MEDICAL ASPECTS OF PEACEKEEPING OPERATIONS: TRENDS AND COURSES OF ACTION

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A Thesis

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NOTE: The opinions expressed herein are solely those of the author and do not necessarily represent the views of the U.S. Army or the Peace Operations Training Institute or any other governmental agency.
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# Acronyms

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<tbody>
<tr>
<td>ADCON</td>
<td>Administrative Control</td>
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<tr>
<td>AO</td>
<td>Area of Operation</td>
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<td>CASEVAC</td>
<td>Casualty Evacuation</td>
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<td>CT</td>
<td>Computed Tomography</td>
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<td>ECMO</td>
<td>Extracorporeal Membrane Oxygenation</td>
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<td>ECOWAS</td>
<td>Economic Community of West African States</td>
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<td>EMT</td>
<td>Emergency Medical Technician</td>
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<td>FMT</td>
<td>Forward Medical Teams</td>
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<td>FST</td>
<td>Forward Surgical Team</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>HOs</td>
<td>Humanitarian Organizations</td>
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<td>IED</td>
<td>Improvised Explosive Device</td>
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<td>KFOR</td>
<td>Kosovo Forces NATO Mission</td>
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<td>MEDEVAC</td>
<td>Medical Evacuation</td>
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<td>MONUC</td>
<td>United Nations Observer Mission in the Congo</td>
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<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
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<td>NGOs</td>
<td>Non-Government Organizations</td>
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<td>OPCON</td>
<td>Operational Control</td>
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<td>Acronym</td>
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<tr>
<td>PK</td>
<td>Peace Keeping</td>
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<td>PKO</td>
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<td>PTSD</td>
<td>Post Traumatic Stress Disorder</td>
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<td>QRF</td>
<td>Quick Reaction Force</td>
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<td>ROE</td>
<td>Rules of Engagement</td>
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<td>RTD</td>
<td>Return-to-Duty</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNAMSIL</td>
<td>United Nations Mission in Sierra Leone</td>
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<td>UNAVEM III</td>
<td>United Nations Angola Verification Mission III</td>
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<td>UNDFS</td>
<td>United Nations Department of Field Support</td>
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<td>UNDPKO</td>
<td>United Nations Department of Peace Keeping Operations</td>
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<td>UNMEE</td>
<td>United Nations Mission in Ethiopia and Eritrea</td>
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<td>UNMIK</td>
<td>United Nations Interim Administration Mission in Kosovo</td>
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<td>UNTAC</td>
<td>United Nations Transitional Authority in Cambodia</td>
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Terms and Definitions

Levels (Tiers/Echelons) of Medical Care: Levels of medical care are also known as the echelons or tiers of medical care and include 4 Levels. Basic is the most rudimentary and it increases in levels of complexity and sophistication rearward to Level 4, which involves definitive care conducted at fixed facilities typically outside the AO and entails patient transfer and repatriation to the force contributing nation (UNDPKO, 1999: 18).

Basic: This is the level of care provided at the lowest level in the field (i.e., forward Areas of Operation or AOs, that is, those locations “out there,” or the “frontlines”). Basic care refers to First Aid, self-aid, or buddy aid. It also may include care provided by a trained paramedic or even a nurse who are trained in trauma care and evacuation. It is usually organic to the element operating in the field (ibid.).

Level 1: This is care non-organic to the field unit provided by a medical treatment facility (i.e., Battalion Aid Station), which performs emergency medical resuscitation and stabilization, dispenses triage, treatment, Return-to-Duty, has beds for holding, oversees preventive medicine measures including vaccinations, performs minor medical procedures, and packages patients for evacuation and transport to a higher level of care. Level 1 medical assets can be augmented by Forward Medical Teams. This is the level at which there will be a physician or physician assistant. Level 1 implements trauma life support care and patient collection and conducts routine sick call for minor sick and injured and it communicates patient reporting. This is a contributing nation national asset but retains emergency response for all PKO personnel operating in a mission area (ibid.: 19; also see, Leslie, 2011: 108).

Level 2: This provides evacuation (from Level 1) and triage, trauma care, and stabilization for seriously ill, injured, or wounded. There is sustainment for casualties requiring further evacuation. There is Return-to-Duty for mildly sick/injured/wounded as well as augmentation for Level 1, if necessary.
There is centralization of medical assets, re-supply, and medical hygiene and dental support. Normally, it is a national asset of a troop contributing nation and “Adcon” (see below for definition) to the national command but “Opcon” (see below for definition) to the PKO mission Command. It has a high level of medical expertise in trauma treatment and life-limb-eyesight surgical saving measures, complex resuscitation, intensive care monitoring, anesthesia, internal medicine, emergency dentistry, basic blood supply, X-ray capabilities, large scale vaccinations, and approximately 20 bed capacity. Essentially, it is a limited Field Hospital at the Brigade level. It also has the ability to deploy 2 FMTs or FSTs. (UNDPKO, 1999: 22-24.; also see, Leslie, 2011: 109).

Level 3: Whether this is present will be mission dependent and also a consequence of local conditions. Basically, it is a large general hospital provided where, ‘there are large numbers of personnel or Host Nation support is insufficient or inadequate.’ Ideally, it can also include hospital ships and Non-Governmental Organizations (NGOs) or a combination. It includes approximately 50 beds and specialists such as orthopedic surgeons, psychiatric services, preventive medicine teams for vector control, dermatologists, burn specialists, and gynecologists along with high-level trauma physicians and nurses to save life, limb, eyesight, and stabilize, diagnose, treat, and medically evacuate out-of-country to home nation or Return-to-Duty within a pre-set time. They also can be augmented with other medical specialties. This Level also has the bulk of medical supply and medical equipment maintenance, thus it has X-ray, CT, ultra-sonography, ECMO, and a substantial formulary. This Level also has medical operations planning capability, Command and Control, patient administration and coordination, and Signal (UNDPKO, 1999: 25; also see, Baig, 2010: 48-9).

Level 4: This is evacuation and treatment from in-Theater to Home-nation (i.e., Medical Repatriation), but per PKO evacuation policy it can include a regional center for treatment (e.g., a European Military Hospital for U.S. Personnel involved in African or Central Asian PKOs). This encompasses definitive medical care, specialized treatment, reconstruction, rehabilitation, and
convalescence. It is where “such treatment is highly specialized and costly, and may be required for a long duration. It is neither practical nor cost-effective for the UN to deploy such a unit within the Mission area.” In most cases, it involves repatriation to the Home Nation (UNDPKO, 1999: 28).

**Adcon:** This refers to direction or exercise of authority over subordinate or other organizations in respect to administration and support, including organization of Service forces, control of resources and equipment, personnel management, unit logistics, individual and unit training, readiness, mobilization, demobilization, discipline, and other matters not included in the operational missions of the subordinate or other organizations (Ford, 2012: 89-90, 106-110, 116-119).

**Assets** (e.g., Medical Assets): Medical and health, transportation, engineering, logistics, and security personnel and equipment that a Peacekeeping unit has control over and can use and for which it has visibility on and accountability and responsibility for the care, custody and safeguarding (Baig, 2010; 19, 26, ).

**Casevac:** This term refers to evacuation of PKO members in non-medical transportation assets in the interest of expediency with or without trained medical personnel attending and accompanying them (UNDPKO, 1999: 75; also see, Leslie, 2011: 20-22).

**Definitive Care:** This is a type of care typically connected to a specific sickness, injury, or wound. Some types of Definitive Care must be performed in the field at Level 1 or 2 facilities in order to maintain a sick or injured mission member (UNDPKO, 1999: 29; also see, Leslie, 2011: 100-111).

**Deployability:** This term refers to the readiness, flexibility, and capability with which a medical organization can be transferred for its normal operations base into mission Theater (Leslie, 2011: 110-112).

**Failed States:** This is a nation that has failed at some basic conditions and responsibilities of sovereign government, including: loss of territorial control, loss of the monopoly of force within its territory,
erosion of legitimate authority, and inability to interact with other states (Ram, 2008[b]: 2-6; cf. CIMIC Field Handbook (3 ed.), 2012: 3.1-3.2.1).

Failing or Fragile States: This is a nation characterized by weakened or weakening state legitimacy that leaves its citizens vulnerable. They are victims of bad governance and cannot deliver even basic services to their citizens. They are susceptible to internal, external, or natural crises that can result in their becoming a failed state. The main difference is that they still have institutional arrangements and the state does have some power and legitimacy (ibid.).

Forward (Support) Medical Teams: These are specialty teams designed to provide augmentation or extra capabilities to existing components as attachments (UNDPKO, 1999: 29; also see Leslie, 2011: 100-111).

Medevac (Air or Ground): Medical evacuation, this term refers to evacuation by medical transportation assets where the patient situation requires higher levels of care and medical skills and is the PKO mission Command’s responsibility. Unlike, CASEVAC, these have medical personnel assigned to attend and accompany. MEDEVAC transportation assets are usually organic to a contributing nation.

Mobility: This is the measure of a medical unit’s capability to move using organic assets (UNDPKO, 1999: 75. also see, Leslie, 2011: 20-22).

Modularity: Systems are deemed “modular”, for example, when they can be decomposed into a number of components that may be mixed and matched in a variety of configurations. Components are able to connect, interact, or exchange by adhering to a standardized interface. Modular systems of components are “loosely coupled.” This is unlike tight integration of a stand-alone system whereby each component is designed to work—specifically and often exclusively—with other particular components in a tightly coupled system (Frechette & Kristensen, 2012: 12-13 & 17; Feickert, 2006; also see, Nessen, 2005: 39-42; cf. Baig, 2010: 161-4).

Peacekeeping: UN peacekeeping is guided by three basic principles: (1) Consent of the parties;
(2) Impartiality; and, (3) Non-use of force except in self-defense and defense of the mandate.

Multidimensional peacekeeping operations are called upon to maintain peace and security. But they are also there to facilitate the political process, protect civilians, assist in the disarmament, demobilization and reintegration of former combatants; support the organization of elections, protect and promote human rights and assist in restoring the rule of law. Peacekeeping involves monitoring and enforcing a cease-fire agreed to by two or more former combatants. It proceeds in an atmosphere where peace exists and where the former combatants minimally prefer peace to continued war (UNDPKO & DFS, 2008:17-28).

**Opcon:** Operational control is inherent in command authority and may be delegated within the command and can be exercised by commanders at any lower level that it is given. When forces are transferred between commands, the command relationship the gaining commander will exercise (and the losing commander will relinquish) over these components must be specified by PKO Command. Operational control is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations (Ford, 2012: 73-75, 112-113, & 202-6).

**Preventive Medicine:** This includes hygiene/sanitation, screening, monitoring, disease surveillance, prophylaxis, identifying special environmental and occupation hazards and necessary preventive and controlling measures and advising commanders on their implementation and even training on controls (Leslie, 2011: 108).

**Professional Medical Personnel/Re-Supply:** Since medical units at Level 1 and 2 (and 3, if present) are Adcon to their Host nation, the host nations are responsible for ensuring medical personnel are both
credentialed according to a common standard and planning for their replacements. This means that they have a system established for “back filling” medical professional replacements especially early deployments (Leslie, 2011: 110-112; Reade, 2002).

**Resuscitative Care:** This term refers immediate care required to save life by maintaining the airway and controlling bleeding in most cases (UNDPKO, 1999: 136; also see, Leslie, 2011, 110-114).

**Robust or Robust Plus:** Peacekeeping Operations in which the mission’s mandate and Rules of Engagement permit the pre-emptive use of force and very selective and restrained us of force for specific mandated tasks. When such force is used, it is only used at the tactical level, and it is constrained by the time, place, and precise calibration of the force used (UNDPKO & DFS, 2008: 17-28).

**Rules of Engagement:** The Rules of Engagement (ROE) outline the authority of armed peacekeepers to use force in implementing the mandate. They also clearly state when armed military peacekeepers may not use force. The Rules of Engagement apply to all armed military personnel and units in the mission and they are tailored to the particular mandate of that mission. They are legally binding. They are usually issued (on cards) in brief and understandable language to peacekeepers (Ford, 2012:77).

**Safe Havens:** Circumscribed areas where displaced populations an seek protection and sustenance close to their homes, but not in them (Outram, 1997).
III

Abstract

In recent years, peacekeeping operations (PKOs) have been larger in scale, more mobile, and conducted over vast areas of remote, rugged, and harsh geography with multi-faceted modalities, but with an expectation of financial restraint and austerity. PKOs have been increasingly involved in dangerous areas with ill-defined boundaries, simmering internecine armed conflict, and disregard on the part of some local parties for peacekeepers’ security and role. In addition, PKOs have become more “robust.” Thus, for post-Cold War missions, the odds of death from hostile action have increased by 50%, while the odds of death due to disease have remained constant and high and the odds of death by accident have decreased by 25%. A statistically positive and significant relationship exists between the size and complexity of a mission and a higher probability of trauma or death, especially as a result of hostile actions or disease. Therefore, in the interest of “force protection” and optimizing operations, a key component of PKOs is health care and medical treatment. Considering the current state of peacekeeping worldwide, the more than 100,000 United Nations (UN) military and civilian personnel deployed all need and deserve high-quality medical care. The expectation is that PKO medical support will conform to the general intent and structure of PKOs to become more streamlined, portable, mobile, compartmentalized, and specialized, but also more varied and complex to address the medical aspects of these missions cost-efficiently.

The intent of this paper is to argue that establishing a hybrid level 2—a level 2 with level 3 modules and components (i.e., level 2+)—is a viable course of action when considering trends in the medical aspects of the PKOs. These aspects include (1) the nature of PKOs, (2) proximity or distance to medical treatment, (3) preventive medicine, (4) psychological morbidity, (5) humanitarian assistance, (6) land mines and improvised explosive devices (IEDs), (7) women’s health, (8) medical training, (9) electronic
medical documentation, (10) medical professional personnel backfill, (11) the “quick reaction force” concept, and (12) the medical command structure. A level 2 medical treatment facility has the potential to provide needed forward mobile medical treatment, especially trauma care, for extended, complex, large-scale, and comprehensive PKOs. This is particularly the case for those missions that include humanitarian outreach, preventive medicine, and psychiatric medicine. The level 2 treatment facility is flexible enough to expand into a hybrid level 2+ with augmentation of modules based on changes in mission requirements and variation in medical aspects. Recommendations are made about possible courses of action in terms of addressing trends found in identified medical aspects of PKOs.
IV

Background and Significance

During the Cold War, the template for the classic peacekeeping operation (PKO) was first vetted in the United Nations Emergency Force (UNEF) mission following the 1956 Suez Israeli-Egyptian War (Ram, 2008, 33, 35, 42). This was the first UN PKO mission using military units interpositionally to separate belligerents who had consented to a cease fire (Ram, 2008, 35 & 42). UNEF’s aims were to supervise the withdrawal of occupying belligerent forces and, at the withdrawal’s conclusion, to serve as a buffer between the former belligerents and supervise a ceasefire (ibid.). The objective of the interposition was to check the resumption of hostilities and buy time to effect a political settlement (ibid.). The military peacekeepers were armed and their rules of engagement (ROE) dictated that their weapons were to be used only for self-defense, and only then with the greatest of restraint (ibid., 37). The principles of classic UN peacekeeping were thus established: (1) consent of the supervised parties, (2) impartiality of peacekeepers, and (3) force used only in self-defense (ibid.). Indeed, the terms “peacekeeper” and “peacekeeping” were coined as a result of this mission (ibid., 31). This was also the first mission to have dedicated (Canadian and Norwegian) military medical personnel and support (ibid., 38-40).

On the basis of this mission, PKOs took two ideal forms: (1) small unarmed military peace observer missions and (2) large but lightly armed military “peacekeeping” units used as interposition forces between truly agreeable former belligerents (Osmançavuşoğlu, 2000; Ram, 2008, 12-43). Medical support reflected the character and variations in character of those missions and their themes (Ram, 2008, 171). Thus, as these operations were relatively fixed and in fairly secure bases, medical care emphasized static or semi-permanent, but sophisticated, facilities and heavy reliance on field medical evacuation assets (Ram, 2008[a], 226). These medical facilities also treated illnesses and kept patients for convalescence (Ram, 2008[a], 17-18; also see 38-46, 99-101). With Medevac and Casevac assets, in
particular aero-evacuation, the medical support achieved care unequaled previously (UNDPKO, 1999, 22-24; also see Leslie, 2011, 109). Trauma and minor medical care was available in the same facility, which was but a short transport away (ibid.). Nevertheless, there were increasing expectations for limited medical treatment for the local populations pursuant to civil-military considerations (i.e., humanitarian outreach or “military humanitarianism”) (Seet & Burnham, 2000; Pugh, 1998; Outram, 1997; Posen, 1996). Most of these missions were deployed into relatively benign situations (an exception is the UN mission in the Democratic Republic of the Congo in the early 1960s (Ram, 2008, 140, 163; Ram, 2008[a], cf. Ram, 2008 [b], 2-6, 52-55; see Seet & Burnham, 2000; cf. McKee et al., 1997). Thus, the medical events on classic PKOs echoed that benign tenor and were similarly benign (e.g., involving non-combat injuries/accidents and endemic disease) (see McKee et al., 1997).

After the Cold War, the situation changed dramatically. Regional conflicts re-emerged with a vengeance, particularly in remote, rugged, and practically inaccessible areas (e.g., equatorial Africa, the Arab Middle East, Southwest and Central Asia, and the Balkans) (ibid.). However, to their credit, PKOs continued to be the one solid mechanism for soothing troubles (ibid.; Osmancavusoglu, 2000; Hannum & Charmy, 2013). Thus, an over-extension and expansion of UN PKOs outpaced capabilities regarding finances, personnel, and equipment (Osmancavusoglu, 2000; Ram, 2008[b], 33-35; Durch & Berkman, 2006, 33-39). Also, the focus shifted from Cold War confrontation avoidance to settling internal conflicts resulting from collapsing or failed states (Pugh, 1998; cf. Seet & Burnham, 2000). The ideal that grew exponentially out of the mid-1990s into the 21st century has been the alleviation of human suffering and the creation of conditions to re-build fractured infrastructure to achieve self-sustaining peace (Durch & Berkman, 2006, 1-15; cf. Pugh, 1998). This meant sizable and lengthy deployments to conflict-torn areas and calming those conflicts to create a lasting peace and re-build stable states (Osmancavusoglu, 2000; Ram, 2008 [b], 277; Pugh, 1998).
As Durch and Berkman (2006, 1-2) observed, these “post-Cold War expanded” PKOs were “follow-ons to incomplete security missions (e.g., the UN mission in Kosovo—UNMIK/KFOR) and about... internal/societal wars, the ones halted to no one’s complete satisfaction or consent and usually by outside military force in lethal environments and involving imperfect deals (or deals that are really works in progress), devastated economies, and local governments...” that were more pariahs than public servants to their people. “They are about international efforts to effect rebuilding and restructuring and leaving behind a semblance of market democracy.” Along with all this was the withdrawal of substantial U.S. support and commitment (Osmancavusoglu, 2000). Despite PKOs’ limitations, they are still vital and practical and a less expensive tool for containing and resolving conflicts than the alternatives (Ram, 2008[a], 225-228; also see Durch & Berkman, 2006; 35-49). The challenge was strengthening and streamlining PKOs to better enable them to operate in missions involving civil wars, major humanitarian crises, and failing or collapsed states (UN, 2012, 13-17). Naturally, this included PKOs’ medical support (ibid.).

The previous system of PKO military medical care was also challenged regarding provision of care in far different operational conditions. The struggle was to provide medical treatment and health care in PKOs commensurate with that of large fixed facilities and relatively static operations, but now in remote, rugged, inhospitable, and risky—if not deadly—places (ibid.). All this was expected while increasing the mobility and flexibility required to accompany peacekeepers’ movements and evolving operations (ibid.; UNDPKO, 1999, 20-21; also see Leslie, 2011, 109; Seet & Burnham, 2000). Thus, emphasis on relatively fixed facilities for medical care has become ill-suited for such operations because these missions increasingly incorporate humanitarian outreach (Seet, 1999; Ram, 2008[b], 6, 223). These missions also have assumed a more “robust” (or even “robust+”) temperament. That is, within the mission mandates and ROE, pre-emptive offensive operations have been carried out to prevent attacks on innocent civilians or disruptions of the peace process or attacks on PKO personnel and facilities (e.g., the UN
mission to the Democratic Republic of the Congo—MONUC) (Frechette & Kristensen, 2012, 8; Ram, 2008[b], 104-114). The unpleasant environments and dangerous situations within which these new missions have operated also changed the nature of the majority of medical events from non-combat injuries to those resulting from hostile actions (Ram, 2008[b], 2-8; Seet & Burnham, 2000). (Infections from endemic diseases remained constant or increased slightly given where missions were conducted [ibid.].) The traditional emphasis on surgical physicians in fixed facilities proved inappropriate for rapidly evolving and ill-defined missions (Reade, 2002; Ram, 2008[b], 96, 142, 159). To compensate for this and the austerity or paucity of resources, there were attempts to tailor medical care to missions and suggestions for augmenting shortage areas (Ram, 2008[b], 39). Also, there was increasing incorporation of transportation assets for medical evacuation and movement and also communication assets for command and control (Ram, 2008[b], 8, 14, 64, 67, 71, 74).

Meaning and Purpose

PKOs have a time-honored tradition of providing medical care to mission personnel. Each mission era has presented its own particular problems and opportunities to learn about what worked concerning medical services for PKOs. The eras also provide insight into what to expect in future operations. In general, medical treatment and health care for PKOs is important in that they serve as mission multipliers and have far-reaching operational implications (UNDPKO, 1999, 11; cf. Balanzino, 1997, 20; cf. Nessen, 2005.) In any mission, medical treatment and health care must be provided for the first three levels of care and perhaps the fourth level as well (Seet, 1999). In accordance with each mission, the same numbers of medical assets are available for all levels of care (ibid.; also see Hacon, 1962; Beebe & DeBakey, 1952). Therefore, it is important to have appropriate allocations and efficient responsive structures at all levels to provide the best possible care across the spectrum of medical operations (ibid.).
For example, UN PKO doctrine dictates that PKOs maintain basic medical standards and capabilities and that mission operations include projecting and supporting peacekeepers in theaters that are austere and geographic areas that are difficult to access—while improving throughout the mission tenure (Leslie, 2011, 13-15). For example, the UN has increasingly undertaken streamlined missions characterized by fewer uniformed personnel (1) doing more, (2) operating in remote areas, and (3) conducting a series of hazardous and mobile operations in support of the main mission (Ram, 2008[b], 2-35). Sustaining these contingencies requires adequate, adaptable, flexible, portable, and mobile medical assets (Frechette, 2012, 8; Leslie, 2011, 105; Wilkerson & Rinaldo, 2008). The purpose of this paper is to argue for optimally configured PKO medical assets and operations designed to provide a light, mobile, forward-projected, and modular medical capability that can easily and cost-effectively be conformed to particular mission requirements. It is hoped that this work will inform applications leading to models that are imminently more deployable, mobile, and practical and incorporate flexibility in planning by using modularity. This could potentially reduce the amount of valuable medical resources needed or allow for their appropriate reallocation.

Implications

Efficient medical treatment and health care for close-in support of peacekeepers should improve their operability given the context and constraints within which they work. The consequences of lower mortality and morbidity cannot be overstressed. Also, public media are ever present and thrive on reporting sick, injured, or dead mission personnel or interviews with ill and wounded peacekeepers (e.g., “if it bleeds, it leads”) (Seet & Burnham, 2000). This can be counter-productive for continuation of contributing nation support (ibid.). Thus, optimal medical treatment and health care support for PKOs has mission accomplishment implications (UNDPKO, 1999, 11; cf. Neesen, 2005, 39-42; also see
Balanzino, 1997, 20). Unquestionably, the delivery of improved medical care must be pursued wherever possible.
A vital and essential element of peacekeeping operations (PKOs) is provision of health services in support of mission personnel in the area of operations (AOs) (UNDPKO, 1999, 3). The overall objective of medical support must be the physical and mental well-being of the deployed personnel, the conservation of human resources, the preservation of life, and the limitation of residual physical and mental disabilities (ibid.). There is a nascent understanding that quality health service means that “planning, coordination, execution, monitoring, and professional supervision impacts the health and well-being of mission members and ultimately the mission’s successful execution” (UNDPKO, 1999, 11; cf. Balanzino, 1997, 20); arguably, peacekeepers operate better when they are healthy and know that high-quality medical treatment is available in case of injury. Nevertheless, PKOs are becoming increasingly mobile over wide swaths of rugged/remote geographic areas and increasingly must meet extensive and varied multi-dimensional mandates—all while facing considerable financial constraints (Osmancavusoglu, 2000; UN, 2012, 13-17; Seet & Burnham, 2000). Also, PKOs are operating in hostile environments with poorly defined boundaries, continued armed conflict, and little if any genuine assurance of respect for their safety or peacekeeping role (ibid.).

To manage and treat sizable numbers of casualties and preserve life and limb, military medicine, including UN PKOs, uses a planning technique involving echelons (“levels” or “tiers”) of care to reduce the task of providing medical treatment to manageable proportions (UNDPKO, 1999, 18; Seet, 1999; also see Hacon, 1962; Beebe & DeBakey, 1952). Tiers or levels of care represent a framework for the rational, practical, and efficient deployment of medical resources in support of missions (ibid.). This framework developed from the premise that casualties occur in places remote from care facilities and these casualties must be treated and sheltered at staging points before evacuation (ibid.). Thus, a medical
event or condition is addressed at a level of care that offers the necessary sophistication in skills and complexity in technology and materials. If it cannot be addressed at one level, then the patient is moved to a higher level of care. Thus, a system was instituted for progressive care and five echelons of care were recognized (basic plus levels 1-4) (Seet, 1999; Hacon, 1962). The effectiveness of treatment was enhanced by a division of labor and standardization of treatment at each echelon (ibid.). Minor casualties are preempted early on so that serious casualties can receive better treatment. A nagging problem with the system has always been a lack of suitable facilities to treat emergencies in forward AOs (Hacon, 1962; Beebe & DeBakey, 1952). The result is that casualties are transported long distances. This system provides the basic framework for delivery of military medical treatment on peacekeeping missions (PK) (Leslie, 2011, 107-117; also see Seet, 1999). The Medical Support Manual for United Nations Peacekeeping Operations (2nd ed.) notes that “levels of medical support have been standardized to ensure the highest standards of peacekeeping medical care come from different countries with varying standards ... medical support plans must be designed to meet specific operations demands (UNDPKO, 1999, 12, 31; cf. Balanzino, 1997, 18).

In this system, the level 2 mobile medical hospital, though mobile, portable, and flexible, is the consequence of deploying a tiered system that evolved from experience in sustaining sizable pre-Cold War PKOs that were relatively fixed/static and to some extent linear. However, reliance on the level 2 mobile facility is the consequence of a tiered system with increasing complexity and sophistication that also can rely on the level 3 fixed-facility hospital (or transport out of country to such a facility) for extensive diagnostics, trauma surgery, specialist care, and long-term medical care capabilities (ibid.; Seet & Burnham, 2000; cf. Seet, 2001; also cf. Reade, 2002).* (In some cases, level 3 facilities have not been deployed and their medical capabilities have rarely been deployed fully. Such care has been obtained either from existing civilian hospitals in or within the vicinity of the AOs or a military hospital in a nearby stable nation [UNDPKO, 1999, 31]).
Previously, singular PKO components have had their own basic, level 1, and even level 2 medical assets to treat their own members. Nevertheless, PK missions in general have attempted to provide a standalone, central level 2 mobile hospital from a troop-contributing nation (ibid., 31, also see 11). These medical care facilities, while relatively fixed/static, are theoretically able to provide mobile care in dynamic operations (ibid., cf. Reade, 2002; Seet, 1999). Nevertheless, as the complexity of operations has increased, the need to fix quarters and provide more sophisticated medical capabilities has also increased, thus decreasing mobility (ibid.). Logically, it has always been difficult to strike a balance between capabilities and mobility (cf. Hacon, 1962; Beebe & DeBakey, 1952; also see Seet, 1999).

Smaller mobile medical facilities have found the need for some assets and personnel assigned to larger fixed facilities and remote hospitals despite sacrificing some mobility. That is, to offset any reduction in mobility, the most mobile and mission-essential assets have been selected from level 3 to augment level 2 and even level 1 (ibid.; also see Frechette & Kristensen, 2012, 8, 12, 17).

That being the case, the level 2 mobile hospital remains the standard, mainstay, workhorse, and lynchpin for relatively large-scale PKOs in various theaters (Reade, 2002; Seet, 1999). The result is lower levels of medical care relying heavily on non-organic transportation assets to ensure movement and through-put so that care arrives where needed and need is transported to where care can be provided (ibid.; UNDPKO, 1999, 74-76; Smadi & Smadi, 2004; Joshi, 2003). In addition, movement, in particular patient transport, always incurs additional risks (ibid.; Holt & Kelly, 1999). Furthermore, PKOs are increasingly involved in “failed states.” The local in-country hospitals that could have been used for level 3 care—and even remote military hospitals in neighboring so-called stable nations—are compromised. That is, their use for UN personnel is not feasible in that “they are poorly equipped and incapable of providing many basic services, medical emergent stabilization services are limited, blood supplies are unavailable, tainted, and even non-existent, and medicines, if even available, are expired, and there is poor sanitation and hygiene” (Chulkov, 2011, 34). This situation leads to even lengthier and more
expensive transports for relatively routine medical procedures as well as catastrophic emergencies needing procedures higher than level 2 care (ibid.; cf. Smadi & Smadi, 2004; Joshi, 2003). This then clogs-up and overburdens the transport system and is counter-productive (ibid.); it also affects peacekeeper downtime when peacekeepers cannot be returned to duty (RTD) quickly after routine procedures (ibid.).

The situation is even further complicated because PKO personnel are operating more frequently in environments marked by poor sanitation, as well as water- and food-borne vectors and illnesses, and are at high risk for infectious and debilitating diseases (UNDPKO, 1999, 63-71; Hazra, 2013; Ledgerwood, 1994; Schwartz et al., 2001; Cali, 1996; Craig et al., 1999). Thus, preventive medicine—a level 3 commodity—is absolutely necessary in remote areas of operation (at level 2 or 1) to advance force protection and civil-military cooperation (UNDPKO, 1999, 63-71).

Presently, the hope is that PKOs will become streamlined, faster, more efficient, and more capable so as to be involved in more wide-ranging, multi-faceted operations conducted over large, diverse, and remote geographic areas (Osmancavusoglu, 2000, 8). Simply put, “there are hopes to structure slow and cumbersome processes to quickly respond to emergent crises” (ibid., 5; cf. Onuorah, 2013).

Consequently, the expectation for medical support is that it will likewise conform to the larger structure of the PKO. Medical support too will become smaller, more portable and mobile, more compartmentalized, and more specialized (i.e., modular—for “plug in and play”) for special challenges and to establish itself more quickly in the AOs in furtherance of the larger PKO mission (UNDPKO, 1999, 8; Osmancavusoglu, 2000, 9-19). Also, in response to the harsher and unforgiving environments, PKOs may need to become more self-sufficient and insular (Fechette & Kristensen, 2012, 12-17; cf. Ministry of Foreign Affairs of Japan, 1997).

Therefore, the purpose of this paper is to report on investigations of whether (1) current PKOs’ medical components and assets have met current needs in light of current trends, (2) if not, how they
can be better conformed to meet these needs, and (3) in what ways planning for medical aspects of peacekeeping missions can best address these considerations. This report argues that a hybrid level 2 medical treatment facility augmented with proper services and modules is the most promising option when accounting for trends in the medical aspects of PKOs. These aspects include (1) the nature of PKOs, (2) proximity/distance to/from medical treatment, (3) preventive medicine, (4) psychological morbidity, (5) humanitarian assistance, (6) land mines and improvised explosive devices (IEDs), (7) women’s health, (8) medical training, (9) electronic medical documentation, (10) medical professional personnel backfill, (11) quick reaction force concept, and (12) medical command structure. These aspects were gleaned through iterative probing into open-source articles in the medical literature for useful conceptual categories and themes across PK missions regarding medical aspects that (1) influenced recent missions and their medical support and (2) might be influential in the future (cf. Durch & Berkman, 2006, 2). It is hoped that this report will inform planners and policymakers so they can enhance medical support to PKOs and better ensure the health and well-being of PKO members. This is the ultimate ideal of medical support to PKOs, ensconced in the UN’s medical mission statements (UNDPKO, 1999, 11).

Some basic assumptions are made in this study. Level 2 medical care will likely continue in a variety of PKOs and environments (Reade, 2002; UNDPKO, 1999, 22-23, 33-35). Modularity will likely reduce the availability of non-medical transportation assets (cf. Feickert, 2006; Neesen, 2005, 39-42; also see Hacon, 1962; Beebe & DeBakey, 1952; also see Seet, 1999). The trends cited will continue or even increase and, thus, the volume of medical conditions, illnesses, injuries, and wounds will remain constant or increase (Seet & Burnham, 2000). Even if they remain constant, the expectation is that the number, extent, and health risk of missions will increase (ibid.; also see Ram, 2008[b], 2-6). In addition, the availability of particular licensed medical professionals will be constrained and there will always be a need to “back fill” these positions (Reade, 2002; cf. Neesem, 2005, 39-42). Furthermore, this study has
emphasized deployed military peacekeeping personnel, even though the entitlement to medical care extends to all civilian and military personnel assigned to a PKO (UNDPKO, 1999, 48-50). This work has focused primarily on the basic, level 1, and level 2 tiers of medical care with some reference to level 3 and even medical repatriation out of country (level 4). This report explicitly addresses (expanded peacekeeping) missions like those post-Cold War (i.e., “Durchian,” see Durch & Berman, [2006]) missions the UN has conducted in recent years. This is opposed to classic peacekeeping and peace observer missions. Prior to executing a mission, medical needs assessments should be conducted so that troop-contributing nations have a clear understanding of the mission’s medical requirements. This will determine what will be needed for medical preparation for the mission and the medical support structure established.
VI

Medical Aspects

Nature of PKOs

Since 1990, the nature of PKOs has changed. The nature of PKOs dictates their medical events, which dictates their medical support needs (and medical support planning). With the end of the Cold War, there have been nearly as many deaths among peacekeepers as in all the PKOs in previous years (Seet & Burnham, 2000; also see Ram, 2008[b], 2–6). This statement may appear incorrect, internally inconsistent, or simplistic. Nevertheless, it has resounding implications for the medical aspects of PK missions and, thus, for medical support to those missions. In the first 40 years of UN peacekeeping, there were 13 missions, all of which were relatively benign, except for the 1960s mission to the Democratic Republic of the Congo (ibid.). However, in the next 25 years, more than 40 very large, difficult, and complicated missions were undertaken in dangerous environments (ibid.). A prime example is Somalia, where 110 peacekeepers were killed in action over a three-year period (ibid.). With more than three times the missions in this period, and their much more dangerous and robust nature, logically one would expect substantially more casualties. These casualties would be expected to result from hostile actions (Ram, 2008[b], 1–6). Logically, medical events would consist of emergency trauma, for example, high-velocity penetrations and embedment, blunt force trauma, blast injuries, burns, lacerations and contusions, closed and open fractures, tissue and blood loss, and contamination, among other injuries. Indeed, this finding has been reflected in similar changes in the nature and probabilities of casualties and fatalities reported for field workers in different non-governmental organizations (NGOs) and humanitarian organizations (HOs) working alongside PKOs (Sheik et al., 2000; cf. Pugh, 1998). However, NGO/HO figures are suspected of being grossly underreported (ibid.).
Two reasons have been cited for PKOs’ greater danger and resulting fatalities: (1) the increased number, scale, and coverage of PKOs and (2) their more robust operations conducted in more remote areas where there might be questionable consent in the hearts of “former” belligerents (Seet & Burnham, 2000; Ram, 2008 [b], 31, 35-38). Pugh (1998, also see Durch & Berkman, 2006, 1-8) argued that some of these operations have taken on an extremely tenuous resemblance to classic consensual peacekeeping. Seet and Burnham (2000; Seet, 2001) found that unintentional violence accounted for 41% of fatalities, followed by hostile acts (36%) and illness (21%). However, in terms of probabilities, the odds of PKO personnel dying from acts of violence increased by 50%, whereas the odds of fatalities due to unintentional acts decreased by 25% and those from illness remained constant, if not increasing slightly (ibid.; cf. McKee et al., 1998). The largest proportion of deaths occurred in the Middle East and Africa, and Africa had the largest number of deaths due to hostile acts—by almost two times (Seet & Burnham, 2000; Ram, 2008 [b], 1-6). The death rate was two times as great for expanded robust peacekeeping operations than classic peace observation peacekeeping. Also, a positive and significant correlation existed between deaths and the duration and cohesiveness of PKOs. Seet and Burnham (2000) argued that the fatality results suggest that higher casualties and wounds/injuries were related to (1) large-scale operations over long durations, (2) involving untrained, multi-national forces, (3) covering geographically wide and remote areas in austere conditions, and (4) where there was a great deal of instability and simmering conflict.

Similarly, Ledgerwood (1994; cf. Farris, 1994) credited the PKO forces involved in the UN Transitional Authority in Cambodia (UNTAC) mission for not becoming part of the ongoing fighting and serving as classic peacekeepers. Nevertheless, some locals perceived them as non-neutral, that is, as the “enemy.” This resulted in their being attacked in the hinterlands where they were more isolated and vulnerable. Thus, some UNTAC personnel were wounded and killed in hostile actions. Ledgerwood (ibid.) also mentioned a high incidence of traumatic injuries due to reckless driving and traffic accidents involving
UN vehicles and personnel in remote areas in sub-optimal conditions on roads in poor condition, inclement weather, and nighttime driving on unlit avenues, among other traffic conditions. Additionally, Smadi and Smadi (2004) similarly reported in Eritrea (UNMEE) the short-term experience of 45 trauma cases due to hostilities that were treated at the level 2 hospital. Also, Reade’s (2002) report on the Kosovo (UNMIK/KFOR) mission tacitly acknowledged that the mission was juxtapositioned between warring factions of Albanians and Serbs. The Liberian mission (Economic Community of West African States; ECOWAS) reported that its level 1 hospital was insufficient to treat the medical events peacekeepers on that mission experienced, including trauma resulting from hostile actions—and that was just at the point of disembarkation (UNDPKO, 2005, 10-11). Conversely, McKee et al. (1997) reported that peacekeepers deployed in the classic PKO observer role on the Bosnia-Herzegovina mission had minor medical ailments typically associated with performing a non-combat military role on deployment, including orthopedic conditions, respiratory diseases, dermatologic disorders, dental diseases, and gastroenteritis.

Seet and Burnham’s (2000) results indicating that the odds of fatalities were far lower for non-hostile injuries or unintentional violence led them to conclude that this was the result of improvements in medical evacuation, stabilization, and treatment, which was more assured in static classic peacekeeping operations (cf. Ram, 2008 [b], 1-6). The greatest overall risk factor in terms of wounded and casualties was the robust mission in failed states in Africa that included humanitarian assistance operations, or what is termed “military humanitarianism.” Specifically, Seet and Burnham (ibid.; also see Durch & Berkman, 2006, cf. Ram, 2008 [b], 1-6) voiced the concern that “peacekeepers are being deployed into hostilities between belligerents where not all belligerents may feel they consented to the peace process, and with no real peace to keep, are increasingly drawn into the conflict with dire medical consequences.” An example was provided by Holt and Kelly (1999) regarding the UN mission to the Democratic Republic of the Congo (MONUC), where confirmed intelligence pointed to rogue armed
fighters and groups planning to attack innocent villages and even vulnerable UN installations and personnel. As the mission’s mandate permitted “protection of civilians in immediate danger,” preemptive robust (+) operations were needed to check the imminent threat.

Nevertheless, Seet and Burnham (2000) emphasized that peacekeeper deaths resulting from illness have remained constant and high; this circumstance will continue, if not increase slightly. A major contributing factor is the disease epidemiology of the area of operations, which can be the consequence of a combined constellation of interrelated features, such as (1) geography, climate, infectious disease (endemic to war-torn areas or exotic and particular to the local area), (2) degraded or absent public health infrastructure, and/or (3) ongoing hostilities. For example, Hazra (2013) noted in a study of providing water purification to PKO peacekeepers in South Sudan that continuing conflict in remote regions of Sudan severely limited sanitation methods for water treatment. This increased the risks for PKO peacekeepers acquiring debilitating and deadly waterborne illnesses (ibid.). This study reported that (1) ongoing conflict contributed substantially to poor sanitation, lack of clean potable water, and increased risk of waterborne illness and (2) the geographic remoteness of the area made replenishment of water purification chemicals and equipment, and even supplements of bottled water, untenable (ibid.).

Even according to the UN, PKOs “no longer resemble the ‘classic’ observer missions of small numbers of peacekeepers in lightly armored vehicles maintaining ceasefires” (cf. Ram, 2008[a], 225-228). They are comprehensive, sophisticated, and complicated operations designed to enable security, stability, and reconstruction of failed or decompensating nations (Osmançavuşoğlu, 2000). This also means that the nature and extent of medical events has transformed and consequent medical support must adapt accordingly.
Proximity and Distance to Medical Treatment

Where wounds, injuries, and illness occur in remote areas over great distances, ensuring timely treatment poses a dilemma. Specifically, this dilemma entails pushing valuable medical assets and support out to the forward AOs to immediately treat patients in areas with questionable safety. This is in contrast to expedient transport of patients to medical support rearward to a relatively safe area but with more risk involved in delaying treatment and moving the patients. For example, Joshi (2003) reported on the UN mission in Sierra Leone (UNAMSIL), given the rough country, unsecure and mined roads, continued instability, and hostilities, all the wounded and injured were transported by Medevac/Casevac helicopter. To accomplish this, a system of staged evacuations to the relative safety in the rear of the city of Freetown (ibid.) was used. Also, medical stabilization was provided in-flight to keep medics with their units in the field (ibid). (Furthermore, Joshi noted 15 battlefield casualties supporting the changing nature of PKOs [ibid.]) Put differently, the mission in Sierra Leone (UNAMSIL) relied heavily on forward placement of embedded medical and nursing assistants with field units and then sequential air evacuation to rear facilities [ibid.]. Joshi (ibid.) also mentioned that language barriers and communication posed problems for smooth coordination and provision of medical treatment because the medical support consisted of an amalgamation of different host nations (ibid.). Additionally, he also alluded to how bad weather affected and precluded air transport and that inclement weather sometimes meant an “uncomfortable ride” (ibid.).

Similarly, Reade (2002) reported on the UN mission to Kosovo (UNMIK/KFOR) that the nature of operations was in a more urban environment. Nonetheless, remote geography complicated medical care there too, resulting in a similar assignment of medical transportation (ibid.) with some of the same problems as Joshi (2003) described. However, unlike Joshi (ibid.), Reade (2002) reported that level 2 care was designated as close-in medical support for general practice and trauma stabilization. However, there was heavy reliance on Med/Casevac for rapid rearward evacuation and treatment of cases in need
of more definitive and appropriate care (ibid.). Reade (ibid.) also reported that the area evacuation including level 2 should have advance trauma care skills and comprise immediate response teams to treat battlefield-like emergent cases. For similar reasons, he saw the need for an emergency medical technician, paramedic, or flight nurse on aero-Medevac for in-flight patient stabilization (ibid.). Therefore, he suggested that paramedics and emergency medical technicians should become accustomed to providing a higher level of skilled medical support staff closer to peacekeepers in the field (ibid.). Rosenfeld’s (1997) experience with an Australian surgical medical contingent supporting the Rwandan mission similarly suggested that medical generalists and their facilities should be located closer to where medical events occur. These generalists should have some pre-deployment trauma and surgical specialization training relevant to particular medical events that occur in the theater to which they are deployed. Regarding Eritrea (UNMEE), Smadi and Smadi (2004) likewise observed a need to provide trauma treatment and stabilization in the forward AOs due to the ongoing risk of mines and mining. Because mines and mining posed hazards on transit ways and interdicted ground transport, the units were compelled to rely solely on aero-evacuation to a level 2 hospital in the rear area with similar challenges as found with aero-evacuation in other missions (ibid.).

The consensus is that improvements and emphasis on training of medical personnel and pushing this all the way down to the basic echelon level (1) raises standards overall for treatment, (2) improves immediate treatment, and (3) ensures continuity in proper and standard responses and better outcomes. There was also consensus on (1) the need for a balance between trauma and general practice regarding both trauma and chronic physical conditions and (2) closer forward mobility and proximity of level 2 care so as to keep up with and be closer to peacekeepers operating in the field.
Preventive Medicine

PKOs are operating more frequently in areas that (1) are remote, austere, and rough places and in failed or failing states with crumbling or non-existent water and sewage infrastructure, (2) possess overcrowded and unsanitary living conditions coupled with itinerancy, (3) have local populations experiencing exposure to the elements and exhaustion and malnourishment, and (4) enjoy little or no provision of public health services (e.g., Smadi & Smadi, 2004; Outram, 1997; Hazra, 2013). Such conditions are fertile breeding grounds for rampant epidemics (e.g., Outram, 1997). Thus, peacekeepers are not only exposed to typical deployment illnesses, but they also risk a range of endemic exotic health hazards depending on the particular epidemiology of areas in which they operate (e.g., Smadi & Smadi, 2004; Cali, 1996). Smadi and Smadi (2004) reported on the need, in particular in Eritrea (UNMEE), for malaria and other insect-borne disease prevention, including prophylactic use of insect repellants and netting, as well as eradication and constant field monitoring. Schwartz et al. (2001; also see Wallace et al., 1996) reported that in Angola infectious diseases, in particular malaria, were a constant threat to peacekeepers due to the decompensated economic, social, and health situation of civil war-torn Africa. There was a general need to ensure personal disease protection, prophylaxis, treatment, eradication, and monitoring (ibid.). Schwartz et al. (ibid.) also reported that even with aggressive prophylaxis measures, malaria outcomes were less than optimal regarding infection and subsequent illness. Corwin et al. (1997) found that Indonesian peacekeepers deployed on the UN mission in Cambodia (UNTAC) had high pre-deployment exposure and subsequent antibodies to Rickettsia typhi (murine typhus). This was because this particular disease was endemic to their native country. Nevertheless, they still needed preventive inoculations and intensive surveillance as their immunities did not protect them against a recent emerging drug-resistant strain of scrub typhus that had crossed over from neighboring Thailand (ibid.). Also, both Ledgerwood (1994) and Ryan et al. (1998) reported that a substantial number of military peacekeeping personnel on the Cambodian (UNTAC) mission were diagnosed with HIV and
sexually transferred diseases post-deployment. Their recommendation was for compulsory HIV testing and education to avoid contracting sexually transmitted diseases, as well as the provision of condoms.

These reports commonly suggest “pushing forward” preventive medical support as well as strategically situating preventive medical support at points of in-country disembarkation. In support of this contention, Reade (2002) suggested that pre-deployment preventive medicine screening would have been beneficial in that many deployed peacekeepers with the Kosovo mission (UNMIK/KFOR) were medically or dentally unfit. This resulted in a high rate of emergent presentations on that mission that preventive medicine personnel could have detected and treated or repatriated out-of-country early-on (ibid.). Similarly, the Liberian mission (ECOWAS) report noted that many of the disembarking military personnel were unfit medically and had to be repatriated upon deployment as the level 1 hospital was under-resourced to treat them (UNDPKO, 2005, 10-11). Hazra’s (2013) study of the Darfur area in South Sudan found that its inadequate sanitation, high humidity, and subsequent runoff created a scarcity of drinking water and high risk for waterborne disease. The recommendation was for early preventive medical personnel to conduct “leader’s recons” (ibid.). That is, preventive medicine experts should conduct actual pre-mission on-site visits (i.e., “terrain walks” or “in-and-outs”) to collect information regarding epidemiological risk assessment and awareness of the situation (ibid.). This should be done for pre-planning and material preparedness, acquisition, and prepositioning, particularly for command and operations planning (ibid.). For example, Craig et al. (1999) reported that peacekeeping forces identified tick-borne encephalitis as endemic to the region in the Balkans where they would soon be deployed and accelerated the three-dose schedule for inoculation with minimal side effects. Recognizing the importance of on-site pre-investigations into environmental risks for PKO planning purposes, according to Strikland (2008), the Swedes have developed several templates for reconnaissance teams to conduct on-site environmental hazard risk assessments and develop needed preventive measures.
Psychological Morbidity

Ward (1997), Reade (2002), Geuze et al. (2008), Mehlum et al. (2006), Baggley et al. (1999), and Gabriel and Neal (2002) reported instances of psychological difficulties, chronic alcohol abuse, depression, failure to cope with interpersonal relationships, self-harm, and suicides among Peacekeepers during and after PKOs. Baggley et al.’s (1999) study of non-deployed vs. deployed British infantry who were evaluated after the UN mission to Kosovo (UNMIK/KFOR) found rates of post-traumatic stress disorder (PTSD) double in the deployed peacekeepers. Ledgerwood (1994) noted that during the Cambodian mission (UNTAC), there were substantially high incidences of alcohol abuse and drunkenness that also resulted in injuries. Ward (1997; also see Litz et al., 1997) observed on the Somalia PKO that psychiatric symptoms were more pronounced among peacekeepers as a result of their circumstances and stressors, including (1) witnessing the horror of conflict, (2) uncertainty and confusion about their roles as military personnel but also as peacekeepers, (3) retrieval of human remains, and (4) non-military humanitarian tasks that led them to witness human tragedies such as poverty, massive starvation, and the effects of natural disasters, particularly where children were involved. Also, ROE unique to UN personnel were the cause of a high incidence of psychiatric disorders, specifically, “where UN peacekeepers become targets to be threatened but are not allowed to fire back” (ibid.). Most disturbing are Ward’s (1997; also see Gabriel & Neal, 2002) findings that mental symptoms linger far into civilian life after UN service, such as (1) PTSD, (2) social maladaptation and dysfunction, and (3) educational and career problems. He also argued that with increased PKOs in conflict-torn failed or failing states, the propensity for psychiatric morbidity will likely increase (ibid.). Reade (2002) made a remarkable observation that as the UN Kosovo (UNMIK/KFOR) mission dragged on there was a direct and significant increase in psychiatric disorders, mostly as a result of both (1) the seemingly endless hardships of the mission and (2) the increased number of psychologically unfit peacekeepers being deployed as augmentees to ensure strength in numbers. Mehlum et al.’s (2006) study of PTSD found significant and high differences in disturbances
among peacekeepers deployed individually as augmentees. He attributed this to their missing the benefit of the protective effect of cohesion found in group deployments (ibid.).

Therefore, unique strategies for reducing the psychological impact and discomfort of PKO service must be considered and incorporated and then evaluated in medical support to PKOs. An example Reade (2002) provided is that the UN mission in Kosovo (UNMIK/KFOR) included a dual-hatted psychiatric nurse at the level 2 facility to address psychiatric issues early on. Indeed, Gabriel and Neal’s (2002) case study examination of PTSD in post-deployed PKO British soldiers revealed that the earlier the soldiers were diagnosed with PTSD and their conditions documented, in particular while in-theater, the better the chance of long-term therapeutic success. Other strategies emphasize mission frontloading to include pre-deployment peacekeeper screening, selection, preparation, and debriefing at the point of repatriation (Ward, 1997). Remarkably, Deahl et al. (2000) found that these strategies were beneficial regardless of whether peacekeepers exhibited any symptoms of PTSD. Regarding screening, factors predisposing peacekeepers to psychiatric disorders were youth, family psychiatric history, lower intelligence, and a history of family disruption (Ward, 1997). Other factors related to a high risk for PTSD were lower rank, being deployed early in the mission, and having more deployment-related exposure (Hotopf et al., 2003).

**Humanitarian Assistance**

Increasingly, to promote civil-military cohesion and improve public relations, PKO medical components have been tasked with providing general/family practice outreach clinics and events and clinical services to civilian nationals in the remotest and most rugged areas (i.e., “military medical humanitarianism”; see Pugh, 1998; also see Durch & Berkman, 2006). Note that “medical resources for helping the local population in the case of emergencies are valuable tools for confidence building at the local level,” and “use of mission assets (such as construction engineers or medical resources) for appropriate local public
health and medical outreach projects will also contribute to building good relations with the local population and authorities, contribute to restoring the national infrastructure, have a normalizing and stabilizing effect, and may be part of the mission” (UNDPKO, 1999, 8; cf. Balanzino, 1997, 19-20; cf. Farris, 1994; also see, Pugh, 1998). Through ingratiation with the local population “with the simplest of help,” as Reade (2002; cf. Kevaney, 2014) pointed out about the Kosovo (UNMIK/KFOR) mission, these medical humanitarian relief efforts treated substantial volumes of patients with minimal medical resources. However, these efforts further exposed personnel to the physical dangers and horrors of conflict as well as the risks of attendant psychological conditions (Pugh, 1998; also see Seet, 1999; Seet and Burnham, 2000). As Outram (1997) noted with respect to the Economic Community of West African States case, absent consent to the peace process, despite the number of military peacekeeping assets being relatively large, they were still insufficient to defend and protect humanitarian assistance distribution sites (e.g., Safe Havens). Thus, peacekeepers were further exposed to risk (Sheik et al., 2000). Seet and Burnham (2002; also see Sheik et al., 2000) found that humanitarian assistance PKOs or PKOs with humanitarian assistance outreach components were related to higher crude death rates due to hostile acts and illness, which they contended was a reflection of the poor stability and conditions encountered.

Pugh (1998; cf. Baer et al., 2002) maintained that in situations where consent to the peace process was questionable, providing humanitarian assistance blurred the concepts of impartiality, neutrality, and assistance based exclusively on need without political discrimination. Thus, eventually one side or the other will come to view peacekeepers as “the enemy” and targets for armed aggression (ibid.; cf. Sheik et al., 2000). For example, although Japan did not participate in the Rwanda mission directly, it did provide a small contingent of medical support to Gome Zaire to attend Rwandan refugees fleeing hostilities. The Japanese Ministry for Foreign Affairs (1997) reported that humanitarian assistance was exceptionally popular with the local population and authorities. However, the local ongoing conflict
made that work harrowing and transformed the work and workers into targets for renegade belligerents
crossing over from Rwanda whose consent to the peace process was questionable (ibid.). Therefore, the
need for cooperation with local authorities, particularly for security, became that much more
paramount for ensuring smooth operations (ibid.). The Japanese report also supported Pugh’s (1998;
also see Seet & Burnham, 2000) contention regarding the newer PKOs in that hostilities do not respect
national boundaries. However, Kevany et al. (2014) countered that medical humanitarianism of PKOs
plays a valuable diplomatic role with the potential to mitigate and reverse tensions and hostility in
conflict and post-conflict settings. The trend toward including military medical humanitarianism in PKOs
has been growing, and the number of such PK missions is predicted to rise (Seet & Burnham, 2002; Seet,
2001; cf. Pugh, 1998). This aspect of medical support to PKOs lends credence to the contention that
employment of medical support is not simply a question of distance and time, but also a security
consideration.

Land Mines and IEDs

According to Wertheimer (1994; cf. Van Der Linden, 1994), land mines and IEDs are cheap yet brutally
effective weapons. Therefore, they have had widespread use in virtually all the conflicts where PK
missions have occurred—and their use is increasing. These devices are hidden and designed to explode
on contact or be tripped remotely. Some have been dropped en masse. Some are made of metal and
others of plastic; the plastic ones are virtually undetectable. In many cases, if emplaced, they can be
long forgotten. However, when they explode, shards of sharp material spray out to cut and rip their
victims to pieces. (The shrapnel from the plastic IEDs is exceedingly difficult to detect and remove from
human tissue.) Thus, they can be indiscriminate killers and continue killing even post-conflict. However,
they have been particularly deadly at troop transit areas such as roads, choke points, bridges, and
intersections (ibid.; cf. Smadi & Smadi, 2004). In addition, with rain and soil erosion, they can migrate.
They kill, injure, and maim both civilians and peacekeepers, thus further burdening missions in terms of both humanitarian medical assistance and medical treatment for peacekeepers. This may be one reason for the increased prevalence of combat-related casualties in PKOs (Seet & Burnham, 2000). Smadi and Smadi (2004) in Eritrea (UNMEE) reported the need for both transfusion and radiological trauma services due to frequent mine “accidents” among the forward AOs’s peacekeepers. They also needed aero-evacuation of such cases to a level 3 facility or even out of the country (ibid.). Furthermore, they reported exclusive reliance on aero-evacuation of casualties due in part to avoid mines and (re-)mining on transit ways (ibid.; also see Joshi, 2003). Ledgerwood (1994; also see Farris, 1994) reported on the mission in Cambodia (UNTAC), one of the most heavily mined conflict areas of operations in the world, that mine-clearing operations were incredibly slow and fraught with danger. Worse still, belligerents who had not necessarily agreed to the armistice laid more mines post-armistice for both their adversaries and UN peacekeepers, whom they considered adversaries because the peacekeepers were helping their adversaries.

Women’s Health

Milosevic (2012) reported that with the shift in peacekeeping from relatively benign operations to more robust operations, there has been a consequent shift in the protection of civilians (e.g., UN mission to the Democratic Republic of the Congo—MONUC), particularly women and children. Thus, the presence of female peacekeepers in PKOs provides new possibilities to effect peace as women can engage women, particularly where cultures forbid man-to-woman contact (ibid.). Furthermore, female health providers have offered medical treatment to women as the humanitarian medical aspects of PKOs have increased. Thus, since 2002, women increasingly have accounted for a greater percentage of PKO forces (ibid.). Milosevic (1994) drew on the example of the Chad mission (MINURCAT), noting that increased inclusion in the medical component of that PKO was not new. However, there was increased
representation of women in roles traditionally considered the province of males (ibid.). Milosevic (ibid.) suggested that planners give more consideration to female health care on missions.

Medical Training

Reade (2002) reported on the Kosovo (UNMIK/KFOR) mission that the medical training and skills of medics located in the forward AOs were poor, where they should have been superior. This was due to a lack of experience in treating casualties (ibid.). Joshi (2003) regarding the mission in Sierra Leone (UNAMSIL) mentioned the lack of standardization in medical response at the basic (front area) level. He attributed this to inconsistent training or not training to standards, although disease prevention and basic first aid health education was provided (ibid.). Reade (2002) further noted the value and importance of training exercises for planning for casualty incidents, especially for inexperienced medics. This “improved a general level of knowledge, but also ensures everyone has similar responses to trauma” (ibid.). Accordingly, the British (and American) system is optimal in that it encourages medical personnel to seek formal certification and re-certification in “immediate medical treatment” for emergencies and then documents those skills (ibid.). Thus, there is consistency in response and standards of best practices in care (ibid.). Joshi (2003) noted that consistency and adherence to standards was also important in the detection and treatment of psychological conditions among PKO peacekeepers.

Electronic Medical Documentation

Regarding the Kosovo (UNMIK/KFOR) mission, Reade (2002) reported that a secure, but operationally integrated, computerized medical records systems enabled the expedient transmission of peacekeepers’ medical information. Electronic information systems proved immensely useful and practical for (1) retention of peacekeepers’ medical treatment information as well as relatively seamless transfer to
civillian care, (2) stock control and re-supply, (3) summary statistics for epidemiological analyses of trends and quality assurance, and (4) resolution of post-deployment disability claims (ibid.). For the Kosovo (UNMIK/KFOR) mission, regarding medical imaging, Mun et al. (1998) also observed that the adoption of electronic systems was practical and cost-efficient. These medical systems eliminated shipping and storage of bulky new and unexposed films with fixed shelf lives, processing of chemicals and water, and toxic discharge that had to be collected and transported out of the deployed area (ibid.). The same can be true for medical records and documentation in that electronic systems dispense with the storage, retrieval, transport, and eco-unfriendliness of bulky paper copies and the expense and encumbrance of paper, printers, ink and printing, and upkeep.

**Medical Professional Personnel Backfill**

Reade (2002) reported regarding the mission in Kosovo (UNMIK/KFOR) that the medical service component was severely understaffed concerning medical treatment providers, mainly physicians. This was due to the competitiveness of more favorable civilian employment vs. peacekeeping service (ibid.). Thus, it was necessity to draw on reservists (e.g., Home Guard) for short deployments to augment regular service counterparts. According to Reade (ibid.), the use of reservist medical personnel caused no loss in quality or standard of medical care due to consistent training and skills certification.

**Quick Reaction Force Concept**

Few if any people familiar with UN or regionally led PKOs think they can operate at the level of a quick reaction force (cf. UNDPKO, 2005) The UN's goal has been to be in a position to launch a multidimensional KO mission within 90 days (Ram, 2008[b], 255-279). Even this has proved exceedingly difficult (cf. UNDPKO, 2005). Nevertheless, to reduce response time to crises and streamline the slow and cumbersome redress of emergent crises, advocates have contended that PKOs need to shift to a
quick reaction force concept (e.g., a standby high-readiness brigade--SHIRBRIG) (Ram, 2008[b], 255-279; also see Ministry of Foreign Affairs of Japan, 1997). Specifically, there has been increased emphasis on pre-deployment planning, mobility, pre-positioning of supplies in regional depots, pre-arrangement of transport, improved intelligence, and enhancement in early warning system capabilities (UNDPKO, 1999, 20-21; cf. Reade, 2002). This includes similar efforts in coordination and cohesion within various UN Departments and Agencies that deal with PKOs and member nations (ibid.). This concept extends to aspects of PKO medical support as well. The precedent for advancing this concept was the Kosovo (UNMIK/KFOR) resolution that with the collapse of a state human rights abuses and crimes against humanity merit international intervention with all due speed (Osmancausoglu, 2000; Holt & Kelly, 1999, 37, 42, 92). This entails increased tolerance for early external intervention requiring the legitimacy of multi-national oversight and intervention (ibid.). However, according to Seet and Burnhan (2002), multi-national missions increase risks, lethality, and the need for even more medical support. Despite the calls for and rhetoric surrounding the quick response force concept at the time, the Liberian mission (ECOWAS—UNDPKO, 2005) reported an absence of vital medical capabilities early on in the mission’s deployment concerning (1) effective communications, (2) capable medical support, and (3) adequate life support. A tight time line compounded these shortages and led to recommendations for improvements of pre-positioning and pre-planning sustainment (ibid.). These concerns were also voiced regarding the UN mission to the Democratic Republic of the Congo (MONUC) with regard to inadequate medical supply hampering offensive operations and a rapid response necessary to protect citizens and UN PKO installations from rogue belligerents (Ram, 2008[b], 85-129). Indeed, the UN all but abandoned the standby high-readiness brigade (SHIRBRIG) six years ago—an outward symbolic capitulation that a quick response peacekeeping force was as yet an unworkable ideal (Koops & Varwick, 2008, 23).
Medical Command Structure

Reade (2002) and Joshi (2003; also see UNDPKO, 1999, 14-17) described problems related to the separation of medical command vs. medical authority common to military components supporting PKOs. It must be borne in mind that both studies were on British military medical systems. But the British system is the model for many other nations’ military medical systems. Specifically, senior medical authorities were physicians, whereas their medical commanders were medical service officers (i.e., professional administrators). Reade (2002) reported that in the field this separation proved dysfunctional and inefficient. For example, medical service officers countermanded the medical authorities’ use of assets because the medical service officers had little familiarity with the practical provision of medical treatment. On the other hand, medical authorities who were physicians knew the inside and out of patients but did not know the inside and out of the administrative offices that ran their medical facilities (ibid.). Thus, they made medical decisions that effectively countermanded or usurped their unit’s medical administration. Unfortunately, Reade (ibid.) offered no solution except to comment that this is how things have always been. For that reason, this state of affairs can be expected to continue at least for the foreseeable future unless a viable alternative is discovered.

Summary

In sum, PKOs are increasingly expanded and more robust in post-Cold War affairs. That is, they have been and can expect (1) to be conducted in the world’s rugged, inhospitable, and inherently dangerous peripheries, primarily on the margins of the Third and Fourth Worlds, (2) to involve less benign handovers from unfinished security missions, (3) to have questionable consent by belligerents to the peace process and simmering conflicts ready to boil, and (4) to draw peacekeepers into hostile action or become victims of remote explosive devices. Therefore, the medical events that present themselves to PKO medical support staff will increasingly resemble combat trauma and include illness.
Thus, the conundrum that medical commands face is whether (and how) to (1) move medical
treatment to the patients in the forward AOs and risk their medical assets, (2) move patients back to
medical treatment with risk to their patients, or (3) strike some practical compromise in between.

In addition to operational hostilities and illnesses typically attributable to deployment, the periphery
by its very nature has its own locally endemic exotic diseases, other inhospitable and risky features, and
wicked flora and fauna. These all pose risks to PKO peacekeepers, including medical personnel. This
demands preventive medical measures throughout the area of operations.

One thing is certain, civil conflict and its ancillary human tragedies are not good for the human psyche.
Thus, on-site psychiatric medicine is needed.

Furthermore, the demand for civil/military-driven humanitarian medical outreach far into the margins
of already risky and dangerous situations adds a new and even more dangerous dimension to PK
missions and their medical components. It also creates a need for generalist/family practice medical
professionals with other medical sub-specialties in particular surgical sub-specialties.

As civilians—in particular, women and children—are caught in the middle of all this, there will be more
emphasis on women’s health issues. This means an expanded need for women health professionals, in
particular for cultures with a cross-gender contact prohibition.

As the need for on-site emergency medical skills intensifies, there is the desire for upgraded medical
skills and certification of such all the way down to peacekeepers in forward AOs.

Efficiency and streamlining PKOs means their medical support components must use the most up-to-
date electronic medical documentation and electronic medical information and management systems.

In addition, as expanded post-Cold War PK missions grind on, attrition in the medical staffs will require
a reserve back-fill system. The downside is that deployed augmentees are at higher risk for psychological
morbidities and may be less physically fit for in-the-field austerities and asceticism.
Finally, in all this, without a viable alternative, traditional separate command structures—typical of US and British military medical traditions and cultures—will remain unaltered.
VIII

Discussion

Review of the medical literature on medical aspects of expanded and more robust post-Cold War PKOs suggests the need for field medical treatment support capable of moving itself, while retaining the ability to deliver medical care at different levels. This must be accomplished to provide medical treatment in far forward AOs, especially trauma care, which sustains (1) extended and comprehensive operations, (2) maneuvers, and (3) humanitarian outreach. A modified PKO level 2 facility has the potential to provide the necessary bed capacity for trauma and intermediate care to casualties due to hostile action, injuries, and illness (UNDPKO, 1999, 22-24; also see Leslie, 2011, 109; cf. Reade, 2002). This facility can be variable enough to expand to include augmentation by medical detachments in response to changing mission requirements (ibid.). Additionally, this component’s forward medical care should be upgraded along the lines of U.S. and British models with medics who are (1) assigned to patient transport and other medical duties and (2) trained and certified as emergency medical technicians and paramedics or emergency practical nurses (Reade, 2002; Sokhin, 2000). For the forward AO units, designated squad-level military personnel should be trained and certified as combat life savers or in basic first aid (ibid.). Put differently, the objective is to enhance and push medical/trauma care knowledge and skills down to the forward AOs to improve responsiveness and life support in closer proximity to medical emergencies.

Mobility is important as medical support must keep up and move in tandem with forward AOs peacekeepers. The level 2 facility technically is mobile and provides fundamental trauma care as a base on which modules can be “plugged in for play.” Specifically, this will allow other specialty components to be added on or subtracted as needed. Thus, the next generation of medical care for PKOs can have the
flexibility to expand (or contract) to support needed medical detachments, while retaining mobility and the ability to provide comprehensive medical care, above all for trauma cases.

Level 2 facilities are in operations where medical personnel are best able to intervene medically to alter what might otherwise be serious debilitating or fatal medical outcomes. They also can be augmented with health providers to care for common and endemic diseases and psychological stressors encountered in operations (see Reade, 2002). Level 1 components are primarily designed to treat life-threatening conditions and evacuate to level 2, possibly even level 3 or out of the country (UNDPKO, 1999, 22-24: also see Leslie, 2011, 109). Note that under the changing conditions of PK missions, level 1 medical facilities are insufficient to provide the level of care necessary to avoid out-of-country medical evacuation and repatriation—which really is another way of saying medical losses (Seet & Burnham, 2000; also see Joshi, 2003). Level 2 can provide trauma care and basic medical treatment, as well as hold patients who can return to duty (RTD) and surgical teams, preventive medicine teams, and psychiatric providers alone or in combinations can be plugged into the level 2 facility depending on operations, although maintaining them at a level 3 facility is more traditional. Level 2 has no intensive care, medical supply, or extensive formulary capability (UNDPKO, 1999, 25-27; also see Leslie, 2011, 110). However, through augmentation, level 2 can provide limited specialty care and have limited pharmacy, blood, medical supply, and equipment capability. Level 2 also lacks effective operations planning, patient administration, and signal support—components that only a level 3 facility provides.

It seems clear that an ad hoc/hybrid level 2 facility can provide care comparable to a level 3 but will not supplant the level 3 entirely. Future operations’ mission structures, such as the post-Cold War expanded structures, will require basic and level 1 / 2 augmented support and will need to be farther forward and nearer field units. That is, level 2 should acquire medical care aspects of level 3 such as preventive medicine and psychological care providers. A condensed level 3 can then concentrate on medical command for overall operations. Mission operations will need the support of a level 3 facility to
provide for administration and coordination. Therefore, ideally, there should be one level 3 facility—but a condensed level 3—assigned per mission at the command level and an established relationship with the mission/operation’s control headquarters.

In future post-Cold War expanded PKOs, the level 2 facility should be modular with the ability to expand with add-on level 3 components and adapt its operations accordingly. This can be done to align with the provision of medical treatment and specialized care based on operations’ exigencies, hostilities, patients, terrain, and civil-military concerns. To support such PKOs, the unit must be a tactical unit. Therefore, it must have the maneuverability to rapidly travel over some distance and in tandem with front area peacekeepers.

The level 2 facility arguably will become the center of gravity for medical support for PKOs, if it has not already. In field operations, this component of care provides seriously hurt and ill patients with life-saving medical intervention and care. It also is where patients are stabilized for evacuation out of operations and even out of country. Thus, there must still be use of and emphasis on ground and air Medevac capabilities with highly trained medical personnel for en-route life support and stabilization. The comprehensive review of recent PKO medical literature regarding PKO medical aspects suggests that future medical support ideally should be able to move quickly over large distances and provide comprehensive coverage farther forward in tandem with mobile forward AO peacekeepers. Augmented level 2 facilities are the level of care capable of doing this effectively. Recent operations have demonstrated that the focus of level 2 can be trauma care, followed by non-hostile injuries and then illness (if augmented by preventive medicine teams) (cf. Reade, 2002; also see Seet & Burnham, 2000).

Level 3 can continue to offer specialized surgical capabilities. It also can have command-staff and extensive medical logistics and maintenance capabilities required for sustained long-term care that is cumbersome for maneuvers. The drawback is that it lacks the ability for modular flexibility and expansion. Therefore, given the expected direction of future PKOs, emphasis on medical support for
operations must be at the level 2 facility that also incorporates (1) preventive and psychological medicine, (2) portability and mobility, (3) medical sustainment pushed as far forward as possible, and (4) accommodation for expanded specialized care responsive to operational contingencies. This also permits modular expansion of bed capacity for larger treatment, holding, and, as required, evacuation.

The Mobile Modular Level 2+

In PKOs, personnel and material are available for the level 2+ concept as attachments and augmentation building blocks for the current level 2 (see Appendixes I and II for graphic depictions). The level 2+ should have trauma, medical clinic (general practice) services, nursing services with psychiatric nursing resources (i.e., “dual hats”), expanded pharmacy, blood supply, and expanded medical stock. Preventive medicine teams should be attached—but dispatched and roving throughout the theater—to address field sanitation issues, potable water acquisition, disease prevention, and non-hostile action injury reduction.

The command structure should retain the rank and staff structure found at the level 2 facility with slight elevation due to its add-ons from level 3 components. The level 2 facility should retain the capability to expand and exceed normal bed and sub-specialty capability through modularity. There should be a commander, deputy for clinical services, a director for nursing care, and an administrative officer (UNDPKO, 1999, 22-27; also see Leslie, 2011, 109-110). This facility should not be an amalgamation from different troop-supplying nations. Rather it should be unified, cohesive entity from one troop supplying nation, and capable of maintaining its own vehicles, generators, and equipment and conducting basic medical maintenance. Also, this unit must be able to communicate with field units, aviation, and ground transportation and lower and higher elements. Logically, clinical services should be organized around trauma, resuscitation, and life and limb and eyesight sustainment with the intent of supporting continuous operations. There should be a provision for general and orthopedic practice as
well but not extensive diagnostic capabilities, which can be maintained at level 3. At the level 2 facility, the need for provision of trauma care is rather obvious as is the need to treat most of the illness encountered in operations. This also includes emergency medical treatment. Nursing services should include bed care and patient specialists. Service and supply should allow the organization to increase in size threefold. That way, if the level 2 cannot address a particular challenge it is facing, it can be expanded modularly by adding on those capabilities. This may allow any additional capabilities that are desirable, but wrapped around a trauma and basic care-oriented medical care facility.

To address personnel turnover, back-fill from individual augmentees (i.e., reservists and Home Guard) may be necessary. The troop-contributing nation should be responsible for training and pre-deployment readiness. Detachments should be from either the troop-supplying nation of the level 2+ facility or modules representing one troop-supplying nation. This is to ensure cohesion that develops from training and working together over time and to avoid communication difficulties related to multi-national amalgamations. These modules would be capable of relatively rapid deployment. The expansion of the level 2+ also would give level 2+ leaders the opportunity to develop leadership skills, work on tactical field problems, and meet challenges of operations in the field (e.g., Reade, 2002). Additional non-unit equipment should be available from the level 3 to the level 2+ depending on mission needs. Detachments, for example, such as humanitarian medical aid or women’s care general practice outreach clinics could be organized within the level 2+ and/or drawn on from the level 3. This system can facilitate a modular push forward. This would improve adaptability necessary for future PKOs that might have different and more particular requirements, such as those with specific humanitarian operations (e.g., Milosevic, 2012) or preventive medicine “taskings” (Hazra, 2013). These modules would require fewer personnel and less equipment and would be interchangeable. Ideally, several level 2+s could be fielded in large-scale missions and coordinated by the condensed but refocused level 3 (see Appendix I).
Supporting this shift in medical treatment facilities, and furthering rapid deployment, will require pre-positioning, depot, cache, tracking and management, maintenance of equipment, and contracting and finance specialists. As the Liberian mission (ECOWAS) reported, every contingent, such as medical units and treatment facilities, must be insular and self-sufficient such that it includes laundry, catering, accommodations, office, communications, explosive ordinance disposal (EOD), and observation (UNDPKO, 2005). This means they must be equipped to support whatever type of medical care mission they encounter. This might require an extra inventory or a specialized inventory for plug in and play, depending on operational requirements. This also would create a redundancy of material that has proved useful in previous and prolonged operations that resulted in the need for replacement and maintenance of worn and broken equipment.

Summary

In sum, basic and level 1 medical care is a critical capability required for all PKOs. Level 2 is where wounded, injured, or ill patients are collected, stabilized, and treated prior to return to duty or evacuation to higher and more definitive treatment. If past experience is any judge of future experience, future PKOs’ medical support will be mobile across large distances into dangerous, remote, and rugged areas. Medical care will need to be close-in enough to facilitate rapid treatment and evacuation from basic and level 1 facilities. In previous operations, it was unrealistic to rely on aero-evacuation entirely, in particular where there was (1) constant disruption due to inclement weather, (2) a lack of landing areas and night vision devices, and (3) even hostile anti-aircraft fire. The requirement will be a more complex and larger level 2 facility that is capable of moving closer to field operations. A consideration for planners will be providing security to medical treatment facilities in areas where conflict resolution is indeed robust. This is because the level 2 facility is now somewhere “way out there” and a bigger, potentially vulnerable, high-value target. Another consideration regarding mobility is that additional
modules will reduce mobility even with more transportation components. Thus, the level 2 must have more of its own transportation with the inclusion of additional modules.

The likelihood is that in future post-Cold War PKOs, level 2 capabilities will be required in austere, rugged, remote, and dangerous areas supporting nation stability and building to address the effects of continued hostilities. The practice of staging in multiple locations can overtax command and control, logistics, transportation, and staffing and make medical care less responsive to the ever-unfolding tactical situation.

The recommended adaptations discussed here have the potential to provide medical care capable of supporting PKOs with more mobile medical capabilities, but without the footprint of a level 3 or even the need for expensive out-of-country medical treatment facilities. Also, the facility will have an appropriate size to support ad hoc small-scale contingency operations and humanitarian outreach or special operations. It hints at a small size, but a size and potential for augmentation with special teams or detachments. The level 2+ should be an element of a troop-lending nation, train as a unit, and deploy and function intact to avoid language barriers and communication issues that might impede coordination and provision of medical treatment in the system (e.g., Joshi, 2003; Smadi & Smadi, 2002). To interface with other personnel/units on the mission who may speak a different language, interpreters may be needed (ibid.). These smaller hospitals will be more easily deployed and enhanced through modularity. Modularity is achievable by implementing a system of detachments for requirements and specialties. These can come from the level 2+’s troop-lending nation or self-contained detachment modules from other troop-lending nations. The point is that standards of care must be comparable and personnel must train and work together in the modules (ibid.; also see Reade, 2002). More importantly, this provides the mission commander with flexibility in planning for particular and varied missions or in responding to mission changes.
The lessons learned and reported here convey the importance of medical care to PKOs. They suggest courses of action that include use of modular augmentation in level 2 medical care used by UN PKOs. This system could significantly enhance the provision of military medical care on PKO missions in ways that are capabilities-based and efficiently achieved with flexibility, mobility, adaptability, and expediency to meet particular, varied, and evolving PKOs. Given the direction of PKO trends, the recommendations in this report should be incorporated across the spectrum of medical aspects of expanded, post-Cold War-type missions. The operational component of the level 2 hospital can be modularly augmented with detachments and teams, which can be plugged in for play. At its core, it will still provide needed trauma and general practice care which will be invaluable in future PKOs. Nevertheless, the importance of the work reported here is that it provides a general conceptual approach to considerations of medical aspects across the spectrum of PK missions, specifically the iterative identification of relevant medical and health aspects to PK missions and then planning for medical controls accordingly.

One lesson learned above all is that PKO medical support planning is more complex than a simple fix of more mobility or closer proximity or a cookbook approach adding this or that facet or module. Therefore, medical support plans must be purpose built for each operation. Plans (and planners) must be capable of speedy initial reaction and sufficiently flexible to manage rapidly changing demands (cf. Balanzino, 1997, 20). Thus, given the experience of past PKOs, in addition to fundamental structural modifications, future PKOs will need to adopt a medical support planning mind-set. For example, the planners for the Sierra Leone mission (UNAMSIL) could not secure either the roads to the rear of their mission’s forward areas or medical assets at the forward areas (Smadi & Smadi, 2004). However, they still had to support forward area peacekeepers well into the remote hinterlands (ibid.). Therefore, they wisely chose to rely heavily on high-quality basic emergency care in the forward areas and aero-Medevac for rearward evacuation for even the most minor medical matters (ibid.). They accepted the expense of relying on aircraft and the risk of both anti-aircraft fire and delays for patients, as well as
possible loss of aircraft resulting from inclement weather disruptions (ibid.). However, they also kept their most highly trained and experienced medics with the forward area peacekeepers so as to provide the best and most immediate treatment (ibid.). Another example is the Japanese medical contingent in Zaire supporting the Rwanda refugee relief (Ministry of Foreign Affairs of Japan, 1997). Prior to deployment, the Japanese contingent coordinated with local authorities, NGOs, and regional organizations (ibid.). Thus, the Japanese learned the importance of security and safety and acquiring intelligence on the proposed AO to inform the groundwork for future operations (ibid.). In other words, the mind-set that must be adopted for medical planning must consider and seek to strike a delicate balance of the trinity among proximity to medical care, time involved in transporting, and security given the nature of PKOs.

**Other Recommendations**

The work reported here suggests that a hybrid level 2+ medical facility augmented with proper services and modules is optimal for addressing trends and medical aspects of future PKOs. Nevertheless, this work has highlighted several ancillary trends and medical aspects that beg address. In addition to awareness of the changing nature of PKOs and balancing the PKO medical support trinity (i.e., proximity-transport-security), planners for future medical support to PKOs should consider the following recommendations for medical aspects of PKOs.

First, preventive medicine should be present throughout the AO, in particular for on-site monitoring of forward AO peacekeepers. Preventive medicine practitioners should not be assigned to level 3 care in the rear but to the level 2(+) and then tasked throughout the area of operations. They should be the first in for a “leader’s recon” or epidemiological mapping to improve disease and hazard intelligence. Also, they should be strategically placed where troops disembark to assist with (1) screening and evaluation of unfit peacekeepers, (2) pre-mission briefing of health hazards and their avoidance, and (3) if needed,
vaccination and infection control. And they should be at points of repatriation for evaluation and health education.

Second, similarly, psychiatric health providers should be present throughout the area of operations. In particular, they should be the first in for screening and evaluation at the point of disembarkation to catch pre-operations potential PTSD cases and other psychological conditions. For the same reasons, they also need to be the last out at the points of repatriation. Inclusion of nurses at level 2 or other medical treatment personnel who are also psychiatry trained for early detection and treatment would be optimal.

Third, the presence of IEDs and mines must be incorporated into planning considerations of whether and how to extend medical support forward and transit patients back. Also, this is true for their effect on the type of medical care that might be needed.

Fourth, planners should provide for women’s health and include female medical providers. This is particularly true if the mission has a humanitarian aspect and/or a need to be sensitive to local cultural norms. This also may need to be factored in regarding security.

Fifth, there must be training in the treatment of casualties for medical personnel to ensure cohesion and consistent responses in emergent situations and to maintain skills.

Sixth, there should be integrated, electronic medical information systems that can rapidly and cost-efficiently collect, store, transmit, and receive data, in particular medical records data.

Seventh, given the length of some PK missions and the need for medical treatment providers, there needs to be an a priori system for backfilling replacements.

Eighth, upgrading of medical skills and certifications (i.e., validation of standards) should be expanded and extended all the way to medical assets located with forward area peacekeepers. As the UN Special Committee commented, “There is a responsibility of both the United Nations and the Member States to
ensure that medical personnel assigned in mission areas are highly qualified to provide immediate and proper medical attention to peacekeepers” (UN, 2012, 17-18).

Ninth, previous critiques of the system of separation of medical authority vs. command have offered no resolution. Without a more appealing alternative, these systems that are so much an ingrained part of the culture of Western military medicine should remain in place for now.

Finally, there needs to be more scientific research and publishing of reports in peer-reviewed venues regarding evaluation of PKO medical support and medical aspects of PKOs. Political bodies, in particular the UN, have mandated program evaluation, including PK mission medical care (UN, 2012, 77). However, they tend to report the policy end-product and not the empirical processes of how the policy was derived. The paucity of articles on which this research was derived speaks to the need for more work to be submitted under the scrutiny of peer review. When reviewers green-light a particular article, it means the method or findings/results described in the paper are valid and trustworthy; there is a description of the empirical processes by which findings and results were derived. Peer review sets a standard that the work was carried out following a systematic and quality-controlled process and not “by magic.” A patina is applied to the work, and sense is made of the claims.

Limitations

Material used in this paper was derived from reports in the open-source medical literature which underwent a rigorous screening process. Thus, less rigorous or closed-source reports about certain aspects may not have been covered in the reports used for this study. Arguably, this may be an advantage in that the aspects examined had prior scientifically rigorous validation with the intent of public dissemination. The work in this report was intended to identify and explain processes in specific contexts through identification of categories. It was a practical orientation that produced knowledge of the processes. The fundamental context was medical support for PKOs, given that there has been an
identifiable fundamental situational change or trend. That trend could reverse itself or there could be a
diversion. Predicting the future is a tricky proposition and the one sure thing about the future is that it
will come. Nevertheless, the goal was to generate concepts that explain the way central concerns are
resolved regardless of time or place. Essentially, what has been produced is a series of probability
statements with a high degree of fit, relevance, practicality, and modifiability. Although they may come
from various distinct and particular case studies, this is not to deny that the particular experiences and
probabilities reported would be vastly different had the pool of literature been larger. Another
limitation is the nagging doubt that there is a critical category or consideration that is yet to be found.
Finally, this report was limited by the context it addressed. That is, this report explicitly addressed
(expanded peacekeeping) missions like the expanded, post-Cold War (i.e., “Durcian,” Durch &
Berkman, [2006]) missions the UN has conducted in recent years. The level 2+ medical facility described
is not a universal solution for all PK missions. (One size does not fit all missions.) Troop-contributing
nations must have a clear understanding of the mission’s medical requirements on which the medical
support structure will be established and what must be accomplished in terms of medical preparation
for a mission. This means that a pre-mission medical needs assessment should be conducted to
determine whether a level 2+ is required. Nevertheless, the particular mind-set involved in planning the
medical care support for PK missions highlighted in this report can be applied to classic peacekeeping or
peace observer missions.

Footnotes

*Without making analogies to war or combat, forward AOs refers generally to “frontline” peacekeepers
or peacekeepers “on the frontline.” However, in the post-modern internecine conflict riddled
peripheries of the world, things are not always linear. Rather they may be non-liner. Imagining that
peacekeepers operate from bases and camps, then the forward AOs are places in the Host Nation’s
territory where the peacekeepers are operating “out there,” sometimes “way out there,” away from their base. Forward AOs are where peacekeepers are conducting the business of peacekeeping and doing things such as: patrolling; manning checkpoints; accompanying and protecting key individuals and groups and communities; gathering information; providing a protective presence; monitoring and observing borders and community conditions and activities of potential belligerents; training local people; liaising, DDR; early warning activities; local problem solving; and violence prevention. However, depending on one’s perspective or changes in perspective a “forward AO” just as easily could be to their rear or on the side. In the case of internecine conflicts, “front” and “rear” have little, if any, bearing except in terms of a particular time and context. Ultimately, the front AO is where things are going to and the rear AO is from where they came from and where peacekeepers may leave from at the cessation of operations or have to run to should things start going badly.

+The fact that Africa has the largest number of deaths due to hostile acts is evidenced by more than half of UN PKOs being deployed to Africa (ibid.). Of the four geographically assigned “desks” in the Office of Operations of the Department of Peacekeeping Operations, two are assigned to Africa and the other two to the rest of the world (Seet & Burnham, 2000; Ram, 2008 [b], 1-6).

++Level 2 medical facilities can serve as troop medical clinics in the field—not just emergency medical treatment conduits.
References


personnel during peace keeping operations in Cambodia. *American Journal of Tropical Medical Hygiene*, Nov, 57 (5) 569-70.


Remarks on the Chinese People’s Liberation Army’s Participation in UN Peacekeeping Operations: PRC, Beijing, 26-27 March.


Implementation held at Kofi Annan International Peacekeeping Training Centre, Accra Ghana 10 – 11, February.


Figure 1, Possible Level 2+ PK Mission Configurations

**Level 2+ Standalone/TMC (Small Mission or Classic PKO):**
- Level 1
- Level 2 +
- Out-of-Country

**Level 2+ Medium Mission:**
- Level 1
- Level 1
- Level 1
- Level 2 +
- Condensed Level 3: Command & Control & Spec Diagnostics

**Level 2+ Large Expanded Mission:**
- Level 1
- Level 1
- Level 1
- Level 2 +
- Condensed Level 3: Command & Control & Spec Diagnostics
MAJ. RALPH JAY JOHNSON III
Biographical Summary

MAJ Ralph Jay Johnson III currently is serving as an Medical Plans and Operations Observer/Controller for Team #3 Team Bravo, 1 BDE 1 BCTG, 75th Div BCTD and as a Medical Subject Matter Expert. Concurrently, he is attached to the US Army Recruiting Command as a Texas Medical Center Ambassador and also as a West Point Academy Field Rep. Previously, he was assigned to the Houston-Naval Reserve as an Army Adviser. His most recent deployments were with OEF/HOA to the Middle East (2013), where he assisted Defense Forces with post-Operation medical Ground Evac reconstitution; and, OIF/OND to the Middle East, where he assisted with reorganization of Airborne Medical Supply depots in support of military operations. He received awards and certificates of appreciation/achievement from the Host Nation for his work. Previously for 2 ½ years, he was assigned to the United States Forces Korea—Detachment-Texas (USFK-DET T), where he was the Operations and Training (S-3) section officer. He recently completed NATO CIMIC/CMI/CA Higher Command Course for Field Grade officers in Enschede, Netherlands with Honors. He also has completed Intermediate Level Education with the US Army Command and Staff College Ft. Leavenworth, KA and Strategic Leader School (JMPM-I) with the Naval War College at Providence, RI—at the latter receiving Distinguished Honors. His Advanced Officer/Captain Career Course was at the Swedish UN International Military Institute in Kunsagen, Sweden, where he worked with Multi-national forces, placed in the top 10% of the class, and served in several key leadership roles. There, he also received a gold medal for Sportsmanship as a member of the Hockey Team placing first in the Intramural competitions. With the USFK-DET-T, he deployed twice (2008 – 2009) to South Korea for Joint Forces Exercise as well as 2 tours on the Demilitarized Zone, where he served in the UN/USJF Anti-Terrorism/Force Protection component. Prior to joining the USFK, as a 1LT and later CPT, he served for 6 years with the 10BN(HS/PN)/95TH DIV (IT) as the Acting XO, Personnel Officer (S-1) and later the Training and Operations Officer (S-3). There, he lead the conduct of Medical NCO Academies, 68W EMT Transition courses, Combat Life Saver Instruction, and participated in Operation Enduring Freedom. He also served as the Collateral Duty Safety Officer and the OPFOR Officer for FTXs. From 1998 – 2001, as a 2LT, he was an Observer Controller Trainer with Team 4 of the 3/289TH/75th IT and Asst. S-1.

He was direct commissioned in the United States Army Reserve as a 2LT in 1997, and completed Officer Basic Course in 1999. Before 1997, he enlisted in the Regular Army, completed Basic Training at Ft. Leonardwood, Mo. and Advanced Medical Training at Ft. Sam Houston, Texas. Then he served in various Enlisted capacities in the AMEDD Medical and Infantry Corps, and completed 2 BNCOCs and the Special Forces Aidman course.

He has earned a bachelor (sociology/criminology) degree, three masters degrees (sociology/criminology/counseling, health marketing, and theology and pastoral counseling), and a doctoral degree (community medicine). He also maintains 10 various health and medical licenses, registrations, and certifications. He is a Professor of Medicine at UTHSC-Houston—Medical School and serves as a Catholic Chaplain at St. Luke’s Episcopal Hospital in the TMC.

His military awards include a Joint Services Achievement Medal, Army Commendation Medal, 3 Army Achievement Medals, National Defense Service Medal, 3 Overseas Service Medals, Good Conduct Medal, ARCAM 6 OLC, AFRM w/ SH and “M” Device, and Army Service Ribbon.

He was born in 1958 in Peoria, Illinois and earned his early education in that state. He and his wife, Evelyn Adorno, live in Houston, Texas. He has one son, Jay R Johnson.