recognized as effective by the WHO (or other relevant international aid agencies) or from experience with humanitarian assistance missions. Another important source for effective interventions is the 'Sphere Project,' which "establishes standards of performance for several functions of humanitarian assistance, including health care." To the greatest extent possible, the activities within an MSO should be defined at the intervention level to allow benchmarking against other international assistance programs and to support evaluation of the activities.

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9 Defining Measures of Performance (MOPs) for MSOs

Measures of performance assess the extent or the manner in which a mission/program completed the desired set of activities. Although MOEs are strategic in nature and are not directly linked to the outcomes of a specific mission, MOPs are defined with respect to the activities of a specific mission.

For some services, the outputs and activities are still being defined, and MOPs are in development (see appendices for recommendations on MOPs for individual services). Ideally, the outputs would express mission/event and service-specific objectives, and the measures would then evaluate the degree to which those objectives were met during the mission/event. The measures can be at any of the relevant levels, from assessing the effectiveness of a single intervention to assessing the performance of the service or mission as a whole.

A particular challenge is articulating measures for capacity building activities, since the best measures for these types of activities often require access to data that may not be immediately available to mission personnel. For example, a good measure for a 'train-the-trainer' activity would include information on how many individuals were trained by the new trainers, but this information is, obviously, not immediately available and requires information to be collected from the relevant HN agencies weeks, or even months later.

For this reason, some of the MOPs discussed in this document are essentially 'measures of effort.' As collaboration across multiple missions becomes more common, allowing for more access on the effects of previous missions, more sophisticated measures will be possible.

Some examples of proposed MOPs are the following:

- Percentage of the MEDCAP population who received some form of oral health care
- Support the HN oral hygiene programs, such as school-based oral hygiene
- Support HN in improving hygienic feeding practices and providing oral rehydration treatments and education
- Support HN in developing a national protocol for cervical cancer prevention
- Support HN by providing training on pregnancy planning and spacing
- Support HN by providing training to midwives using the Life Saving Skills course
- Support HN by providing the “Helping Babies Breathe” course to birth attendants
- Work with HN to provide screening eye exams and provide HN with data on incidence of refractive errors
- Support the HN plan for national rabies vaccination program

It is critical to define MOPs that encompass existing MSO activities, such as providing direct care services, as well as MSO interventions, to include interventions focused on capacity building. Allowing the definition of MOPs to include some of the existing level-of-effort measures will provide a transition between existing reporting formats (see the section on MSO Reporting) and future MSO reports.
10 Incorporating Monitoring and Evaluation in Medical Stability Operations

Previous sections presented the monitoring and evaluation framework for MSO missions; this section will focus on how to apply that framework in monitoring and evaluating programs and/or missions.

10.1 Monitoring and Evaluation

Generally speaking, ‘monitoring and evaluation’ activities are conducted to enhance an existing project or to improve the performance of future projects. In this document, measures of effectiveness are used to assess a program (and thus do not refer to any specific mission) and measures of performance are used to assess the activities of an on-going mission.

In a mature monitoring and evaluation program, various activities will have been studied sufficiently to support ‘benchmarking’ and the monitoring and evaluation processes will allow mission planners to correct, or improve activities during a mission. This is not possible at present, because the current data collection processes do not include defined outputs that would allow a current activity to be compared to a desired standard or benchmark.

For example, during current missions, data is collected on how many patients are seen by a DENCAP, but since no standard or benchmark has been defined for dental services, monitoring of this data does not allow for any evaluation of dental activities. This document recommends (Dental Service Appendix) that one output for dental services be to “provide some form of dental service to all patients presenting to a MEDCAP/DENCAP site.”

Data collected from the USS BOXER mission to El Salvador as a part of Continuing Promise 2008 indicates that dental services were performed for only 17.9% of the total patient census. Comparing the data collected during a mission (a monitoring activity) to a defined output would allow for evaluation of that activity and improvement in the performance of the activity.

When monitoring and evaluation is incorporated into the cycle of planning, executing, and analyzing a mission, it supports a continual improvement process that can lead to increased mission and program effectiveness. The figure below illustrates this cycle of improvement, explicitly depicting the monitoring and evaluation activities that should be included in each phase of a mission and providing explicit examples of those activities.

USAID defines monitoring as “the collection and analysis of routine measurements to detect changes in status. Monitoring is used to inform managers about the progress of an ongoing intervention or program, and to detect problems that may be able to be addressed through corrective actions.

Similarly, USAID defines evaluation as “a systematic and objective assessment of an on-going or completed project, program or policy. Evaluations are undertaken to (a) improve the performance of existing interventions or policies, (b) assess their effects and impacts, and (c) inform decisions about future programming. Evaluations are formal analytical endeavors involving systematic collection and analysis of qualitative and quantitative information.

Developing a Prototype Handbook for Monitoring and Evaluating DoD Humanitarian Assistance Projects (RAND)
Each of the following subsections will describe how monitoring and evaluation activities are included in each phase of the mission cycle.

### 10.2 COCOM and Mission Objectives

Generally the COCOM will determine the impact and outcomes for an MSO at the program level, assuming that the mission is occurring within the context of a long-term focus on building partnerships and capacity within a region as part of the COCOM’s Theater Security Cooperation Plan (TSCP). Both Pacific Partnership and Continuing Promise are examples of this type of mission, as are the Afghan reconstruction efforts.

The impacts and outcomes presented in this document were deliberately chosen to be consistent with and supportive of the strategic objectives of these programs, which have included cooperative health engagements as part of their strategies. However, it is possible that a program might not include health engagement activities or might include only a limited degree of health engagement as part of its strategy. In any case, the theater planners will initially determine the scope and nature of the health service support to the stability operation.

Determining these outcomes could be based on a review of the existing MOEs for HNs; the medical planners could use the WHO Statistical Information System (WHOSIS) to find the...
values for these measures for the year prior to the first known mission to that country and for
previous mission years.

Then, for any single mission within that program, the program planners will select the desired
health outcomes for that mission: perhaps the mission will include only a veterinary assistance
team to focus on animal health, or an eye care team. Once the specific outcomes have been
selected, the appropriate required capability (adaptive force package) is determined, which then
informs the Request for Forces (RFF) process.

The table below illustrates how the MSO outcomes might be determined, given an existing set of
program objectives. Note that the MSO impact and outcomes are consistent with, and in support
of program and mission objectives.
### Table 3: Aligning MSO Impact & Outcomes with Program & Mission Objectives

<table>
<thead>
<tr>
<th>Program Objectives</th>
<th>MSO Objectives</th>
<th>Mission Objectives</th>
<th>MSO Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner capability for delivering essential services to its people is improved</td>
<td>Work in partnership with the HN, Partner Nations, and other relevant organizations to:</td>
<td>Strengthen relationship with Host and Partner Nations</td>
<td>Dental:  improve oral health</td>
</tr>
<tr>
<td>Partner Nation capacity to provide human services to its population is improved</td>
<td>• Support and strengthen the HN’s ability to reduce their burden of disease or injury</td>
<td>Build partner capacity to conduct peace, stability, and consequence management operations</td>
<td>Surgical: reduce pain and suffering from injuries or emergent/existing conditions</td>
</tr>
<tr>
<td>Partners have the capacity to conduct effective peace, stability, and consequence management operations</td>
<td>• Strengthen the HN's security forces/military and civilian health systems</td>
<td>Build awareness and detection capacity of key countries to counter public health threats</td>
<td>Public health: optimize health by addressing the complex, interacting causes of poor human health such as unsafe water, lack of sanitation, food insecurity, and proximity between animals, humans, and the environment</td>
</tr>
<tr>
<td>Target population support for local government is improved</td>
<td>• In times of disaster, reduce the pain and suffering of the population and begin the process of recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target population views government ability to respond to disaster as positive</td>
<td>• Improve the operational readiness of deployed U.S. military medical personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with Partner Nations are enhanced</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**10.3 Mission Planning: Selecting Outputs and Activities**

During the planning sessions for the missions, the medical planners and mission planners (meaning the subject matter experts who will lead in providing specific services) will coordinate with the HNs and other relevant agencies in finalizing the list of desired outputs for the mission. Any given service may have a dozen or more outputs that are possible; the goal would be to select those outputs that would most enhance the partnership with the HN and build the capacity within the HN.
The outputs determine the scope of activities that will be performed during the mission, and therefore the logistical support requirements. Each output is associated with a measure of performance, which drives the data collection and reporting requirements for that output. Ideally, a ‘menu of services’ (a term first used by PACFLT) will be offered to the HN for consideration, and the HN will then select the desired outputs from this ‘menu of services.’ This will provide the HN with tactical control of the MSO mission activities in their country, while still providing the COCOM and mission personnel with strategic control. The planning sheets illustrated in the tables below capture the following information:

- **Mission History**: a summary of recent missions or U.S. government activities in each HN
- **Communication History**: a summary of key planning discussions with key HN stakeholders
- **Selected Outputs & Activities**: a list of the selected outputs and activities for each HN, and the point of contact in the HN who participated in the selection process

These mission planning sheets could be maintained in notebooks, spreadsheets, or in databases, as appropriate. In Table 4, a quick summation of recent missions is described and could include on-going activities sponsored by the WHO or USAID. This promotes information sharing among diverse missions and initiatives.

**Table 4: Example of a Mission Planning Sheet: Mission History**

<table>
<thead>
<tr>
<th>Country</th>
<th>Country X</th>
<th>Country Y</th>
</tr>
</thead>
</table>
| **History** | - USAF Humanitarian Assistance Rapid Response Team (HARRT) set up a mobile field hospital at WWWWW from 7-14 Oct 09  
- A MEDCAP/DENCAP were conducted in ZZZ from 13-19 May 06 | - A Veterinary Assistance Visit (VETAV) was conducted in XXX from 17-19 Jun 07 and in YYY from 24-29 Jun 07 |

The next table illustrates how planning communications could be captured; ideally, these summaries would also include the contact information of key individuals which would support the strategic goal of sustaining and enhancing relationships with HN stakeholders.
Finally, the last table illustrates a mechanism for reviewing outputs and activities with each HN, and identifying the outputs and activities the HN would prefer for the mission. A table similar to this could actually be used in discussions with the HN in identifying the desired services for the mission.

<table>
<thead>
<tr>
<th>Communication History</th>
<th>Date</th>
<th>Stakeholder Contact</th>
<th>Mission Contact</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17 Mar 10</td>
<td>Ms Jean Smith USAID</td>
<td>LTC James Jones COCOM</td>
<td>Reviewed on-going initiatives</td>
</tr>
<tr>
<td></td>
<td>20 Jun 10</td>
<td>Mr Yacuba Jones OIE</td>
<td>CPT John Doe 96th Civil Affairs BN</td>
<td>Reviewed potential services</td>
</tr>
<tr>
<td></td>
<td>7 Jul 10</td>
<td>LTC James Jones, Combatant Command</td>
<td>LTC James Jones COCOM</td>
<td>Identified desired outputs &amp; services</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Potential Outputs</td>
<td>Potential Activities</td>
<td>HN Contact</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------------</td>
<td>---------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Country X</td>
<td>Support national fluoridation program</td>
<td>Support development of a national fluoridation strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental</td>
<td></td>
<td>□ Assist in implementation of national fluoridation effort</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Evaluate on-going fluoridation efforts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Provide training support for fluoridation efforts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide as many dental services as possible at designated locations</td>
<td>Perform extractions (limited)</td>
<td>Dr Joe Wiley Dental School Dean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Target limited services to youth &amp; elderly</td>
<td>□ Perform restorations (limited)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Provide sealants to all children presenting at a DENCAP</td>
<td>□ Provide fluoride treatments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Provide varnishes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Perform screening exams</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Perform oral cancer screening exams</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Perform DENCHAPs @ locations XXX &amp; YYY</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide oral health education to patients</td>
<td>Support development of school and patient focused oral health education materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Provide oral health education materials (supplies &amp; marketing materials)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Teach oral health education to patients presenting at DENCAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide training to HN professionals</td>
<td>Demonstration of new digital crown system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Management of dental emergencies &amp; infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Laser dentistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Digital radiography</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SME Exchanges</td>
<td>Symposium on current oral health successes in HN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Symposium on latest dental education techniques</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10.4 Mission Execution: Data Collection

This phase of the mission cycle refers to the actual execution of mission activities; the primary monitoring and evaluation activity during this phase is collecting the data necessary to determine the measures of performance associated with the mission outputs. The appendices of this document specify the outputs, activities and measures of performance for each service.

For the output of providing as many dental services as possible to the inhabitants of a remote village, the measure of performance would be the percentage of the population who received a dental service. For the output of providing limited dental services to the youth and elderly sub-populations, the measure of performance would be the percentage of youths and elderly who received a limited dental service (e.g., exam or extraction), given the numbers of youth and elderly who presented for care.

For each of the training outputs, the following information needs to be collected:

- Date and location of class
- Class topic
- Class audience or participants: type of professional
- Number of attendees
- Expected results of the training (will the attendees train others, provide additional services to patients, etc.)

At present, only the total number of attendees for all classes is collected within any given service; this does not support assessing the effectiveness of any given training session. At this time, MOPs are determined based on the assumption that only data available during the mission will be used to calculate the MOPs; as missions become more integrated, and the data collected during one mission becomes available to mission staff on a follow-on mission, then MOPs can be determined using data collected during additional missions.

For example, if a train-the-trainer class is provided to a HN during one mission, the effectiveness of that class is currently assessed by the number of attendees of the class. The mission staff is very unlikely to have access to future information such as the additional number of classes taught by these attendees, now providing the training to other individuals. However, future missions to that same country may be able to collect that information – if mission data and information were collected and shared across multiple missions. This document encourages the collection and sharing of such information and sees these activities as vital to developing more sophisticated measures of performance.

10.4.1 Standardizing Data Collection and Reporting

Data regarding the total number of patients seen and procedures performed will still need to be collected for some time, since the various commands still expect this data. It will take some time to transition to a system which reports valid measures of effectiveness and performance; a significant challenge to this transition is the simple fact that such data can rarely be condensed to a single briefing slide.

However, this document recommends that the data collected be standardized with respect to terminology and how the data is collected. The table below proposes definitions for key terms used in reporting previous mission efforts.
### Table 7: Standardized Terminology for MSO Mission Data Collection

<table>
<thead>
<tr>
<th><strong>Patient Census</strong></th>
<th>The actual number of individual patients’ seen, or total number of patients. A patient may experience multiple encounters or services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visit</strong></td>
<td>A face to face contact between a patient and a provider who has primary responsibility for assessing and treating the patient at a given contact, and involving exercising independent judgment. Provider must be a clinician or a direct care professional.</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>A specific identifiable act or service involved in the medical care of a patient that does not require the assessment of the patient's condition nor the exercising of independent judgment as to the patient's care, such as a technician drawing blood, taking an x-ray, administering an immunization, issuance of medical supplies and equipment; i.e., colostomy bags, hearing aid batteries, wheel chairs or hemodialysis supplies, applying or removing a cast and issuing orthotics. Pharmacy, pathology, radiology, and special procedures services are also occasions of service and not counted as visits.</td>
</tr>
<tr>
<td><strong>Encounters</strong></td>
<td>The sum of the number of visits and the number of occasions of service.</td>
</tr>
<tr>
<td><strong>Procedure</strong></td>
<td>Healthcare provided during an encounter than can be separately defined and is provided in support of a diagnosis. For example: an extraction is a dental procedure provided during a dental exam.</td>
</tr>
</tbody>
</table>
As an example in applying these definitions, consider the following data provided by the USS KEARSARGE in CP 2008:

Table 8: Data Sample from USS KEARSARGE, August 2008

<table>
<thead>
<tr>
<th>Category: Dental Care</th>
<th>Deployment Total (To Date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Patients Seen</td>
<td>1679</td>
</tr>
<tr>
<td>Adults</td>
<td>1135</td>
</tr>
<tr>
<td>Pediatric Patients</td>
<td>544</td>
</tr>
<tr>
<td>Exams</td>
<td>359</td>
</tr>
<tr>
<td>Extractions</td>
<td>628</td>
</tr>
<tr>
<td>Sealants</td>
<td>1</td>
</tr>
<tr>
<td>Varnishes</td>
<td>334</td>
</tr>
<tr>
<td>Fluoride Treatments</td>
<td>2336</td>
</tr>
</tbody>
</table>

The patient census was 1,679 indicating the total number of individual patients seen to date by the dental element of the HCA mission. The data sample further specifies this census in terms of adult and pediatric patients.

The total number of visits for this category would be 359, since a dental exam constitutes a visit. Extractions are a procedure conducted during a visit, so the total number of procedures is 628.

The total number of services provided by the dental element would be the sum of the totals for sealants, varnishes, and fluoride treatments, or 2,671, since these are typically conducted by dental hygienists.

The total number of encounters would be 3,030, obtained by summing the totals for the number of visits, 359, and the number of services, 2,671.

It is recommended that the total scope of the medical mission activities be reported as follows:
- Patient census: total number of patients seen
- Number of Patient Visits: total number of visits or exams, broken down by medical, surgical (referring to a surgical screening visit) and dental
- Total Number of Surgeries
- Scope of Ancillary Services: broken down by number of radiological tests, number of prescriptions filled, and number of lab procedures performed.

10.4.2 Automating Data Collection

10.4.2.1 Past Mechanisms for the Collection of Medical Information

In the past five years, the programs Continuing Promise and Pacific Partnership have used a variety of mechanisms to collect, track, and report medical data required by the mission command and staff. The most common method uses a single piece of paper to summarize
multiple aspects of the patient encounter information for each patient, and patient totals are then
entered into a spreadsheet or database. These multi-purpose patient encounter forms capture
patient information, medical, dental, optometric, and diagnostic information for each patient. At
the end of each treatment day, the forms are sorted by provider and reviewed by the treatment
team to identify any diagnostic anomalies and to ensure consistency of medical treatment. Since
the medications prescribed by the providers are also included on the patient encounter form, a
pharmacy review of all the forms allows them to prepare the mission supplies for the next day of
treatment.

Copies of these patient encounter forms are then provided to the HN Ministry of Health (or
equivalent), who is responsible for creating medical records, filing the forms, and flagging
records that require follow-on care in the HN medical system.

10.4.2.2 Experiments with Automated Data Collection Tools

In 2009, Continuing Promise fielded an automated data collection tool on the USNS COMFORT
for a single country mission. The automated data collection tool was the Rapid Data
Management System (RDMS) developed by Global Relief Technologies (GRT). The GRT
technology has two primary components: a field
surveying PDA and the virtual network operations
center (VNOC). The field surveying PDA uses RDMS
to support custom survey forms with pre-programmed
questions and responses and free text data entry. The
Broadband Global Area Network (BGAN) is a small,
lightweight satellite terminal which allows users to
upload data to the VNOC via satellite phone, or to a
local area network established for the site.

Continuing Promise also tested the Disaster
Management Information System (DMIS) in its 2010
mission and the system was used actively during
Operation Unified Response, the disaster relief effort to
Haiti in 2010.

Pacific Partnership tested the U.S. Army Corps of
Engineers system, Geospatial Assessment Tool for
Engineering Reachback (GATER) in the Pre-
Deployment Site Surveys for its 2010 missions. The
GATER is a suite of applications allowing for a three
tier business process: field data collection, a desktop
application that serves as a conduit to synchronize data
from the field to the desktop and then to the data
repository, and an online data visualization capability
(online GIS mapping). Once field data is collected and
uploaded at the desktop level, the user can extract
shapefiles and generate reports that depict their data
collection(s).

In 2010, GRT partnered with the Marine Experimentation Center to field the RDMS for the
2010 Pacific Partnership mission. The Operational Effectiveness report for this assessment
concluded that “lessons learned through the Pacific Partnership 2010 operation and user
feedback will enhance the capability to electronically collect civil and humanitarian data in
expeditionary environments and greatly assist in guiding development of the RDMS for employment in future operations.\textsuperscript{56}

10.5 Mission Reporting

This phase of the mission cycle refers to preparing the final mission summary reports and briefings. During this phase, the data is analyzed to determine measures of performance, which are then presented in a summary manner to support strategic communication products. In the near term, mission reports will probably closely resemble existing mission reports, as described in the appendix, “Current MSO Processes for Planning, Data Collection and Data Reporting.”

10.6 Mission Analysis

During this phase, the data collected during the mission is analyzed and used to determine MOPs and compared against service and intervention benchmarks. The mission Lessons Learned Conference is held, during which these measures are reviewed. The \textit{health-related} data collected during a mission should be shared with key stakeholders, including Navy Medicine, Center for Disasters and Humanitarian Assistance Medicine (CDHAM), and USAID. This supports analysis of mission and service effectiveness across multiple missions and will assist the specialty leads in improving the effectiveness of individual interventions. Eventually, the data collected will support \textit{benchmarking} for MEDCAPS/DENCAPS and even at the individual intervention level, which will - in turn - lead to improved definition of the outputs and activities, allowing for continual improvement.

In addition to the value of the data collected for purposes of improving mission capabilities, the data can also be of great value to the HN. For example, collecting information on the refractive errors present within a portion of the population is of great value to the HN in understanding the incidence and extent of refractive error in the nation. Whenever possible, mission planners should coordinate with the HN to provide them with the data collected during the mission.

10.7 Dental Services Example: Outcomes, Activities, and Measures

The outcome for the dental service is to improve oral health.

The measure of effectiveness for the outcome “Improve oral health” is the DMFT (Decayed, Missing, Filled Teeth) index for 12 year olds.

10.8 Dental Service Activities

The defined activities for improving oral health are the following:

- Perform dental cleansings
- Perform extractions
- Perform restorations
- Provide fluoride applications
- Provide sealants
- Provide varnishes
- Perform oral cancer screening exams

• Provide patient education classes on oral hygiene
• Provide consultation to the HN on national fluoridation programs

Recall that in order to be able to state that these direct care activities contribute to an improvement in the DMFT (the MOE for Dental Services), even direct care activities need to be conducted in partnership with the HN, be performed in a manner that can be sustained by the HN, and include training sessions that serve to enhance the capacity of the HN.

The WHO priority action areas for oral health suggests that capacity building efforts be directed toward assisting nations in the effective use of fluoride and supporting school-based programs on oral hygiene instruction.

10.9 Dental Service Outputs and MOPs

Generally speaking, the HN is looking for an impact on the population, and not just for individuals. This indicates a strategy of providing some form of dental service to as many patients as possible, as opposed to providing complete dental care to a (relatively) few individual patients. This suggests that a viable performance goal is to provide some form of oral health to every patient admitted into the MEDCAP/DENCAP.

The case study data from the USS BOXER mission to El Salvador as part of Continuing Promise 2008 (shown in Figure 12) suggests that the DENCAP is reaching only about 20% of the patients presented to a MEDCAP, using the following data:

- An average of 184 dental patients seen each day
- An average of 1,032 patients triaged each day (patient census for MEDCAP)
- The DENCAP reached approximately 17.9 percent of the total patient census, on average

The WHO also recommends improving the oral health of two populations: children and the elderly.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Dental Visits</td>
<td>44</td>
<td>105</td>
<td>99</td>
<td>123</td>
<td>86</td>
<td>55</td>
<td>159</td>
<td>85</td>
<td>67</td>
<td>118</td>
<td>104</td>
<td>0</td>
<td>1,026</td>
</tr>
<tr>
<td>Pediatric Dental Visits</td>
<td>203</td>
<td>66</td>
<td>105</td>
<td>89</td>
<td>84</td>
<td>45</td>
<td>152</td>
<td>67</td>
<td>71</td>
<td>80</td>
<td>67</td>
<td>0</td>
<td>1,004</td>
</tr>
<tr>
<td>Dental Examinations</td>
<td>121</td>
<td>106</td>
<td>108</td>
<td>138</td>
<td>125</td>
<td>49</td>
<td>170</td>
<td>124</td>
<td>119</td>
<td>173</td>
<td>122</td>
<td>0</td>
<td>1,355</td>
</tr>
<tr>
<td>Dental Extractions</td>
<td>43</td>
<td>89</td>
<td>83</td>
<td>145</td>
<td>113</td>
<td>57</td>
<td>78</td>
<td>95</td>
<td>100</td>
<td>115</td>
<td>118</td>
<td>0</td>
<td>1,039</td>
</tr>
<tr>
<td>Sealants</td>
<td>240</td>
<td>227</td>
<td>415</td>
<td>158</td>
<td>284</td>
<td>89</td>
<td>0</td>
<td>226</td>
<td>116</td>
<td>253</td>
<td>78</td>
<td>0</td>
<td>2,086</td>
</tr>
<tr>
<td>Fillings</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Varnishes</td>
<td>18</td>
<td>23</td>
<td>40</td>
<td>64</td>
<td>76</td>
<td>9</td>
<td>124</td>
<td>70</td>
<td>52</td>
<td>46</td>
<td>65</td>
<td>0</td>
<td>584</td>
</tr>
<tr>
<td>Cleanings/Scalings</td>
<td>33</td>
<td>65</td>
<td>55</td>
<td>42</td>
<td>70</td>
<td>30</td>
<td>62</td>
<td>53</td>
<td>59</td>
<td>98</td>
<td>45</td>
<td>0</td>
<td>610</td>
</tr>
<tr>
<td>Fluoride Treatment</td>
<td>128</td>
<td>170</td>
<td>190</td>
<td>195</td>
<td>229</td>
<td>107</td>
<td>278</td>
<td>259</td>
<td>203</td>
<td>119</td>
<td>214</td>
<td>0</td>
<td>2,090</td>
</tr>
<tr>
<td>Other Dental Procedures</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Primary Care Dental Patients Seen</td>
<td>249</td>
<td>170</td>
<td>204</td>
<td>211</td>
<td>172</td>
<td>79</td>
<td>281</td>
<td>152</td>
<td>138</td>
<td>203</td>
<td>171</td>
<td>0</td>
<td>2,030</td>
</tr>
<tr>
<td>Total Patients Triaged (Actual Census)</td>
<td>782</td>
<td>784</td>
<td>978</td>
<td>1114</td>
<td>1184</td>
<td>572</td>
<td>872</td>
<td>1267</td>
<td>1341</td>
<td>1232</td>
<td>1222</td>
<td>0</td>
<td>11,348</td>
</tr>
<tr>
<td>Total Patient Encounters (ex. 1 person goes to Medical)</td>
<td>908</td>
<td>862</td>
<td>998</td>
<td>1087</td>
<td>1198</td>
<td>586</td>
<td>963</td>
<td>1303</td>
<td>1352</td>
<td>1276</td>
<td>1218</td>
<td>0</td>
<td>11,817</td>
</tr>
<tr>
<td>Total Patient Service</td>
<td>2613</td>
<td>2169</td>
<td>2846</td>
<td>2870</td>
<td>3084</td>
<td>1597</td>
<td>2609</td>
<td>3190</td>
<td>3295</td>
<td>3455</td>
<td>3254</td>
<td>0</td>
<td>31,002</td>
</tr>
</tbody>
</table>

Figure 6: Dental Services Data Extract from USS BOXER Mission, 2008
The outputs and measures of performance (MOPs) for Dental Services are presented in the table below.

**Table 9: Outputs and Measures of Performance for Dental Services**

<table>
<thead>
<tr>
<th>Dental Service Outputs</th>
<th>Dental Service MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide some form of dental service to all patients presenting to a MEDCAP/DENCAP site</td>
<td>Percentage of patients triaged at a MEDCAP/DENCAP site who received one or more dental services</td>
</tr>
<tr>
<td>Target limited dental services (such as exams &amp; extractions) to children and the elderly</td>
<td>Percentage of the pediatric and elderly patients who received one or more of the following: dental examination; extractions, cleanings, and restoration (optimizes scarce dental resources for the target groups)</td>
</tr>
<tr>
<td>Provide sealants to all children presenting to a DENCAP/MEDCAP</td>
<td>Percentage of the pediatric patients who received a sealant (optimizes a key preventive measure for a target group most likely to benefit)</td>
</tr>
<tr>
<td>Provide oral health education to as many patients as possible</td>
<td>Percent of patients who receive an oral health education class; specify the class topic and total number of trainers</td>
</tr>
<tr>
<td>Provide training to HN dental professionals</td>
<td>Description of each dental training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td>Support national/local fluoridation efforts</td>
<td>Description of support provided to national/local fluoridation efforts to include HN contact, support provided, scope of support, and recommended follow-on actions</td>
</tr>
</tbody>
</table>

10.10  **General Planning Considerations**

Planning considerations for individual health/public health services are provided in the appendices; this section will describe those planning considerations that are generally applicable to all of the health/public health services.

10.10.1  **Building Relationships**

It is critical for mission planners and staff to understand the necessity for developing and sustaining relationships at all levels of the command, from the individual provider level up to the command level. It is this network of relationships – if sustained and enhanced over time – that truly serve to build partnership with another nation.

10.10.2  **Cultural Competence**

Cultural competence is an essential element of quality health care and can help improve health outcomes, increase clinic efficiency, and produce greater patient satisfaction. Although there is

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no universally accepted definition of cultural competence, it may generally be understood to be a
set of attitudes, skills, behaviors, and policies that enable organizations and staff to work
effectively in cross-cultural situations. Furthermore, it reflects the ability to acquire and use
knowledge of the health-related beliefs, attitudes, practices, and communication patterns of
patients and their families in order to improve services, strengthen programs, increase
community participation, and close the gaps in health status among diverse population.
To move towards cultural competence, health care providers and other program staff should
understand the ethnic and cultural needs of the populations they serve. Providing effective care
involves taking the time and effort to learn from patients what is important to them in the
experience of illness and treatment. According to medical anthropologist Arthur Kleinman,
finding out “what is at stake” for the individual will provide crucial information to use in
communication and in tailoring a treatment plan. Culture does matter in the clinic, and providers
must remember that they too bring a cultural perspective to the patient-provider relationship.
Increasing mission personnel knowledge of the cultural and ethnic backgrounds of populations
served is an important component of mission readiness.

10.10.2.1 Coordinate with the Maritime Civil Affairs Group
In 2007, the Navy Expeditionary Combat Command (NECC) officially established its newest
command, Military Civil Affairs Group (MCAG); the MCAG mission is to assess, plan and
execute civil affairs (CA) activities in the maritime operational environment. Their expertise
includes the traditional CA functional areas such as public education and public health, but they
also focus on three maritime specific functions: commercial port operations, harbor and channel
construction and maintenance, and marine and fisheries resources. MCAG forces also serve as
first responders for disaster relief operations throughout the world.
It is essential that mission planners coordinate with MCAG in planning and executing MSO
missions.

10.10.3 Tiered and Tailored Approach
In general, capacity-building activities must be matched to the HN’s level of development and
needs. Mission specialty leads should assess countries as falling into one of three categories:
• Developed: capabilities on par with the U.S.
• Developing: HN has capabilities, but needs improvement
• Least Developed: Host nation lacks basic capabilities.
Frequently, programs such as Continuing Promise and Pacific Partnership include visits to HNs
from all three categories in a single mission, so mission planners need to include a spectrum of
activities appropriate for each type of country. There is very little point in providing
sophisticated instruction on fetal monitoring techniques in a country that does not use fetal
monitoring equipment, or even have reliable power sources for such equipment. For these Least
Developed countries, a simple class on handwashing and management of pre-eclampsia may be
much more effective and useful to its healthcare providers.
When providing instruction courses to the HN personnel, consider the following aspects of the
instruction:
• Do the course materials for the attendees require the attendees to be literate? Recommend the
  use of pictorial-based instructional materials. Many course materials provided by the WHO
  are pictorially based
If the course materials require literacy, are they written in the language of the attendees, or do they require the attendees to be able to read and write English? The WHO, and other international organizations, often provide course materials in many different languages; using standardized course materials also improves the standardization of instruction across multiple missions.

Are the course materials culturally and gender appropriate and relevant? For that matter, is the instruction itself culturally and gender appropriate? Classes on contraception and family planning may not always be appropriate for all audiences, for example.

Is the course length appropriate for the duration of the mission? A life saving skills course which takes three days to complete may not be viable for a mission that stays in a single country for only 4 or 5 days (without careful advance planning).

Does the course use or demonstrate equipment that is not available to the HN?

10.10.3.1 Provide Sustainable Care

It is tempting in humanitarian assistance missions to provide the latest and most effective care to the patient, but it is critical to accept that this care is ineffective – and possibly harmful – if it can’t be adequately sustained by the HN. This is a major reason why a requirement for effective MSO missions is to provide support within the context of an existing national or global health program: to ensure that any care provided is effective and sustainable.

10.10.3.2 Health and Public Health Training

One effective and simple method of assessing the quality of health training is to conduct an oral assessment of the material taught during the class; answers can be quickly assessed by counting raised hands or other, similar mechanisms. This would allow the mission staff to rapidly evaluate the quality of the instruction and identify areas for improvement. Furthermore, lessons plans and visual aids from previous missions should be saved and available to each mission team.

Training materials should be obtained from WHO or other international sources, as they are often available in storyboard form (does not require literacy) and may also be translated into a variety of languages. Advance detail about the target audience is critical to the development of effective training modules; the minimum knowledge necessary includes: age range, occupation, and some information on the audience’s current knowledge or expertise on the subject.

10.10.3.3 Subject Matter Expert Exchanges

An important part of building a partnership with a HN is being willing to learn from the HN, in addition to teaching. Listening to HN professionals is often a more challenging task for U.S. personnel, but it is a vital task, none the less. One effective mechanism is the Subject Matter Expert Exchanges, which are based on the assumption of professional equality, and allow for subject matter experts to exchange their experiences and knowledge freely.

A useful technique for such exchanges is to ask the HN to share a recent success in their area; not only does this provide a forum for them to speak, but very often it provides a great deal of useful information and insights to the mission personnel.

10.10.3.4 Translators

Many After Action Reviews have noted the importance – and difficulty – of obtaining good translators. Ideally, the translators used during the mission are medical personnel familiar with the types of activities being conducted during the mission and are working with mission personnel to provide those services. Even in these best of circumstances, mission personnel will
need to condense their instructions to the simplest form and learn to speak concisely, clearly, and slowly – and to be prepared to repeat themselves, as necessary.

Translation software might be useful for modifying presentations for specific audiences.

10.10.3.5  Mission Reference Library
Mission participants could contribute to building, over time, a mission reference library of useful reference materials that would be available to all future missions (for HCA missions, the reference library could be maintained on the hospital ship). Simple references such as texts or electronic documents describing simple latrine construction as performed around the world would be of enormous value.

10.10.3.6  Health Facility Assessment
One important element of a mission is conducting health facility assessments, which can provide vital data to mission staff, HN personnel and future missions. See Appendix S for a sample assessment form that can be used.

10.11  Summary of MSO Capabilities
The following table provides a summary of the outcomes, measures of effectiveness, outputs, and measures of performance for each of the adaptive force packages defined to date.
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental</td>
<td>Improve oral health</td>
<td>The DMFT (Decayed, Missing, Filled Teeth) Index for 12 yr olds</td>
<td>Provide some form of dental service to all patients presenting at a MEDCAP site</td>
<td>Percentage of patients triaged at a MEDCAP site who received one or more dental services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Target limited dental services (such as exams &amp; extractions) to children &amp; elderly</td>
<td>Percentage of pediatric and elderly patients who received on or more the following: dental exams; extractions; cleanings; and restorations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide sealants to all children presenting to a DENCAP</td>
<td>Percent of pediatric patients who receive a sealant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide oral health training to as many patients as possible</td>
<td>Percent of patients who receive an oral health training class; specify the class, topic &amp; number of trainers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide training to HN dental professionals</td>
<td>Describe each training initiative: target audience, number of audience, topic, and HN teaching participants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Support national/local fluoridation efforts</td>
<td>Describe support provided to include HN contact, scope of support, and recommended F/U actions</td>
</tr>
<tr>
<td>Health/Public Health Service</td>
<td>Outcome</td>
<td>MOE(s)</td>
<td>Output(s)</td>
<td>MOPs</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------</td>
<td>--------</td>
<td>-----------</td>
<td>------</td>
</tr>
</tbody>
</table>
| Surgery                       | Reduce pain and suffering from injuries or emergent/existing conditions, especially in times of disaster through timely and appropriate surgical intervention. | WHO Disability Adjusted Life Year (DALY) for:  
- Injuries  
- Maternal Conditions  
- Congenital Anomalies | Provide surgical care to injury victims | Number of surgeries provided to injury victims (in disaster responses, this can be further broken down by types of surgeries, i.e., orthopedic, thoracic, etc.) |
|                               |         |        | Improve the management of obstetrical complications | • Number of surgeries  
• Number of surgical training sessions (include type of training, description of target audience and size of target audience) |
|                               |         |        | Improve the surgical management of abdominal and extra-abdominal emergent conditions | Number of surgeries provided |
|                               |         |        | Provide elective care of simple conditions | Number of surgeries provided, broken down by type of surgery (e.g., clubfoot, cataracts, LF hydroceles) |
|                               |         |        | Provide training to HN surgical professionals | Number of patients treated (if conducted in conjunction with a surgery)  
Number of HN surgeons involved  
Number of Training Sessions: number of attendees, topic, and profession of audience defined |
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
</table>
| **Infectious Disease**      | Improve the treatment and management of infectious disease, focusing on TB, malaria, and HIV/AIDS | Incidence, prevalence, and death rates associated with tuberculosis, specifically:  
  - TB incidence rate per year per 100,000 population (MDG and WHO indicator)  
  - TB prevalence rate per 100,000 population (MDG and WHO indicator)  
  - TB death rate per year per 100,000 population (MDG indicator) | Support HN in its management and treatment of TB | Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees. |
|                             | Improve the treatment and management of infectious disease, focusing on TB, malaria, and HIV/AIDS | Incidence, prevalence, and death rates due to HIV/AIDS, specifically:  
  - Percentage of people living with HIV/AIDS, 15-49 yrs old (MDG indicator)  
  - HIV prevalence rate, women 15-49 years old, in national based surveys (MDG indicator)  
  - Deaths due to HIV/AIDS per 100,000 population per year (WHO indicator) | Co-locate primary care services with HIV screening services | Train Voluntary Testing and Counseling (VTC) counselors for a given region (coordinate with NHRC) |
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infectious Disease</strong></td>
</tr>
<tr>
<td>Improve the treatment and management of infectious disease, focusing on TB, malaria, and HIV/AIDS</td>
</tr>
<tr>
<td>Incidence and death rates due to malaria, specifically:</td>
</tr>
</tbody>
</table>
  - Malaria death rate per 100,000 population, all ages (MDG indicator)
  - Notified cases of malaria per 100,000 population (MDG indicator) |
| Output(s)                  |
| Support HN in its management and treatment of malaria |
| MOE(s)                     |
| Support HN in the assessment and management of country-specific infections such as lymphatic filariasis and onchocerciasis |
| MOPs                       |
| Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees. |

<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children’s Health</strong></td>
</tr>
<tr>
<td>Improve the health status of children</td>
</tr>
<tr>
<td>Children under five mortality rate per 1,000 live births (MDG and WHO indicator)</td>
</tr>
<tr>
<td>Infant mortality rate (0-1 year) per 1,000 live births (MDG and WHO indicator) Children's Health Activities</td>
</tr>
<tr>
<td>Output(s)</td>
</tr>
<tr>
<td>Support HN in improving hygienic feeding practices</td>
</tr>
<tr>
<td>MOE(s)</td>
</tr>
<tr>
<td>Improve diarheal case management</td>
</tr>
<tr>
<td>MOPs</td>
</tr>
<tr>
<td>Improve child mortality by providing vitamin A and zinc supplements</td>
</tr>
<tr>
<td>The number of children who received vitamin A and zinc supplements</td>
</tr>
<tr>
<td>Support HN in its management and treatment of malaria</td>
</tr>
<tr>
<td>Children's Health Activities</td>
</tr>
<tr>
<td>Provide training to birth attendants on &quot;Helping Babies Breathe&quot;</td>
</tr>
<tr>
<td>Describe the number of training sessions performed, profession and number of attendees.</td>
</tr>
<tr>
<td>Health/Public Health Service</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
</tbody>
</table>
| **Children’s Health**       | Improve the health status of children | • Children under five mortality rate per 1,000 live births (MDG and WHO indicator)  
• Infant mortality rate (0-1 year) per 1,000 live births (MDG and WHO indicator)  
Children's Health Activities | Provide PALS courses to pediatric care professionals | Describe the number of training sessions performed, profession and number of attendees. |
<p>| <strong>Women’s Health</strong>          | Improve the health status of women | The MOE is the maternal mortality rate (per 100,000 live births). | Provide Advanced Life Support in Obstetrics (ALSO) training | Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees. |
|                             |         | Provide training sessions and support in developing a sexual safety action plan for women and children | | Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees. |</p>
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
</table>
| Women’s Health | Improve the health status of women | The MOE is the maternal mortality rate (per 100,000 live births). | • Provide training on the JHPIEGO cervical screening method  
• Support HN in developing a national protocol for cervical cancer prevention | • Number of women seen/treated  
• Progress toward development of a national cervical cancer protocol  
• Number of training sessions, specifying topic, number of attendees and number of instructors |
|                           |         |        | • Provide training on pregnancy planning and spacing  
• Supporting HN in improving access to contraception services | • Number of training sessions, specifying topic, number of attendees and number of instructors  
• Number of cycle beads distributed |
<p>|                           |         |        | • Provide training to midwives using the Life Saving Skills course | • Number of midwives trained |
|                           |         |        | • Provide training to birth attendants, using the &quot;Helping Babies Breathe&quot; course | • Number of birth attendants trained |</p>
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
</table>
| Dermatology                  | None    | None   | Provide training on the management and treatment of preventable skin diseases | • Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees.  
• Number of consultations conducted; specify the professional status of the consulting partner (e.g., physician, dermatologist, medical technician)  
• Number of training sessions, specifying topic, number of attendees and number of instructors  
• Number of training sessions, specifying topic, number of attendees and number of instructors

Provide training on skin cancer prevention and treatment |
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
</table>
| **Eye Care**                  | Improve visual function and reduce preventable causes of blindness. | None | Provide screening examinations to as many patients as possible | • Provide number of screening examinations, as percentage of the population presenting to the MEDCAP  
• Note age and gender of individuals screened |
|                               |         |        | Issue corrective lens | • Provide number of corrective lenses issued, as percentage of the population who received a screening exam  
• Note the refractive power of each set of issued corrective lenses |
<p>|                               |         |        | Issue reading glasses | Provide number of reading glasses issued, as percentage of the population who received a screening exam |
|                               |         |        | Perform cataract or pterygium surgeries | Provide number of surgeries performed, as a percentage of the population that presented to the MSO diagnosed with the condition |
|                               |         |        | Provide training on the eye care treatment and management | Number of training sessions, specifying topic, number of attendees and number of instructors |</p>
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|                              | Optimize health by addressing the multiple and interacting causes of poor human health: unsafe water, poor sanitation, food insecurity, and proximity between animals and humans, and the environment. | Percentage of deaths among children under 5 years of age due to diarrheal disease (WHO indicator) | Provide training on:  
- Hygienic feeding practices  
- Hygienic food storage  
- Use of Oral Rehydration Treatments in diarrheal case management  
- Protection of drinking water and water purification at point of use  
- Use of vector control equipment  
- Food safety  
- Food services capability | Number of training sessions, specifying topic, number of attendees and number of instructors |
<p>| | | | | |
|                              |         |        |           |      |
| <strong>Drinking Water</strong>           | None    | None   | Training sessions on safe use and storage of water | Number of training sessions, specifying topic, number of attendees and number of instructors |</p>
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
</table>
| Drinking Water              | None    | None   | Provide safe drinking water | • Number of sand filtration units installed  
  • Number of wells repaired |
| Sanitation                  | None    | None   | TBD       | TBD  |
| Pest Management             | None    | None   | TBD       | TBD  |
| Animal Health               | None    | None   | Improved animal health practices  
  Higher production yields in animal agriculture | • Provide list of equipment and supplies provided to HN personnel  
  • Describe training provided to HN personnel to include: training topic; professional status of attendees; number of attendees and duration of training. Specify the expected outcome of the training (e.g., was it train-the trainer) |
<p>| Epidemiology &amp; Public Health Surveillance | None | None | TBD | TBD |</p>
<table>
<thead>
<tr>
<th>Health/Public Health Service</th>
<th>Outcome</th>
<th>MOE(s)</th>
<th>Output(s)</th>
<th>MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Security/Safety</strong></td>
<td>None</td>
<td>None</td>
<td>Provide training and train-the-trainer courses on food safety based upon the WHO initiative, &quot;Five Keys to Safer Food&quot;</td>
<td>Description of each food safety training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td><strong>Infection Control</strong></td>
<td>None</td>
<td>None</td>
<td>Improve knowledge and use of hand hygiene for the population and healthcare professionals</td>
<td>Description of each hygiene training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td><strong>Environmental Health</strong></td>
<td>None</td>
<td>None</td>
<td>Provide HN with support and assistance in managing medical, infectious, and pharmaceutical waste</td>
<td>Description of each training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td>Health/Public Health Service</td>
<td>Outcome</td>
<td>MOE(s)</td>
<td>Output(s)</td>
<td>MOPs</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------</td>
<td>--------</td>
<td>---------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Environmental Health</td>
<td>None</td>
<td>None</td>
<td>Provide HN with support and assistance in limiting indoor and outdoor air pollution</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide HN with support and assistance in managing storage tanks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide HN with support and assistance in managing hazardous materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Description of each training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
<td></td>
</tr>
</tbody>
</table>
11 Appendix A: References

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12 Appendix B: Acronyms

AFP  Adaptive Force Package
AMDD  Averting Maternal Death and Disability
BGAN  Broadband Global Area Network
CCDR  Combatant Commander
CDHAM  Center for Disaster and Humanitarian Assistance Medicine
CP  Continuing Promise
DENCAP  Dental Civic Action Program
DMIS  Disaster Management Information System
DoD  Department of Defense
DoS  Department of State
GATER  Geospatial Assessment Tool for Engineering Reachback
GBD  Global Burden of Disease
GHI  Global Health Initiative
GRT  Global Relief Technologies
HALE  Healthy Life Expectancy at Birth
HN  Host Nation
IGO  International Governmental Organization
INGO  International Non-Governmental Organization
JP  Joint Publication
MDG  Millennium Development Goals
MEDCAP  Medical Civic Action Program
MHS  Military Health System
MOE  Measure of Effectiveness
MOP  Measure of Performance
MSO  Medical Stability Operations
NECC  Navy Expeditionary Combat Command
NGO  Non-Governmental Organization
NSS  National Security Strategy
PACFLT  Pacific Fleet
PACOM  Pacific Command
PDA  Personal Digital Assistant
PP  Pacific Partnership
PVO  Private Voluntary Organization
QDR  Quadrennial Defense Review
RDMS  Rapid Data Management System
TSCP  Theater Security Cooperation Program
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>VETCAP</td>
<td>Veterinary Civic Action Program</td>
</tr>
<tr>
<td>VNOC</td>
<td>Virtual Network Operations Center</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WHOSIS</td>
<td>WHO Statistical Information System</td>
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13 Appendix C: Current MSO Mission Processes

13.1 Review of COCOM Program Objectives
Mission planning for a MSO begins with consideration of the COCOM objectives for the supported program or from the Global Engagement of Strategic Forces. For example, the Pacific Command (PACOM) describes the desired effects from its Pacific Partnership Program as:

- Partner capability for delivering essential services to its people is increased
- Partner Nation capacity to provide human services to its population is increased
- Partners have capacity to conduct peace, stability, and consequence management operations
- Target population support for local government is increased
- Target population views government ability to respond to disaster as positive
- Relationships with Partner Nations are enhanced
Mission objectives need to contribute to these desired effects, and selected activities need to support the mission objectives.

13.2 Developing Mission Objectives
The mission objectives are established very early in the planning cycle, when the mission is first conceived, and are generally developed by command staff. Some mission objectives from recent missions are presented below.

Pacific Partnership 2006 (USNS MERCY):
- Demonstrate compassion, support and commitment to the Southeast Asia region
- Leverage and continue the goodwill developed during Operation UNIFIED ASSISTANCE (tsunami assistance in 2005)
- Provide medical services to underserved populations

Pacific Partnership 2007 (USS PELELIU):
- Deliver medical, dental, veterinary, and engineering services to underserved populations
- Successfully embed humanitarian organizations in operations from a U.S. Navy gray hull
- Provide a mutually beneficial experience for partner nation participants

Pacific Partnership 2008 (USNS MERCY):
- Strengthen relationship with host and partner nations
- Build partner capacity to conduct peace, stability, and consequence management operations
- Build awareness and detection capacity of key countries to counter public health threats

Continuing Promise 2008 (USNS COMFORT):
- Train U.S. personnel
- Provide much needed and direct medical and engineering services to underserved areas in the Southern Command area of operations

Continuing Promise 2010 (USNS COMFORT):
- Ensure the Forward Defense of the United States by training U.S. personnel in a collaborative effort to provide humanitarian assistance.
• Encourage regional partnerships
  • Foster goodwill and enhance the credibility of the U.S.
  • Solidify existing partnerships with key nations and encourage the establishment of
new ones between/among nations, non-governmental (NGOs) and international
organizations.
• Enhance regional stability and security
  • Demonstrate U.S. commitment and support to Latin America and the Caribbean
region by providing humanitarian assistance.
  • Support partner nations’ efforts to build capacity to provide humanitarian
assistance.

After the command develops the initial plans for the mission, HNs formally invite the ship to
their country, and a tentative timeframe is established for the mission.

13.3 Planning Timeline for Missions Involving Hospital Ships
Generally speaking, the minimum amount of time required to plan a mission involving a hospital
ship is six months (many experts recommend at least 12 months). The six month planning
timeline includes the following activities:58
• 6 months prior: ship for mission selected and countries that will be visited identified
• 6 months prior: initial planning conference where guidelines are developed regarding Pre-
Deployment Site Survey (PDSS) itineraries, deployment and country team expectations
• 5 months prior: guidance message for mission released
• 4 months prior: mid-planning conference; PDSS teams are chosen
• 2 months prior: PDSS visits completed and all materials ordered
• 1 month prior: final planning conference; finishing touches on training, logistics and
operations
• 14 days prior to ship arrival at HN port: Advanced Echelon (ADVON) team arrives in
country

13.4 Pre-Deployment Site Surveys (PDSS)
The PDSS teams visit the HNs approximately 6 months prior to the mission in order to meet with
representatives from the HN and the U.S. Embassy and discuss the mission, objectives,
resources, needs, logistics, and other planning details. The PDSS team has a general list of
capabilities that the military can provide, such as dental care services, and it seeks input on the
medical needs from the local officials. The PDSS team may also meet with NGOs or other
international organizations (IOs) located in the country and identify potential opportunities for
collaboration. The PDSS team then reports the needs assessment to the mission commander and
planners.59

13.5 Advance Team (ADVON)

58 Bell, L; Davis, J; Azar, R; Leavitt, L.J.; Rebhan, E. "Future Strategies: Analysis of Navy Medicine Humanitarian
59 Lawlor, A; Kraus, A; Kwast, H. "Navy-NGO Coordination for Health-Related Humanitarian and Civic
The Advance Teams (ADVON) are deployed a few weeks to a month before the ship's arrival in the HN and they remain in the HN until ship arrival. The purpose of the ADVON is to coordinate all remaining details of the ship's mission in the HN prior to and during the ship's presence in the HN.

13.6 Current MSO Data Collection Processes

MSOs use a variety of mechanisms to collect, track, and report the medical data required by the mission command and staff. In recent hospital ship MSOs, the medical operations staff uses patient information collection forms, Officer-In-Charge (OIC) summary forms, and a medical tracking spreadsheet.

The patient encounter forms document the patient care and are the source for the information entered into the various medical data tracking systems. The USS BOXER and USS KEARSARGE (Continuing Promise 2008) used multi-purpose patient encounter forms that captured patient information, medical, dental, optometric, and diagnostic information for each patient. At the end of each treatment day, the providers sorted the forms, which were then reviewed by the treatment team to identify any diagnostic anomalies and to ensure consistency of medical treatment.

Since the medications prescribed by the providers are also included on the patient encounter form, the pharmacy team then reviews all of the forms as a means of preparing the mission supplies for the next day of treatment.

Copies of these patient encounter forms were then provided to the HN Ministry of Health (or equivalent), who is responsible for creating medical records, filing the forms, and flagging records that require follow-on care in the HN medical system.

The USNS MERCY used a series of spreadsheets to capture and report its medical workload in 2006, and the USS BOXER and USS KEARSARGE expanded upon that spreadsheet to track its medical data in 2008. In the USNS MERCY mission of 2008, the Medical Operations staff used data collection sheets and a metrics master spreadsheet to automate interconnected data fields to populate a cumulative master spreadsheet. This enabled the USNS MERCY to report data to higher-level commands with a significant decrease in manual effort. 60

The figure below is an excerpt from the El Salvador portion of the USS BOXER mission).

60 Briefing, LCDR Cheryl Ringer, “Medical Metrics”
### Figure 7: Excerpt of Preventive Medicine Data from El Salvador Portion of CP08

The challenge is to collect meaningful data that will support continual improvement in the public health support to humanitarian missions and demonstrate value to the HNs. In one HN, the mission team generated a patient tracking and referral spreadsheet for following care at the health agent, local district hospital, capitol city large hospital, and future U.S. MEDCAP/medRETE levels. The HN Ministry of Health found this patient tracking system to be of enormous value and used it in a following MSO mission.

Identified weaknesses of the current data collection processes include:

- Data collection terms are not standardized;
- Data collection focuses only on measures of effort and does not support collection of information about the actual services provided (e.g., what types of immunizations) or capacity-building activities;
- Data collection is not commonly available after a mission; usually only the mission briefings are widely disseminated.

Future data collection processes should use standardized terminology in reporting data at the activity/intervention level that is widely available for other mission planners.

### 13.7 Current MSO Mission Reporting

The figure below illustrates the current mechanism for reporting mission data from HCA missions. This is a single slide from a command briefing, reflecting the value or impact of the medical services performed during the mission.

<table>
<thead>
<tr>
<th></th>
<th>19-May</th>
<th>20-May</th>
<th>21-May</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preventive Medicine</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessments</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Entomology Assessments</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>43</td>
</tr>
<tr>
<td>Environmental Health Assessments</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>43</td>
</tr>
<tr>
<td>Industrial Hygiene Assessments</td>
<td>0</td>
<td>0</td>
<td>26</td>
<td>122</td>
</tr>
<tr>
<td><strong>TOTAL PM SERVICES</strong></td>
<td>0</td>
<td>0</td>
<td>49</td>
<td>222</td>
</tr>
<tr>
<td><strong>Sites Visited</strong></td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>44</td>
</tr>
<tr>
<td><strong>Animals Seen</strong></td>
<td>0</td>
<td>368</td>
<td>277</td>
<td>1943</td>
</tr>
<tr>
<td><strong>Immunizations</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Deworming Doses Given</strong></td>
<td>0</td>
<td>368</td>
<td>277</td>
<td>2108</td>
</tr>
<tr>
<td><strong>Vitamin Injections</strong></td>
<td>0</td>
<td>368</td>
<td>277</td>
<td>2108</td>
</tr>
<tr>
<td><strong>Surgeries</strong></td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL VETERINARY SERVICES</strong></td>
<td>0</td>
<td>736</td>
<td>554</td>
<td>4216</td>
</tr>
</tbody>
</table>

---

1. Preventive Medicine
2. Entomology Assessments
3. Environmental Health Assessments
4. Industrial Hygiene Assessments
5. Sites Visited
6. Animals Seen
7. Immunizations
8. Deworming Doses Given
9. Vitamin Injections
10. Surgeries
11. TOTAL VETERINARY SERVICES
Figure 8: Continuing Promise 2008, Pacific Phase (USS BOXER)

For smaller civil affairs missions, the lead specialist will prepare a trip report that summarizes the observations and recommendations from the mission and presents information on the number of patients (or animals) treated during the mission. Table 2 is abstracted from the report of a VETCAP in Mali in 2008.

Table 11: Number of Animals Treated in a Typical VETCAP

<table>
<thead>
<tr>
<th>Day</th>
<th>Goats</th>
<th>Sheep</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>17 Nov 08 (Soufroulaye)</td>
<td>509</td>
<td>396</td>
<td>905</td>
</tr>
<tr>
<td>18 Nov 08 (Samadougou)</td>
<td>524</td>
<td>326</td>
<td>850</td>
</tr>
<tr>
<td>19 Nov 08 (Sofara)</td>
<td>323</td>
<td>536</td>
<td>859</td>
</tr>
<tr>
<td>20 Nov 08 (Ouo)</td>
<td>154</td>
<td>61</td>
<td>215</td>
</tr>
<tr>
<td>Total</td>
<td>1510</td>
<td>1319</td>
<td>2829</td>
</tr>
</tbody>
</table>

Identified weaknesses of the current MSO reporting mechanism include:

- Reduces reporting of medical activities to only measures of effort
- Does not allow or support the reporting of capacity-building activities
- Does not allow or support the reporting of activities at an intervention level (for example, reports that "150 people were seen" and does not actually specify what services - if any - were performed for those individuals)
- Medical reporting is not generally linked to available staffing or resources
- Inconsistent use of terminology
The following form is used in conducting health facility assessments as part of the Continuing Promise missions.

<table>
<thead>
<tr>
<th>CAPABILITIES REPORT COMPLETED BY:</th>
<th>DATE:</th>
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### HOSPITAL INFORMATION

**TYPE OF FACILITY:** (circle one)

<table>
<thead>
<tr>
<th>MILITARY</th>
<th>HN GOV</th>
<th>HN PRIVATE</th>
<th>NGO</th>
<th>OTHER</th>
</tr>
</thead>
</table>

- Main Contact:
- GPS Coordinates:
- Address:
- City/State:
- Phone number:
- Number of Beds:

### DESCRIPTION

- Distinguishing Features:
- Coordinates, Size and Security of nearest HLZ:
- Physical Security provided?
  - Who and How Many?
- Loading Dock:
- Storage Facility:
- Other Area Medical Facilities:
<table>
<thead>
<tr>
<th><strong>ACCESSIBILITY OF MEDICAL SERVICES</strong></th>
<th><strong>REFERRAL INFORMATION</strong></th>
<th><strong>EMERGENCY SERVICES</strong></th>
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<tr>
<td>Private Pay:</td>
<td>Percent Population with Health Insurance Coverage:</td>
<td>Emergency Number:</td>
</tr>
<tr>
<td>YES  NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Insurance is Available:</td>
<td>Medical Provider List:</td>
<td>Method of Payment:</td>
</tr>
<tr>
<td>YES  NO</td>
<td>YES  NO</td>
<td></td>
</tr>
<tr>
<td>Aide from HN government:</td>
<td>Provider Contact Information:</td>
<td>Emergency Department Office Number:</td>
</tr>
<tr>
<td>YES  NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Medical Missions at location:</td>
<td>English Speaking Staff?</td>
<td>Emergency Physician Contact:</td>
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<tr>
<td>Nationalities?</td>
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<td></td>
</tr>
<tr>
<td>Reciprocity with U.S.?</td>
<td></td>
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<tr>
<td>Procedure and Waiting Time for Elective Surgery:</td>
<td>Limitations on healthcare accessibility:</td>
<td>Average Wait for Emergency Surgery</td>
</tr>
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<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20</td>
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<tr>
<td>Medical Services</td>
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<td>------------------</td>
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<td>General Medicine</td>
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</tr>
<tr>
<td>Number of Physicians</td>
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<td></td>
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<tr>
<td>Number of Nurses</td>
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<tr>
<td>Number of Medical Assistants</td>
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</tr>
<tr>
<td>Foreign Physicians</td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
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<tr>
<td>Medication Availability</td>
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<td>Antibiotics Require Prescriptions?</td>
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<tr>
<td>Funding Assistance for Medication</td>
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<tr>
<td>Referral Locations:</td>
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<td>Contact:</td>
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<td>Address:</td>
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<td>Medical Provider Credentialing Required?</td>
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<td>Blood Bank</td>
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<td>Women's Health</td>
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<tr>
<td>Internal Medicine</td>
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15 Appendix E: Disaster Preparedness

15.1 Introduction

This section has been abstracted from the WHO document, “Disease Control Priorities in Developing Countries,” as a valuable succinct statement of the preparation for timely and effective disaster response activities.

Sudden-onset natural and technological disasters impose a substantial health burden, either directly on the population or indirectly on the capacity of the health services to address primary health care needs.

Disaster has multiple and changing definitions. The essential common element of those definitions is that disasters are unusual public health events that overwhelm the coping capacity of the affected community. This concept precludes the universal adoption of a threshold number of casualties or victims. What would be a minor incident in a large country may constitute a major disaster in a small isolated island state. Not only are quantitative definitions of disasters unworkably simplistic, but when based on the economic toll or the number of deaths, they are also misleading with regard to the immediate health needs of the survivors or their long-term impact on the affected country.

Disasters can be classified as natural disasters, technological disasters, or complex emergencies. The latter include civil wars and conflicts. These classifications are arbitrary and refer to the immediate trigger—a natural phenomenon or hazard (biological, geological, or climatic); a technologically originated problem; or a conflict. In reality, all disasters are complex events stemming from the interaction of external phenomena and the vulnerability of man and society.

15.1.1 Short-Term Health Burden

Losses fall under three categories, which may have both direct and indirect components:

- Lives and injuries leading to disabilities (both direct damage and an indirect consequence)
- Direct losses in infrastructure and supplies (direct impact)
- Loss or disruption in the delivery of health care, both curative and preventive (indirect impact).

The immediate health burden is directly dependent on the nature of the hazard. National health budgets of developing countries are, in normal times, insufficient to meet the basic health needs of the population. In the aftermath of a major disaster, authorities need to meet extraordinary rehabilitation demands with resources that often have been drained by the emergency response (as distinct from the resources destroyed by the event). Beyond the immediate response, decision making in the allocation of resources among sectors is mostly influenced by the magnitude of the economic losses rather than by the health statistics or social costs.

15.1.1.1 Earthquakes.

In the past five centuries, earthquakes caused more than 5 million deaths—20 times the number caused by volcanic eruptions. In a matter of seconds or minutes, a large number of injuries (most

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of which are not life-threatening) require immediate medical care from health facilities, which are often unprepared, damaged, or totally destroyed, as was the case in the earthquake in Bam, Iran, in 2003. In the aftermath of that earthquake, which resulted in 26,271 deaths, the entire health infrastructure of the city was destroyed. All traumas were evacuated by air to the 13 Iranian provinces long before the arrival of the first foreign mobile hospitals.

After a few weeks, national political solidarity and external assistance wane, and the local budgetary resources are drained. At the same time, health authorities face the overwhelming task of providing services to a displaced population, rehabilitating health facilities, restoring normal services, strengthening communicable disease surveillance and control, and attending to the long-term consequences, such as permanent disabilities, mental health problems, and possibly long-term increases in rates of heart disease and chronic disease morbidity.

15.1.1.2 Tsunamis.

Earthquakes on the ocean floor may cause catastrophic tidal waves (tsunamis) on faraway shores. Waves caused by the seismic event crest at less than a meter in open seas, but they travel several hundred kilometers per hour, so when they reach shallow waters, they can be 10 meters high. Damage on the coast can be extensive. Usually, the number of survivors presenting severe injuries is small in proportion to the number of deaths.

15.1.1.3 Volcanic Eruptions.

Volcanoes persist as a serious public health concern, though they are often overlooked by authorities and communities lulled by long periods of inactivity. Eruptions are preceded by a period of volcanic activity, which provides an opportunity for scientific monitoring, warning, and timely evacuation. Some issues, such as ash fall, lethal gases, lava flow, and projectiles, although of concern to the public, are of minimal health significance:

- Ash fall causes a significant burden on medical services but is unlikely to result in excess mortality or significant permanent problems. However, ash fall affects transportation, communications, water sources, treatment plants, and reservoirs.
- Concentrations of volcanic gases are rapidly diluted to nonlethal levels, which lead to inconvenience but negligible morbidity for the general public.
- Lava flows present little health risk because of their very slow speed of progression.
- Mortality caused by ballistic projectiles from a volcanic eruption is minimal.

Attention to these public concerns may distract the authorities from preparing for the greatest factors of mortality: the pyroclastic flows (Mount Pelé in Martinique, in 1902, with 29,000 deaths) and lahars. Lahars are mud flows or mud and ash flows caused by the rapid melting of a volcano’s snowcap, as in Colombia in 1985 (23,000 deaths), or caused by heavy rains on unstable accumulations of ash, as in the Philippines in 1991. Historically, pyroclastic explosions or lahars have caused about 90 percent of the casualties from volcanic eruptions. Potential contamination of water supplies by minerals from ash; displacement of large populations for an undetermined period of time (over five years in Montserrat, a small island in the Caribbean); accompanying sanitation problems; and mental health needs are of great public health significance.

15.1.1.4 Climatic Disasters.

Many communities and health services have learned to live with seasonal floods of moderate intensity. Periodically, the magnitude of the phenomenon exceeds the local coping capacity and overwhelms the resources of the health systems. The health burden associated with seasonal
floods is well known locally: increased incidence of diarrheal diseases, respiratory infections, dermatitis, and snake bites.

Prolonged flooding endangers local agriculture and occasionally requires food assistance on a large scale. The primary factors of morbidity remain overcrowded living conditions and poor water and sanitation in temporary settlements and other areas where water and sanitation services have deteriorated or are suspended. Mortality and morbidity caused by tropical storms (hurricanes in the Atlantic Ocean and typhoons in the Pacific Ocean) result from, in increasing order of importance, high winds, heavy rainfall, and storm surge.

When Hurricanes Mitch and George hit the Caribbean in 1998, traumatic injuries (lacerations or electrocution) caused by high winds of up to 150 miles per hour were relatively few; deaths from extensive rainfall (leading to flash floods and landslides) constituted the bulk of the more than 13,000 fatalities (PAHO 1999). In the Bangladesh delta, storm surges up to 6 meters traveled unimpeded over hundreds of kilometers and claimed between 250,000 and 500,000 lives in 1970 and up to 140,000 lives during five cyclones in the 1990s—primarily during one storm in 1991.

15.1.2 Interventions: From Response to Prevention

The immediate lifesaving response time is much shorter than humanitarian organizations recognize. In a matter of weeks, if not days, the concerns of both the population and authorities shift from search and rescue and trauma care to the rehabilitation of infrastructure (temporary restoration of basic services and reconstruction). In Banda Aceh, Indonesia, after the December 2004 tsunami, victims were eager to return to normalcy while external medical relief workers were still arriving in large numbers.

15.1.2.1 Response and Rehabilitation

Immediate emergency response is provided under a highly political and emotional climate. The public demands visible, albeit perhaps unnecessary, measures at the expense of proven low-key approaches. The international community, eager to demonstrate its solidarity or to exercise its “right of humanitarian intervention,” undertakes its own relief effort on the basis of the belief that local health services are unwilling or unable to respond. Donations of useless medical supplies and medicines and the belated arrival of medical or fact-finding teams add to the stress of local staff members who may be personally affected by the disaster. The cultural disregard of the humanitarian community to cost-effective approaches in times of disaster and the tendency to base decisions on perceptions and myths rather than on facts and lessons learned in past disasters contribute to making disaster relief one of the least cost-effective health activities.

15.1.2.2 Assessment of the Health Situation

A country’s ministry of health is expected to assess the health situation. To influence the course of humanitarian response, this assessment must be rapid and, therefore, simple; transparent in collaboration with the main actors—non-governmental organizations (NGOs) and donors; and technically credible. The input of WHO, as the lead agency in health matters, is most valuable. Confusion should be avoided between assessing emergency needs and inventorying or valuating the damage. In the first hours or days, relief actors base their decision making on the ministry of health’s assessment of what is required and, more importantly, what is not required for emergency response. Later, the international community will request detailed data, such as the number of persons affected, buildings damaged, and monetary valuation.

15.1.2.3 Mass Casualties Treatment

Following natural disasters, hospital capacity may be considerably reduced by actual damage to the facility or, in the case of a seismic event, an often unnecessary—but hard to reverse—
evacuation. Triage of patients is required in order to first treat those likely to benefit most, rather than the terminally injured or those whose care can be delayed. Lifesaving primary care takes place in the first six hours (the golden rule of emergency medicine), making most of the foreign field hospitals irrelevant for intensive acute care of traumas. Effectiveness of immediate care will depend on local preparedness before the disaster, not on faraway resources.

15.1.2.4 Strengthened Surveillance, Prevention, and Control of Communicable Diseases

Because the surveillance, prevention, and control of communicable diseases are strengthened, the anticipated massive outbreaks generally do not actually occur. Traditional surveillance systems that are based on periodic notification of diseases by the health services are inadequate in a crisis situation. Early warning requires flexible and simple syndrome-based monitoring in temporary settlements and health centers, with information collected not only by the official health services but also by the medical humanitarian organizations. Systems that do not include consultation with NGOs are unlikely to succeed.

Disease control programs in place before the disaster are the fruit of local experience and external technical advice. In a disaster situation, there is generally no need to resort to new and expensive control measures. The key is to quickly resume, strengthen, and better monitor the routine control programs. No public health concerns justify the hurried disposal of corpses through mass burial or unceremonious incineration. This practice is socially and culturally damaging. In addition, improvised mass immunization campaigns, especially by external relief groups, should be discouraged in favor of opportunistically strengthening national routine immunization coverage, especially in temporary settlements.

15.1.2.5 Environmental Health

Typical interventions in the aftermath of disasters include strengthening the monitoring and surveillance of water quality, vector control, excreta disposal, solid waste management, health education, and food safety. A first priority is water supply. It is often preferable to have a large quantity of reasonably potable water than a smaller amount of high-quality water. Massive distribution of water purification disinfectants can be effective if the public is already familiar with their use and not confused by the availability of many different brands and concentrations of donated chemicals. Health education and hygiene promotion efforts target populations in shelters, temporary camps, collective kitchens, or prepared food distribution centers. The cost-effectiveness of the external relief effort could often be increased by shifting resources from the over attended medical response to the improvement of environmental health in temporary settlements.

15.1.2.6 Transparent Management of Donations and Supplies

If donations and supplies are managed transparently during the emergency, the flow of assistance to the intended beneficiaries will be improved. Unsolicited and often inappropriate medical donations compete with valuable relief supplies for scarce logistical resources. Good governance is critical, and effective logistics cannot be improvised following a disaster.

Coordination of the Humanitarian Health Effort

Coordination of the humanitarian health effort is essential to maximize the benefit of the response effort and ensure its compatibility with the public health development priorities of the affected country. Effective coordination in the health sector must do the following:

- Be comprehensive and include all external health actors.
- Be based on mutual respect rather than regulatory authority alone. Dialogue and consultation are more effective than enforcement.
• Benefit all parties, starting with the victims. It should aim to support and facilitate the activities of other partners.
• Be evidence-based and transparent. Information is made to be shared and used, not jealously guarded. Coordination cannot be improvised in the aftermath of a disaster. Preparedness before the occurrence of the hazard is essential.

15.1.2.7 Emergency Preparedness of the Health Sector

Effective response by national health authorities cannot be impromptu. Ministries of health that neglected to invest in capacity building before emergencies have generally experienced serious difficulties in exercising their technical and political leadership in the immediate aftermath of a disaster. Disaster preparedness is primarily a matter of building institutional capacity and human resources, not one of investing heavily in advanced technology and equipment. Building local coping capacity is one of the most cost effective ways to improve the quality of the national response and the external interventions.

Disaster preparedness is not merely having a disaster plan written by experts. It must involve the following:
• Identifying vulnerability to natural or other hazards. The health sector should seek information and collaborate with other sectors and institutions (civil protection, meteorology, environment, geology) that have the primary responsibility for collecting and analyzing this information.
• Building simple and realistic health scenarios of a possible and probable occurrence. It is challenging enough to prepare for a moderate-size disaster; building and sustaining a culture of fear based on unrealistic worst-case scenarios may serve the corporate interests of the disaster community but not the interests of the public at large.
• Initiating a participative process among the main actors to develop a basic plan that outlines the responsibilities of each actor in the health sector (key departments of the ministry of health, medical corps of the armed forces, private sector, NGOs, UN agencies, and donors). What matters is the process of identifying possible overlaps or gaps and building a consensus—not the paper plan itself. Disasters often present problems that are unforeseen in the most detailed plans.
• Maintaining a close collaboration with these main actors. A good coordinator is one who appreciates and adapts to the strengths and weaknesses of other institutions. Stability is essential. Changes of key emergency staff members during a disaster situation or when a new administration or minister take over have occasionally complicated the tasks.
• Sensitizing and training the first health responders and managers to face the special challenges of responding to disasters. Participation of external actors (UN agencies, donors, or NGOs) in designing and implementing the training is critical. The incorporation of disaster management in the academic curriculum of medical, nursing, and public health schools should complement the on-the-job training programs of the ministry of health, UN agencies, and NGOs. Well-designed disaster management training programs will improve the management of daily medical emergencies and accidents as well.

15.1.3 Cost-Effectiveness of Selected Humanitarian Interventions

Emergency health interventions are more costly and less effective than time-tested health activities. Improvisation and rush inevitably come with a high price. The preferential use of expatriate health professionals; the emergency procurement and airlifting of food, water, and
supplies that often are available locally or that remain in storage for long periods of time; and the
tendency to adopt dramatic measures contribute to making disaster relief one of the least cost-
effective health activities.

15.1.3.1 Search and Rescue
Few developing countries have established the technical capacity to search for and attend to
victims trapped in confined spaces in the event of the collapse of multistory buildings. Industrial
nations routinely dispatch search and rescue (SAR) teams. Costs are high and effectiveness is
reduced by delayed arrival and quickly diminishing returns. Following the 1988 earthquake in
Armenia, in the former Soviet Union, the U.S. SAR team extracted only two living victims at a
cost of over US$500,000. In Turkey in 1999, 98 percent of the 50,000 people pulled alive from
the rubble were salvaged by relatives and neighbors. In Bam in 2003, the absence of high-rise
and reinforced concrete buildings ruled out the need for specialized teams. Nevertheless,
according to UN statistics, at least US$2.8 million was spent on SAR teams. An alternative
solution consists of investing these resources in building the capacity of local or regional SAR
teams—the only ones able to be effective within hours—and training local hospitals to dispatch
their emergency medical services to the disaster site.

15.1.3.2 Field Hospitals
The limited lifesaving usefulness of foreign field hospitals has been discussed. Again, the
lessons learned from the Bam earthquake are clear. The international community spent an
estimated US$10.5 million to dispatch approximately 10 mobile hospitals, which arrived from
two to five days after the impact, long after the last casualty had been evacuated to other Iranian
provinces. This delay alone, hard to reduce further, rules out any significant contribution to
immediate trauma care and led the hospitals to compete for routine outpatient care with the
teams of Iranian volunteers from across the country. A few of the mobile hospitals, better
prepared to meet non-trauma needs and to stay much longer than the usual two to three weeks,
have been invaluable. No data are available on the number of lives actually saved by mobile
hospitals (that is, lives that would not have been saved by local means). Less understood are the
negative effects of such hospitals on local health services, which are often marginalized and
discredited for their lack of technology and sophistication but which must cope once the external
facility leaves. The cost of mobilizing a mobile hospital for a few weeks often exceeds US$1
million, funds that would be more productive in the construction and equipping of a simple but
sturdy temporary facility. Such an approach was adopted by the U.S. Army Southern Command
in Wiwili, Nicaragua, in the aftermath of Hurricane Mitch. In the case of Bam, Iran, the cost of
rebuilding the entire primary and secondary health care facilities and teaching institutions was
estimated by the government of Iran to be US$10.75 million, an amount very similar to that
expended for the dispatch of field hospitals from the international community.

15.1.3.3 In-Kind Donations
Unsolicited donations of inappropriate medical supplies not only are of limited use, but often
cause serious logistic, economic, and political problems in the recipient country. Warehousing
those supplies and, in many instances, building facilities (incinerators, for example) for the safe
disposal of pharmaceutical donations diverts humanitarian funds from more effective uses.
Recipient countries collectively share part of the responsibility by not clearly indicating what
they do not want to receive and by not speaking out once inappropriate items arrived.

15.1.3.4 Disease Prevention and Control
Post disaster interventions in surveillance and control of communicable diseases should focus on strengthening existing programs. Benefits will outlive the crisis. Improvised mass immunizations (instead of improved sanitation and public awareness) and vector control by aerial spraying or fogging (instead of breeding-site reduction or waste disposal) are just two examples of wasteful managerial decisions.

15.1.3.5 Shelters

Tent cities should be a last resort. Family-size tents may be expensive and do not last long. Establishing large settlements is easy, but such settlements are difficult to sustain and nearly impossible to terminate. They come with their own sanitation problems and social shortcomings (lack of privacy, loss of family identity, and loss of empowerment). Distributing construction material (or, preferably, cash subsidies) is more cost-effective and tailored to the needs and priorities of end users.

15.1.3.6 Cash Assistance

Developed societies long ago abandoned the distribution of in-kind relief goods and services to their nationals in favor of direct financial assistance in the form of subsidies, grants, or tax relief. The individual is free to determine actual priorities and to seek the most cost-effective source of services (shelter, medical, food, or other). It is therefore surprising that external assistance from these same countries remains focused on the costly delivery of predetermined services or commodities. The most immediate lifesaving needs can be addressed only locally with existing resources and capacity. No cash contribution will meet those immediate needs. Beyond the acute phase, in many countries with market economies, most other services and goods are easily procured by those with financial means, suggesting that income availability is often the single limiting factor in rehabilitation. Undoubtedly, this approach would affect considerably the type (and number) of humanitarian actors by transferring power and decision making to the local beneficiaries and relying on local economic forces for delivery to the end user. It may also bring its own set of problems (and abuses), though perhaps that is a small cost, considering the economic and social benefits of the most interested party—the victim—being in charge.

15.2 Disaster Preparedness Activities

The primary activities in supporting HNs in their disaster preparedness efforts are training and consultation services.

15.3 Disaster Preparedness Outputs and MOPs

The outputs and MOPs for disaster preparedness assistance are summarized in the table below.

<table>
<thead>
<tr>
<th>Disaster Preparedness Outputs</th>
<th>Disaster Preparedness MOPs</th>
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<tbody>
<tr>
<td>Support HN disaster preparedness programs</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors</td>
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<tr>
<td></td>
<td>When conducting training sessions, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands.</td>
</tr>
</tbody>
</table>
16 Appendix F: Dental Services

16.1 Introduction

Oral health is a state of being free from chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity. Risk factors for oral diseases include unhealthy diet, tobacco use, harmful alcohol use, and poor oral hygiene. A variety of diseases involve the oral cavity; the two main oral diseases present worldwide and leading to tooth destruction or tooth loss are:

- Dental caries, the disease that leads to cavities in the teeth
- Periodontal disease, which leads to loosening of teeth

The DMFT/DMFS index describes the prevalence of caries in permanent teeth for a specified age group. DMFT/DMFS indicates the number of decayed (D), missing (M), and filled teeth (FT) or surfaces (FS) in an individual. A common international health indicator is the DMFT for 12 year old children. The ideal capacity building effort supports an initiative that provides a systemic improvement in oral health, while enhancing the national capacity to promote oral health. The WHO World Health Organization global policy for improvement of oral health, agreed upon by the World Health Assembly in 2007 identifies the following priority action areas for improving oral health:

- Effective use of fluoride
- Healthy diet and nutrition
- Tobacco control
- Oral health of children and youth through Health Promoting Schools
- Oral health improvement amongst the elderly
- Oral health, general health, and quality of life
- Oral health systems
- HIV/AIDS and oral health
- Oral health information systems, evidence for oral health policy, and formulation of goals
- Research for oral health

In Jamaica, a formal agreement between the Ministry of Health and the country’s only salt producer introduced salt fluoridation in 1987 to prevent caries. By 1995, the prevalence of caries in children between the ages of 6 and 12 had fallen by more than 80 percent. (WHO, “Priorities in Health,” p 26)

16.2 Dental Service Outcomes and MOEs

The outcome for the dental service is to improve oral health. The measure of effectiveness for the outcome “Improve oral health” is the DMFT (Decayed, Missing, Filled Teeth) index for 12 year olds.

16.3 Dental Service Activities

The defined activities for improving oral health are the following:

- Perform dental cleanings
Perform extractions
Perform restorations
Provide fluoride applications
Provide sealants
Provide varnishes
Perform oral cancer screening exams
Provide patient education classes on oral hygiene
Provide consultation to the HN on national fluoridation programs
Recall that in order to be able to state that these direct care activities contribute to an improvement in the DMFT (the MOE for Dental Services), even direct care activities need to be conducted in partnership with the HN, be performed in a manner that can be sustained by the HN, and include training sessions that serve to enhance the capacity of the HN.
The WHO priority action areas for oral health suggests that capacity building efforts be directed toward assisting nations in the effective use of fluoride and supporting school-based programs on oral hygiene instruction.

16.4 Dental Service Outputs and MOPs
Generally speaking, the HN is looking for an impact on the population, and not just for individuals. This indicates a strategy of providing some form of dental service to as many patients as possible, as opposed to providing complete dental care to a (relatively) few individual patients. This suggests that a viable performance goal is to provide some form of oral health to every patient admitted into the MEDCAP/DENCAP.
The case study data from the USS BOXER mission to El Salvador as part of Continuing Promise 2008 (shown in Figure 12) suggests that the DENCAP is reaching only about 20% of the patients presented to a MEDCAP, using the following data:
• An average of 184 dental patients seen each day
• An average of 1,032 patients triaged each day (patient census for MEDCAP)
• The DENCAP reached approximately 17.9 percent of the total patient census, on average
The WHO also recommends improving the oral health of two populations: children and the elderly.
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<tr>
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<td>105</td>
<td>96</td>
<td>123</td>
<td>88</td>
<td>34</td>
<td>159</td>
<td>85</td>
<td>67</td>
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<td>105</td>
<td>88</td>
<td>84</td>
<td>45</td>
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<td>67</td>
<td>71</td>
<td>85</td>
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<td>106</td>
<td>108</td>
<td>138</td>
<td>125</td>
<td>49</td>
<td>170</td>
<td>124</td>
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<td>173</td>
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<td>415</td>
<td>158</td>
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<td>89</td>
<td>0</td>
<td>226</td>
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<td>20</td>
<td>40</td>
<td>64</td>
<td>70</td>
<td>9</td>
<td>124</td>
<td>70</td>
<td>52</td>
<td>46</td>
<td>65</td>
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<td>Varnishes</td>
<td>33</td>
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<td>55</td>
<td>42</td>
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<td>30</td>
<td>62</td>
<td>53</td>
<td>59</td>
<td>96</td>
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<td>190</td>
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<td>Other Dental Procedures</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Total Primary Care Dental Patients Seen</td>
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<td>170</td>
<td>204</td>
<td>211</td>
<td>172</td>
<td>79</td>
<td>281</td>
<td>152</td>
<td>138</td>
<td>203</td>
<td>171</td>
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<td>Total Patients Treated (Actual Census)</td>
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<td>784</td>
<td>978</td>
<td>1114</td>
<td>1184</td>
<td>572</td>
<td>872</td>
<td>1267</td>
<td>1341</td>
<td>1232</td>
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<td>Total Patient Encounters (ex. 1 person goes to Medical)</td>
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<td>862</td>
<td>996</td>
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<td>586</td>
<td>983</td>
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<td>Total Patient Service</td>
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<td>3190</td>
<td>3295</td>
<td>3455</td>
<td>3254</td>
<td>0</td>
<td>31,002</td>
</tr>
</tbody>
</table>

**Figure 9: Dental Services Data Extract from USS BOXER Mission, 2008**

The outputs and measures of performance (MOPs) for Dental Services are presented in the table below.

### Table 13: Outputs and Measures of Performance for Dental Services

<table>
<thead>
<tr>
<th>Dental Service Outputs</th>
<th>Dental Service MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide some form of dental service to all patients presenting to a MEDCAP/DENCAP site</td>
<td>Percentage of patients triaged at a MEDCAP/DENCAP site who received one or more dental services</td>
</tr>
<tr>
<td>Target limited dental services (such as exams &amp; extractions) to children and the elderly</td>
<td>Percentage of the pediatric and elderly patients who received one or more of the following: dental examination; extractions, cleanings, and restoration (optimizes scarce dental resources for the target groups)</td>
</tr>
<tr>
<td>Provide sealants to all children presenting to a DENCAP/MEDCAP</td>
<td>Percentage of the pediatric patients who received a sealant (optimizes a key preventive measure for a target group most likely to benefit)</td>
</tr>
<tr>
<td>Provide oral health education to as many patients as possible</td>
<td>Percent of patients who receive an oral health education class; specify the class topic and total number of trainers</td>
</tr>
<tr>
<td>Provide training to HN dental professionals</td>
<td>Description of each dental training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td>Support national/local fluoridation efforts</td>
<td>Description of support provided to national/local fluoridation efforts to include HN contact, support provided, scope of support, and recommended follow-on actions</td>
</tr>
</tbody>
</table>
16.5 Dental Service Planning Considerations

The following describes a successful training event for a recent hospital ship mission, illustrating what can be done, even in a short period of time.

In the 2009 USNS COMFORT mission, Dental Services hosted a series of dental symposia on board the ship. The lead Dental Officer (Dental Lead) contacted the HN Ministries of Health and requested point of contact information for the Deans of the national dental schools. The Dental Lead then invited each of these individuals to attend - with students of their choice - a 2 day Dental Symposium to be hosted on the USNS COMFORT. In general, the attendees would stay aboard the COMFORT for the Symposium. For those HNs that didn't have dental schools, the Dental Lead would invite local dentists to the Symposium.

The topics for the Symposium vary, depending upon the needs of the HN and the dental capabilities available on the USNS COMFORT. In general, the capabilities of the HNs could be categorized as:

- Developed: the available dental technology and practices are comparable to that within the U.S.
- Developing: HN has advanced dental capabilities, but may not have all of the latest technology:
- Least Developed Dental Capabilities: HN has inadequate dental care available for its population

For the Least Developed HNs, the Symposium topics focus on the management of dental emergencies and infections.

For the Developing and Developed HNs, the topics can focus on using or applying the latest technologies, such as using CEREC, a digital crown system, to create and apply porcelain crowns in a single visit. The manufacturer, Sirona, donated three CEREC systems to the USNS COMFORT for use during the mission.

The dentists in the Developed Countries already had experience using CEREC, so they were invited to present topics for the Symposium, making the event a true professional exchange. Other topics that would be appropriate for Developing and Developed Countries include laser dentistry and digital radiography.

Planning considerations relevant for future training activities include:

- The Dental Lead should attend the mid and final mission planning conferences. One of the important outcomes of attending these conferences is to meet the Military Group Liaisons assigned to the U.S. embassies in the various HNs; it is these liaisons who can then arrange contact with HN representatives.
- Collect data at the encounter/procedure level of detail; data sets from previous missions can be obtained from the Dental Career Plans Officer at BUMED (202-762-3413). The eventual goal is to collect data that can be used to benchmark dental services and support analysis of effectiveness across multiple missions.
- Acquire the point of contact information for Ministries of Health and Dental School Deans from previous mission Dental Lead
- Solicit donations of dental equipment, such as CEREC, from manufacturers

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62 CAPT David Hartzell, Office of the Chief, Dental Corps, BUMED. Interview conducted by Ms. Schnelle on 23 Sep 10.
• Prepare a list of potential Symposium topics (dependent upon skills sets of dentists supporting the mission) and allow the HNs to select the topics of interest
• Invite dentists from Developing and Developed HNs to present at the Symposium
• Assess HN dental capabilities and structure the training topics accordingly
Appendix G: Surgical Services

17.1 Introduction
Surgery has often been associated with technology-intensive interventions that can be extremely costly. Furthermore, surgery is neither specific to a particular disease or risk factor nor is it exclusive to a particular level of health care. Consequently, its public health potential has often been overlooked by health policy makers. The document, "Disease Control Priorities in Developing Countries" (DCP2) gives renewed attention to surgery as a cost-effective health care service for a range of common conditions.

DCP2 estimates that about 12 percent of the world’s disease burden is associated with conditions that could benefit from surgery. Injuries account for about 38 percent of these surgical conditions, followed by malignancies and congenital anomalies. Surgically treatable conditions fall into four general categories:

- The provision of competent, initial surgical care to injury victims, not only to reduce preventable deaths but also to decrease the number of survivable injuries that result in personal dysfunction and impose a significant burden on families and communities
- The handling of obstetrical complications (obstructed labor, hemorrhage)
- Timely and competent surgical management of a variety of abdominal and extra-abdominal emergent and life-threatening conditions
- Elective care of simple conditions, including hernias, club feet, and cataracts

DCP2 defines surgery as services involving sutures, incisions, excisions, manipulation, and other invasive procedures that require local, regional, or general anesthesia.

17.2 Surgical Outcomes and MOEs
The outcome for surgical services is to reduce pain and suffering from injuries or emergent/existing conditions, especially in times of disaster through timely and appropriate surgical intervention.

Restoring health is appropriate for surgical services to injury victims, women suffering from obstetrical complications and patients suffering from emergent and life-threatening conditions.

Improving health refers to the surgical care of simple conditions, such as hernias, club feet, and cataracts.

The ideal measure of effectiveness for surgical services would be the WHO estimate of DALYs (Disability Adjusted Life Year) for HN for the following categories:

- Injuries
- Maternal Conditions: the sum of the categories for maternal hemorrhage and obstructed labor
- Congenital Anomalies

Recall that the medical/mission planner is not responsible for calculating this DALY; only for reporting the current and historical values for the HNs.

17.3 Surgical Activities
The four surgical activities in support of restoring and improving health are the following:
The provision of competent, initial surgical care to injury victims, not only to reduce preventable deaths but also to decrease the number of survivable injuries that result in personal dysfunction and impose a significant burden on families and communities.

- The handling of obstetrical complications (obstructed labor, hemorrhage)
- Timely and competent surgical management of a variety of abdominal and extra-abdominal emergent and life-threatening conditions
- Elective care of simple conditions, including hernias, club feet, and cataracts

The type of capacity-building activities that can be conducted in support of a HN obviously depend upon the level of development of the HN and the available surgical skills. Generally speaking, for the Least Developed and Developing nations, the HN surgeons are so busy that they rarely have the time to attend training sessions on board the ship. The ideal capacity building activity would be to imitate Operation Smile, and offer to work with them in their facilities, on their cases. This approach, of course, requires advanced planning and coordination in partnership with the HN.

There are several types of activities, which - if performed with HN surgeons - could provide a significant capacity building impact to the HN. These activities include:

- Cataract surgery, especially the techniques for performing the surgeries in mobile clinics
- Training on management of childbirth deliveries (conducted in partnership with midwives)
- Surgical management of childbirth complications, such as fistulas and rectal tears
- Training on casting and non-surgical management of club feet
- Partner with Operation Smile for the treatment of cleft palate
- Circumcision techniques and training on the health benefits of circumcision (used in support of HIV/AIDS programs)
- Training on pelvis screenings to identify at risk pregnancies
- Surgical correction of large lymphatic filariasis hydroceles

**17.4 Surgical Outputs and MOPs**

The outputs and the MOPs for surgical services focus on the four basic activities described above; additional outputs and measures could be added in the future to capture capacity building activities.

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*Treating cataracts is one of the best-documented cases of surgical interventions provided at the population level. India has used mobile camps to provide cheap and efficient cataract surgery in rural areas. The number of surgeries more than doubled from 1.2 million in 1991–92 to 2.7 million in 1996–97. The cost was about US$97 per patient in camps, compared with US$176 in medical college hospitals and US$54 in nongovernmental hospitals. At less than US$25 per DALY, cataract surgery in India is highly cost-effective.*

*WHO, "Priorities in Health," pg 141*
Table 14: Surgical Outputs and Measures of Performance (MOPs)

<table>
<thead>
<tr>
<th>Surgical Outputs</th>
<th>Surgical MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide surgical care to injury victims</td>
<td>Number of surgeries provided to injury victims (in disaster responses, this can be further broken down by types of surgeries, i.e., orthopedic, thoracic, etc.)</td>
</tr>
</tbody>
</table>
| Improve the management of obstetrical complications | • Number of surgeries  
• Number of surgical training sessions (include type of training, description of target audience and size of target audience) |
| Improve the surgical management of abdominal and extra-abdominal emergent conditions | Number of surgeries provided |
| Provide elective care of simple conditions | Number of surgeries provided, broken down by type of surgery (e.g., clubfoot, cataracts, LF hydroceles) |
| Provide training to HN surgical professionals | Number of patients treated (if conducted in conjunction with a surgery)  
Number of HN surgeons involved  
Number of Training Sessions: number of attendees, topic, and profession of audience defined |

17.5 Planning Considerations

Under development.
18 Appendix H: Infectious Disease

18.1 Introduction
The material in this appendix is drawn largely from the document, "Priorities in Health," unless otherwise indicated. Additional material is drawn from the WHO document, "Disease Control Priorities in Developing Countries" (chapters 16, 18, and 21; TB, HIV/AIDS and malaria, respectively). The sections review common activities in managing and treating these diseases, and then identify those activities most appropriate for an MSO that are consistent with these internationally recommended interventions.

Many of the diseases and health conditions that account for a large part of the disease burden in less developed and developing countries are far less common in developed countries. These burdens are primarily associated with infectious diseases, reproductive health, and childhood illnesses. Just eight diseases and conditions account for 29 percent of all deaths in less developed and developing countries: TB, HIV/AIDS, diarrheal diseases, vaccine-preventable diseases of childhood, malaria, respiratory infections, maternal conditions, and neonatal health. For many of these diseases, cost-effective strategies are known, available, and feasible. The prevention and management of diarrheal disease is covered in the Public Health Appendices (Appendices K through R); this section will focus on communicable diseases such as malaria, TB, and HIV/AIDS.

18.2 Infectious Disease Outcomes and MOEs
Three communicable diseases, HIV/AIDS, TB, and malaria, account for about 10 percent of the deaths in less developed and developing countries. The outcome for infectious disease is to improve the treatment and management of infectious disease, focusing on TB, malaria, and HIV/AIDS.

This concentrated focus on these three critical diseases will allow MSOs to collaborate and support ongoing global health programs in these areas.

The associated MOEs for this outcome are:

Incidence, prevalence, and death rates associated with tuberculosis, specifically:
- TB incidence rate per year per 100,000 population (MDG and WHO indicator)
- TB prevalence rate per 100,000 population (MDG and WHO indicator)
- TB death rate per year per 100,000 population (MDG indicator)

Incidence and death rates due to malaria, specifically:
- Malaria death rate per 100,000 population, all ages (MDG indicator)
- Notified cases of malaria per 100,000 population (MDG indicator)

Incidence, prevalence, and death rates due to HIV/AIDS, specifically:
- Percentage of people living with HIV/AIDS, 15-49 yrs old (MDG indicator)
- HIV prevalence rate, women 15-49 years old, in national based surveys (MDG indicator)
- Deaths due to HIV/AIDS per 100,000 population per year (WHO indicator)

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64 The World Bank, “Priorities in Health,” The World Bank, 2006, pp 60
18.3 Infectious Disease Activities

This section will review those activities known to be effective in managing and treating TB, HIV/AIDS and malaria. However, it is always possible that it will be difficult to integrate the health engagement activities of a short-term MSO into longer, country-specific programs. In that case, it is appropriate for MSO missions to also support HNs on other infectious disease efforts, such as influenza, typhoid, cholera, dengue or some country-specific infectious diseases such as lymphatic filariasis or onchocerciasis. These interventions are discussed in additional depth in Section 18.3.4.

18.3.1 HIV/AIDS Activities

HIV is transmitted primarily through sexual intercourse, which accounts for approximately 80 percent of all infections. HIV is also transmitted via exposure to infected blood and from mother to child in utero due to membrane rupture, during childbirth due to fluid and blood exposure, and from post-natal behaviors of breastfeeding, and pre-chewing food. Efforts to reverse the epidemic are founded on preventive strategies. For sexual transmission and exposure to infected blood, such measures include educating people about infection and how it is transmitted, encouraging condom use and decreased sexual contact with concurrent partners, or adult circumcision practices, screening blood that will be used for transfusions, establishing needle exchanges for injecting drug users, and promoting universal access to clean needles in health care settings. Antiretroviral drugs can be used to halt mother-to-child transmission (MTCT) during birth; perinatal transmission can also be reduced by limiting the duration of breastfeeding and further preventing mixed feeding and pre-chewing, and finally by implementing maternal education programs. Epidemic control strategies must not only include preventative strategies including training, but should also incorporate treatment regimens using antiretroviral therapy (ART), which can extend lives and improve the quality of life for people living with AIDS.

In spite of these efforts, global attempts have not proved sufficient to control the spread of the pandemic or to extend the lives of the majority of those infected. The desired level of success has not yet been achieved for several reasons. Most people who could benefit from available control strategies (including treatment) do not have access to them. Modeling of the epidemic has determined that existing interventions could prevent 63 percent of all infections projected to occur between 2002 and 2010. However, as of now, fewer than one in five people at high risk of infection had access to the most basic prevention services, including condoms, AIDS education, MTCT prevention, voluntary counseling and testing (VCT), and harm reduction programs. Furthermore, care for those infected with HIV has historically been limited in developing country settings, and coverage of ART has been unavailable to most people living in resource-scarce countries (notable exceptions include Argentina, Brazil, and Mexico). In short, national programs have lacked the means to undertake a comprehensive approach to HIV/AIDS.

The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) five-year strategy recommends the following actions in support of HNs:65

- Support coverage of testing for pregnant women
- Support coverage of antiretroviral drug (ARV) prophylaxis and treatment, as indicated, of women found to be HIV-infected
- Support education programs on how HIV/AIDS is transmitted and how to prevent transmission

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• Support direct treatment of people infected with HIV/AIDS
• Support coverage for early infant diagnosis and testing of older children of HIV-positive mothers, with increased referrals and linkages to care and treatment
• Support training of health care workers in the prevention and treatment of patients with HIV/AIDS.

Specific experience from USNS MERCY and COMFORT missions indicates that performing HIV screening during an MSO is a controversial issue. In two USNS COMFORT missions, (2007 and 2009 Continuing Promise missions), the USNS COMFORT staff partnered with the local HN program for HIV screening; the MEDCAP operation attracted large numbers of people who could be rapidly screened by their HN medical staff and the COMFORT mission staff was available to treat opportunistic infections, such as thrush. In Guyana in 2007, the local HIV resources pulled up to the MEDCAP site with a screening van complete with posters. They occupied a room in the MEDCAP facility and the COMFORT staff was able to direct their patients to the HN staff.

A final thought on cost effective HIV/AIDS interventions for MSOs. The Naval Health Research Center (NHRC, Dr. Stephanie Brodine) is working on building capacity in HNs for Voluntary Testing and Counseling (VTC) for HIV/AIDS. The concept is to build a capacity in a specified area, by training about 50 VTC counselors who are then paid by the HN Ministry of Health (via the PEPFAR program) to provide those services.

18.3.2 TB Activities

TB remains the second largest cause of death from an infectious agent in the world, even though drugs to cure the disease have been available for 50 years. TB is high on the international public health agenda because of this enormous burden, because of the increase in TB cases associated with HIV infection and drug resistance, and because the internationally recommended TB control strategy known as Directly Observed Therapy Short Course (DOTS) is recognized as one of the most cost effective of all health interventions.

Interventions for controlling TB include preventing infection by means of vaccination, treating latent infections, and treating active disease. About 80 percent of infants worldwide currently receive a live attenuated vaccine, Bacille Calmette-Guérin (BCG). While the vaccine is protective against meningitis and miliary TB in children, it has low efficacy against pulmonary TB in adults. Vaccination is still cost-effective in places with a high incidence, but is often discontinued in low-incidence countries, because the risk of infection is low and the immune response to the vaccine makes tuberculin skin tests less effective for disease surveillance purposes.

Identifying and treating active cases is currently the primary and most effective measure to control TB. The cornerstone of this approach is the DOTS strategy. DOTS entails diagnosis with a positive sputum sample, short-course treatment with effective case management, regular drug supplies, and systematic monitoring to evaluate outcomes for every patient. Effective case management includes regular supervision by a health worker or community volunteer to ensure that the patient is actually taking the medication. The additional cost of monitoring patients and ensuring their adherence to the drug regimen even after symptoms have stopped has proven cost-effective because of its impact on cure rates, both in slowing the epidemic and limiting the development of drug resistance.

Success in controlling TB is closely related to the capacity of local health systems to maintain an effective system for identifying cases, beginning treatment, and assuring adherence. Continued
international financial assistance is critical to ensuring that TB control can be maintained in the world’s poorest countries, where the challenge of TB control is aligned with the challenge of building and implementing effective public health programs.

The proposed interventions, in support of the HN, for TB are the following:

- Support health care worker training on DOTS
- Promote best practices in prevention, diagnosis, and therapy of TB

18.3.3 Malaria Activities

Malaria is directly responsible for about 2 percent of all deaths in the world each year (an estimated 1.2 million deaths) and almost 3 percent of global DALYs. In Sub-Saharan Africa, malaria accounts for a large share of the disease burden, causing about 9 percent of all deaths. The share in other regions is much lower, approximately 1 percent, but still accounts for a significant number of deaths and disabilities.

In addition, malaria has a significant impact on other health conditions. Women contracting malaria during pregnancy are more likely to develop anemia and bear children with low birth weight who are then at greater risk of disease, disability, or even death. About 3.7 percent of maternal deaths, or 5,300 deaths per year, are the result of malaria-related conditions. Estimates show that between 190,000 and 934,000 children die each year when malaria contributes to the development of anemia. Being ill with malaria has a variety of other consequences. One study in Africa estimated that 13 to 15 percent of school absenteeism was due to malaria in children. Studies in Gambia and Kenya showed that children who were protected by insecticide-treated bednets grew faster than those left unprotected.

Drug use and vector controls are the main anti-malaria strategies and interventions for controlling malaria. Others aim at killing mosquitoes, preventing bites, blocking the development of the disease, or treating the disease itself. Environmental methods to kill the mosquitoes that spread malaria include eliminating breeding sites and the application of insecticides as is advocated in some circumstances in the context of indoor residual spraying. Other efforts to kill mosquitoes or prevent bites include indoor residual spraying and the use of insecticide-treated bednets. Though a range of prophylactic drugs are taken by travelers to malaria-ridden areas and pregnant women, finding drugs to treat the disease has become more of a challenge because of the emergence of drug-resistant strains of malaria globally.

Many places have successfully used insecticide-treated nets (ITNs) to reduce transmission. ITNs have been associated with reductions in child mortality by 18 percent and reductions in malarial episodes by as much as 50 percent in different parts of Africa. The impact of ITNs is related not only to the technical effectiveness of the nets and the duration and efficacy of the insecticide used, but to the social and cultural acceptance of their use and to their affordability. China, Tanzania, and Vietnam have successfully promoted the use of ITNs and achieved substantial control of malaria in many places. Strategies to encourage ITN use have included social marketing in Kenya and Malawi; assisted commercial sector development in Mali, Senegal, and Tanzania; free generalized distribution in Togo; and vouchers for highly subsidized ITNs distributed to pregnant women in Tanzania.

Treatment programs have traditionally relied on relatively inexpensive drugs, principally chloroquine though areas in which this drug can be used against P. falciparum, the deadliest common pathogen causing malaria, are rare. The key to success is timely detection and treatment. In South Africa, where 83 percent of the population lives within 10 kilometers of a health clinic, health professionals play a central role. In countries like Burkina Faso, Ethiopia,
and Uganda, where health clinics are much less accessible, reducing mortality and morbidity through treatment has required training mothers and community health workers to dispense treatment based on presumptive diagnoses. In most areas, strains of the parasite resistant to chloroquine and sulfadoxine-pyrimethamine are common. Fortunately, researchers have developed a new array of drugs, including artemisinin combination therapy (ACT), which costs more than traditional first-line drugs but is cost-effective in areas where drug-resistant strains are highly prevalent.

Health education and counseling are also significant for controlling malaria. They improve the timeliness of treatment by helping people identify the disease and seek appropriate care. They also promote better and more regular use of ITNs and encourage re-treatment of nets with insecticide as required. In addition, they further improve adherence to treatments, thereby reducing transmission of the parasite and the development of drug resistance.

As discussed above, recommended interventions, taken in support of the HN, include the following:

- Providing drug treatments
- Supporting assessments of drug-resistant malarial strains in country
- Providing insecticide-treated nets (ITNs)
- Supporting education and marketing programs for use of ITNs
- Supporting training of health care workers.

### 18.3.4 Other Infectious Diseases

As mentioned earlier, sometimes the MSO mission is of such short duration that it is difficult to engage meaningfully with the HN's on-going malaria, TB or HIV/AIDS programs. In addition, there are other infectious diseases that have a profound impact in many developing countries and where MSO missions may make a difference. This section introduces some cost effective interventions, recommended by the WHO and from previous humanitarian assistance missions.

#### 18.3.4.1 Lymphatic Filariasis (LF)

In recent years, new control tools and strategies have become available for lymphatic filariasis (LF) and the World Health Assembly adopted a resolution to eliminate the disease and launched a campaign in 2000. The primary goals are to interrupt the transmission of the disease and the prevention of filarial infection.

The core strategy for interrupting transmission is annual mass drug administration to treat the entire at-risk population for a period long enough to ensure that levels of blood microfilariae remain below those necessary to sustain transmission. Where feasible, diethylcarbamazine-fortified salt (DEC salt) as the only domestic source of salt for a period of at least six months is an alternative to the mass drug administration.

The principal strategy for alleviating suffering and decreasing the disability caused by LF focuses on decreasing secondary bacterial and fungal infections of limbs or genitals whose lymphatic function has already been compromised by filarial infection. In addition, simple and cheap methods exist to manage lymphedema, such as using water and soap occasionally supplemented with antibiotics. Studies in India, Africa, and the Americas have shown that such methods can significantly improve the quality of life of those affected.

One intervention successfully employed by the USNS MERCY and COMFORT is the surgical correction of large LF hydroceles, difficult to do in countries which may not have adequate surgical facilities. A hospital ship - with its surgical suites - can provide a safe venue for these
surgeries, if these activities are coordinated ahead of time with the HN and with the hospital ship surgical teams.

18.3.4.2 Onchocerciasis

Onchocerciasis control is based on vector control and large scale ivermectin treatment. Vector control measures are discussed in Appendix J, Public Health Services. In 1987, Merck & Co., the manufacturer of ivermectin, agreed to donate the drug for onchocerciasis for as long as needed. Clinical and community trials involving more than 70,000 people showed that annual ivermectin treatment was safe, prevented ocular and dermal morbidity, and significantly reduced transmission; however, ivermectin is a microfilaricide and does not kill the adult worms, and long-term treatment is needed to sustain suppression of the microfilarial load.

The African Programme for Onchocerciasis Control now uses a community approach for managing the ivermectin treatments, known as community-directed treatment with ivermectin. In this program, local communities - rather than the health services - direct the treatment process. A community decides collectively whether it wants ivermectin treatment, how it will collect ivermectin tablets from the medical supply entity, when and how the tablets will be distributed, who will be responsible for distribution and recordkeeping, and how the community will monitor the process. Health workers provide only the necessary training and supervision.

18.3.4.3 Summary of Recommended Activities

Some appropriate activities for these other arenas include:

- Enhancing hospital infection control for wound infections and C. difficile
- Train healthcare workers on the Hgb cards and how to titrate volume repletion in the setting of dengue distributive shock
- Partner with the HN in supporting a mass drug administration or distribution of DEC salts
- Coordinate corrective surgeries for patients with large LF hydroceles
- Support HN in managing ivermectin distribution

18.4 Infectious Disease Outputs and MOPs

Most of the infectious disease outputs and measures focus on training efforts, but also include the assessment and evaluation of country-specific infections such as lymphatic filariasis or onchocerciasis (see Appendix D, Surgical Services, for measures specific to surgical services, such as the corrective surgery of large LF hydroceles).
### Table 15: Infectious Disease Outputs and Measures of Performance (MOPs)

<table>
<thead>
<tr>
<th>Infectious Disease Outputs</th>
<th>Infectious Disease MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support HN in its management and treatment of TB</td>
<td>Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees.</td>
</tr>
<tr>
<td>Support HN in its management and treatment of HIV/AIDS</td>
<td></td>
</tr>
<tr>
<td>Co-locate primary care services with HIV screening services</td>
<td></td>
</tr>
<tr>
<td>Train Voluntary Testing and Counseling (VTC) counselors for a given region (coordinate with NHRC)</td>
<td></td>
</tr>
<tr>
<td>Support HN in its management and treatment of malaria</td>
<td></td>
</tr>
<tr>
<td>Support HN in the assessment and management of country-specific infections such as lymphatic filariasis and onchocerciasis</td>
<td></td>
</tr>
</tbody>
</table>

### 18.5 Infectious Disease Planning Considerations

- Under development
19 Appendix I: Children's Health

19.1 Introduction

From 1 month to 5 years of age, the main causes of death are pneumonia, diarrheal disease, malaria, measles and HIV and malnutrition contributes to more than one-third of all child deaths.66

- Worldwide, pneumonia is the most important cause of death in children under 5 years of age with nearly three-quarters of all cases occurring in just 15 countries. Major risk factors include malnutrition and indoor air pollution. Programs which address these causes, provide vaccines against respiratory pathogens and support breastfeeding are central to reducing the morbidity and mortality. Antibiotics and oxygen are vital tools for effectively managing the illness.

- Diarrheal diseases are another leading cause of illness and death among children in developing countries. Breastfeeding and improved food and water sanitation are pivotal in reducing diarrheal illnesses among young children as are immunization. Treatment with Oral Rehydration Therapy (ORT) combined with zinc supplements is safe, cost-effective, and life-saving.

- One African child dies every 30 seconds from malaria. Insecticide-treated nets prevent transmission and increase child survival.

- Over 90 percent of children with HIV are infected through mother-to-child transmission, which can be prevented with antiretrovirals during delivery, as well as safer delivery and feeding practices.

- About 20 million children under 5 worldwide are severely malnourished leaving them more vulnerable to illness and early death.

19.2 Children's Health Outcomes and MOEs

The outcome for children’s health is to improve the health status of children.

The MOEs are:

- Children under five mortality rate per 1,000 live births (MDG and WHO indicator)

- Infant mortality rate (0-1 year) per 1,000 live births (MDG and WHO indicator) Children’s Health Activities

As discussed earlier, recommended interventions, provided in coordination with the needs of the HN can include but are not limited to:

- Reducing Diarrheal disease burden by (discussed in more detail below)
  - Encouraging exclusive breastfeeding during a child’s first six months of life
  - Establishing local breast feeding education expertise able to provide education to expecting mothers and recently delivered couplets
  - Improved feeding practices by training local resources on hygienic food storage and preparation

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Providing Vitamin A (200,000 units) and zinc supplements
Introduction of better diarrheal case management.
Support HN development of Oral Rehydration Treatment (ORTs) capabilities
- Train HN resources on the evaluation of the nutritional status of children under the age of 5 and the use of data for targeted interventions and monitoring of effectiveness of interventions
- Establish a train the trainer program for "Helping Babies Breathe" (discussed in more detail below)
- Based on a needs assessment and in concert with HN resources, provide basic training on the management and treatment of pneumonia and asthma in children
- Provide training on "Pediatric Advanced Life Support (PALS)" based on a needs assessment and availability of required technology (discussed in more detail below)

19.2.1 Diarrheal Disease
Diarrheal disease is one of the top five preventable killers of children under 5 years old in developing countries. It is most dangerous for the young, with about 90 percent of deaths from diarrhea occurring in small children.

The strategies for reducing the burden of diarrheal disease focus on providing better and more hygienic feeding practices, immunization, improved water and sanitation, and better case management. They are also the major interventions available for preventing and treating diarrheal disease.

Better and more hygienic feeding starts with programs that promote exclusive breastfeeding during a child’s first 6 months of life. This reduces the likelihood that a child will ingest contaminated food or water during infancy and strengthens the child’s immune system through the ingestion of beneficial elements in the mother’s milk. Such programs include hospital policies that encourage breastfeeding, counseling and education from peers and health workers, mass media and community education campaigns, and mothers’ support groups. Better feeding practices once a child is 6 months old can also be encouraged and effective. Some 800,000 lives per year could be saved by more hygienic food storage and preparation and by promoting education, providing good nutrition, and ensuring adequate weight gain. Researchers have also shown that vitamin A and zinc supplementation have beneficial effects on diarrhea: both are associated with reducing the frequency of severe diarrhea, and zinc supplementation also reduces the incidence of diarrhea.

Another way to reduce diarrheal disease is by providing clean water and sanitation, because estimates indicate that contaminated water causes 90 percent of diarrheal cases among children. Nevertheless, the Disease Control Priorities in Developing Countries (DCP2 (chapter 41, p. 778) notes that “domestic hygiene—particularly food and hand hygiene—is the principal determinant of endemic diarrheal disease rates and not drinking water quality.” Rather than quality, the quantity, continuity, and convenience of water services is what reduces the incidence of diarrhea by encouraging more hygienic behavior with regard to personal care and food preparation.

When diarrhea prevention fails, simple and low-cost techniques are available for managing most cases. ORT, which consists of the oral administration of fluids containing simple salts and sugars, is inexpensive, can be administered by family members with limited training, and is highly effective at reducing the severity of many diarrheal diseases and averting death. After its introduction in the 1980s, many countries rapidly expanded the use of ORT to reach 33 percent of children with diarrhea in the Philippines, 35 percent in Brazil, 50 percent in Egypt, and 81 percent in Mexico. Zinc supplementation for children with diarrheal disease also helps reduce
the severity of the illness. For bloody diarrhea, treatment with antimicrobial drugs is indicated, but as with so many other diseases, resistance to first-line antimicrobials is spreading and making these drugs less effective.

19.2.2 Helping Babies Breathe

The WHO estimates that one million babies die each year from birth asphyxia (eg. inability to breathe immediately after delivery). The Helping Babies Breath (HBB) program addresses this challenge as well as helping to move forward Millennium Development Goal of reducing child mortality by two thirds from 1990 to 2015.

Helping Babies Breathe (HBB) is an evidence-based educational program to teach neonatal resuscitation techniques in resource-limited areas. It is an initiative of the American Academy of Pediatrics (AAP) in collaboration with the World Health Organization (WHO), US Agency for International Development (USAID), Saving Newborn Lives, the National Institute of Child Health and Development, and a number of other global health organizations.

The objective of HBB is to train birth attendants in developing countries in the essential skills of newborn resuscitation, with the goal of having at least one person who is skilled in neonatal resuscitation at the birth of every baby.

A key concept of HBB is The Golden Minute: Within one minute of birth, a baby should be breathing well or should be ventilated with a bag and mask. The Golden Minute identifies the steps that a birth attendant must take immediately after birth to evaluate the baby and stimulate breathing.

The HBB curriculum is designed to be used as part of a coordinated educational approach to early neonatal care and can be effectively combined with other curricula. It can be locally taught to birth attendants in diverse venues and locations. HBB focuses on practices that all persons who care for babies at birth can learn to care for healthy babies and/or assist babies who do not breathe on their own.

To accomplish this goal HBB has developed a comprehensive training solution, which includes:

- An evidence-based educational program, using the conclusions from the International Liaison Committee on Resuscitation (ILCOR) Consensus on Science that have undergone a WHO scientific technical review.
- Culturally sensitive, pictorial-based learning materials
- Realistic newborn simulator with ability to imitate an umbilical pulse, bag-mask ventilators, and bulb suction that can be cleaned by boiling which will be made available at cost to MDG countries.
- An ongoing mentorship program to provide: expert assistance, implementation guidance, knowledge exchange, integration and evaluation support, and continuous quality improvement for sustained practice outcomes and decreased infant mortality.

19.2.3 Pediatric Advanced Life Support (PALS)

The PALS course gives healthcare professionals the knowledge and skills to better recognize and treat critically ill infants and children. The course uses a scenario-based, team approach to teach pediatric emergency management of pediatric patients approaching or already in respiratory or

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cardiac arrest. The course covers treatment beyond the first few emergency minutes and goes through stabilizing patients or transport phases of a pediatric emergency, in or out of the hospital.

The training program includes:

- Recognition and treatment of infants and children at risk for cardio-pulmonary arrest
- The systematic approach to pediatric assessment
- Effective respiratory management
- Validate skills for 1- and 2-person CPR and AED skills for infant and child
- Defibrillation and synchronized cardioversion
- Intraosseous access and fluid bolus administration
- Effective resuscitation team dynamics

19.3 Children's Health Outputs and MOPs

The outputs and MOPs for children's health are summarized in the table below.

Table 16: Children's Health Outputs and MOPs

<table>
<thead>
<tr>
<th>Children's Health Outputs</th>
<th>Children's Health MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support HN in improving hygienic feeding practices</td>
<td>Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of education sessions performed, topics and number of attendees.</td>
</tr>
<tr>
<td>Improve diarrheal case management</td>
<td></td>
</tr>
<tr>
<td>Improve child mortality by providing vitamin A and zinc supplements</td>
<td>Describe the increased ability of the HN to provide vitamin A and zinc supplements</td>
</tr>
<tr>
<td>Establish train the trainer programs for HN to provide training to birth attendants on &quot;Helping Babies Breathe&quot;</td>
<td>Describe the number of trainers trained education sessions performed, profession and number of attendees.</td>
</tr>
<tr>
<td>Support HN efforts with the collection and interpretation of health statistics</td>
<td>Initially report efforts to tailor content of health surveys with eventual evaluation of the use of health indicators</td>
</tr>
<tr>
<td>Provide PALS courses to pediatric care professionals</td>
<td>Describe the number of education sessions performed, profession and number of attendees.</td>
</tr>
</tbody>
</table>

19.4 Planning Considerations

Under development


20 Appendix J: Women's Health

20.1 Introduction
Along with infectious diseases, maternal and neonatal conditions account for a substantial part of
the health gap between rich and poor countries; for example, more than 99 percent of maternal
deaths occur in the developing world. This differential represents the largest single disparity in
public health statistics between developing and less-developed countries and developed
countries. Overall, the average lifetime risk of maternal death is 1 in 4,000 in high-income
countries, 1 in 61 in middle-income countries, and 1 in 17 in the lowest-income countries.

Death rates during the neonatal period (from birth to 28 days old) also reveal vast differences
between rich and poor countries. Only 1 percent of all neonatal deaths occur in high-income
countries, where the neonatal mortality rate averages 4 per 1,000 live births. In low-income
countries, the average is about 33 per 1,000 live births. The majority of neonatal deaths occur in
South Asia because of its sizable population; however, 20 of the countries with the highest
neonatal mortality rates are in Sub-Saharan Africa. The highest rates are found in countries
where civil wars and political instability have exacerbated poverty, such as Ethiopia, Liberia, and
Sierra Leone. In these countries, neonatal mortality rates exceed 50 per 1,000 live births.

The maternal and infant mortality rates in a particular country may reveal more about the state of
its health system than any other figures. Achieving low maternal and infant mortality rates
requires an integrated and well-functioning health care delivery system that reaches communities
with education and counseling, helps people avoid unwanted pregnancies, promotes good
nutrition, screens for risks, assists healthy births, and responds to obstetric emergencies
effectively.

20.2 Women's Health Outcomes and MOEs
The outcome for women is to improve the health status of women.
The MOE is the maternal mortality rate (per 100,000 live births).
The MOE defined above is a very ambitious MOE that might require nation-wide and system-
wide changes over many years for any improvements to be visible. It might be more useful to
measure other surrogates of improvement in care - if these surrogate measures are collected
internationally and do not require MSO personnel to calculate and determine. Some examples of
these surrogate measures are:
- Postpartum hemorrhage rates
- Postpartum hemorrhage rates requiring transfusions
- Rates of women with hypertension being treated with magnesium sulfate in labor

20.3 Women's Health Activities

20.3.1 Overview
For women who are pregnant, a variety of maternal conditions can lead to death or disability
even though pregnancy and childbirth are not inherently pathological. Providing care during
normal, healthy pregnancy and childbirth while ensuring a state of readiness to deal with
potential health problems is the goal of safe motherhood programs.
Thirteen countries—Afghanistan, Angola, Bangladesh, China, Democratic Republic of Congo, Ethiopia, India, Indonesia, Kenya, Nigeria, Pakistan, Tanzania, and Uganda—account for 70 percent of all maternal deaths because of varying effects of population size, low incomes, and poor health care. Together South Asia and Sub-Saharan Africa account for 74 percent of the global burden of maternal conditions. Complications experienced by mothers also lead directly to many stillbirths and neonatal deaths each year, and several studies have shown that the survival prospects for a baby whose mother dies are low.

Just five conditions account for three-quarters of maternal deaths: hemorrhage, sepsis, hypertensive disorder, obstructed labor, and unsafe abortion. Many of these conditions can be effectively mitigated through prenatal screening and skilled attendants, and differences in access to such care explain a large part of the regional disparities. For example, fewer than 30 percent of women in the poorest countries have access to skilled birth attendants, compared with more than 98 percent of women in the world’s richest countries. Yet progress on this front is frustratingly slow: the regional average for birth attendants in Sub-Saharan Africa has increased by only 0.2 percent per year in the past decade.

Given the nature of pregnancy and childbirth, no single intervention or approach can fully address their associated disease burden. The only relevant analysis is to compare alternative packages that differ by content and means of distribution. For example, a comprehensive safe motherhood strategy might include the following range of interventions:

- Adolescent reproductive health education and services
- Community education on safe motherhood and newborn care
- Prenatal care and counseling, including nutritional supplements, blood pressure screening, sexually transmitted infection (STI) screening, treatment for syphilis, breastfeeding advice, tetanus toxoid immunization, and treatment of urinary tract infections
- Skilled assistance at delivery
- Care for obstetric complications and emergencies
- Postpartum care.

Studies have shown that four prenatal visits with a health care provider can be cost-effective. Training for such providers should include how to recognize danger signs and arrange for rapid transfer to an appropriate facility in the event of an emergency, and should also emphasize the use of skilled attendants during childbirth. Other essential elements of prenatal care include prevention and treatment of malaria and anemia, screening and treatment for syphilis, and immunization against tetanus.

In general, capacity-building activities must be matched to the HN’s level of development and needs. Mission specialty leads should assess countries as falling into one of three categories:

- Developed: capabilities on par with the U.S.
- Developing: HN has women's health capabilities, but needs improvement
- Least Developed: Host nation lacks basic maternal health capabilities.

Depending on the level of a Host Country’s development, some programs which offer a significant impact for improving Women’s Health in an MSO are:

- Advanced Life Support in Obstetrics (ALSO)
- Sexual safety for vulnerable populations (women and children)
- Cervical cancer prevention
• Pregnancy planning/spacing
• Life Saving Skills
• Helping Babies Breathe

It is also critical to understand that Women’s Health is an issue of significant cultural sensitivity; many cultures may not be comfortable with some of the services suggested in this appendix, and the planner needs to ensure full HN participation and support of any Women’s Health activities. Ideally, the HN will identify and select desired services for any of the clinical care offered by an MSO; this is paramount for Women’s Health. In many cases, the HN may even dictate exactly what can and can’t be performed by the mission staff.

Many of the activities below are fairly ‘high end’ services, which may be most appropriate for those more developed countries. It is unfortunately true that in the least developed countries, the focus may not be on women’s health as much as it is necessarily directed at public health issues such as drinking water, sanitation, and ensuring a safe food supply.

20.3.2 Advanced Life Support in Obstetrics (ALSO)\(^6\)

Advanced Life Support in Obstetrics (ALSO) helps physicians and other health care providers develop and maintain the knowledge and skills they need to effectively manage potential emergencies during the perinatal period. The program additionally serves as an aid for training residents in obstetrics as well as family medicine.
ALSO emphasizes labor and delivery room emergencies but also covers:
• Prenatal risk assessment
• First-trimester bleeding
• Consultant relationships
• Helping parents cope with a birth crisis
• Information on reducing medical malpractice risk

ALSO provides three courses:
• Provider course: a 2 day course for all maternity care providers, including physicians, nurse midwives, registered nurses and other clinicians
• Refresher course: a 1 day course on treating emergencies that may occur during pregnancy
• Instruction course: a 1 day course on specific teaching skills required for adult learning.
MOPs could include describing the type of course provided and number and professional occupation of attendees for each course.

It should be noted however, that the ‘Advanced Life Support in Obstetrics’ (ALSO) program might be relevant to both developing and developed countries, whereas the ‘Helping Babies Breathe’ might be most appropriate for least developed countries, such as Haiti. This is further detailed in subsection 33.2.6.

20.3.3 Sexual Safety for Women and Children

Women and children are at particular risk for sexual assault/exploitation in many nations.

Women and children are impacted by unwanted pregnancies, STI/HIV transmission, physical

trauma and psychological trauma. This is especially true for disaster relief and post-combat/refugee settings.

Educating host nations on how to address sexual safety and develop actions plans for their vulnerable populations can become an integral part of even the short-term MSO missions. MOPs might include reporting the development of a contingency plan for sexual safety in disaster operations; the number of women/children seeking safe haven as a result of a HN program; and the number of condoms distributed.

20.3.4 Cervical Cancer Prevention

Eighty percent of cervical cancer deaths worldwide occur in resource-limited countries. Most of these countries have no cervical cancer screening services.

JHPIEGO is an international non-profit health organization affiliated with Johns Hopkins University. For 35 years, JHPIEGO has designed and implemented effective, low-cost, hands-on solutions to strengthen the delivery of health care services for women and their families.

JHPIEGO has developed a program for a 1-time see and treat cervical cancer screening that has been successfully implemented in several resource-limited countries. It is a program that can be taught to host nation medical personnel (nurses & mid-wives) in a two-week time period and can be sustained by the host nation. The WHO also has a great training manual for implementing cervical cancer screening activities in resource-limited settings. MOPS could include the number of women seen/treated; development of national protocol for cervical cancer prevention; and number of medical personnel trained.

20.3.5 Pregnancy Planning and Spacing

Infant and maternal morbidity and mortality in resource-limited countries is greatly impacted by spacing of pregnancies. A recent demographic study in Zambia showed that pregnancies occurring less than 24 months since the previous pregnancy were at much higher risk than those spaced more than 24 months. Acceptance, availability and accessibility of effective contraception has the potential to significantly impact maternal/child mortality and morbidity. Likewise, other mechanisms for birth control that are not “contraceptive” per se have shown to be effective in curbing these rates as they lower pregnancy rates. One example of such would be the use of cycle beads, which help women determine their fertile periods and play an active role in family planning.

Thus MSOs are an opportunity for educating the local communities, teaching host nation medical personnel and providing family planning services. MOPs could include number of women provided with access to contraception or beads; number of classes provided on contraceptive use; and the number of medical personnel trained.

20.3.6 Life Saving Skills

In 1989, the American College of Nurse-Midwives (ACNM), in collaboration with the Government of Ghana, conducted two maternal mortality studies in the Greater Accra Region. Based on the results of these studies, the ACNM began providing assistance to Ghana on the development of a program for updating and expanding the skills of public and private-sector midwives with the goal of reducing the high infant and maternal mortality in the country. This program focused on training a core of midwife trainers in life saving skills (LSS) and the

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development of a ten-module training package that came to be known as the Life Saving Skills
Manual for Midwives (LSS Manual). ACNM’s approach was to provide didactic training in
critical knowledge, along with intensive on-the-job, competency-based clinical experience in
specific interventions aimed at preventing or minimizing the mortality and morbidity associated
with the major causes of maternal death and neonatal death.

In developing countries, 81% of maternal mortality is from direct causes: hemorrhage, sepsis,
unsafe abortion, pregnancy induced hypertension and obstructed labor. Globally, 77% of
neonatal death is from direct causes. Most of these deaths are preventable through quality
maternity care, improved nutrition, family planning, access to post abortion care, available
transportation and communication, rapid and safe blood services, improved education for women
and girls, and improved status of women within the culture.

The LSS manual and training program encourages an expanded role for the midwife in
recognizing and responding to life-threatening emergencies. The ten modules include:

- Introduction to Maternal Mortality
- Quality Antenatal Care
- Monitoring Labor Progress
- Episiotomies and Repair of Lacerations
- Prevention and Treatment of Hemorrhage
- Resuscitation (adult and infant)
- Prevention and Management of Sepsis (adult and infant)
- Hydration and Rehydration
- Vacuum Extraction
- Other Emergencies (labor and delivery problems, postabortion care, LSS Formulary)

20.3.7 Averting Maternal Death and Disability

The Averting Maternal Death and Disability Program (AMDD) is part of the Mailman School of
Public Health in the Department of Population and Family Health at Columbia University in
New York City. The organization helps to strengthen national health systems in providing
emergency care for all women experiencing life-threatening obstetric complications. It conducts
research and policy analysis, lends technical expertise, and advocates for solutions that reduce
maternal and newborn mortality.

One of AMDD’s services is to provide a weekly global maternal health literature review,
available at http://www.amddprogram.org/d/.

20.4 Women's Health Outputs and MOPs

The outputs and MOPs for women's health are still being refined at this time.

Table 17: Women's Health Outputs and MOPs

<table>
<thead>
<tr>
<th>Women's Health Outputs</th>
<th>Women's Health MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide Advanced Life Support in Obstetrics (ALSO) training</td>
<td>Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees.</td>
</tr>
<tr>
<td>Provide training sessions and support in developing a sexual safety action plan for women and children</td>
<td>Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees.</td>
</tr>
<tr>
<td>• Provide training on the JHPIEGO cervical screening method</td>
<td>• Number of women seen/treated</td>
</tr>
<tr>
<td>• Support HN in developing a national protocol for cervical cancer prevention</td>
<td>• Progress toward development of a national cervical cancer protocol</td>
</tr>
<tr>
<td>• Provide training on pregnancy planning and spacing</td>
<td>• Number of training sessions, specifying topic, number of attendees and number of instructors</td>
</tr>
<tr>
<td>• Supporting HN in improving access to contraception services</td>
<td>• Number of cycle beads distributed</td>
</tr>
<tr>
<td>• Provide training to midwives using the Life Saving Skills course</td>
<td>• Number of midwives trained</td>
</tr>
<tr>
<td>• Provide training to birth attendants, using the &quot;Helping Babies Breathe&quot; course</td>
<td>• Number of birth attendants trained</td>
</tr>
</tbody>
</table>

20.5 Planning Considerations

The health of women is a broad-spectrum journey from young adolescence through the child-bearing years and on into menopause. Each phase of a women’s journey offers health challenges ranging from health and wellness to episodes of acute and chronic illness. Embedded in this journey are the aberrant conditions of abuse, violence, and the practice of cultural norms that can have far-reaching effects on all phases of women’s health (i.e. female circumcision) that may or may not be apparent or discussed in the short time frame of Medical Stability Operations. Due to cultural sensitivity, HN capability, and a short time frame of intervention the ability to address many of the key elements facing women’s health remain a challenge. Maternal and infant mortality rates are a good indicator of the state of a health system. Medical Stability Operations have the ability to influence women’s health though education on nutrition, exercise and general health. Cultural sensitivity and HN support will be key drivers in the outcomes and methods of effectiveness achieved within a given region. Leadership assessment of HN development, length and type of mission and cultural sensitivity will drive the mission framework for women’s health. At a minimum education on general
health and hygiene, self-care during pregnancy, and nutrition and exercise (i.e. good body mechanics to decrease musculoskeletal pain) can be provided. Measures of outputs can be achieved through administrative tracking of patients seen and the number and content of classes taught. Measures of effectiveness in this specialty can be difficult given the fact missions do not consistently return to the same area making evaluation of interventions a challenge.

One of the common limitations to teaching the Home Based Life Saving Skills course from the American College of Nurse Midwives (ACNM) is the lack of electricity and equipment. The Advanced Life Support in Obstetrics (ALSO) course might also be difficult in many countries that don’t have fetal monitoring and are limited to no vacuum/forceps applications. A modified ALSO course involving postpartum hemorrhage and preeclampsia recognition and management would probably be the most beneficial with hands on practice.
21 Appendix K: Dermatology Services

21.1 Introduction

In assigning health priorities, skin diseases are sometimes thought of, in planning terms, as small-time players in the global league of illness compared with diseases that cause significant mortality, such as HIV/AIDS, community-acquired pneumonias, and tuberculosis. However, skin problems are generally among the most common diseases seen in primary care settings in tropical areas, and in some regions where transmissible diseases such as tinea imbricata or onchocerciasis are endemic, they become the dominant presentation.

Although mortality rates are generally lower than for other conditions, people’s needs for effective remedies for skin conditions should be met for a number of important reasons:

- First, skin diseases are so common and patients present in such large numbers in primary care settings that ignoring them is not a viable option. Children, in particular, tend to be affected, adding to the burden of disease among an already vulnerable group;
- Second, morbidity is significant through disfigurement, disability, or symptoms such as intractable itch, as is the reduction in quality of life. For instance, the morbidity from secondary cellulitis in lymphatic filariasis, which may lead to progressive limb enlargement, is severe, and subsequent immobility contributes to social isolation;
- Third, the relative economic cost to families of treating even trivial skin complaints limits the uptake of therapies. Generally, families must meet such costs from an overstretched household budget, and such expenses in turn reduce the capacity to purchase such items as essential foods;
- Fourth, screening the skin for signs of disease is an important strategy for a wide range of illnesses, such as leprosy, yet a basic knowledge of the simple features of disease whose presenting signs occur in the skin is often lacking at the primary care level.

A number of common diseases account for the vast majority of the skin disease burden; therefore implementing effective treatments targeted at those conditions results in significant gains for both personal and public health. Even where eradication is impossible, control measures may be important in reducing the burden of illness; yet few systematic attempts have been made to validate control programs for skin diseases as public health interventions. A recent (unpublished) survey by the International Foundation of Dermatology designed to provide information about community patterns of skin disease in nine different countries across the world—Australia (Northwest Territory), Ethiopia, Indonesia, Mali, Mexico, Mozambique, Senegal, Tanzania, and Thailand—and poor regions in other tropical environments from Mexico to Madagascar indicates that the following were the main skin conditions at the community level:

- Scabies. Although scabies was often the most common skin disease, it was completely absent in some regions.
- Superficial mycoses. This group of infections was usually reported as one of the three commonest diseases.
- Pyoderma. This disease was often, but not invariably, associated with scabies.

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- **Pediculosis.** This disease was the subject of much variation but is often overlooked in surveys. Firm, community-level data on the prevalence of pediculosis are deficient; thus, this disease is not discussed further in this chapter.

- **Eczema or dermatitis.** Although this disease was usually unclassified, irritant dermatitis and chronic lichen simplex were often cited.

- **HIV-related skin disease.** This disease was reported mainly in Africa. The pruritic papular dermatitis of AIDS is a specific problem.

- **Pigmentary anomalies.** Three different problems were cited: hypopigmentation, often diagnosed as pityriasis alba, a form of eczema; melasma; and dermatitis caused by cosmetic bleaching agents.

- **Acne.** This disease was reported as an emerging and common problem.

Dermatology services contribute to systemic wellness by diagnosing conditions often missed by primary care providers, such as leprosy, leishmania, lupus, unusual presentations of varicella, and a host of genoderm.

### 21.2 Dermatology Outcomes and MOEs

There are no outcomes or measures of effectiveness (MOEs) specific to dermatology services.

### 21.3 Dermatology Activities

The previous discussion highlights some potential interventions for dermatology. Dermatologists on MSO missions generally end up providing a great deal of direct care and consultation on dermatological issues. The potential interventions for dermatological problems include providing treatment for the more common skin ailments, in support of the HN. However, it is equally important – if not more so – to educate the local, HN medical assets in the proper identification, treatment, and prevention of common public health issues such as scabies. These training activities require meeting with local HN medical personnel to realistically understand what medicines/compounds would be available, and then to develop training that treatment strategies that use these available medications. Key training activities would include:

- Visual diagnosis of significant skin ailments
- Management and treatment of preventable skin diseases

The MOPs for these activities include detailed descriptions of the support provided to the HN, the extent of the support (e.g., number of training sessions conducted and the number of attendees, number of treatments provided, by type), and a brief description of the role of the MSO support to the HN.
21.4 Dermatology Outputs and MOPs

The outputs and MOPs for dermatology are still being refined at this time.

Table 18: Dermatology Outputs and MOPs

<table>
<thead>
<tr>
<th>Dermatology Outputs</th>
<th>Dermatology MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide training on the management and treatment of preventable skin diseases</td>
<td>• Describe support provided, the extent of the support and the intended outcomes for each activity. Specifically identify the number of training sessions performed, topics and number of attendees.</td>
</tr>
<tr>
<td>Provide training on skin cancer prevention and treatment</td>
<td>• Number of consultations conducted; specify the professional status of the consulting partner (e.g., physician, dermatologist, medical technician)</td>
</tr>
<tr>
<td></td>
<td>• Number of training sessions, specifying topic, number of attendees and number of instructors</td>
</tr>
</tbody>
</table>

21.5 Planning Considerations

Under development
22 Appendix L: Eye Care Services

22.1 Introduction

The WHO defines ‘low vision’ as visual acuity of less than 6/18 but equal to or better than 3/60, or a corresponding visual field loss to less than 20°, in the better eye with the best possible correction. ‘Blindness’ is defined as visual acuity of less than 3/60, or a corresponding visual field loss to less than 10°, in the better eye with the best possible correction. ‘Visual impairment’ includes both low vision and blindness.

The major causes of adult-onset blindness are cataract (47.8 percent), glaucoma (12.3 percent), macular degeneration (8.7 percent), diabetic retinopathy (4.8 percent), trachoma (3.6 percent), and onchocerciasis (0.8 percent). Uncorrected refractive errors are also a major cause of morbidity related to vision, but this type of disability is not included in the global burden of disease by definition.

In 2006, WHO released new global estimates, which, for the first time, included the global magnitude of visual impairment due to uncorrected refractive errors, accounting for an additional 153 million people. At least 13 million children (aged 5–15) and 45 million working-age adults (aged 16–49) were affected globally. Thus, according to WHO estimates, there are approximately 314 million people around the world whose vision is impaired, due either to eye diseases or uncorrected refractive errors. Of this number, 45 million people are blind. This statistic does not include uncorrected presbyopia, the prevalence of which is unknown.

The major causes of childhood vision loss have marked regional variations. They include vitamin A deficiency (xerophthalmia) and ophthalmia neonatorum in low-income countries, retinopathy of prematurity and hereditary conditions in middle-income countries, and congenital cataract and glaucoma everywhere.

Vision loss is chronic and, almost invariably, without remission. The extent of morbidity is related to the level of alteration of vision function. However, 80 percent of cases are avoidable, either through treatment (cataract and refractive errors) or through primary prevention (onchocerciasis, trachoma, glaucoma, and diabetic retinopathy). Strictly speaking, blindness attributable to glaucoma and diabetic retinopathy can be prevented. However, prevention depends on the availability of a simple, cheap, and efficacious diagnostic test and rigorous treatment.

Recently released World Health Organization (WHO) data indicate that the prevalence of visual impairment has been significantly reduced to 285 million. Of these, 246 million have moderate to severe visual impairment, while an estimated 39 million people are blind.

This reduction reflects the investment of governments and their international development partners in improving eye health services and strategies. Socioeconomic developments in many countries have also contributed to these welcome trends.

Key Global Facts:


• A total of 285 million people are visually impaired

• Of these, 39 million are blind

• 246 million have moderate to severe visual impairment

• 63% of those with low vision and 82% of blind people are over 50 years of age

Of the six WHO world regions, South East Asia and Western Pacific account for 73% of moderate to severe visual impairment and 58% of blindness.

The global initiative known as ‘VISION 2020: the right to sight’ was launched in 1999 and is now an established partnership between WHO and the International Agency for the Prevention of Blindness (IAPB). The mission of VISION 2020 is to eliminate the main causes of avoidable blindness by the year 2020 by facilitating the planning, development and implementation of sustainable national eye-care programmes based on the three core strategies of disease control, human resource development and infrastructure and technology, incorporating the principles of primary health care. The vision of VISION 2020 is a world in which no one is needlessly blind and where those with unavoidable vision loss can achieve their full potential. Its aims are to eliminate the main causes of avoidable blindness by the year 2020 and to prevent the projected doubling of avoidable visual impairment between 1990 and 2020.

From the outset, it has been considered that the goal of eliminating avoidable blindness by the year 2020 would best be achieved by integrating an equitable, sustainable, comprehensive eye-care system into every national health system. The initiative is intended to strengthen national health-care systems and facilitate national capacity-building.

The objectives of VISION 2020 are to:

• Raise the profile in key audiences of the causes of avoidable blindness and the solutions to the problem

• Advocate for and secure the necessary resources to increase prevention and treatment activities

• Facilitate the planning, development and implementation of national VISION 2020 programs in all countries

22.2 Eye Care Outcomes and MOEs

The outcome for the eye care services is presented in this section; there are no measures of effectiveness associated with this outcome.

The outcome for eye care is to improve visual function and reduce preventable causes of blindness.

22.3 Eye Care Activities

The proposed activities for eye care, in support of HN programs, are the following:

• Provide visual screening examinations for the major causes of blindness

• Provide corrective lenses

• Provide reading glasses.

The SEAR and WPR regions account for around 50% of the world’s population (Source: WHO, World Health Statistics, 2010)
In addition to these direct care activities, the Eye Care team of an MSO can directly support the VISION 2020 goals by providing data that the HN can use to assess their progress toward improving visual function in their country. The VISION 2020 Action Plan for 2006-2011 has identified indicators and proposed a monitoring framework to track progress in the implementation of interventions and the achievement of a set of objectives and target. These indicators include:

- Measuring the impact on the burden of blindness and visual impairment
- Measuring the related human resource development
- Measurements of the related eye health sector and technology development
- Measures of the Member States’ commitment to implementation of VISION 2020 and development of partnerships.

MSO Eye Care teams can provide data on:

- Prevalence of visual impairment: the absolute number of individuals (by gender and age) with a presenting visual acuity less than 3/60 and less than 6/18-3/60 in the better eye
- Prevalence of visual impairment: the absolute number of individuals (by gender and age) with a presenting visual acuity less than 3/60 and less than 6/18-3/60 in the better eye due to a preventable cause
- Cataract surgical rate: number of cataract surgical operations performed per million population per year
- Control of refractive errors: proportion of people by age group with uncorrected refractive errors causing visual impairment (can be measured by documenting the number of corrective lenses distributed, by refractive power)
- Prevalence of avoidable childhood blindness by cause: number of children blind from avoidable causes (must be clearly defined, e.g. vitamin A deficiency, cataract, retinopathy of prematurity) per million population
- Incidence of blinding trachoma: number of individuals presenting who are blind due to trachoma
- Population at risk for onchocerciasis: number of individuals presenting with or at risk for onchocerciasis
- Prevalence of age-related macular degeneration: number of individuals presenting with blindness or visual impairment due to age-related macular degeneration
- Prevalence of diabetic retinopathy: number of individuals presenting with blindness and visual impairment due to diabetic retinopathy
- Prevalence of glaucoma: number of individuals presenting with blindness and visual impairment due to glaucoma

These data collection activities are NOT listed as MSO measures of performance, because the number of individuals presenting to an Eye Care Team at a MEDCAP site do NOT constitute prevalence data; however, the HN can use this data to determine prevalence for these measures, given additional information on the presenting population. If strong relationships are forged with HN Eye Care professionals, this data may become accessible, and MSO personnel may be able to develop population health measures relevant to a single MSO.
### 22.4 Eye Care Outputs and MOPs

The outputs and MOPs for eye care services are provided in the table below.

<table>
<thead>
<tr>
<th>Eye Care Outputs</th>
<th>Eye Care MOPs</th>
</tr>
</thead>
</table>
| Provide screening examinations to as many patients as possible | • Provide number of screening examinations, as percentage of the population presenting to the MEDCAP  
• Note age and gender of individuals screened |
| Issue corrective lens | • Provide number of corrective lenses issued, as percentage of the population who received a screening exam  
• Note the refractive power of each set of issued corrective lenses |
| Issue reading glasses | Provide number of reading glasses issued, as percentage of the population who received a screening exam |
| Perform cataract or pterygium surgeries | Provide number of surgeries performed, as a percentage of the population that presented to the MSO diagnosed with the condition |
| Provide training on the eye care treatment and management | Number of training sessions, specifying topic, number of attendees and number of instructors |

### 22.5 Planning Consideration

Navy Medicine Optometry has established a valuable resource on Navy Knowledge Online (NKO) on planning and executing optometry services during a humanitarian assistance mission. The link for Operational Optometry is:  

The lessons learned and planning considerations presented below are a synthesis of the following After Action Reviews (AARs) posted on Operational Optometry as of February 2011.

- Cambodian Interoperability Program 2009 Optometry AAR (CDR Byman, LT Senko)
- Lessons Learned Balikatan 2009 (LT Linnell)
- Africa Partnership Station 2010 AAR (LCDR Sunman)
- Haiti 2010 Optometry Lessons Learned (CDR Jackson)
- Humanitarian Optometry USS PELELIU, 2007 (LCDR Behil; served as the basis for the discussion below)

#### 22.5.1 General

Optometry services are highly desirable and the demand can run as high as 500 patients per day. Try to provide some level of service to everyone who presents as many of these patients have gone through a great deal to be seen.
On some missions, patients are screened through medical before going to optometry, but this significantly degrades patient flow. Recommend that all eye patients go directly to optometry, where we had our own waiting room.

22.5.2 Planning
As far ahead as possible, find out which nations you will be assisting and how long you will be in each location. Review the demographics for each nation and/or location (if applicable) and try to discover the prevalence of refractive error. Sometimes mission reports from previous missions can help in this task.
The greatest challenge is determining how many spectacles are required and what powers are needed; Navy Medicine Optometry is currently developing a database to record the refractive powers of each set of spectacles distributed for each mission that will serve as a resource in this planning. A rough planning guide is described below.
- Identify how long you will be in a particular country
- Eliminate the first and last day that you will be in the country and the number of days left is an indicator of the number of MEDCAPs for that country (there may be multiple MEDCAP sites/day, as well).
- For each day, assume that approximately 300 patients will be seen by each provider; don't be afraid to err on the high side! Extra glasses can always be left at the local clinic.
- Use the Optometry database for information on the distribution of powers for the reading glasses, previous mission reports or the rough planning guide provided in the text box.

22.5.3 Staffing
Typical mission staffing is two optometrists and two optometry technicians and there would often be two MEDCAP sites run simultaneously - and sometimes more than two. Sometimes the advance planning teams commit to providing optometric services in more locations each day than the number of available optometrists. Leadership may opt for sending a single technician to a deployment site, but this isn't recommended because the technician will not be able to handle disease management issues. Ideal is providing optometry services in partnership with a HN ophthalmologist.

22.5.4 Supplies
Submit the order for pre-fabricated glasses as far in advance as possible (more than 3 months out) as it is safest to assume that there will be problems with the process of providing prefabricated spectacles. Basically, as soon as you are tasked with the mission, begin the process of ordering the glasses by talking with the Medical Supply Officer for the mission. Generally, do not assume that glasses can be fabricated on the ship, as there are too many variables that can go wrong in this process, and this frees up your technician to do other tasks.
ADSPECs do have a role in these missions, but must not be relied upon as the primary means of refractive correction when an eye care provider is available. In one mission, the provider noted that these adjustable glasses are remarkably versatile, but of poor quality. The failure rate in making these glasses is on the order of 30%; which means that about one third will have temple glue issues, leaking problems, brittle screws, stripped screws or barrel issues that will render the pair useless. In addition, these glasses are heavy and...unattractive. Many people may simply refuse to wear them.

Prior to arriving in a country, package about 300 pairs of glasses in varying powers for each MEDCAP for each provider. Each power was sorted into a separate box or compartment and easily labeled so once on site, the glasses were easy to account for and distribute. Recommend using plastic containers to transport the glasses and equipment in, as cardboard boxes can be easily crushed in transit or will dissolve if they get wet.

Sometimes a mission would be supplied with donated glasses; these need to be inspected and sorted prior to the mission. Many donated glasses are unusable due to their poor condition or because the prescriptions are so unusual (e.g., high degree of anisometropic correction).

In tropical countries, sunglasses are also essential in order to protect patients from UV exposure which leads to pterygium, early cataracts, and macular degeneration.

Artificial tears are also needed and provide an easy way to give all patients something, just as family medicine and pediatrics provide multivitamins to all of their patients. The high incidence of pterygium necessitates treatment for dry eye and irritation.

22.5.5 Equipment

Essential items to bring are: retinoscope, ophthalmoscope, transilluminator, acuity charts (multiple), tropicamide, proparacaine, tonopen, lens bars, prism bars, pens, markers. We also had a portable slit lamp, BIO, and a retinomax. These last three items were very helpful when they worked. Again, in a bright environment, the effectiveness of these instruments decreased dramatically.

In the heat and humidity, we found that the batteries in our instruments drained very quickly. Many instruments that we would have liked to have used more often stopped working after only a few hours. Make sure you have several new batteries for each item you bring and don't rely on rechargeable batteries, as the re-charging equipment may not always function or needs a transformer appropriate to the HN voltage.

22.5.6 Facility Setup

Each MEDCAP site would have a perimeter with a single entrance and exit to control patient flow. Site setup will be different for each location. In most cases, the MEDCAP is in either a clinic or a school, and when no building was available, a tent. Make known to the EMBEDS that optometry requires a dark space. Many times this will not be possible. Tents aren't very effective; they is too much light and they are incredibly hot. Buildings tend to be both darker and cooler.

Try to get at least two tables and four chairs to have enough room to set up your equipment and stage your glasses.

22.5.7 Transport

Transport times from a hospital ship (or gray hull) can be significant, on the order of several hours each day.
22.5.8 Translators

Translators are essential and the optometry team should ensure they receive at least one full-time translator for each MEDCAP site. The best translators are those with medical training, such as a nursing student or a local physician. In any case, be prepared to keep your instructions simple and to repeat yourself a great deal.

Treat your translators well! A small gift from the ship is a thoughtful gesture to someone who is volunteering their time to make your stay more productive.

22.5.9 Examinations

Each site will be different, but try to do the most good at each location and see all patients who come. The following guidelines summarize some basic ideas for seeing a large number of patients in a single day from various mission reports.

- The majority of patients will just want reading glasses. By far, most of our patients were over the age of 40. With large volumes of patients, the exam consisted of a brief history. The patient would then try a pair of reading glasses based on their age. If distance vision was their concern, we would do a quick ret, and then try the closest pair of distance glasses with them. We would then take a look with a transilluminator, and then an ophthalmoscope. This would take 1-2 minutes for each person. When it was slower, or a patient presented with an ocular disease complaint, we were able to do a more thorough exam.

- After the patients were triaged, the corpsmen would perform an autorefraction on the patients with a Nikon Retinomax autorefractor. They would then print out the autorefraction and have the patient hold it until they were examined by the optometrist. We would then ask the patient if they wanted distance or reading glasses (with the help of the translator) and refract them depending on their needs. Most of the time we were able to refract with just the autorefraction but sometimes we had to perform retinoscopy with the lens rack. We would then give them their distance or reading glasses that was close to their Rx. We were not trying to make the patients 20/20 but rather just 20/30 or 20/40. We performed direct ophthalmoscopy on a small percentage of patients only when indicated.

If performing eye care services with an ophthalmologist, any patients with cataracts or pterygium are immediately referred to ophthalmology.

22.5.10 Record Keeping

Each patient will be given a registration/examination form at check-in. There should be an area to write down notes of what you did, what you dispensed, and an area to report the diagnosis. We tried to gather as much information as we could for future missions. We kept track of the total number of patients seen, male or female, over or under age 40, what power glasses were dispensed, what medications were prescribed, and the number of referrals. Just have a spreadsheet and put a tick mark in each category and tally the numbers at the end of the day.

22.5.11 Surgical Referrals

The referral process will vary for each country as they each have different health care systems. Try to find out what the process is prior to arrival. Most countries we visited had a system where we would simply generate a list of patients, what the diagnosis was, and how they could be contacted. We would give this list to the host nation who would pass it to the nearest ophthalmologist that could do the surgery. In some countries, the surgery would be free for the patient and in others it was not. Find out if any other humanitarian missions will be coming through and will do ophthalmological procedures. If you will be traveling with an
ophthalmologist, they will most likely have their own patients who have been prescreened, but they may be open to taking some referrals from you.
23 Appendix M: Public Health Services

23.1 Introduction

One definition of public health is “a field of medicine that deals with the physical and mental health of the community, particularly in such areas as water supply, waste disposal, air pollution, and food safety.” Important elements of public health include the prevention and control of diseases, distinct from the treatment of individuals suffering from disease.

The current organization of the Public Health Service from the Menu of Health Services is depicted in Figure 13 and does not match the definition provided above. Due to input from various subject matter experts, this document recommends that the adaptive force package for public health services be modified slightly. For example, in the construct illustrated below, veterinary personnel are depicted as separate from other public health functions, which is not normally the case.

Figure 10: Original Depiction of Public Health Services

The “One World, One Health” approach to public health recognizes the “interconnectedness of human, animal, and environmental health…interventions that simultaneously and holistically address multiple and interacting causes of poor human health—unsafe and scarce water, lack of sanitation, food insecurity, and proximity between animals and humans—will yield significantly larger health benefits than policies that target each of these factors individually and in isolation.”

The recommended structure for the public health services is shown in Figure 14 below.

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Many MSOs are on the order of 2 weeks; ensuring sustained impact from such a short-term mission is difficult and requires a specific, defined public health focus. An effective public health mission is one that addresses a public health need using a coordinated and integrated public health strategy.

An important part of planning public health activities in support of the HN is recognizing that these activities exist in a natural hierarchy, as illustrated by the quote below.

**23.2 Public Health Outcomes and MOEs**

The outcome for public health is: to optimize health by addressing the multiple and interacting causes of poor human health: unsafe water, poor sanitation, food insecurity, and proximity between animals and humans, and the environment.

The following are the proposed MOEs specific to water and sanitation:

- Percentage of deaths among children under 5 years of age due to diarrheal disease (WHO indicator)
- Proportion of the population using improved drinking water sources, rural (MDG and WHO indicator)
• Proportion of the population using improved sanitation facilities, rural (MDG and WHO indicator)

Of course, public health activities contribute to population health in a variety of ways, and the complete list of MOEs can all be considered as ‘public health’ measures, in one way or another.

23.3 Public Health Activities

In planning the public health aspects of an MSO, the emphasis, as always, needs to be on defining activities that meet the three requirements for effectiveness:

• Partnership: the activity is conducted in partnership with the HN or NGO
• Sustainability: the activity is conducted in support of a national or international health initiative
• Capacity Building: the activity contributes to the HN capacity in some manner

Most of the activities conducted during an MSO can be considered as "public health activities," but this appendix - and the other appendices that follow - will focus on those activities that are specific to improving human health by addressing food, water, sanitation, and environmental issues.

As the quote to the right illustrates, advanced clinical curative interventions may be of limited impact in an environment where the populace does not have reliable access to potable water, food, shelter or adequate sanitation. For these interventions to be sustainable, the health system must include those traditional public health measures such as immunizations, health education, maternal and child health issues, and health surveillance.

The difference between the U.S. life expectancy of over seventy eight years and the forty three years in Afghanistan is not a result of cardio-bypass surgery or cancer therapy. It is access to potable water, nutritional food, waste management, and window screens for vector control; it has nothing to do with managing hypertension or treating chronic back pain; it has everything to do with immunizing children, hand washing and sterile delivery techniques for mid-wives. None of this is possible with a single-day visit from an American provider.

Information Paper, "Cooperative Medical Assistance Planning Considerations in Afghanistan," Combined Joint Task Force - 82, Bagram, Afghanistan

In earlier versions of this document, the Public Health appendix included information on Animal Care, Pest Management, Drinking Water, Sanitation, Epidemiology, Infection Control, and Food Security. The complexity of these public health issues led to their development as separate appendices and now this appendix serves to introduce the topic of public health and to discuss those public health activities that don't fit neatly into any single professional category. These public health activities include:

• Health Fairs
• Community Needs Assessments
• Subject Matter Expert Exchanges (SMEES)

Providing Health Fairs is an excellent mechanism for reaching large numbers of individuals, and can range from teaching secondary education students, nursing or medical school students, or other healthcare professionals. Topics typically included in Health Fairs include: Sexual Health, Handwashing, Keeping Drinking Water Safe, Proper Nutrition, Food Safety, and Vector Control. An excellent way to assess the effectiveness of these training sessions is to administer an
assessment of some kind to determine if knowledge of a topic improves after a training session. Experiences from recent missions have indicated that training is effective if one of the following objectives is met:

- The training session improved the knowledge or skills of the attendees in a specific area.
- The training session provided an opportunity for HN professionals to meet and discuss an issue in a common setting; some mission participants comment that public health training sessions provide a mechanism for HN public health personnel to talk to each other.
- The training session provides an opportunity for the HN public health professionals to share lessons learned with the U.S. personnel.

Community needs assessments should be performed only at the request of the HN and should support clearly defined objectives. The focus of Subject Matter Expert Exchanges (SMEEs) is to allow health professionals from the HN and the MSO staff to discuss an issue as professional colleagues. It is a valuable mechanism for demonstrating - by actions - that the MSO staff considers the HN professionals as partners, and not as recipients of charity. One effective mechanism for conducting a SMEE in this manner is to ask the HN professionals to share their public health successes with the MSO staff; this not only allows them to share their experiences - but understanding the strategy behind successful public health strategies is critical information in forming and sustaining an effective partnership with the HN.

23.4 Public Health Outputs and MOPs
The outputs and MOPs for general Public Health services are summarized in the table below.

<table>
<thead>
<tr>
<th>Public Health Outputs</th>
<th>Public Health MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide training on:</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors</td>
</tr>
<tr>
<td>Hygienic feeding practices</td>
<td>When conducting Health Fairs, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands.</td>
</tr>
<tr>
<td>Hygienic food storage</td>
<td></td>
</tr>
<tr>
<td>Use of Oral Rehydration Treatments in diarrheal case management</td>
<td></td>
</tr>
<tr>
<td>Protection of drinking water and water purification at point of use</td>
<td></td>
</tr>
<tr>
<td>Use of vector control equipment</td>
<td></td>
</tr>
<tr>
<td>Food safety</td>
<td></td>
</tr>
<tr>
<td>Food services capability</td>
<td></td>
</tr>
</tbody>
</table>

Support HN public health initiatives Describe extent and scope of support
Support HN in completing community needs assessments Type and scope of assessment and initial results
Conduct Subject Matter Expert Exchanges on topics of mutual interest with HN Public Health professionals Identify the number of training sessions performed, topics and number of attendees.
23.5 Planning Considerations

23.5.1 Tiered and Tailored Approach

In general, capacity-building activities must be matched to the HN's level of development and needs. Mission specialty leads should assess countries as falling into one of three categories:

- Developed: capabilities on par with the U.S.
- Developing: HN has capabilities, but needs improvement
- Least Developed: Host nation lacks basic capabilities.

Frequently, programs such as Continuing Promise and Pacific Partnership include visits to HNs from all three categories in a single mission, so mission planners need to include a spectrum of activities appropriate for each type of country. There is very little point in providing sophisticated instruction on fetal monitoring techniques in a country that does not use fetal monitoring equipment, or even have reliable power sources for such equipment. For these Least Developed countries, a simple class on handwashing and management of pre-eclampsia may be much more effective and useful to its healthcare providers.

When providing instruction courses to the HN personnel, consider the following aspects of the instruction:

- Do the course materials for the attendees require the attendees to be literate? Recommend the use of pictorial-based instructional materials. Many course materials provided by the WHO are pictorially based
- If the course materials require literacy, are they written in the language of the attendees, or do they require the attendees to be able to read and write English? The WHO, and other international organizations, often provide course materials in many different languages; using standardized course materials also improves the standardization of instruction across multiple missions
- Are the course materials culturally appropriate? For that matter, is the instruction itself culturally appropriate? Classes on contraception and family planning may not always be appropriate for all audiences, for example.
- Is the course length appropriate for the duration of the mission? A life saving skills course which takes three days to complete may not be viable for a mission that stays in a single country for only 4 or 5 days (without careful advance planning)
- Does the course use or demonstrate equipment that is not available to the HN?

23.5.2 Provide Sustainable Care

It is tempting in humanitarian assistance missions to provide the latest and most effective care to the patient, but it is critical to accept that this care is ineffective – and possibly harmful – if it can’t be adequately sustained by the HN. This is a major reason why a requirement for effective MSO missions is to provide support within the context of an existing national or global health program: to ensure that any care provided is effective and sustainable.

23.5.3 Public Health Training

One effective and simple method of assessing the quality of public health training is to conduct an oral assessment of the material taught during the class; answers can be quickly assessed by counting raised hands or other, similar mechanisms. This would allow the mission staff to rapidly evaluate the quality of the instruction and identify areas for improvement.
Furthermore, lessons plans and visual aids from previous missions should be saved and available to each mission team.

Training materials should be obtained from WHO or other international sources, as they are often available in storyboard form (does not require literacy) and may also be translated into a variety of languages. Advance detail about the target audience is critical to the development of effective training modules; the minimum knowledge necessary includes: age range, occupation, and some information on the audience’s current knowledge or expertise on the subject.

23.5.4 Subject Matter Expert Exchanges

An important part of building a partnership with a HN is being willing to learn from the HN, in addition to teaching. Listening to HN professionals is often a more challenging task for U.S. personnel, but it is a vital task, none the less. One effective mechanism is the Subject Matter Expert Exchanges, which are based on the assumption of professional equality, and allow for subject matter experts to exchange their experiences and knowledge freely. A useful technique for such exchanges is to ask the HN to share a recent success in their area; not only does this provide a forum for them to speak, but very often it provides a great deal of useful information and insights to the mission personnel.

23.5.5 Translators

Many After Action Reviews have noted the importance – and difficulty – of obtaining good translators. Ideally, the translators used during the mission are medical personnel familiar with the types of activities being conducted during the mission and are working with mission personnel to provide those services. Even in these best of circumstances, mission personnel will need to condense their instructions to the simplest form and learn to speak concisely, clearly, and slowly – and to be prepared to repeat themselves, as necessary. Translation software might be useful for modifying presentations for specific audiences.
24 Appendix N: Drinking Water

24.1 Introduction

The drinking water supply can be broken down into three categories, which are illustrated in the form of a ‘drinking water ladder’ similar to that developed for sanitation:

- Unimproved drinking water sources such as an unprotected dug well, unprotected spring, cart with small tank/drum, tanker truck, and surface water (river, dam, lake, pond, stream, canal, irrigation channels) or bottled water
- Improved drinking water sources other than piped water such as public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater collection.
- Water piped into a dwelling, plot or yard defined as piped household water connection located inside the user’s dwelling, plot or yard.

The main benefit of water supply, sanitation and hygiene is a reduction in diarrheal disease, although the effects on other diseases are substantial. Providing safe, reliable, piped-in water to every household is an essential goal, yielding optimal health gains while contributing to the Millennium Development Goal (MDG) targets for poverty reduction, nutrition, childhood survival, school attendance, gender equity and environmental sustainability. While strongly committed to this goal and to incremental improvements in water supplies wherever possible, the World Health Organization (WHO) and others have called for targeted, interim approaches that will accelerate the health gains associated with safe drinking-water for those whose water supplies are unsafe.

Interventions to treat and maintain the microbial quality of water at the household level are among the most promising of these approaches. In many settings, both rural and urban, people have access to sufficient quantities of water, but that water is unsafe. Effective household water treatment and safe storage (HWTS)—if used correctly and consistently—can significantly improve the microbiological integrity of the water at the point of ingestion. Ensuring widespread and equitable access to effective HWTS solutions to those for whom water is a significant pathway for the transmission of enteric infection can deliver some of the health benefits of improved water supplies and thus complement other efforts in water, sanitation and hygiene.

This section will briefly describe some household-based interventions for HWTS. Critical to the success of these interventions is the need to:

- Focus on the user’s attitudes and aspirations
- Take advantage of simple technologies to minimize the need for intensive behavior change promotion
- Promote non-health benefits, such as cost savings, convenience and aesthetic appeal
- Use schools, clinics and women's groups to gain access to more vulnerable population segments
- Take advantage of existing manufacturers and supply channels to extend coverage

This section will briefly discuss the advantages and disadvantages of various HWTS strategies.

24.1.1 Boiling

Boiling is the most prevalent means of treating water in the home; it is practiced by hundreds of millions of people, perhaps because the necessary hardware is already available in most cases. In certain Asian countries, boiling is practiced by more than 90% of the population. Boiling is among the most effective methods of improving the microbiological quality of water, even under a variety of conditions that challenge other methods. This combination of scalability and effectiveness renders boiling the benchmark by which other methods must be measured. At the same time, boiling presents potential disadvantages in actual practice that raise questions about whether it should continue to be promoted over other HWTS options. These include relatively high cost compared with certain alternatives, susceptibility of boiled water to recontamination, contribution to poor indoor air quality and adverse environmental impact. Some of these shortcomings can be minimized with cleaner fuels, more efficient stoves, the use of simple indicators to show householders when pasteurization temperatures have been reached, and safe storage. Unless and until alternatives to boiling have demonstrated higher performance at scale, boiling should continue to be encouraged.

24.1.2 Safe Water System

CDC and the Pan-American Health Organization introduced the “safe water system”, a combination of sodium hypochlorite (liquid bleach), safe storage and a hygiene message as a means by which householders could protect themselves against cholera. No single approach has been more extensively tested, and, apart from boiling, none has reached the same levels of scale, despite some resistance in uptake due to objections to taste and odor. Like sodium hypochlorite, chlorinated isocyanurates (e.g. sodium dichloroisocyanurate [NaDCC] tablets) produce hypochlorous acid to disinfect drinking-water. At the same time, NaDCC may have certain advantages over sodium hypochlorite owing to its solid form, long shelf life, visual activity, convenience and lower up-front cost (although higher overall cost per litre treated). Microbiological performance has been demonstrated in the laboratory and in the field, and a health impact trial has recently been completed in Ghana.

24.1.3 Solar Disinfection

Solar disinfection, which synergistically applies the biocidal action of heat and ultraviolet radiation, has also been shown to be effective, both microbiologically and in reducing diarrhoeal disease and cholera. Although continuous commercial systems are used in some settings, the approach that has gained the largest traction among low-income populations consists simply of filling clear plastic bottles with water and placing them on the roof to expose the water to sunlight for at least 6 h. Like boiling, this method is fundamentally a behavior change strategy more than a product and has little commercial potential. Accordingly, it is promoted exclusively by governments and NGOs. Despite these limitations, solar disinfection reported more than 2.1 million users as of the end of 2007.

24.1.4 Filtration Options

Among various filtration options whose microbiological performance has been demonstrated, only ceramic and biosand filters have been promoted actively as HWTS options for lower-income populations. Ceramic filters have been tested widely in the laboratory and in the field and
have demonstrated their capacity for reducing diarrhoeal disease, despite little, if any, capacity for removing viruses.

While ceramic “candle” filters have a long history in treating water in the home, inconsistent performance owing to poor quality of the medium, especially in Asia, has limited the potential of these devices for making an important contribution to overall scale. Large producers of higher-end ceramic candles in Brazil, Switzerland, the United Kingdom and elsewhere have so far demonstrated only minor interest in lower-income markets, although 100 000–150 000 microbiological-quality units are estimated to be in use.

Pot-style filters have shown more promise recently, especially in Cambodia, where factories have produced more than 194 000 filters to date, overcoming quality challenges and creating some demand at full cost-recovery pricing. Quality control, breakage in transport or cleaning, high up-front cost, slow flow rates, the need for regular cleaning and susceptibility to water recontamination are challenges that may inhibit scaling up this alternative.

Biosand filters provide a means by which the well-established process of continuous slow sand filtration can be carried out intermittently, thus making it suitable for household-based applications. While somewhat less effective in microbiological performance than other HWTS options—possibly due in part to recontamination arising from a lack of safe storage—biosand filters have nevertheless been shown to reduce diarrhoeal disease in efficacy trials. Like solar disinfection and pot-style ceramic filters, biosand filters have been promoted mainly by NGOs.

24.2 Drinking Water Activities

Experience in previous missions indicate that drinking water solutions need to be simple, meaning using the techniques of boiling water and solar disinfection. More complicated solutions, such as filtration and chemical disinfection, should be limited to persons with more training or who are associated with a professional organization (e.g., school or hospital) that can help to sustain the effort.

The key public health activities for improving drinking water include:

- Training programs on how to prevent diarrhea by using safe drinking water and proper techniques for safeguarding water (storage, transport, boiling, chlorination, etc)
- Protection of drinking water and water purification at point of use; can train a targeted audience of community volunteers for a 'train the trainer' effect
- Installation of sand filtration units which provide clean drinking water
- Repair of hospital well pumps
24.3 Drinking Water Outputs and MOPs

The outputs and MOPs for drinking water services are provided in the table below.

**Table 21: Drinking Water Outputs and MOPs**

<table>
<thead>
<tr>
<th>Drinking Water Outputs</th>
<th>Drinking Water MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training sessions on safe use and storage of water</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors</td>
</tr>
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<td></td>
<td>When conducting training sessions, conduct simple pre and post-tests of attendee knowledge; these tests don’t</td>
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</tr>
<tr>
<td>Provide safe drinking water</td>
<td>• Number of sand filtration units installed</td>
</tr>
<tr>
<td></td>
<td>• Number of facility corrective actions implemented</td>
</tr>
<tr>
<td>Assess existing sources and facilities with users and community leaders.</td>
<td>• Number of assessments conducted</td>
</tr>
<tr>
<td></td>
<td>• Number of opportunities identified for improvement that were implemented (e.g. patched a crack in the</td>
</tr>
<tr>
<td></td>
<td>wellhead, placed a cover on a storage tank, etc.</td>
</tr>
</tbody>
</table>

24.4 Planning Considerations

25 Appendix O: Sanitation

25.1 Introduction

Readers of the BMJ (British Medical Journal) recently identified sanitation as “the most important medical advance since 1840.” Nevertheless, only 62 per cent of the world’s population has access to improved sanitation – that is, uses a sanitation facility that ensures hygienic separation of human excreta from human contact. A further 8 per cent shares an improved facility with one or more households, and another 12 per cent uses an unimproved sanitation facility – one that does not ensure hygienic separation of excreta from human contact. The remaining 18 per cent of the world’s population practices indiscriminate or open defecation. The WHO defines sanitation coverage as a four-step ladder that includes the proportion of the population:

- Practicing open defecation in fields, forests, bushes, bodies of water or other open spaces, or disposal of human feces with solid waste.
- Using an unimproved sanitation facility that does not ensure hygienic separation of human excreta from human contact. Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines.
- Using a shared sanitation facility of an otherwise acceptable type shared between two or more households. Shared facilities include public toilets.
- Using an improved sanitation facility that ensures hygienic separation of human excreta from human contact. They include: flush or pour-flush toilet/latrine to a piped sewer system, septic tank or pit latrine; ventilated improved pit (VIP) latrine; pit latrine with slab; and composting toilet.

25.2 Sanitation Activities

Latrine construction has been demonstrated to be the most important public health intervention for the prevention of diarrheal disease in the populations of developing countries. Latrine construction is determined on a household basis, with the percent coverage being extrapolated to the population covered. Crude construction designs, such as a pit or a structure hanging over the water, do not qualify. The construction of the latrines also needs to be accompanied by instruction on maintaining the latrine.

- Construct latrines
- Teach how to sanitize open pits or spilled sewage w/ lime or chlorine; a good topic to combine with a handwashing class
- Teach how to sanitize open pits or spilled sewage w/ lime or chlorine.

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81 Laron, Charles; Mercer, Alan, “Global Health Indicators: An Overview,” Canadian Medical Association Journal, Nov. 9, 2004; 171(10)
25.3 Sanitation Outputs and MOPs

The outputs and MOPs for sanitation services are still in development.

Table 22: Sanitation Outputs and MOPs

<table>
<thead>
<tr>
<th>Sanitation Outputs</th>
<th>Sanitation MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the number of improved sanitation facilities</td>
<td>Percent of latrine construction</td>
</tr>
<tr>
<td>Improve knowledge on how to construct and maintain various types of latrines</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors when conducting training sessions, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands.</td>
</tr>
<tr>
<td>Improve knowledge on disease organisms and transmission</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors when conducting Health Fairs, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands.</td>
</tr>
</tbody>
</table>
| Assess existing sources and facilities with users and community leaders. | • Number of assessments conducted  
• Number of opportunities identified for improvement that were implemented |

25.4 Planning Considerations

26 Appendix P: Pest Management

26.1 Introduction

Vector-borne diseases are responsible for a significant fraction of the global disease burden and have profound effects not only on health but also on the socioeconomic development of affected nations. Thus, an econometric model for malaria — which is responsible for more than 1 million deaths every year — suggests that countries with intensive malaria have income levels only 33% of those without malaria.

Vector control has a proven record in the prevention and control of vector-borne disease. The distribution and incidence of vector-borne disease are strongly determined by the ecological conditions that favor different species of disease vector. Knowledge and understanding of these characteristics provide a unique opportunity to prevent and control such diseases, by reducing vector–human contact and vector population density and survival.

Integrated Vector Management, or IVM, is based on the premise that effective control is not the sole preserve of the health sector but requires the collaboration of various public and private agencies and community participation. The engagement of communities is a key factor in assuring sustainability. IVM entails the use of a range of interventions of proven efficacy, separately or in combination, in order to implement more cost-effective control and reduce reliance on any single intervention. This strategy also serves to extend the useful life of insecticides and drugs by reducing the selection pressure for resistance development.

Although many vector-borne disease control programs continue to rely heavily on vector control, the benefits are far from being fully realized. Reasons for this include the following:

- The skills to both manage and implement vector control programs remain scarce, particularly in the resource-poor countries that are in most need of effective vector-borne disease control. This has led to control measures that are unsuitable or poorly targeted, with insufficient coverage and consequent wastage of resources and sometimes avoidable contamination of the environment.

- The use of insecticides in agriculture and poor management of insecticides in public health programs have contributed to resistance in disease vectors.

- Development programs, including irrigated agriculture, hydroelectric dam construction, road building, forest clearance, housing development and industrial expansion, all influence vector-borne diseases but opportunities for cooperation between sectors and for adoption of strategies other than those based on insecticides are seldom grasped. Integrated vector management is a process for managing vector populations in such a way as to reduce or interrupt transmission of disease.

Characteristic features of IVM include:

- Methods based on knowledge of factors influencing local vector biology, disease transmission and morbidity;

- Use of a range of interventions, often in combination and synergistically;

- Collaboration within the health sector and with other public and private sectors that impact on vectors;

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• Engagement with local communities and other stakeholders;
• A public health regulatory and legislative framework.
Effective IVM requires the establishment of principles, decision-making criteria and procedures, together with time frames and targets. These principles need to be incorporated into national health policies and supported by legislation and regulation. To be successful, IVM requires an inventory of essential functions and organizational structures that optimize the use of financial, human and technical resources for vector-borne disease control. The key elements are:
• Advocacy, social mobilization and legislation: promotion and embedding of IVM principles in development policies of all relevant agencies, organizations and civil society; establishment or strengthening of regulatory and legislative controls for public health; empowerment of communities.
• Collaboration within the health sector and with other sectors: consideration of all options for collaboration within and between public and private sectors; application of the principles of subsidiarity in planning and decision-making; strengthening channels of communication among policymakers, vector-borne disease control program managers and other IVM partners.
• Integrated approach: ensure rational use of available resources through application of a multi-disease control approach, integration of nonchemical and chemical vector control methods, and integration with other disease control measures.
• Evidence-based decision-making: adaptation of strategies and interventions to local vector ecology, epidemiology and resources, guided by operational research and subject to routine monitoring and evaluation.
• Capacity-building: development of essential physical infrastructure, financial resources and adequate human resources at national and local level to manage IVM programmes based on a situation analysis.

26.2 Pest Management Activities
The proposed activities for pest management include:
• Support vector control programs, particularly that of mosquitoes in countries where malaria or dengue and that of sandfly where leishmaniasis is an issue
• Donations of vector control equipment (i.e., Thermofogger)
• Initiate vector control measures for lymphatic filariasis and onchocerciasis
26.3 Pest Management Outputs and MOPs
The outputs and MOPs for pest management services are still in development.

Table 23: Pest Management Outputs and MOPs

<table>
<thead>
<tr>
<th>Pest Management Outputs</th>
<th>Pest Management MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve vector control equipment</td>
<td>Describe the equipment donated in terms of its value to the HN vector control program</td>
</tr>
</tbody>
</table>
| Improve knowledge on Integrated Vector Management principles and practices | Number of training sessions, specifying topic, number of attendees and number of instructors  
|                                                              | When conducting training sessions, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands. |

26.4 Planning Considerations
27 Appendix Q: Animal Health

27.1 Introduction

Much of the following section is excerpted from a WHO report, “Future Trends in Veterinary Public Health.” In this section, the term ‘veterinary personnel’ includes para-veterinary personnel and does not specify only those individuals trained as veterinarians.

Veterinary science contributes to human health by promoting the health of animals, which provide necessary income, food, transport, draught power and the raw materials for clothing throughout the world. By promoting animal health, the quality and quantity of animal products is enhanced. This is especially important in developing countries, where foods of animal origin help to improve the nutritional status of malnourished people by providing high-quality protein and micronutrients. In the same way, using animals for draught power and their manure for fertilizer and fuel increases crop production, especially on small-scale farms. In all countries, improved animal health and quality assurance of foods of animal origin contributes to food security at local and national levels. Agricultural policies that encourage both small-scale producers and larger operators contribute to economic development through national and international trade in animals and animal products; increased livestock productivity facilitates rural development and reduces rural–urban migration by stimulating the rural economy.

Veterinary Public Health (VPH) is an essential part of public health and includes various types of cooperation between the disciplines that link the health triad of people–animals–environment, and all of its interactions. Examples of subjects related to this triad include zoonoses, chemical residues, animal production systems, nature conservation, and wildlife and water pollution. To better understand the local and regional differences involved in implementing VPH in different geographical areas, countries and regions can be classified into three stages of socioeconomic development.

Stage 1 is characterized by virtually no organized agricultural society, very basic actions against animal diseases, and little systematic governmental support for improving livestock and the production of food of animal origin. Because national income is directly linked to production, countries and regions at this stage are among the poorest in the world. The low productivity also leads to malnutrition and a lower physical ability to produce food, further undermining the ability of these countries to feed their own populations. In countries and regions at this stage, the major role of VPH almost completely overlaps with that of basic veterinary medicine (i.e. taking care of primary needs at the local level, such as animal power for transportation and traction, food production and the control of animal diseases).

Stage 2 is characterized by some wealth and the existence of legislation for public health and control of animal diseases. Inspection, condemnation and rendering of meat are well organized, at least on paper. However, modern quality assurance systems based on good manufacturing practices (GMP), HACCP or good veterinary practices do not exist. VPH is thus largely involved in meat and food inspection and in programs for controlling some zoonoses. There is an emphasis on prevention of human diseases, rather than on programs to eradicate zoonoses, and the diagnostic skills of veterinarians form the basis of the VPH system. The more advanced systems involve veterinarians in food hygiene in areas such as fish, vegetables and retail markets. Although there is some discussion of environmental pollution, animal welfare and the health

risks associated with companion animals, in most cases these are considered as merely a formality in the work of VPH veterinarians.

Stage 3 is characterized by a relatively affluent life style, highly organized agricultural production systems, and industrialized meat and milk production. Large production animal units are often kept indoors with controlled feed, water, waste disposal, quarantine procedures for imported animals, and quality assurance systems based on HACCP or good veterinary practices. Records are kept on all critical control points and the responsibility for animals, products or disposals is at the production level. Governmental control consists primarily of monitoring the herd or flock and the actual production system, rather than inspection of individual animals.

The definition of the above stages implies that most of the veterinary work in MSOs will be within the area defined as Stage 1, meaning the major role of veterinarians in humanitarian assistance missions is on primary care of the animal population. For these countries, capacity building focuses on animal health programs and programs to control zoonotic diseases.

Most veterinary and extension programs exhibit a bias towards cattle and other large animals, which are typically controlled by men. Meanwhile, goats and other small animals, which may contribute more to family food security, receive relatively scant attention. UN Food & Agriculture Organization, "Veterinary Public Health and Control of Zoonoses in Developing Countries"

27.1.1 Control of Zoonotic Diseases

WHO defines zoonoses as diseases and infections that are naturally transmitted between vertebrate animals and humans. A zoonotic agent may be a bacterium, a virus, a fungus or other communicable disease agent. At least 61% of all human pathogens are zoonotic, and have represented 75% of all emerging pathogens during the past decade. Except for the newly

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emerging zoonoses such as SARS and highly pathogenic avian influenza H5N1, the vast majority is not prioritized by health systems at national and international levels and is therefore labeled as neglected.

Interventions to control zoonoses require concerted action between the veterinary and the human health sectors, because they affect both people and animals. WHO has long taken the lead in bringing together international and national organizations to deal with the problems posed by both emerging and endemic zoonoses. Although much publicity has been accorded to the emerging zoonotic diseases, it is the endemic, and occasionally epidemic zoonoses, which year in, year out affect poor livestock keepers in marginalized communities.

Many zoonotic diseases impact significantly on human health as well as livestock productivity, thus undermining livelihoods both by causing illness in the household and threatening its livestock and their output. WHO and other international agencies hence saw the need in strengthening multidisciplinary, intersectoral and cross cultural efforts by health, agriculture, environment and other sectors of society at the national and international level.\(^{85}\)

Seven neglected zoonotic diseases with great impact on human populations are:

- Anthrax (multiple species)
- Bovine tuberculosis (cattle)
- Brucellosis (multiple species, particularly goats and sheep)
- Cysticercosis and neurocysticercosis (NCC)
- Cystic echinococcosis or hydatid disease
- Zoonotic sleeping sickness or human African trypanosomiasis (HAT)
- Rabies

### 27.1.2 Transboundary Diseases\(^{86}\)

The Animal Health Service within the AGA Division of FAO addresses four animal health related issues: transboundary diseases, vectorial diseases, veterinary public health (including food safety) and veterinary services.

Transboundary Animal Diseases (TADs) may be defined as those epidemic diseases which are highly contagious or transmissible and have the potential for very rapid spread, irrespective of national borders, causing serious socio-economic and possibly public health consequences. These diseases which cause a high morbidity and mortality in susceptible animal populations, constitute a constant threat to the livelihood of livestock farmers.

Furthermore, their potential consequences are of such a magnitude that their occurrence may also have a significant detrimental effect on national economies.

Seven transboundary diseases are of particular interest:

- African swine fever
- Avian influenza: Highly pathogenic avian influenza (HPAI) program
- Contagious bovine pleuropneumonia
- Foot and mouth disease (FMD): affects multiple species

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Hemorrhagic septicemia: affects cattle
Rift valley fever: affects multiple species
Rinderpest: affects multiple species; Global Rinderpest Eradication Program (GREP)

27.1.3 World Organization for Animal Health (OIE) Performance of Veterinary Services (PVS) Tool

The World Organization for Animal Health (OIE) Performance of Veterinary Services (PVS) Tool is an important internationally recognized tool for assessing the animal health services in a nation; it can be found on the OIE website, (http://www.oie.int/eng/OIE/en_oie.htm).

OIE is the international intergovernmental organization responsible for developing standards for terrestrial and aquatic animal health, animal welfare, and safe international trade of animals. The organization has 172 Members which include nearly every country in the world involved in any form of animal agriculture. The OIE is officially recognized by the World Trade Organization as the standard setting organization for international trade in terrestrial and aquatic animals.

PVS Tool assessments are conducted at the request of member countries by OIE trained and certified experts. The in-country portion of the evaluation normally takes about 10-14 days and the team is made up of four to five certified assessors from the OIE.

The PVS Tool is a comprehensive evaluation of the performance of the national veterinary services throughout the country. The tool is divided into four fundamental components:

- Human, physical, and financial resources
- Technical authority and capability
- Interaction with stakeholders
- Access to markets

Each of these four components has six to twelve specific critical competencies that are assessed during the evaluation. For each critical competency the team of assessors assigns a level of advancement from 1 to 5 with 1 representing the lowest level of advancement.

The PVS evaluations are a collaborative effort between the OIE, the assessment team, and the national veterinary services of the country being evaluated. The PVS evaluation is not an audit and countries do not “pass” or “fail” an evaluation. The objective of a PVS assessment is to identify gaps and weaknesses in the performance of veterinary services, to recommend actions to improve performance in critical areas and to develop investment projects. Major international donors such as the World Bank recognize and use the OIE PVS Tool assessment as a prerequisite to funding investment projects in countries. PVS reports are also very useful internally in the country for the VS to justify budgetary increases or adjustments to increase effectiveness in specific areas.

The PVS assessments and reports are confidential and are internally peer reviewed at the OIE before being sent to the country for review. Once finalized, the evaluated country can decide to keep the report completely confidential, conditionally release the report to donors only, or unconditionally release the report. As of March 2010, the OIE has conducted 49 evaluations, 27 of those reports are finalized, and 10 countries have agreed to release the reports unconditionally.

The results of PVS Tool evaluations could be useful in guiding veterinary activities in successive humanitarian assistance missions. At present, the PVS Tool evaluations for 9 countries are available on the OIE website: Belize, Bolivia, Brazil, Guinea-Bissau, Namibia, Panama, Paraguay, Uruguay and Vietnam.
Even if the country has not publically released the report; asking the Chief Veterinary Officer if a PVS assessment has been performed in the country may result in obtaining the results of that report directly from the country. The tool can also be used informally during PDSS and missions to identify areas for improvement.

Working within the framework of the OIE standard ensures that the assistance provided has the ultimate goal of increasing the overall veterinary service capabilities in accordance with current international standards.

27.2 Animal Health Outcomes and MOEs

There are no defined outcomes or measures of effectiveness for animal care at this time.

27.3 Animal Health Activities

The current VETCAP structure consists of providing de-worming treatment and vitamin supplements to the greatest number of animals possible within the scope of the mission. This section will present an illustration of what is possible during the transition from the current structure of de-worming as many animals as possible to the desired situation of conducting sufficient planning prior to allow the performance of high impact, sustainable activities during a visit to a HN, similar to the earlier discussion of moving from “activities to interventions” (Section 9).

27.3.1 Illustration of a Capacity Building Approach to Animal Health Mission Services

If there are not strong, sustained relationships between mission animal health personnel and HN animal health professionals, then the default animal health service objective is to augment and extend host nation programs, while gaining an understanding of the needs of the HN. An emphasis on such capacity building activities do not prevent veterinarians in performing any services requested by the HN; they simply serve as the ‘default activities’ in the absence of more in-depth planning or coordination with the HN. The goal is to establish relationships, by assisting the HN veterinarians with an existing program – not to bring in a great deal of information and technology about a program they don’t have.

The proposed default activity when developing a relationship with HN veterinary personnel is to provide assistance on a national health program, such as a rabies control program. Most nations have a rabies control program; but many low and middle-income countries could use some assistance with their national rabies program. Working together with the HN veterinarians on an existing program helps establish a working relationship with them. Working with a rabies control program also provides insight into the nation’s animal health infrastructure, since a rabies control program requires laboratory analysis, surveillance, case reporting, etc.

Specific support activities that would be helpful include:

- Use the education materials (available in a variety of languages) from the website of the Alliance for Rabies Control to support the host nation’s rabies education program (http://www.worldrabiesday.org/EN/Education-Bank/english.html)
- Share the lessons learned for effective community vaccination for rabies with host nation (for example, forced removal of community dogs is NOT effective in most tropical communities)
- Be prepared to participate in rabies vaccination programs, if requested, using local vaccine sources
27.3.2 Other Proposed Animal Health Activities

The proposed activities for animal care include:

- Identifying key veterinary personnel in the HN government and private sector
- Identifying key veterinary personnel of WHO, USAID and NGOs currently working in the HN
- Identifying local veterinary supply sources and range of available drugs and supplies
- Review of the PVS and other national assessments to define future activities, focusing initially on disease-specific programs and eventually on national capabilities.
- Assess the status of herd health programs
  - Identify the prevalence and incidence of the top 3 infectious diseases in herd animals
  - Identify the top 3 non-infectious diseases of herd animals (by region, if applicable)
  - Identify tribal seasonal migratory routes (if applicable)
  - Identify production practices/breeding practices and fertility rates of herds
- Perform herd health assessments (if requested)
- Supervise locally trained veterinary personnel in providing basic veterinary care to local herders and farmers
- Assist in parasite surveys to determine relative burden
- Support national/global disease control programs
- Vaccine donations
- Laboratory renovations
- Animal corral areas in local markets
- Participatory veterinary working groups
- Develop parasite control program
- Support the development of laboratory capability for testing for zoonotic or transboundary diseases by training laboratory staff on identification and detection measures
- Support the development of an effective surveillance system for reporting of zoonotic or transboundary disease by conducting outbreak investigations, testing animals for zoonotic or transboundary diseases, providing epidemiological training to veterinary professionals, and conducting prevalence surveys of animal populations
- Assist in identifying vaccine sources and vaccination techniques; provide training on cold chain custody of vaccines and other medications; support vaccination of animal populations as part of an on-going surveillance program
- Support the development of a system for animal and group identification
- Support the communication of public health information
- Support the application of the principles of biosecurity and hygiene by providing training to veterinary professionals
- Equip trained veterinary personnel with veterinary supplies (see Section 26.5 for a draft supply list)
Review the World Organization for Animal Health (OIE) "Evaluation of the Performance of Veterinary Services" (PVS) report with the HN and identify opportunities for improvement of the animal agricultural system.

The Food and Agriculture Organization (FAO) of the United Nations provides tools and training materials for many of these activities.

27.4 Animal Health Outputs and MOPs

This section discusses the development of use of MOPs for animal health and then presents the recommended outputs and MOPs for animal health services in the table below.

Measures of performance for education and training activities should specify:

- The target audience (e.g., veterinarians, para-veterinarians, community health workers, slaughterhouse workers, etc)
- The education and training topic/purpose, such as: provide community health workers with educational materials and advice for educating pet owners on rabies control

The measure of performance then assesses the value/relevance of the activity to the national/global program.

EXAMPLE: “Country X is starting a national education program on rabies control in 6 months, which will include ten different education programs. These education sessions assisted HN personnel in finalizing 50% of these education programs.

Measures of performance for disease-specific activities should specify the disease and the objective of the national/global program. For example, the purpose of a brucellosis control program might be to assess the prevalence of brucellosis and reduce the prevalence to less than 2%. The measure of performance then assesses the extent to which the activity contributed to the national/global goal.

EXAMPLE: “The Country X brucellosis control program will be conducting 10 prevalence studies throughout the nation in 2011. We assisted Country X personnel in designing these prevalence studies and assisted in the performance of the first study.”

Measures of performance for capability-specific activities should specify:

- The capability (e.g., laboratory, surveillance, vaccine supplies, etc)
- Definition of the purpose of the specific activity; example: assisted in establishing improved procedures for cold chain custody of drugs by recommending solutions for storage of drugs in areas with minimal power.

The measure of performance then assesses the extent to which the activity contributed to the national/global goal.

EXAMPLE: “The PVS report identified cold chain custody as an issue. We reviewed the situation and were able to assist the HN in ensuring adequate cold chain custody in each of its regions.”
27.5 Animal Health Outputs and MOPs

The recommended animal health outputs and MOPs are summarized in the table below.

Table 24: Animal Health Outputs and MOPs

<table>
<thead>
<tr>
<th>Animal Health Outputs</th>
<th>Animal Health MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved animal health practices</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors. When conducting training sessions, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands.</td>
</tr>
<tr>
<td>Trained and equipped local veterinary personnel</td>
<td>• Provide list of equipment and supplies provided to HN personnel</td>
</tr>
<tr>
<td></td>
<td>• Describe training provided to HN personnel to include: training topic; professional status of attendees; number of attendees and duration of training. Specify the expected outcome of the training (e.g., was it train-the trainer)</td>
</tr>
<tr>
<td>Provide Level 1 and 2 veterinary medical care for Military Working Dogs, contracted Mine Detection Dogs, Cadaver Dogs, and Search and Rescue Dogs</td>
<td>Number of dogs treated.</td>
</tr>
<tr>
<td>Advise on public health considerations surrounding dislocated civilian populations in close contact with dislocated domesticated and feral animal populations</td>
<td>Describe the issue or situation and then define the support provided in terms of its value to the HN</td>
</tr>
<tr>
<td>Provided ‘train the trainer’ education sessions to Ministry of Health rabies control personnel on presentations appropriate for the following target audiences: pet owners; public; veterinarians; children and schools</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors</td>
</tr>
<tr>
<td>Animal Health Outputs</td>
<td>Animal Health MOPs</td>
</tr>
<tr>
<td>-----------------------</td>
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</tr>
</tbody>
</table>
| Share the lessons learned from the Alliance of Rabies Control and other nations for effective community vaccination for rabies with host nation. Specifically:  
  • Control of rabies in dogs eliminates rabies in cats in Asia & South America (exception is vampire bat areas in South America)  
  • Four types of dogs: owned & restricted; owned & unrestricted; community & unrestricted; strays. Approx 1 dog per 4.2 people  
  • Different control measures for different types! | Number of training sessions, specifying topic, number of attendees and number of instructors |
| Be prepared to participate in rabies vaccination programs, if requested, using local vaccine sources | Participated in neighborhood vaccination program; reached X% of estimated neighborhood dogs |
| Identifying key veterinary personnel in the HN government and private sector | Identify relevant veterinary personnel |
| Identifying key veterinary personnel of WHO, USAID and NGOs currently working in the HN | Identify relevant veterinary personnel |
| Identifying local veterinary supply sources and range of available drugs and supplies | Identify sources |
| Assess the status of herd health programs  
  • Identify the prevalence and incidence of the top 3 infectious diseases in herd animals  
  • Identify the top 3 non-infectious diseases of herd animals (by region, if applicable)  
  • Identify tribal seasonal migratory routes (if applicable)  
  • Identify production practices/husbandry practices and fertility rates of herds | Specify the prevalence and incidence of individual diseases.  
  Describe tribal seasonal migratory routes (if applicable)  
  Describe production practices/husbandry practices and fertility herd rates |
<p>| Perform herd health assessments (if requested) | Provide the average Body Condition Score (BCS) for each species and specify the range of BCS and the size of the samples for each species. |</p>
<table>
<thead>
<tr>
<th>Animal Health Outputs</th>
<th>Animal Health MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review the PVS and other national assessments to define future activities, focusing initially on disease-specific programs and eventually on national capabilities.</td>
<td>Specify recommended future support activities</td>
</tr>
<tr>
<td>Trained local veterinarians on use of anthelmentics to reduce parasite burden; also donated sufficient supplies of anthelmentics</td>
<td>Specify the amount of anthelmintic donations in terms of the number of herds that could be dosed within a given period of time</td>
</tr>
</tbody>
</table>

### 27.6 Planning Considerations

Under development.
Appendix R: Epidemiology and Public Health Surveillance

28.1 Introduction

Epidemiology is the study of the distribution and determinants of health-related states or events (including disease), and the application of this study to the control of diseases and other health problems. Various methods can be used to carry out epidemiological investigations: surveillance and descriptive studies can be used to study distribution; analytical studies are used to study determinants.

Public health surveillance is the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice. Such surveillance can:

- Serve as an early warning system for impending public health emergencies;
- Document the impact of an intervention, or track progress towards specified goals; and
- Monitor and clarify the epidemiology of health problems, to allow priorities to be set and to inform public health policy and strategies.

Surveillance systems need to be designed and implemented to meet top management’s needs for focused, reliable, timely evidence gathered efficiently and presented effectively. Because these needs differ, a number of different strategies for public health surveillance have been developed, described briefly below.

28.1.1 Sentinel Surveillance

In a sentinel surveillance system, a prearranged sample of reporting sources agrees to report all cases of defined conditions, which might indicate trends in the entire target population. When properly implemented, these systems offer an effective method of using limited resources and enable prompt and flexible monitoring and investigation of suspected public health problems. Examples of sentinel surveillance are networks of private practitioners reporting cases of influenza or a laboratory-based sentinel system reporting cases of certain bacterial infections among children. Sentinel surveillance is excellent for detecting large public health problems, but it may be insensitive to rare events, such as the early emergence of a new disease, because these infections may emerge anywhere in the population.

28.1.2 Periodic Population-Based Surveys

Population-based surveys can be used for surveillance if they are repeated on a regular basis. Examples of population-based surveys in surveillance include the Behavioral Risk Factor Surveillance System in the United States, HIV-prevalence surveys, household surveys, and the demographic and health surveys that many developing countries conduct every five years (http://www.orcmacro.com). Population-based surveys require careful attention to the methodology, particularly the use of standard protocols, supervision of interviewers, comparable sampling strategy, and standard questionnaires. These surveys require a clear definition of the

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target population to which the results can be generalized, and they need careful attention to the sample size, based on efficiency and the epidemiologic characteristics of the health condition under surveillance (for example, rare conditions require substantial samples). Supervising interviewers and maintaining high response rates are critical to avoid bias. Because the surveys are repetitive, population changes (caused, for example, by mortality or mobility) might bias results.

### 28.1.3 Laboratory-Based Surveillance

The methods used for infectious disease surveillance form a spectrum that evolves with the economic development of a country and can be divided into four distinct levels of surveillance:

- No formal surveillance
- Syndromic surveillance
- Lab-based surveillance
- Integrated disease surveillance

Each level is more complex and has greater capacity for controlling and detecting disease, but it also depends on more resources and infrastructure. Laboratory-based surveillance systems require resources, facilities, and training. A central public health reference laboratory is essential for quality assurance and quality control and support. Such a laboratory-based system might begin with systematic referral of a sample of strains isolated at a sample of sentinel clinics, plus those strains that are part of outbreaks. A systematic sampling scheme provides better data than a more haphazard attempt at universal reporting. Regular sharing of information between the public health microbiology laboratory and epidemiologists is critical for the information to be used successfully.

### 28.1.4 Integrated Disease Surveillance and Response

The Integrated Disease Surveillance and Response (IDSR) strategy, first developed in Africa, links epidemiologic and laboratory data in communicable disease surveillance systems at all levels of the health system, with emphasis on integrating surveillance with response. Districts were identified as a focus for strengthening efforts in collecting timely data, analyzing the collected data, and using the generated information for public health responses.

The IDSR strategy is based on core activities, including case-patient detection, registration, and confirmation; reporting, analysis, use, and feedback of data; and epidemic preparedness and response (for example, outbreak investigations, contact tracing, and public health interventions). Support functions include coordination, supervision or performance evaluation, training, and resource provision for infrastructure, including communication. Key steps in implementing the IDSR strategy include sensitizing key health authorities and stakeholders; conducting situational analysis; preparing a strategic IDSR plan; identifying and training a motivated, competent workforce; developing national IDSR technical guidelines; implementing the plan; and monitoring and evaluating implementation to improve performance. Assessment of the existing national surveillance and response activities provides baseline data to measure progress; to identify and build consensus on the national priority communicable diseases; to identify surveillance gaps of the selected priority diseases; to document the strengths, weaknesses, and opportunities of the existing systems; and to make appropriate recommendations.

### 28.2 Epidemiological Activities

Some recommended epidemiological and public health surveillance activities include:
• Support HN surveillance programs through training, consultation, preparing an integrated
disease surveillance (IDSR) plan, and developing IDSR technical guidelines.
• Support HN surveillance programs by providing training on case-patient detection;
conducting outbreak investigations; contact tracing; and public health interventions.
• Conducting environmental surveillance, specifically air and water quality testing, with HN
professionals

28.3 Epidemiology Outputs and MOPs

The outputs and MOPs for epidemiology and public health surveillance services are provided in
the table below.

Table 25: Epidemiology & Public Health Surveillance Outputs and MOPs

<table>
<thead>
<tr>
<th>Epidemiology &amp; Public Health Surveillance Outputs</th>
<th>Epidemiology &amp; Public Health Surveillance MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support HN public health surveillance programs</td>
<td>Number of training sessions, specifying topic, number of attendees and number of instructors</td>
</tr>
<tr>
<td></td>
<td>When conducting training sessions, conduct simple pre and post-tests of attendee knowledge; these tests don’t have to be written, but can be implemented orally, with a counting of hands.</td>
</tr>
</tbody>
</table>

28.4 Planning Considerations

29 Appendix S: Food Security & Safety

29.1 Introduction

Food safety is an increasingly important public health issue. Governments all over the world are intensifying their efforts to improve food safety. These efforts are in response to an increasing number of food safety problems and rising consumer concerns. Foodborne illnesses are defined as diseases, usually either infectious or toxic in nature, caused by agents that enter the body through the ingestion of food. Every person is at risk of foodborne illness.

Foodborne diseases are a widespread and growing public health problem, both in developed and developing countries.

- The global incidence of foodborne disease is difficult to estimate, but it has been reported that in 2005 alone 1.8 million people died from diarrheal diseases. A great proportion of these cases can be attributed to contamination of food and drinking water. Additionally, diarrhea is a major cause of malnutrition in infants and young children.

- In industrialized countries, the percentage of the population suffering from foodborne diseases each year has been reported to be up to 30%. In the United States of America (USA), for example, around 76 million cases of foodborne diseases, resulting in 325,000 hospitalizations and 5,000 deaths, are estimated to occur each year.

- While less well documented, developing countries bear the brunt of the problem due to the presence of a wide range of foodborne diseases, including those caused by parasites. The high prevalence of diarrhoeal diseases in many developing countries suggests major underlying food safety problems.

- While most foodborne diseases are sporadic and often not reported, foodborne disease outbreaks may take on massive proportions. For example, in 1994, an outbreak of salmonellosis due to contaminated ice cream occurred in the USA, affecting an estimated 224,000 persons. In 1988, an outbreak of hepatitis A, resulting from the consumption of contaminated clams, affected some 300,000 individuals in China.

The major foodborne diseases from microorganisms include:

- Salmonellosis is a major problem in most countries. Salmonellosis is caused by the Salmonella bacteria and symptoms are fever, headache, nausea, vomiting, abdominal pain and diarrhoea. Examples of foods involved in outbreaks of salmonellosis are eggs, poultry and other meats, raw milk and chocolate.

- Campylobacteriosis is a widespread infection. It is caused by certain species of Campylobacter bacteria and in some countries, the reported number of cases surpasses the incidence of salmonellosis. Foodborne cases are mainly caused by foods such as raw milk, raw or undercooked poultry and drinking water. Acute health effects of campylobacteriosis include severe abdominal pain, fever, nausea and diarrhoea. In two to ten per cent of cases the infection may lead to chronic health problems, including reactive arthritis and neurological disorders.

- Infections due to enterohaemorrhagic (causing intestinal bleeding) E. coli, e.g. E.coli O157, and listeriosis are important foodborne diseases which have emerged over the last decades. Although their incidence is relatively low, their severe and sometimes fatal health

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consequences, particularly among infants, children and the elderly, make them among the
most serious foodborne infections.

- Cholera is a major public health problem in developing countries, also causing enormous
economic losses. The disease is caused by the bacterium Vibrio cholerae. In addition to water,
contaminated foods can be the vehicle of infection. Different foods, including rice,
vegetables, millet gruel and various types of seafood have been implicated in outbreaks of
cholera. Symptoms, including abdominal pain, vomiting and profuse watery diarrhoea, may
lead to severe dehydration and possibly death, unless fluid and salt are replaced.

Some major examples of other food safety problems include:

- Naturally occurring toxins, such as mycotoxins, marine biotoxins, cyanogenic glycosides and
toxins occurring in poisonous mushrooms, periodically cause severe intoxications.
- Mycotoxins, such as aflatoxin and ochratoxin A, are found at measurable levels in many
staple foods; the health implications of long-term exposure of such toxins are poorly
understood.
- Unconventional agents such as the agent causing bovine spongiform encephalopathy (BSE, or
"mad cow disease"), is associated with variant Creutzfeldt-Jakob (vCJD) Disease in humans.
- Consumption of bovine products containing brain tissue is the most likely route for
transmission of the agent to humans.
- Persistant Organic Pollutants (POPs) are compounds that accumulate in the environment and
the human body. Known examples are Dioxins and PCBs (polychlorinated biphenyls).
- Dioxins are unwanted byproducts of some industrial processes and waste incineration.
- Exposure to POPs may result in a wide variety of adverse effects in humans.
- Metals: such as lead and mercury, cause neurological damage in infants and children.
- Exposure to cadmium can also cause kidney damage, usually seen in the elderly. These (and
POPs) may contaminate food through pollution of air, water and soil.

29.2 Food Security and Safety Activities

The primary food safety activity is providing training and train-the-trainer sessions on food
safety. The WHO has developed a Train the Trainer course on the "Five Keys to Safer Food"
which provides guidance on how to both educate and promote the adoption of safe food handling
behaviors. The first module was designed to target women as women play an important role in
the production and the preparation of safe food (women produce between 60% and 80% of the
food in most developing countries and are responsible for half of the world’s food production.
29.3 Food Security and Safety Outputs and MOPs

The outputs and MOPs for food security services are provided in the table below.

Table 26: Food Security and Safety Outputs and MOPs

<table>
<thead>
<tr>
<th>Food Security &amp; Safety Outputs</th>
<th>Food Security &amp; Safety MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide training and train-the-trainer courses on food safety based upon the WHO initiative, &quot;Five Keys to Safer Food&quot;</td>
<td>Description of each food safety training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td>Provide Class I (food, bottled water, and ice) safety and defense and provide rapid field testing capability of food and water to meet immediate humanitarian needs of the population.</td>
<td></td>
</tr>
<tr>
<td>Assess local food storage, transport and distribution systems for food safety and defense considerations</td>
<td></td>
</tr>
<tr>
<td>Provide ‘train the trainer’ sessions on food inspection to MOH personnel</td>
<td>Description of each food safety training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
</tbody>
</table>

29.4 Planning Considerations

There is a need to ensure that training is “localized” and training examples of local foods and cooking methods are used. Possibly provide thermometers and a one pager on safe cooking temps to students.

Also, see Section 24.5, “Appendix M: Public Health Planning Considerations.”
30 Appendix T: Infection Prevention Control

30.1 Introduction\textsuperscript{90, 91}

Infection prevention and control concepts are cross-cutting for all activity associated with health care; including both prevention and delivery strategies. Infection prevention and control measures aim to ensure the protection of those who might be vulnerable to acquiring an infection both in the general community and while receiving care due to health problems, in a range of settings. The basic principle of infection prevention and control is hygiene.

Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. Medical hygiene therefore includes a specific set of practices associated with this preservation of health, for example environmental cleaning, sterilization of equipment, hand hygiene, water and sanitation and safe disposal of medical waste.

WHO launched the program "Clean Care is Safer Care" in October 2005 to promote safe hand hygiene practices globally and at all levels of health care as a first step in ensuring high standards of infection control and patient safety. This program focuses on reducing health care-associated infections (HCAI) which occur worldwide in both developed and developing countries and are among the major causes of death and increased morbidity for hospitalized patients.

Hand hygiene, a very simple action, is well accepted as one of the primary modes of reducing HCAI and enhancing patient safety.

30.2 Infection Control Activities

The recommended infection control activities include providing hand hygiene classes. Additional information concerning the most current approaches/guidelines for infection prevention and control can be found at the following WHO website:


30.3 Infection Control Outputs and MOPs

The outputs and MOPs for infection control services are summarized in the table below.

<table>
<thead>
<tr>
<th>Infection Control Outputs</th>
<th>Infection Control MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve knowledge and use of hand hygiene for the population and healthcare professionals</td>
<td>Description of each hygiene training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
</tbody>
</table>

30.4 Planning Considerations


\textsuperscript{90} WHO website on Infection Control, http://www.who.int/topics/infection_control/en/, accessed on 3 Mar 11.

\textsuperscript{91} WHO website on Hygiene, http://www.who.int/topics/hygiene/en/, accessed on 3 Mar 11.
31 Appendix U: Environmental Health

31.1 Introduction

Environmental health addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviors. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments. This definition excludes behavior not related to environment, as well as behavior related to the social and cultural environment, and genetics.

31.2 Environmental Health Activities

The recommended environmental health activities include: providing assistance on management of hazardous waste (to include hospital, infectious and pharmaceutical waste), management of air pollution (indoor and outdoor), and management of storage tanks.

31.3 Environmental Health Outputs and MOPs

The outputs and MOPs for environmental health services are summarized in the table below.

<table>
<thead>
<tr>
<th>Environmental Health Outputs</th>
<th>Environmental Health MOPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide HN with support and assistance in managing medical, infectious, and pharmaceutical waste</td>
<td>Description of each training initiative to include definition of target audience and number of target audience trained; if available, the total number of the target audience within the HN (provides more detailed information on the type of training provided and who received it)</td>
</tr>
<tr>
<td>Provide HN with support and assistance in limiting indoor and outdoor air pollution</td>
<td></td>
</tr>
<tr>
<td>Provide HN with support and assistance in managing storage tanks</td>
<td></td>
</tr>
<tr>
<td>Provide HN with support and assistance in managing hazardous materials</td>
<td></td>
</tr>
</tbody>
</table>

31.4 Planning Considerations
