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Running Head: Deployed Military Health Information System

Analysis of the Deployed Military Health Information System and its Ability to Satisfy  
Requirements of Public Law 105-85, Section 765

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A graduate management project proposal submitted in fulfillment for the requirements of the  
Army-Baylor program

U.S. Army-Baylor University Graduate Program in Health Care Administration

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### Abstract

The Department of Defense (DoD) is undergoing tremendous change in the manner in which it is documenting, tracking, and reporting patient encounter information within the entire Military Health System (MHS). The MHS has major deficiencies in medical record keeping and reporting the medical condition of military personnel serving in deployed locations. As health care leaders in the MHS, we have an obligation both professionally and ethically to ensure that our deployed personnel are given the best possible health care. The information obtained in this analysis will be used to further identify the strengths and weaknesses of the deployed medical information systems in the MHS and determine the ability of the MHS to meet the requirements of Public Law 105-85.

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## Introduction

In every military engagement, medical care is rendered to military personnel around the world. Although the medical care received at these deployed locations is meaningful and necessary, documentation and tracking of this medical information has continually challenged the Military Health System (MHS). Although this problem has plagued the military for many years, it received renewed public attention during and after the Gulf War. Military members returning from duty in Southwest Asia reported persistent and unexplained illnesses possibly related to their service during that time.

Medical documentation, tracking, and reporting for the Gulf War were found to be lacking at best. Many organizations including the Institute of Medicine, the Presidential Advisory Committee on Gulf War Veterans' Illnesses, and the General Accounting Office all commented that the lack of medical documentation and tracking from the Gulf War has hampered the investigation of the reported illnesses and diseases. Veterans noted that medical care and immunizations given during their deployments were not recorded in their medical records and have expressed concerns that medical information is now missing from their records (Rostker, 1999). These events raised serious concerns regarding the ability of the MHS to accurately document, track, and report patient encounter information in contingency operations.

My residency site location is the Air Force Medical Support Agency (AFMSA) working in the information systems division. This office has been working on the integration of the Air Force medical software used in deployed locations, the Global Expeditionary Medical System (GEMS), with the Theater Medical Information Program (TMIP). This integration aims to complete the MHS effort to have an interoperable medical information

system that can accurately document, track, and report patient encounter information for deployed personnel. This integration effort hopes to fully meet the requirements of Public Law 105-85, Section 765. This law requires the development of a medical information system that can accurately assess the medical condition of members of the armed forces.

*Conditions that prompted the study*

The Department of Defense (DoD) is undergoing tremendous change in the manner in which it is documenting, tracking, and reporting patient encounter information within the entire MHS. As noted in congressional testimony made by the acting Assistant Secretary of Defense in 1998, mistakes made in the collection and dissemination of medical information during the Gulf War were unacceptable and it is imperative that those mistakes are not made again (Christopherson, 1998). In August 1997, the Department of Defense issued DoD Instruction 6490.3, which established requirements to improve health assessments, surveillance, and record keeping during deployments. This instruction led to a view that the military can no longer rely on a paper-based medical record for tracking and trending disease in a forward deployed location. This shift in the way medical information was to be collected, reported, and disseminated was codified in Public Law 105-85, Section 765. This section specifically directed the Secretary of Defense to establish a system to assess the medical condition of members of the armed forces who are serving in deployed locations.

In efforts to comply with Federal, DoD, and Department of the Air Force rules and regulations, AFMSA is currently working to integrate GEMS into TMIP. These information systems are used in areas of operation to document, track, report, and analyze medical information from deployed locations. GEMS is currently used only by the Air Force and has

some known difficulties with interoperability with other MHS deployed systems and the Interim Theater Data Base (ITDB).

*Statement of the problem or question*

The MHS has major deficiencies in medical record keeping and reporting the medical condition of military personnel serving in deployed locations. This problem also raises ethical considerations with regard to the MHS ensuring each patient is given proper care and that the care received is properly documented following the patient back to his home unit.

Can the MHS develop and deploy a medical information system that can accurately assess, document, and report the medical condition of members of the armed forces serving in

deployed locations? As health care leaders in the MHS, we have an obligation both professionally and ethically to ensure that our deployed personnel are given the best possible health care. In addition, we must ensure that all care rendered in deployed locations is well documented and successfully reported back to military members' home stations for continuity of care.

I hypothesize that the TMIP medical information system meets that obligation and satisfies the requirements of Public Law 105-85, Section 765. Further, I hypothesize that by integrating all services to one end-user interface for TMIP, the MHS can streamline the deployed medical information systems in a way that all members, regardless of service, can operate in austere environments in a manner that enables real time reporting, tracking, and documenting of deployed personnel health and readiness.

*Literature review*

Close to 700,000 military men and women deployed to Southwest Asia during the Gulf War. Many veterans upon their return reported persistent and unexplained illnesses

possibly related to their service during that time (Rostker, 1999). Many organizations have commented that the lack of medical information and documentation hampered the investigation of these illnesses and diseases. Veterans noted that medical care and immunizations given during their deployments were not recorded in their medical records and have expressed concerns regarding medical information currently missing from their records (Rostker, 1999). These organizational concerns coupled with comments from veterans have focused attention on the ability of military medical systems to accurately document and record all health care services during times of deployment.

Before the Gulf War, medical record keeping policy was primarily a function of the individual military services Surgeon General and was contained in specific medical regulations and instructions. This service specific approach led to many undefined areas of medical documentation requirements where forces serve in joint capacity. Additionally, these policies primarily focused on the health care of non-deployed personnel in peacetime and said little about record keeping under deployment conditions (Rostker, 1999).

Initially, it was common practice the entire individual health record would accompany military personnel on deployments. Later, the Army and Air Force reconsidered and chose to send an abstracted record with the individual military personnel instead of the entire medical record. This change may have resulted from many lost and incomplete records that returned from deployed locations. In addition to overall medical documentation, immunization guidance did not anticipate the use of investigational vaccines or the need for operational security (Rostker, 1999). These issues arose during the Gulf War and continue to concern both veterans and policy makers today.

Since the Gulf War, there have been efforts by the DoD to focus on the deployable medical record and to begin looking at computer-based patient records for future deployments. Policy regarding medical record keeping continues to be made primarily by the three services but the DoD, Joint Staff, and the combatant commands are playing more active roles (Rostker, 1999). To date, the Air Force and Army continue to deploy personnel with an abstract medical record while the Navy and Marine Corps choose to deploy the full health record with the military member. These conflicting requirements continue to breed confusion on medical documentation for deployed personnel.

In an effort to direct military focus on the concerns surrounding post-conflict illness among veterans, Congress provided legislative direction regarding military medical record keeping in Public Law 105-85, known as the National Defense Authorization Act for Fiscal Year 1998. Public Law 105-85, Section 765 (1997) states the following:

The Secretary of Defense shall establish a system to assess the medical condition of members of the armed forces (including members of the reserve components) who are deployed outside the United States or its territories or possessions as part of a contingency operation (including a humanitarian operation, peacekeeping operation, or similar operation) or combat operation. (p. 198)

The above excerpt from Public Law 105-85, Section 765, signed November 18, 1997, amended Chapter 55 of Title 10, United States Code. This section clearly defines the Secretary of Defense role in establishing this new medical information system capable of increased medical surveillance and record keeping during times of deployment.

An important aspect within this requirement was increased medical surveillance. Medical surveillance is defined in DoD Directive 6490.2 (1997) as the following:

The regular or repeated collection, analysis, and dissemination of uniform health information for monitoring the health of a population, and intervening in a timely manner when necessary. It is defined by the Centers for Disease Control and Prevention as the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link of a military medical surveillance system is the application of these data to military training, plans and operations to prepare and implement early intervention and control strategies. A surveillance system includes a functional capacity for data collection, analysis and dissemination of information

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linked to military preventive medicine support of operational commanders. (p. 2)

As noted in the operational definition of medical surveillance, the new information system must include a functional capability for data collection, analysis and dissemination of information to operational commanders. DoD Directive 6490.2 further defines medical information systems must be designed, integrated, and utilized in a way to maintain, assess, and protect the physical and medical health of armed forces members throughout their military service. DoD Instruction 6490.3 (1997) states, "medical surveillance is essential to ensure a fit and healthy force and to prevent illness, disease, adverse stress responses, and injuries from degrading mission effectiveness and warfighting capabilities" (p. 2). TMIP and GEMS both seek to satisfy the requirements for medical surveillance set forth in these DoD directives and instructions.

Public Law 105-85, Section 765 further defines this medical information system will include the use of a pre-deployment and post-deployment medical examination to accurately

record the medical condition of members before their deployment and any changes in their medical condition during the course of their deployment. Although it does not specify a time restriction for completing the post-deployment examination, it states it will be conducted when the member is re-deployed or otherwise leaves an area in which the medical information system is in operation. The law also calls for the detailed record keeping of all medical examinations and health care received by members in anticipation of their deployment or during the course of their deployment. The requirement calls for the retention of all this medical information in a centralized location to improve future access to the medical records.

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The MHS responded with the creation of TMIP. TMIP is a tri-service system

designed to provide information to deployed medical forces to support all medical functional areas, including command and control, medical logistics, blood management, patient regulation and evacuation, medical threat/intelligence, health care delivery, manpower and training, and medical capability assessment and sustainment analysis (DOT&E, 2002).

TMIP performs this service by integrating information from other medical information systems, including the Composite Health Care System (CHCS), CHCS II, Defense Blood Standard System, and Defense Medical Logistics Standard Support (DMLSS). TMIP integrates medical systems at the theater level to support deployed forces, enhances the services' capability to collect, process, and disseminate a flow of information, and allows for efficient protection of lives and resources (DOT&E, 2002).

TMIP was initiated by the Assistant Secretary of Defense of Health Affairs to provide integrated automation of the theater medical information environment to establish a means for integrating existing and emerging medical information systems into an interoperable

system that supports theater health services (TFMO, 1998). The purpose of TMIP is to integrate medical information systems to ensure precise, interoperable support for rapid mobilization, deployment, and sustainment of all field medical services (TFMO, 1998). TMIP has a mission to provide the right information to the right people at the right time to improve and maintain health status across the entire continuum of health care operations.

Medical staff, health care providers, and military commanders are three distinct TMIP user communities. The challenge TMIP faces is to ensure military medical personnel are prepared to recognize and treat an array of exotic diseases, deal with humanitarian crisis in a combat area, respond to chemical and biological threats, and manage logistics and supply problems caused by the long distances involved. In addition to the mandates, another primary reason for the development of TMIP is to provide the MHS support for the theater portion of Force Health Protection (FHP), to ensure a fit and healthy force, and provide casualty care and management.

The integrated medical information systems of TMIP ensure precise, interoperable support for rapid mobilization, deployment, and sustainment of all theater medical services anywhere, anytime, and in support of any mission. TMIP is the medical component of both the Global Command and Control System and the Global Combat Support System. Through the TMIP Medical Surveillance System, theater commanders will gain situational awareness for critical decision-making. Commanders will be able to track trends, take preventive action, and keep their forces fit through the new ability to collect, analyze, and make use of collective medical information across the services throughout the theater in near real-time. Commanders will be able to determine the location and health status of injured war fighters

across the theater. Commanders also will be able to determine the types and skills of replacement personnel required.

TMIP supports the MHS for the theater portion of FHP. FHP is a comprehensive management strategy that benefits the total force throughout the individual service member's lifecycle. The overall goal of FHP is improvement of operational fitness through the preservation, maintenance, and improvement of individual and collective health. TMIP contributes significantly to this goal by rectifying deficiencies identified during Desert Shield/Desert Storm and other operations (TMIP, n.d.). These deficiencies included a lack of consistent information capture within and between the services, the lack of interoperability between service systems, and significant deficiencies in communications between the medical entities of the services. TMIP addresses specific deficiencies in limited health care data collection for post operational analysis, insufficient interoperability between the services' medical operational forces, inadequate automation for medical situational awareness, and the lack of patient visibility.

In addition to the mandates, another primary reason for the development of TMIP is to provide the MHS support for the theater portion of Force Health Protection, to ensure a fit and healthy force, and provide casualty care, and management. For example, TMIP tracks immunizations and monitors disease trends. TMIP collects medical information within theater. CHCSII collects medical information in garrison. TRANSCOM Regulating and Command and Control Evacuation System (TRAC2ES) keeps track of patients while in the air evacuation system. Information residing in theater on the ITDB replicates to the Clinical Data Repository (CDR). TMIP provides for a complete medical record both in theater and stateside. CHCS II is a system that will be used in garrison and TMIP contains similar

functionality reemphasizing the theory that we maintain the same capabilities in war as we do in peacetime.

TMIP links different echelons of medical care information to theater commanders allowing for time-sensitive, critical decision-making. While enhancing the ability to collect, analyze, and share information, it also integrates many existing medical information systems with the Global Command and Control System and Global Combat Support System. TMIP captures medical information from the lowest levels of care to facilities with more definitive care. This medical information will move with the patient and, in most cases, ahead of the patient through levels of care in the theater.

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TMIP development is based on an incremental system of blocks of increasing functionality and integration. Block 1 serves as the foundation for the system and blocks 2 and 3 will provide additional capabilities. The military services have funded their own infrastructure and computer hardware to host the TMIP software in the theater environment. The Joint Requirements Oversight Council (JROC) approved a Capstone Requirements Document (CRD) in January 1999 and the Operational Requirements Document (ORD) for TMIP Block 1 in October 1999. The JROC revalidated the Block 1 ORD in August 2001. Block 1 enables initial medical trend analysis, clinical care documentation and medical supply management and is the foundation of the TMIP system. The following is a list of capabilities included in block 1:

1. Medical Command and Control
2. Medical logistics assemblage management
3. Blood management
4. Immunization tracking

5. Medical record generation
6. Structured text clinical encounter
7. Battle injuries
8. ICD-9 coding scheme
9. Occupational health / radiation exposure
10. Lab results
11. Automated medical reference / library
12. Status reporting
13. Interface with Electronic Information Carrier (EIC)

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Block 2 adds expanded medical trends analysis, clinical care documentation, and medical

supply management. In addition, block 2 adds the capability to track patients in-transit. In addition to the capabilities of block 1, block 2 adds the following:

1. Enhanced medical planning
2. Integrated patient in-transit visibility
3. Medical surveillance based on real time population at risk
4. Environment and occupational health data collection
5. Preventative health data collection
6. Medical care enhancements
7. Dental
8. Integrated medical logistics support for all echelons of care
9. Patient movement item tracking
10. Personal digital assistant support
11. Web enabled access

## 12. Interface with DOD approved EIC

Block 3 software is scheduled to be operational by Fiscal Year (FY) 2008. This will most likely be conducted in two increments. Post block 3 will meet requirements of Joint Vision 2020. Block 3 reaches full system capability and interoperability.

TMIP block 1 will be used in all four echelons of care. Echelon 1, emergency medical care, represents emergency medical care provided by a variety of personnel. The initial treatment may be self or buddy aid and followed by a trained medical airman. This airman gives first aid and conveys or directs the casualty to the aid station. The aid station has essential emergency care capabilities and prepares the casualty for evacuation to the rear. This care may include beginning intravenous fluid administration, control of hemorrhage, and establishment of an airway. Echelon 2, initial resuscitative care, provides resuscitative care as provided by company-sized medical units such as clearing stations or medical companies.

Depending on the capability of the medical unit, initial surgery to save life or limb may be available. The medical units prepare those patients requiring further care for evacuation to the next echelon facility. Echelon 3, resuscitative care, provides medical care in a facility staffed and equipped for surgery and post-operative care. These facilities may provide additional surgical specialty support, additional laboratory and radiology support. Echelon 4, definitive care, provides medical care in a facility staffed and equipped for follow-up surgery and other rehabilitative therapy for patients in the recovery phase who may be expected to return to duty. The medical data generated at each echelon will be transmitted to a central repository, which the Commander-in-Chief/Joint Task Force (CINC/JTF) can

then view for command and control of the theater medical battlefield and use it to provide medical situational awareness.

The Air Force responded to the congressional requirements with the creation of the Global Expeditionary Medical System (GEMS). GEMS was developed in 1998-1999 by the Medical Agile Combat Support Division, Headquarters Air Combat Command Surgeon's Office as a reach back capability that integrates control across the full spectrum of Air Force medical units, Coalition Forces, government agencies, and civilian medical treatment facilities (Turner, n.d.). GEMS provides medical personnel and decision makers the ability to manage casualties and adverse health events that may occur during contingency operations.

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GEMS delivers the ability to record and/or review clinical information captured from individual patient encounters. That information is then shared or "rolled-up" for automated analysis. This analysis occurs within a time frame that allows for early identification and mitigation of the risk. GEMS improves the documentation of the health care delivered and response to threats and/or events that place military personnel at risk. The by-products are a better continuity of patient care, improved medical surveillance of the deployed forces' health and the direct reduction of illness and death through risk avoidance in the event of attack or endemic event (Turner, n.d.).

GEMS serves as a stepping-stone to an integrated biohazard surveillance and detection system used to keep a global watch over the deployed forces in forward areas. GEMS also serves as the foundation for an Air Force wide integrated surveillance and medical command and control network (Carlton, 2001). The GEMS medical information system is a full spectrum medical management system that consists of the patient encounter

module, theater epidemiological module, theater occupational module, and the public health deployed module.

The patient encounter module is a paperless data linked tool allowing front line medics to record individual patient assessments. This system can be expanded to work off a handheld computer unit in combat environments (GEMS, n.d.). The theater epidemiological module was primarily designed as a preventative aerospace medical team management tool. It provides the ability to perform automated surveillance and reporting of deployed force health and readiness. The theater occupational module is able to record, track and monitor occupational and environmental concerns in the expeditionary setting. As an intuitive data linked tool to record preventive medicine assessments, the public health deployed module provides a way to conduct and document many tasks such as food inspection, operational rations, food facility inspections, public facility inspections, and communicable disease (GEMS, n.d.).

GEMS is noted to not only document medical encounters but also track chemical, physical, and radiological hazards. In addition, GEMS can track results from food inspections and living conditions in the field. The sophisticated epidemiological tracking model within GEMS allows for identification of potential disease outbreaks. GEMS has had some initial success in recent deployments. In his testimony before the United States House of Representatives in 2004, General George Taylor (2004) noted that to date GEMS has logged nearly 107,000 patient encounters in Afghanistan and Iraq. This information has served to provide commanders a theater wide overview on the health of their forces.

GEMS has gone through four version upgrades in an effort to improve its compatibility with other MHS deployed software and its ability to communicate with the

ITDB. After many unsuccessful attempts to integrate independently, the Air Force Medical Service (AFMS) decided to fully integrate GEMS into TMIP. This integration into TMIP will further develop the possibility of a single joint services system that will satisfy the intent of Public Law 105-85 and create a way to successfully collect, report, and disseminate medical information from deployed locations to theater commanders and the MHS.

Integration of these medical information systems requires a change in the way the DoD looks at deployed medical assets. Change has quickly become a way of life in healthcare organizations, both military and civilian. Today military healthcare is experiencing realignment efforts as Congress tries to create a military that is able to accomplish the mission with less overall cost. In today's environment, an acceptance to organizational change is essential for any project to succeed.

According to Fried and Johnson (2002), organizational change is a continuous process that involves multiple transactions and uncertain future states that lead organizations from one state to another. Organizational change is driven by both internal and external forces and healthcare professionals must be aware of the environment that surrounds military healthcare. Internal forces of change are those things such as policies and internal politics. A new federal law that affects operations is an example of an external change. Internal and external forces have opposing effects on most organizations. Forces from both inside and outside the organization combine to trigger change (Fried & Johnson, 2002).

While external forces in the environment act to trigger change, internal, or inertial, forces generally act to retard change (Fried & Johnson, 2002). Employees are frequently resistant to change and may actually have an interest in maintaining the status quo, especially when there are no immediate threats perceived in their environment. Most change in an

organization occurs in increments, allowing both the organization and the employee's time to adjust to the change process (Fried & Johnson, 2002). This incremental change is simply a series of small steps that result in the changing the direction of an organization.

Organizations must battle resistance to change by building the framework of change as a continuous process.

According to Hannan and Freeman (1984), learning and adjusting strategies and structure enhances the chance of organizational survival if the speed of response is commensurate with the temporal patterns of relevant environments. These strategies and structures are vulnerable to forces of inertia, or internal change. Forces of inertia are powerful forces that obscure threats and create resistance to change in organizations and may lead to failure if not managed correctly (Fried & Johnson, 2002). Structures of organizations that have strong inertial forces find change difficult to accomplish and the speed of change overall is much slower than the rate at which the environmental conditions change (Hannan & Freeman, 1984).

In order for an organization to succeed, strategies must be implemented to lower structural inertia. According to Fried and Johnson (2002), strategies that facilitate change in organizations and in turn lower structural inertia are things such as developing open channels of communication, setting up teams, and building networks and alliances. Developing open channels of communication allows everyone to participate in the discussion of issues allowing a common definition of the problem to develop. Setting up teams allows different areas of the organization to communicate openly and to become joint stakeholders in the outcome. Many organizational changes will require cooperation from managerial, financial, and technological resources (Fried & Johnson, 2002). Building a network of alliances and

partnership will aid in the successful collaboration from these different areas. Each military medical service, and the DoD as a whole, must implement these strategies and structures that facilitate organizational change.

### *Purpose*

The purpose of this study is to conduct a policy analysis on the deployed MHS information system and determine its ability to satisfy the requirements of Public Law 105-85. Further, this study will analyze the MHS alternatives for implementing a deployed medical information system and to discuss the projected outcomes of those alternatives. This analysis is to determine which alternative gives the MHS the most benefit while meeting all congressional requirements. In addition, this analysis will show that further integration of medical information systems will enable MHS wide information sharing increasing the ability of service specific commanders to have real time information on the physical and mental health of deployed personnel under their command.

### *Method and Procedures*

As stated earlier, I hypothesize that the TMIP medical information system meets that obligation and satisfies the requirements of Public Law 105-85, Section 765. Further, I hypothesize that by integrating all services to one end-user interface for TMIP, the MHS can streamline the deployed medical information systems in a way that all members, regardless of service, can operate in austere environments in a manner that enables real time reporting, tracking, and documenting of deployed personnel health and readiness. This graduate management project will show the events leading to the development of TMIP and each service specific software used to interface with TMIP. It will also show the ability of the MHS to accurately report, track, and document medical care given in deployed locations. To

conduct this analysis, an eight-step process identified by Eugene Bardach will be used.

Bardach (2000) lays out the following eight steps for policy analysis:

1. Define the problem
  2. Assemble some evidence
  3. Construct the alternatives
  4. Select the criteria
  5. Project the outcomes
  6. Confront the trade-offs
  7. Decide
  8. Tell your story
- 

This eight-step process of policy analysis will be used to analyze the alternatives for the MHS to successfully develop and deploy a medical information system that can accurately assess, document, and report the medical condition of members of the armed forces serving in deployed locations and its ability to satisfy requirements of Public Law 105-85, Section 765. Using this pre-defined method of policy evaluation will allow for a more concise reporting of both the problem discussed and the projected outcomes. This enables the reader to quickly understand what is being studied and how the results of this analysis can be used in decision-making.

#### *Define the problem*

Defining the problem gives a reason for doing all the work necessary to complete the project and provides a sense of direction for the evidence gathering activity (Bardach, 2000). Most good problem definitions are limited to description only. The problem definition should not include an implicit solution introduced by opinion. Projected solutions must be

evaluated empirically and not legitimated by definition alone (Bardach). A well-structured definition of the problem allows for a project that is manageable and is likely to be accomplished within the time and monetary constraints of the project.

#### *Assemble some evidence*

Gathering information that can be turned into evidence for your project is a major part of policy analysis. All of the time spent doing a policy analysis is spent either thinking or gathering data that can be turned into evidence. Of the two, thinking is more important but gathering data takes much more time. The key to assembling some evidence is to try to collect only that data that can be turned into information and evidence that has some bearing on the stated problem (Bardach, 2000). Evidence is needed for three principal purposes: to assess the nature and extent of the problem, review the particular features of the policy situation at hand, and evaluate policies that have been thought to work effectively in situations similar to your project.

#### *Construct the alternatives*

Each problem has many alternatives to choose from for a course of action. The person completing a policy analysis should list a few alternative actions or policies that they want to consider in the course of their analysis (Bardach, 2000). One alternative that should be included is to let the present course of action continue undisturbed. This simply notes that doing nothing to initiate change is an alternative that can be chosen out of the list of possible alternatives.

#### *Select the criteria*

Bardach (2000) states it is helpful for the analyst to view any policy story as having two interconnected but separable plot lines; the analytical and the evaluative. Select the

criteria belonging to the evaluative plot line. Evaluative criteria are used to judge the alternatives but are to be applied to projected outcomes. The most important criterion is that the projected outcome will solve the policy problem to an acceptable degree, also referred to as effectiveness (Bardach, 2000). Other important evaluative criterion includes efficiency and equity.

### *Project the outcomes*

For each of the alternatives identified in step three, one must project all the outcomes that might conceivably happen and have an impact on your area of interest. Policy analysts have a tendency to project outcomes of optimism and neglect reporting the possible negative outcomes. Making policy imposes a duty that requires realism in projected outcomes. The step of projecting outcomes leads to a dense thicket of information and you will not want to present all of it in your final report (Bardach, 2000). A way to get an overview of this information is to display it in an outcome matrix that can be shown in your final report. This graphical representation of information allows you to convey to the reader a concise representation of all information gathered during your research and information gathering.

### *Confront the trade-offs*

In some instances it occurs that one of the policy alternatives under consideration is expected to produce a better outcome than any of the other alternatives, referred to as dominance (Bardach, 2000). In reality, it is more common that trade-offs between outcomes associated with policy alternatives must be clarified for the sake of the intended audience.

### *Decide*

At this point in the eight-step process, the policy analyst should put himself in the position of the decision maker. You should then decide what to do based on your current

analysis. If you have trouble choosing a course of action, you may need to clarify trade-offs sufficiently or give more attention to projected outcomes. If you cannot convince yourself in the plausible course of action, you will probably not be able to convince your intended audience (Bardach, 2000).

#### *Tell your story*

Upon the completion of the above seven steps the policy analyst should be prepared to tell their story to the intended audience. They should be able to convince the audience that a particular alternative deserves to be chosen as the right alternative. The analyst should think strategically and defensively to see how an opponent might characterize the outcome (Bardach, 2000).

#### Discussion

As noted earlier, I will use the eight-step process of policy analysis to analyze the alternatives for the MHS to successfully develop and deploy a medical information system that can accurately assess, document, and report the medical condition of members of the armed forces serving in deployed locations. Additionally, this analysis seeks to determine the ability of the MHS to satisfy the requirements of Public Law 105-85. The analysis will show that further integration of medical information systems will enable MHS wide information sharing increasing the ability of service specific commanders to have real time information on the physical and mental health of deployed personnel under their command.

Part of any research or policy analysis is to ensure the tool used to evaluate the problem at hand is both valid and reliable. Validity refers to the extent to which a test measures what it is actually intended to measure. Reliability has to do with the accuracy and precision of a measurement tool. Reliability is a necessary contributor to validity but alone is

not a sufficient condition for validity (Cooper & Schindler, 2003). The primary tool used in this policy analysis was the eight-step process identified by Eugene Bardach and is recommended by the Army-Baylor residency committee as a reference to completing a proper policy analysis.

*Define the problem*

The overall problem is in the ability of the MHS to develop and deploy a medical information system that can accurately assess, document, and report the medical condition of members of the armed forces serving in deployed locations and to satisfy the requirements of Public Law 105-85, Section 765. The purpose of this research is to see if the TMIP program can satisfy the requirements of Public Law 105-85. Additionally, this research is to show through policy analysis that by integrating all services to one end-user interface for TMIP, the MHS can streamline the deployed medical information systems in a way that all members, regardless of service, can operate in austere environments in a manner that enables real time reporting, tracking, and documenting of deployed personnel health and readiness.

This analysis steps through the review of a policy making process as it applies to determining the right path for the MHS in regards to developing and deploying a medical information system that meets the above criteria. By effectively meeting the requirements of Public Law 105-85, the MHS ensures medical care rendered around the world is accurately documented, reported, and tracked. This results in greater continuity of care and increases the ability of combatant commanders to gain situational awareness for critical decision-making. Successful implementation gives commanders the ability to track trends, take preventive action, and keep their forces fit through the ability to collect, analyze, and make

use of collective medical information across the services throughout the theater in near real-time.

*Assemble some evidence*

The importance of a medical information system that can accurately assess, document, and report the medical condition of members of the armed forces serving in deployed locations cannot be understated. Every day, medical care is rendered to military personnel around the world in support of military engagements. Documentation and tracking of this medical care has continually challenged the entire MHS. The Gulf War ignited renewed interest in the ability of the military to accurately document and track medical care rendered in these battlefield environments. Medical documentation, tracking, and reporting for the Gulf War were found to be incomplete and unreliable. Many organizations including the Institute of Medicine, the Presidential Advisory Committee on Gulf War Veterans' Illnesses, and the General Accounting Office all commented that the lack of medical documentation and tracking from the Gulf War hampered the investigation of the reported illnesses and diseases. Veterans complained medical care and immunizations given during their deployments were not recorded in their medical records (Rostker, 1999). These events raised serious concerns regarding the ability of the MHS to accurately document, track, and report patient encounter information in contingency operations.

As noted previously, the DoD is undergoing tremendous change in the manner in which it is documenting, tracking, and reporting patient encounter information within the entire MHS. Through DoD Instruction 6490.3, requirements were established to improve health assessments, surveillance, and record keeping during deployments. This led to the belief the military cannot simply rely on a paper-based medical record. The shift in the way

medical information was to be collected, reported, and disseminated was codified in Public Law 105-85, Section 765. This section specifically directed the Secretary of Defense to establish a system to assess the medical condition of members of the armed forces who are serving in deployed locations.

In efforts to comply with Federal and DoD policy, each service developed systems that they hoped would modernize their tracking and documentation efforts. The Air Force developed GEMS. The Army focused on the development of TMIP and later the integrated use of Composite Health Care System II – Theater (CHCSII-T). The Navy developed the Shipboard Automated Medical System (SAMS). Out of the three developed systems, GEMS is the only one that cannot transmit data directly into the TMIP system. For each service, the intent was to replace paper systems that were hard to manage and inefficient. Prior to the implementation of these systems, the provider needed to coordinate with medical support personnel to ensure the medical records were gathered and stored in a protective storage area. This presented difficulties as rapid deployments arose and medical records were stored at clinics that were not open on the weekends. Records were often in transit or could not be located because they were filed incorrectly. These systems were implemented to add value to their organizations by making medical information more rapidly available and accessible, thereby supporting global health care for military forces.

TMIP and GEMS were discussed at length earlier in this paper giving an in depth history of each. SAMS began in 1986 and has evolved over time as the service needs have changed. SAMS is a Navy software tool used by Navy independent duty corpsmen for medical record documentation on deployed ships at sea. It has the capability to record data from water samples, food sanitation analysis, and patient evaluation. It is a module of TMIP.

SAMS data is transmitted through TMIP to the commander. All information is routed to the CDR. It is important to Navy medicine for documentation of patient treatment and tracking. It has powerful medical surveillance and medical situational awareness capabilities. SAMS is primarily a tool for operational medical departments although a number of clinics have found it useful. It is almost exclusively used to track active duty health status. It is a multi-user, administrative management tool developed on a microcomputer for use by shipboard medical personnel. It is used by more than 600 operational commands, 150 Marine Corps medical units, and 150 MTF/clinics. SAMS is the foundation software for TMIP. At this time, the Navy is not planning on changing to the Composite Health Care System II – Theater.

The Composite Health Care System II-Theater (CHCSII-T) is derived from the Composite Health Care System II system, which is used in garrison. It is designed to document outpatient and emergency care in theater. It provides the capability to document the medical record with structured notes, eliminating operator fluctuations in wording and diagnosis description and allows the provider to select preset phrases for documentation of the medical record. CHCSII-T has a more comprehensive note writer than GEMS. It transmits documentation information through TMIP to the CDR, similar to the process that SAMS follows. It provides various reports for the health care administrator, which are necessary to analyze the trends and health status of the troops being considered. This allows for better decision-making processes by commanders and support staff. Having this information available also allows them to anticipate threats and changes in the deployed environment.

Ultimately, the MHS must integrate all service specific systems into TMIP to allow for cross service integration and create one true DoD medical tracking system. In doing so, the MHS will enable service members from the Air Force, Army, and Navy to work side by side during global engagements. This overarching system will allow any medical member, regardless of service background, to report, track, and trend soldiers, seamen, and airman for combatant commanders worldwide.

### *Construct the alternatives*

The third step in the eight-step process of policy analysis is to construct the alternatives. Bardach (2000) notes in his book that the basic element in many policy alternatives is an intervention strategy such as regulatory enforcement or a subsidy that causes people or institutions to change their conduct in some way (Bardach). In this policy analysis paper, the alternatives are simply different approaches the MHS can take to satisfy the requirements of Public Law 105-85 and develop and deploy a medical information system that can accurately assess, document, and report the medical condition of members of the armed forces serving in deployed locations. Bardach later states no intervention strategy can stand-alone but must be implemented by some agency and have a source of financing. The MHS sets aside funds each fiscal year to address the implementation of medical information systems used in deployment. This source of financing offers any successful alternative the ability to be fully implemented. In addition, by evaluating each alternative and choosing one as the best, financing can be targeted to that alternative instead of being spread across a list of possible solutions to the problem.

The first alternative according to Bardach should be to take no action and let the present trends continue undisturbed (Bardach, 2000). This alternative would not be

reasonable as it refers to Public Law 105-85. The law states that the Secretary of Defense shall establish a system to assess the medical condition of members of the armed forces who are deployed. This mandate does not allow past tracking and reporting errors to continue under a paper based system. Congress wanted to ensure that the reporting and tracking difficulties of the Gulf War would never reoccur. If the MHS had not taken any action and let the present trends continue, we would still have military members receiving disjointed medical care with little to no documentation finding its way back to the member's medical record.

The second alternative is the complete integration of each service specific information system, GEMS, SAMS, and CHCSII-T, into TMIP. This alternative would allow each service to continue development of their individual system while enabling the universal reporting of each service data to the CDR. It gives each service control of their training and deployment while enabling combatant commanders access to data in a clear and concise format that can be used for real time decision-making. This alternative allows for interoperability without the requirement of each service to give up systems they have tailored to their mission requirements.

The third alternative would be to completely integrate the services with one end-user interface for TMIP. This alternative would result in the eventual expiration of GEMS and SAMS, moving the Air Force and the Navy to CHCSII-T and continue to integrate it with TMIP for reporting, documenting, and tracking patient encounters. This alternative would require the complete participation of each service for a universal MHS deployed platform. It would enable the MHS to focus spending on one central software program and train all

personnel on a system that would be applicable wherever they serve, even if they are part of a joint medical unit that employs members from each service.

*Select the criteria*

According to Bardach (2000), the most important evaluative criteria are that the projected outcome will solve the policy problem to an acceptable degree. Although this is true, it is only the beginning since any course of action is likely to change the MHS in many ways. Each of those effects requires a judgment on the part of the evaluator on whether and why it is a desirable outcome (Bardach). This leads to the need for evaluative criteria. The evaluative criteria that most aligns itself with health policy is one that determines effectiveness, efficiency, and equity. Each alternative will be evaluated on its ability to satisfying Public Law 105-85 based on these three criteria. Each alternative will be rated in these three areas with scores ranging from 0, being the worst, to 10, being the best. The average score for each alternative will be calculated to determine the best possible alternative for implementation.

Effectiveness can be broken into two definitions, the population perspective and the clinical perspective (Aday, Begley, Lairson, & Slater, 1998). The larger or macro view is referred to as the population perspective. It considers the role of physical, social, and economic environments on the overall health of the population. The population perspective focuses on the benefits from both medical and non-medical determinants of health (Aday et al.). The clinical perspective is one that focuses on the individual interactions of patients and providers in the medical system and the results or health benefits achieved by patients (Aday et al.). This analysis will focus on the population perspective as it deals with the overarching health of the military population.

The effectiveness of alternative one, take no action and let the present trends continue undisturbed has proven to be the wrong way to address the reporting, documentation, and tracking of medical information in deployed locations. As seen in the Gulf War, many problems may arise when military members return from deployed locations without proper documentation in their medical record showing all treatment and immunizations received. This error may be perceived by the public as a government effort to cover up mistakes and opens the MHS up for public criticism and Congressional inquiry. Allowing the military medical system to continue to use a broken, outdated system will result in continued problems for military members and combatant commanders serving in deployed locations. SCORE – 3.

The second alternative, the complete integration of each service specific information system, GEMS, SAMS, and CHCSII-T, into TMIP has the potential to effectively document, track, and report patient information from deployed locations. Two of the three systems have already been integrated into TMIP with the Air Force currently working to integrate GEMS. This option allows each service to maintain their current knowledge base with each system and simply feed this information into TMIP and subsequently the CDR. While this alternative may be somewhat effective, it still leads to problems when Army, Navy, and Air Force personnel are deployed in joint missions where medical assets are shared between the services. This could lead to training deficiencies and slower response times as members of sister services must be trained on new procedures for that particular software tracking system. Additionally, it could lead to more errors in data entry and ultimately lead to errors in casualty reports for the combatant commanders in theater. SCORE – 7.

Completely integrating each service with one end-user interface for TMIP is the third alternative. This alternative would retire GEMS and SAMS, moving the Air Force and the Navy to CHCSII-T and continue to integrate CHCSII-T with TMIP for reporting, documenting, and tracking patient encounters. It would result in a universal MHS deployed platform. It would enable the MHS to focus spending and training efforts on one central software program that would be applicable wherever they serve, even when they are part of a joint medical unit. This alternative offers the most benefit to the MHS given that training one system would result in a reduction in data errors since all medical service members would become familiar with the same system. In a deployed location, Army doctors and Air Force medical technicians could work side by side without interruption in patient care because of miscommunication due to software operation and training requirements. SCORE – 10.

The next criterion for evaluation is efficiency of the alternatives. Bardach (2000) states the efficiency criterion is the most important evaluative consideration in cost-effectiveness and cost-benefit studies. Efficiency is basically maximizing the sum of individual utilities. The requirement of efficiency pertains to allocative, technical, and productive efficiency. Productive efficiency means that a firm produces its quantity of outputs with the minimum possible quantities of inputs, or equivalently, produces the maximum quantity of output with given quantities of inputs, which implies that the amount of waste is minimized. Technical efficiency means the production of a given quantity of output with the least cost combination, also called cost efficiency and operational efficiency. Allocative efficiency occurs when, given the existing distribution of income, it is not possible

to reallocate resources to make one person better off without making at least one other person worse off (Clewer & Perkins, 1998).

The efficiency of alternative one, take no action and let the present trends continue undisturbed shows little productive or technical efficiency. This option increases cost for the MHS not only in the waste of resources committed to an outdated information system but also in the overall cost of maintaining a full paper based system without implementing the uses of information technology. SCORE – 0.

The efficiency of the second alternative, the complete integration of each service specific information system into TMIP, offers the MHS some ability to achieve levels of productive, technical, and allocative efficiency. By using existing information systems and making them fully integrated with TMIP, the MHS begins to minimize inputs and maximize outputs. This step, while better than the first alternative, has limits in minimizing inputs to a degree. As services continue to spend resources on individual systems and compete for limited MHS funds, allocative inefficiencies occur. SCORE – 5.

Completely integrating the use of CHCSII-T into each service creating one end-user interface for TMIP is the third alternative and offers the most benefits with regard to efficiency. By combining efforts to develop, operate, and maintain one user interface that is completely integrated with TMIP, the MHS can attain productive, technical, and allocative efficiency. An additional benefit in using CHCSII-T is that as the MHS deploys CHCSII in peacetime operations, deployed personnel will be more familiar with CHCSII-T as it is a complimentary software package to CHCSII. Allowing personnel to not only train for deployments but to actually use software on a daily basis that closely mirrors the software in the field, the MHS can achieve operational efficiency. SCORE – 10.

The last area for a complete evaluation of the alternatives is the equity of each alternative. Equity is simply something that is fair, just and impartial. For this evaluation, I will judge the alternatives based on the fairness toward the MHS as a whole and the military members that are served by this system in deployed locations.

The equity of alternative one, take no action and let the present trends continue undisturbed would be a great disservice to the MHS and the military members served by the MHS in deployed locations. The MHS has a moral and ethical responsibility to ensure that all patients receive adequate care in forward locations and that documentation of that care is carried back to their home unit. Without the full reporting of medical treatment to home units, local primary care managers will find it increasingly difficult to prescribe proper treatment for ongoing conditions. The military member puts his life in the hands of the MHS system. It would be unfair to that military member if the MHS did not make every effort to improve its documentation, tracking, and reporting system to ensure all steps were taken in reducing the possibility of errors or omissions in the member's medical record. SCORE 0.

The equity of the second alternative, the complete integration of each service specific information system into TMIP, is more in line with equity towards the military member. By creating software that completely integrates with TMIP, the MHS assures that data entered into the CDR is useful to combatant commanders who make important battlefield decisions. Information on the conditions of military members will aid everyone in the deployed location since public health officers will be able to track trends and use preventative measures to mitigate risks. Further development of TMIP could also use information entered to produce electronic data that can be accessed by home units upon the military members return. SCORE - 8.

The third alternative, complete integration of CHCSII-T into each service creating one end-user interface for TMIP also offers increased equity for the MHS and the military member. Again, by training and using one system, the likelihood of error is reduced. This means that TMIP will more accurately reflect what is actually occurring in the field. This will aid combatant commanders and public health officers in making real time battlefield decisions that can improve the overall health of deployed personnel. CHCSII-T, like CHCSII, stores all information on the patient encounter and has the capability to serve as an electronic medical record. It allows the provider to see the patient history and treatment. By having access to this information, the provider is given an immense advantage in treatment options instead of having to start from scratch. When military members are deployed it is often hard to physically locate the hard copy of their medical record, and often patients are poor historians. The electronic record will allow for seamless medical care regardless of the location of the patient and allow the information to follow the member back to their home unit. SCORE – 10.

Table 1 shows a detailed graphic for the scoring for each alternative. Based on the subjective scoring grid, the best alternative for the MHS to satisfy Public Law 105-85 is alternative three. If the third alternative were unattainable, the next best alternative would be alternative two. Both alternative two and alternative three would satisfy Public Law 105-85, but alternative three offers the best value for the MHS.

In an effort to show validity in the results, I conducted interviews with five military members representing each of the services. Validity refers to the extent to which a test measures what it is actually intended to measure. The members were chosen for their experience with current service deployed medical systems and their familiarity with TMIP.

Table 1  
Scoring Grid

| Grading<br>Criterion | <i>Alternative<br/>One</i> | <i>Alternative<br/>Two</i> | <i>Alternative<br/>Three</i> |
|----------------------|----------------------------|----------------------------|------------------------------|
| Effectiveness        | 3                          | 7                          | 10                           |
| Efficiency           | 0                          | 5                          | 10                           |
| Equity               | 0                          | 8                          | 10                           |
| Average<br>Score     | 1                          | 6.67                       | 10                           |

Note. 0 = worst, 10 = best

They (1 Army, 1 Navy, and 3 AF) were asked to score each alternative in the same manner of this research paper. They were given a brief executive summary about the research and operational definitions of effectiveness, efficiency, and equity. Table 2 shows a detailed graphic for the scoring for each alternative by the five military members. Based on the scoring grid from the interviews, the best alternative for the MHS to satisfy Public Law 105-85 is alternative three. This is the same result as the scoring of the subjective data presented in this research paper.

Table 2  
Scoring Grid for Interviews

| Grading<br>Criterion | <i>Alternative<br/>One</i> | <i>Alternative<br/>Two</i> | <i>Alternative<br/>Three</i> |
|----------------------|----------------------------|----------------------------|------------------------------|
| Effectiveness        | 1.6                        | 5.0                        | 7.4                          |
| Efficiency           | 1.4                        | 3.0                        | 8.0                          |
| Equity               | 2.2                        | 6.4                        | 6.6                          |
| Average<br>Score     | 1.7                        | 4.8                        | 7.3                          |

Note. N = 5. Each score is the average from all five scores from personnel interviewed.

*Project the outcomes*

The next step the eight-step process is to project the outcomes. Bardach (2000) states for each of the alternatives presented, you should project all the outcomes that you or other interested parties might reasonably care about. Although most of the projected outcomes have been stated in the selecting and scoring of the criteria, I will provide a summary of the projected outcomes of each alternative.

The projected outcome of alternative one, take no action and let the present trends continue undisturbed is fairly predictable. If no changes are made to the current trends in medical documentation, tracking, and reporting, the MHS can expect to fall under continued scrutiny. The problems identified during and after the Gulf War will continue to create problems in future engagements. This will result in decreased trust in the ability of the MHS to fully care for the injured personnel at deployed locations. Alternative one would also result in increased costs for the MHS by not looking at ways to decrease waste and redundancy in current information systems and not using technology to move toward an electronic medical record.

The second alternative, the complete integration of each service specific information system into TMIP, also has some predictable outcomes. First, the Air Force GEMS software is the only service platform that has not been integrated with TMIP. This integration of GEMS would complete a platform where all data for each service could feed into a central program and eventually find its way to the CDR. This would result in shorter turnaround of casualty data for the combatant commanders in theater that must make decisions regarding troop strength and health. In addition, this alternative begins the process of minimizing inputs and maximizing outputs within the MHS deployed system. As TMIP becomes the

common thread for each information system within the Army, Navy, and Air Force, cost is reduced and future changes can be coordinated across the MHS.

The projected outcome of the third alternative, completely integrating the use of CHCSII-T to each service creating one end-user interface for TMIP offers the best-projected outcomes for both the MHS and the community served. By combining the efforts of the MHS to train, update, and maintain a single interface, the MHS streamlines the process of documenting, tracking, and reporting patient information in deployed locations. This will also result in reduced data entry errors since all medical personnel, regardless of service, will train on the same system. CHCSII-T will complement the skills already acquired by medical personnel since CHCSII is to become the standard interface used during peacetime operations. Overall, this alternative would result in decreased costs, increased productivity, and increased accuracy of the data reported.

#### *Confront the tradeoffs*

Bardach (2000) states that in the process of policy analysis one alternative is expected to produce a better outcome than any other of the alternatives considered. When this occurs, it is called alternative dominance. In this policy analysis, there is clearly one alternative that results in the best overall outcomes. The third alternative, the complete integration CHCSII-T to each service creating one end-user interface for TMIP offers the best projected outcomes for the MHS and the military members it serves. This alternative results in the best possible outcomes for the MHS in terms of cost, training, and accuracy of the data reported. This integration of systems gives the MHS the ability to train and deploy one medical information system that will meet all requirements of Public Law 105-85 and create a process that uses information technology to provide accurate data to decision makers on the battlefield.

To accomplish the third alternative, each service will have to commit to a system wide implementation. A change of this magnitude will in no doubt spark resistance to change. Each of the services has spent time and effort in the development of their current interface for deployed medical systems. As noted earlier in this paper, there are keys to lowering resistance to change in an organization. According to Fried and Johnson (2002), strategies that facilitate change in organizations and in turn lower structural inertia are things such as developing open channels of communication, setting up teams, and building networks and alliances. The services have had past success in creating enterprise wide information systems and migrating from individual platforms to a uniform system in efforts to save time and resources.

There are many examples where the three services have been able to accomplish this with other information systems within the MHS. One example would be Tricare Online (TOL). This information system enables the online scheduling of appointments and patient education. TOL came from an effort to help medical treatment facilities in their efforts to create an online appointing system. Prior to TOL, facilities ran into problems with online appointing such as:

1. Security implementation requirements of HIPAA and Section 508 of the Rehabilitation Act
2. Devoting resources to develop systems that would not be compatible in all regions
3. Beneficiaries have to "relearn" how to access Tricare benefits and services with each PCS move
4. Poor security and life cycle management support

TOL provided an opportunity to leverage Internet technology to respond to the needs of all stakeholders within the DoD. It has become a single common, and secure DoD enterprise platform designed to:

1. Increase access to care
2. Facilitate population health management and MHS optimization
3. Support patients, providers, and managers
4. Allow Access to Services 24/7

Other examples of success include CHCSII, Tele-radiology, and The Defense Medical Human Resources System – Internet (DMHRSi). These, along with TOL, show where the services have come together to promote a common information system/information technology. As the medical components of each service integrate with other services, enterprise wide technology solutions become necessary. The Tricare Management Activity (TMA) has become the central office for the deployment of enterprise wide systems. TMA maintains a tri-service environment where each service has a voice in the development and implementation of new information systems within the MHS.

### *Decide*

The policy analyst should put himself in the position of the decision maker at this point in the process. If the analyst has trouble choosing a course of action, they may need to clarify trade-offs sufficiently or give more attention to projected outcomes. Bardach (2000) states if you cannot convince yourself in the plausible course of action, you will probably not be able to convince your intended audience.

During this policy analysis process, it has become clear that the best course of action for the MHS is to completely integrate CHCSII-T to each service creating one end-user

interface for TMIP in an effort to fully satisfy the requirements of Public Law 105-85. This alternative clearly offers the most desirable benefits to the MHS and to the injured personnel served in deployed locations. This integration meets and or exceeds the intent of Public Law 105-85.

*Tell your story*

After the completion of the eight policy analysis steps, I am convinced that the MHS should pursue the integration of CHCSII-T to each service creating one end-user interface for TMIP. As stated throughout this policy analysis, this alternative clearly meets the requirements set forth in Public Law 105-85 and results in an effective, efficient, and equitable information system for the entire MHS. The best way to tell my story would be to engage the MHS division chiefs that coordinate efforts on future medical information systems development.

Conclusions and Recommendations

The information obtained in this analysis will be used to further identify the strengths and weaknesses of the deployed medical information systems in the MHS. By completing an exhaustive policy analysis of the MHS medical information systems and the alternatives for future actions, the AFMS will gain an understanding of how it can further integrate systems to enable MHS wide deployment and continue to meet the requirements of Public Law 105-85. This integrated approach will result in the ability of service specific commanders to have real time information on the physical and mental health of deployed personnel under their command.

Each branch of the military service continues to improve the methods and systems used to track medical information in a field environment. The challenge however, is in

developing a system that can be used by all branches that can communicate with each other.

From this policy analysis, it is evident that the current systems are working for each service,

but have also contributed to an overall fragmented system. Completely integrating the use of

CHCSII-T to each service creating one end-user interface for TMIP offers the best projected

outcomes for both the MHS and the military members injured in combat operations.

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