A Systems Analysis of the Army Substance Abuse Program
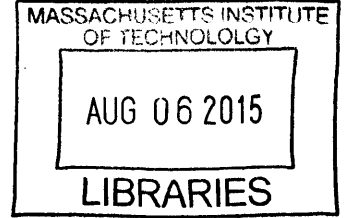
by

Christopher S. Wadsworth

B.S. Physics
Auburn University, 2005

SUBMITTED TO THE SYSTEM DESIGN AND MANAGEMENT PROGRAM
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN ENGINEERING AND MANAGEMENT
AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

JUNE 2015

© Christopher S. Wadsworth. All rights reserved.

The author hereby grants to MIT permission to reproduce and to
distribute publicly paper and electronic copies of this thesis in
whole or in part in any medium now known or hereafter created.

Signature redacted

Signature of Author___

Christopher S. Wadsworth
System Design and Management Program
May 1, 2015

Signature redacted

Certified by_____

Jayakanth Srinivasan
Research Scientist, Behavioral and Policy Sciences Division, Sloan School of Management
Thesis Supervisor

Signature redacted

Accepted by_____

Patrick Hale
Director
System Design and Management Program

1

A Systems Analysis of the Army Substance Abuse Program

By

Christopher S. Wadsworth

Submitted to the System Design and Management Program on
May 1, 2015, in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Engineering and
Management

ABSTRACT

The Army Substance Abuse Program is a program within the United States Army that has the mission to deter, detect, and treat substance abuse by US Army Soldiers, Civilians, and Family Members. This thesis examines the program from a systems point of view, using the generic US Army installation for the system boundary, and how the system creates value for the installation enterprise.

This thesis first explores the motivation for this research, drawing on contemporary reports from the US Army, published news articles, and my own personal experience. Secondly, I examine the system from a systems architecture perspective, employing design structure matrices or adjacency matrices, based on the normative state of the system codified in US Army Regulations. In doing so, I highlight the important architectural changes within the program since 2001 and determine what aspects of the architecture inhibit the program's performance. Thirdly, I examine the system's dynamic behavior over time and establish a causal loop diagram to explain that behavior, drawing on the US Army's reports, the literature surrounding management response to substance abuse in the workplace, and field interviews. I then examine whether commanders are actually adhering to the required processes and if key commander-driven processes are effective in deterring substance abuse. Concluding, I recommend specific actions that can drive more benefit from the program, particularly from the point of view of leader supervision.

The research here suggests a degree of architectural dissonance within the program that may limit performance across the US Army. The choices of data capture, access, and authority across organizational boundaries inhibit real-time supervision through command channels and coordination of medical care. Although actions seem to be mostly in compliance with regulations, the rate of non-referrals after positive drug tests is a notable exception. The rate of testing soldiers seems to have the desired impact on behavior while the impact of other commander-driven actions is mixed.

Thesis Supervisor: Jayakanth Srinivasan
Title: Research Scientist, Behavioral Policy Sciences Division, Sloan School of Management

2

ACKNOWLEDGEMENTS

Table of Contents

4

List of Figures

List of Tables

Chapter 1: Motivation

"Many of the issues addressed in this report are complex, especially those related to healthcare. One of the most important lessons learned in recent years is that we cannot simply dealt with health or discipline in isolation; these issues are interrelated and will require interdisciplinary solutions." Vice Chief of Staff of the Army, General Peter Chiarelli, Army 2020: Generating Health and Discipline Ahead of the Strategic Reset

Recognizing the Problem

In 2010, the US Army published the "Red Book", or *Health Promotion, Risk Reduction, and Suicide Prevention Report 2010*, detailing the many health and discipline issues found in an initial investigation into the circumstances surrounding the well-documented rise in suicides, which had exceeded civilian rates for the first time in 2008. The picture painted by the Army's report on the state of health and discipline was grim. The suicide rate had doubled since Fiscal Year (FY) 2001, from less than 10 per 100000 to over 20 in FY09. (p. 16) The number of domestic abuse cases nearly doubled (p. E6) while the number sexual offense cases tripled in the same time period. (p. 79) The number of DUI offenses alone increased from 850 in FY01 a peak of 4009 in FY07 while the number of positive urinalysis results increased from 1976 to 9880 in the same period. (p. E7) In FY09 alone, there were 16,997 drug and alcohol related offenses (p. ii) and 306 "high risk" deaths (p. 41), which included 79 drug overdoses (p. i), and 160 suicides.[1] (p. E2)

The rise in the detected population for substance abuse occurred during a period in which the odds of a unique Soldier being tested during a given year actually declined. At the same time, the number of Soldiers being separated from the Army for *any* reason fell slightly, including

---

[1] Suicides impacted individuals and units disproportionately. Junior enlisted Soldiers accounted for 45.5% of the Army population but 57.1% of suicides FY05-FY09. Likewise, Infantry soldiers represented 13.2% of the population but 20.7% of suicides.

those required to be "processed" for separation for illegal drug use. (p. E5) At the time of the report in 2010, the Army estimated that there were 1318 Soldiers still serving after testing positive for illegal drugs in two urinalysis tests, just one of which was sufficient cause and a requirement for separation. (p. 35) In an organization that takes pride in its military discipline and taking care of Soldiers, there was clearly something amiss. The actions of unit commanders in deterring and responding to the huge increase in documented substance abuse was inadequate in deterring and responding on average.

Furthermore, the Army estimated that drug or alcohol use was involved in 21% of suicides[2] and 45% of "non-fatal" suicidal behavior (pp. 4, 27). The Army also estimated that 16.7% of suicides in FY09 involved a "substance abuse stressor" and that of 916 non-combat deaths from FY06-09, "nearly half…involved drugs or alcohol at the time of death." Drug and alcohol misuse had metastasized in other areas of risky or criminal behavior, perhaps most notably that around 60% of sexual offenses involved alcohol use by the victim and/or the offender. (p. 79)

Compounding the issue of suicides and substance abuse was the rise in mental health disorders associated with operations in Afghanistan and Iraq. Behavioral health diagnoses including post-traumatic stress disorder (PTSD), depression, anxiety and other conditions increased from an incidence rate a little over 6,000 per 100,000 person-years in 2000 to over 12,000 in 2009 in the active component[3]. (HQDA, 2012, p. 13) Although behavioral health conditions are health concerns on their own accord, research has found conditions more common in Soldiers with

---

[2] This number includes the 6.2% of all suicides where overdose was the method. (HQDA, 2010, p. 19)

[3] The US Army has three components: the active component (i.e., the regular Army), the National Guard, and the Army Reserve. The last two are "reserve" components but served significant time on active duty. Thus, active duty numbers shown throughout have reserve component soldiers but the majority of reserve component soldiers are not on active duty at any particular instance.

combat deployment experience to be a significant risk factor for alcohol misuse, particularly in those returning from combat deployments. (Jacobson, et al., 2008)[4]

The Army attributed this decline in good order and discipline to a "lost art of leadership in garrison." The phrase "lost art" is interesting for several reasons. Aside from implying previous adherence to standards and a failure of current leaders to maintain those standards,[5] it provided a causal mechanism: individuals and units were now "transients" in the garrison environment based on mission requirements, and as such were less interested in "institutional readiness". The report found this transient tendency was exacerbated by the problems associated with the Army Transformation and the disassociation of garrison roles and responsibilities from most Soldiers' chains of command. (p. 37)

However, the *Red Book* came up short in recommending policies to prevent the art of garrison leadership from being "lost" in the future by units under similar circumstances. While there were some relatively minor recommendations to improve processes, most commander-related recommendations reinforced rather than revised existing policy. The only substantial architectural change proposed was the Army Staff's enterprise-based program governance model for health promotion, risk reduction, and suicide prevention. While the proposed Program Governance supposedly would synchronize programs across the Army enterprise, it does not include any indication of how tactical level unit commanders would execute their duties differently aside from executing policy "as is". Furthermore, while recognizing the "silo'ed"

---

[4] For these and many other issues, the Army recommended 175 separate actions of which 45 dealt directly with alcohol and/or drug abuse in some way listed together in Appendix B. The report concluded this appendix with seven pages of research objectives. Together, these recommendations and research objectives were designed to set the stage for increasing the health and discipline of the force.

[5] Specifically, the Army stated in the *Red Book* that "commanders and subordinate leaders…are unaccustomed to taking care of Soldiers in a garrison environment."

nature of individual programs, the program governance recommendations did not sufficiently address the separation of "institutional readiness" from "combat readiness". (HQDA, 2010, p. 36) The report went on to state that the transformation "left commanders of combat formations unencumbered by many of their former garrison responsibilities" presumably so that the commanders of those formations could focus more on their missions, an act that "served the Army well." Later, the report states that "a commander's primary responsibility is to ensure the readiness, health, morale, welfare, and discipline of the unit." (p. 153) This list is curious by the absence of "mission" or any discussion about how those ideas interact in practice. At a more abstract level the separation of "institutional readiness" from "combat readiness" may have created readiness "silos", of which commanders may have placed more emphasis in one rather than the other and thus contributed to the "lost art."

Signs of Progress

In 2012, the Army released a follow-on report known as the "Gold Book" or more formally as *Army 2020: Generating Health and Discipline Ahead of the Strategic Reset.* As the title implies, the focus of the report was on the complex issues of health and discipline such as the case of the hypothetical Soldier who commits domestic violence and also suffers from "undiagnosed post-traumatic stress" and associated alcohol abuse. The writers of the report then posited that "high risk behavior...viewed in isolation may be misperceived as potential misconduct rather than behavior associated with physical or behavioral health issues." (HQDA, 2012, p. 10)

In reviewing the health of the force, the Army emphasized the decline both in alcohol and drug abuse from 2009 numbers as well as an increase in the ASAP referral rate as proof of "an increase in command involvement." The Army then goes on to highlight that of those referred,

12

around 50% were enrolled in treatment, of whom 47% and 66% were successfully treated for

drug or alcohol abuse, respectively (p. 31). A separate review of data provided by the Army for

this thesis shows that positive drug results have continued to decline since 2009. The number of

Soldiers who tested positive for illegal drug use in 2014 was nearly half of the high water mark

as seen in Figure 1 below. The number of samples taken each year was roughly the same so the

decrease in positive urinalyses was not the result of decreased testing. The command response

also continued the trend from the 2012 report; between 18% and 26% of those who tested

positive were never screened by ASAP as compared with the average of 39% for FY01 through

FY09.[6] (HQDA, 2010, p. E7)

*Figure 1: Soldiers with Positive Urinalyses by Fiscal Year (*Data for FY01 through FY09 from the *Red Book.* Data for FY12 through FY14 courtesy the Army Substance Abuse Program. Data for 2010 and 2011 not available.

Positive Urinalyses by Fiscal Year

---
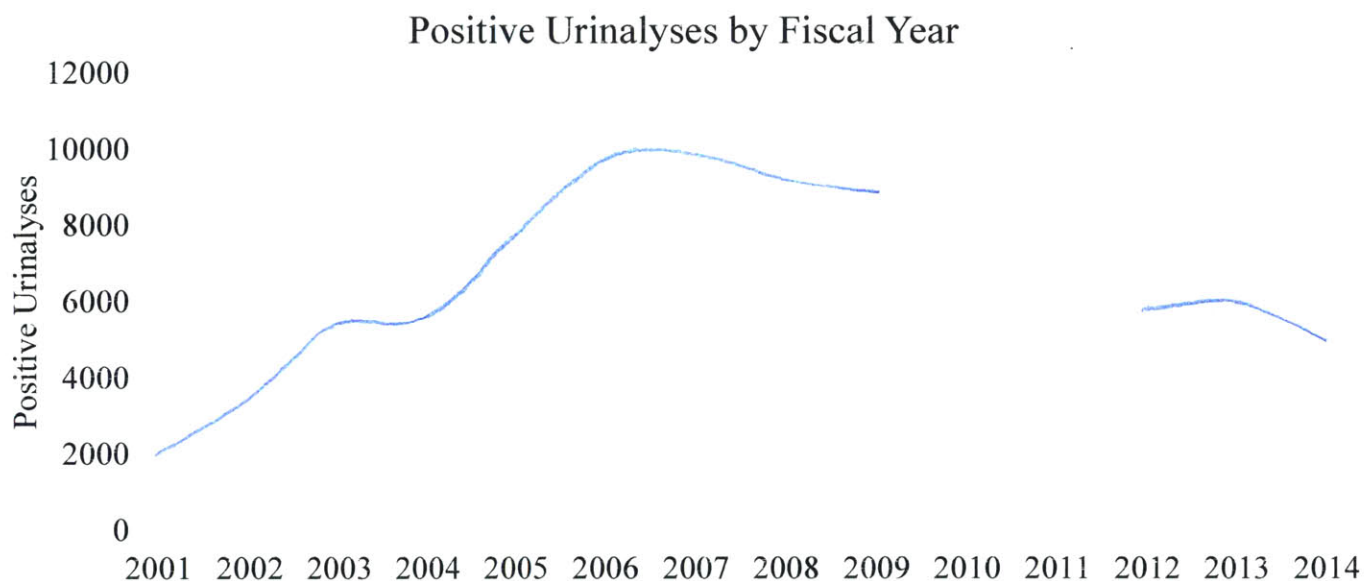
[6] These numbers are estimated by the number of Soldiers that tested positive that had no screening record. The denominator here is the number of unique soldiers who tested positive in a given fiscal year minus those unique Soldiers who only tested positive for rehabilitative tests, as the presence of a rehabilitative test indicates that the Soldier was already enrolled. The numerator here then is the number of Soldiers who were never screened for a positive urinalysis result.

But as a recent article in *USA Today* points out, the Army Substance Abuse Program may be a program under distress. (Zoroyoa, 2015) The allegations in the article, chiefly that the program does not provide quality clinical services to Soldiers, indicate a system that cannot continually provide the right value to Soldiers seeking care. The author cites the removal of the responsibility for oversight of the ASAP clinical program from the US Army Medical Command (MEDCOM) to the US Army Installation Management Command (IMCOM) as an indefensible move that has eroded the focus on quality care. More alarming perhaps is the statement that "90 Soldiers have committed suicide within three months of receiving substance-abuse treatment" since 2010, with 31 of those deaths following "sub-standard care." Although not a part of the article, the degree to which dynamic commander behaviors influence these situations, if they exist, should be examined.

The Army Substance Abuse Program as a System

This thesis will focus on the Army Substance Abuse Program (ASAP) as a system at the installation level rather than a system at the Army level.[7] The ASAP is a unique system within the Army in that while providing care for an ostensibly medical condition, it is a commander's program. The unit commanders yield enormous influence on Soldier (patient's) administrative outcomes associated with the medical condition. As will be discussed in the next chapter, unit commanders are required to test Soldiers, refer Soldiers to treatment, and collaborate with medical providers to place Soldiers in treatment or continue their care while simultaneously recommending or carrying out administrative or judicial punishments for those same Soldiers (HQDA, 2012). As stated above, there has historically been and continues to be non-compliance

---

[7] The Army Substance Abuse Program fits with generally accepted definitions of "system", in that it is a collection of entities that perform a function that the entities by themselves cannot perform. (Rechtin, 1991, p. 7)

14

at the unit level with most aspects of the program that cannot simply be explained by the "lost art" hypothesis. Rather than take the viewpoint of "operator error" due to neglect or ignorance, this thesis examines the program from a systems theory perspective to explain unit level non-compliance as emergent behavior.

An important point is that these commander-driven actions do not occur not in isolation but rather within the broader context of the unit and are subject to the influence of a variety of factors. As such, while the ASAP is intended "to enhance the overall fitness and effectiveness of the Army's workforce, conserve manpower, and enhance the combat readiness of Soldiers" and generally fits very well with the commander's requirements (e.g., health, discipline, readiness, etc.), the program's requirements may conflict with other unit priorities, including the mission. In a fixed training cycle between redeployment from an overseas mission and known upcoming deployments, commanders would be forced to make trade-offs, either implicitly or explicitly, between what they saw as essential for overseas missions and what was required by regulation. These trade-offs between institutional readiness and combat readiness requirements may explain some of the behaviors of commanders in the past 14 years that led to the situations described in the *Red Book*, so an alternative theory of "other requirements" to complement the "lost art" hypothesis will be explored.

This tradeoff may be best explained through the lens of stakeholder salience, in which salience is a measure of who or what managers pay attention to based on the power, legitimacy, and urgency of the stakeholder. (Mitchell, et al., 1997) It is my view that each level of command is a unique stakeholder. By definition, each level of command has some degree of autonomous power and legitimacy through the Army's Command Policy. Despite more or less clearly written requirements for commanders at the Brigade-level and below, the increased urgency of

overseas operations in Iraq and Afghanistan would suggest that Army institutional readiness requirements not directly tied with overseas operations would continually have less importance in the eyes of unit commanders than combat readiness requirements.

Although the numbers of Soldiers testing positive for illegal drug use is in decline, it is important to recognize that the decline is happening during a period in which the Army continues to downsize and in which overseas combat missions for the most part have eased. Therefore, the reduction in negative events may be more of a consequence of commanders' having more incentive to follow guidelines in the Army Regulations (or perhaps having less explicit tradeoffs) rather than a long-lasting solution to substance abuse issues.[8] In other words, there may be currently less incongruence between institutional and organizational readiness goals than there were previously.

The stated intent of the program is to "increase individual fitness and overall unit readiness, provide services which are proactive and responsive..., implement [substance abuse] risk reduction and prevention strategies..., [and] restore to duty those substance-impaired Soldiers who have the potential for continued military service." (HQDA, 2009, p. 1) This thesis will examine the system from a systems architecture view, with special emphasis on the organizational and process architectures, to determine the program's ability to meet its stated intent. The 2010 report suggested that separation of garrison responsibilities from combat formations has severed "formal and informal" connections between garrisons and units. A separate reading of the ASAP regulations since the 1980s for this thesis confirms this organizational severance; with the creation of IMCOM, the requirement for positions to control

---

[8] The next chapter will examine the organizational and process architectures of the program in more detail. While the organizational architecture has changed significantly as already seen, the program's process architecture has changed very little since the mid-1980s.

16

or supervise the ASAP on staffs at the Brigade-level and higher were first degraded and then eliminated entirely. While baseline requirements for commanders at those levels were never substantially changed (i.e., they were still held responsible for the actions of their subordinate units), the reduction in specified staff requirements at all levels may have led to an enterprise-wide lack of control within the context of the program.

Research Questions

This thesis will attempt to answer questions surrounding the overall structure of the program, what aspects of that structure have changed since 2001, and what the impact of those changes and any architectural incongruities are on the enterprise's performance. This thesis will then examine the dynamic behaviors within the program and seek to prove that command-directed actions, in particular testing, referrals, training, and separations, impact the behavior of the soldiers at which such actions are directed The following questions serve as a baseline for the analysis that follows in Chapters 2 and 3:

- What important changes have occurred in the architecture of the program since 2001? How has this impacted the enterprise's performance?
- What aspects of the architecture inhibit the delivery of value to units and individuals?
- Are the actions required after identification (referral and separation) adhered to by unit-level leaders?
- Does awareness training have any impact on drug-related behavior?
- Does urinalysis testing have any impact on drug-related behavior?
- Do separations have any impact on drug-related behavior?

Organization of this Thesis

In Chapter 2, I will examine the organizational and process architectures to determine the exchange of values (most often information) and levels of influence of key stakeholders at the installation level. In Chapter 3, I will present a causal loop diagram that highlights most pressing

value conflicts for unit commanders and present data provided by the Army that confirms or

contradicts the research questions listed above. I will finish off with conclusions and

recommendations in Chapter 4.

Chapter 2: Architecture of the Army Substance Abuse Program

The Army Substance Abuse Program (ASAP) is the Army's system for preventing and treating

alcohol and drug abuse problems for Soldiers, Family Members, and Army Civilians.[9] The

program incorporates every level of the chain of command[10] of a Soldier with non-clinical

prevention education services, clinical screening, and clinical rehabilitation services. These

services are offered through each installation's ASAP clinic. The ASAP clinic is funded and

supervised through IMCOM, separate from tenant unit chains of command, although receiving

some clinical supervision and assistance through each installation's Department of Behavioral

Health of the local Medical Center (MEDCEN) or Medical Activity (MEDDAC).[11]

According to Army Regulation 600-85 (2012), the Army Substance Abuse Program consists of

primarily eight capabilities: education and training, deterrence, identification or detection,

referral, screening, targeted intervention, rehabilitation, and risk reduction.[12] (p. 2) While the

first five support the goal of prevention, the last three support the goal of treatment. AR 600-85

provides definitions of each capability, reprinted in Table 1 below.

---

[9] The scope of this thesis is on the services provided to Soldiers only, so Family Members and Army Civilians are not examined.
[10] That is, every command from company-level (Captain), battalion-level (Lieutenant Colonel), brigade-level (Colonel), Division (Major General), to corps-level (Lieutenant General) and also including Army Commands (e.g., United States Army Forces Command), Army Service Component Commands (e.g., United States Army Europe), and Direct Reporting Units (e.g., United States Military Academy) and their staffs.
[11] Going forward, I will refer to the MEDCEN and MEDDAC as the Military Treatment Facility (MTF).
[12]

Table 1: ASAP Capabilities, reprinted from AR 600-85 (2012)

Table 1–1
Overarching tenets and supporting capabilities of Army Substance Abuse Program

Tenets	Capability	Definition
Prevention	Education and training	Instruction for the Soldiers and other beneficiaries with increased knowledge, skills, and/or experience as the desired outcome.
Prevention	Deterrence	Action or threat of action to be taken in order to dissuade Soldiers or government employees from abusing or misusing substances. The Army's primary mechanism of deterrence is random drug testing.
Prevention	ID or detection	The process of identifying Soldiers and other beneficiaries as potential or actual substance abusers. This ID can be via self ID, command ID, drug testing ID, medical ID, investigation or apprehension ID.
Prevention	Referral	Modes by which Soldiers and other beneficiaries can access ASAP services. Modes are self-referral and command referral.
Treatment	Screening	An in-depth individual biopsychosocial evaluation interview to determine if Soldiers and other beneficiaries need to be referred for treatment. This capability is a MEDCOM responsibility.
Prevention or treatment	Targeted intervention	An educational/motivational program which focuses on the adverse effects and consequences of alcohol and other drug abuse. The methods used by the Army are the Army ADAPT Program and "Prime for Life. All Soldiers and other beneficiaries screened for substance abuse issues will receive targeted intervention, whether they are enrolled in the program or not.
Treatment	Rehabilitation	Clinical intervention with the goal of returning Soldiers and other beneficiaries to full duty or identify Soldiers who are not able to be successfully rehabilitated. This capability is a MEDCOM responsibility.
Prevention	Risk reduction	Compile, analyze, and assess behavioral risk and other data to identify trends and units with high-risk profiles. Provide systematic prevention and intervention methods and materials to commanders to eliminate or mitigate individual high-risk behaviors.

Each capability above is supported by multiple stakeholders as can be seen in Figure 2.
Furthermore, some capabilities may be thought of better as capabilities at the Army-level, when
actual implementation at lower levels may represent several distinct routines. As an example,
education and training at the installation level includes Unit Prevention Leader certification by
the installation Prevention Coordinator, Medical Review Officer certification through US Army
Medical Command, and individual "awareness training." (pp. 57-65) A domain mapping matrix
(DMM) is shown below in Figure 2: ASAP Capabilities and Stakeholders Domain Mapping Matrix. Here,
an 'x' represents some level of involvement of the stakeholder in that capability.

Figure 2: ASAP Capabilities and Stakeholders Domain Mapping Matrix

Group/Element	#	45 US Army Criminal Investigation Command	46 Medical Center (MEDCEN) / Medical Activity (MEDDAC)	47 Clinical Consultant	48 Medical Review Officer	49 Installation Command	50 Installation Alcohol and Drug Control Officer	51 Installation Prevention Coordinator	52 Drug Testing Coordinator	53 Clinical Director, ASAP	54 Clinical Staff, ASAP	55 Law Enforcement Activity Commander/Provost Marshal	56 Corps	57 Division	58 Brigade	59 Battalion	60 Battalion Prevention Leader	61 Company	62 Company UPL	63 Soldier	64 FTDTL
Education and Training	1		X	X	X	X	X	X		X	X					X	X	X	X	X	
Deterrence	2	X				X	X		X		X		X	X	X	X	X	X	X	X	X
ID or detection	3		X		X	X	X		X		X		X			X	X	X	X	X	X
Referral	4		X		X	X											X				
Screening	5		X	X						X	X						X		X		
Targeted intervention	6							X			X								X		
Rehabilitation	7		X	X						X	X						X	X	X		
Risk reduction	8					X	X	X				X	X	X	X	X	X				

Of particular interest to this thesis is how the routines building those capabilities are employed at the installation-level, particularly by unit commanders, and both how their execution is influenced by commander behavior[13] and how execution influence Soldier behavior[14]. While commander influence on routine use may indicate a desired level of flexibility in the implementation of Army policy as suggested in the *Red Book* (HQDA, 2010, p. 36), some of this flexibility and discretion may be unintended, unnecessary, or ineffective.

Furthermore, the Army has offered conflicting advice on the employment of some of those capabilities. For identification/detection, the writers of the *Gold Book* found that random unit sweep urinalysis tests in which the entire unit is tested at a random time was more effective for identifying Soldiers than a random sample of the unit tested periodically. (p. 112) However, the latest revision of AR 600-85, also published in 2012, requires random frequency (number of

---

[13] For example, are Soldier entered into rehabilitation less frequently when they are scheduled to deploy?
[14] For example, does random testing actually deter substance abuse?

times per week), random timing (hour, day, etc.), and random selection of at least 4% of the unit

each week. While the regulation also acknowledges that unit sweeps are effective, unit

commanders are discouraged from conducting them "routinely" and are prohibited from having

the number of samples collected under unit inspections to 75% of the number of samples

collected under random, partial inspections.[15] (pp. 25-28)

Organizational Architecture

Working from the installation as a distinct system as the center of analysis, there are three

organizational actors within the program: the installation command[16], the medical treatment

facility (MTF, encompassing MEDCEN and MEDDAC), and the unit, each of which reports

separately through their own distinct command structure. There is also an overarching Army

Staff governance structure. In the next section, I will analyze the responsibilities of each level

within the distinct command structure, followed by an examination of the interfaces amongst the

structures.

Army Staff

The Deputy Chief of Staff (DCS), G-1 has overall responsibility for integrating, coordinating,

and approving ASAP policies. In addition, the DCS G1 is responsible for "plans... programs,

budget formulation, and related research and program evaluation" for substance abuse within the

Army. (HQDA, 2012, p. 4).

---

[15] If a commander collected 1000 random samples, then the number of samples collected during unit inspections would be 750, or 75% of random samples.
[16] The installation exists as both a command and as a local community. References to the former will be "installation command" or "garrison command" while the latter will be referred to as "installation" or "garrison." The terms installation and garrison have much the same meaning and so may be used interchangeably, although there are certain garrisons that have multiple installations.

22

The Director of Human Resources Policy works directly for the DCS G-1 and is responsible for the "staff leadership and supervision" of the program and for overseeing the "drug and alcohol testing program." (pp. 4-5).

The Direct of the Army Substance Abuse Program is responsible for developing "ASAP goals and policies"; assisting Army Commands, Army Service Component Commands, and Direct Reporting Units as necessary; and executing budgetary processes for the ASAP for the Total Army[17].

US Army Installation Management

The Installation Management Command (IMCOM) is the overarching command responsible for the administration of all installations and garrisons within the United States Army (IMCOM). The Commander, IMCOM, a Lieutenant General, also serves as the Assistant Chief of Staff for Installation Management (ACSIM) on the Army Staff. IMCOM has four IMCOM regions (Central, Atlantic, Pacific, and Europe), each typically led by a member of the Senior Executive Service (IMCOM). These IMCOM Regions are responsible for the United States Army Garrisons (USAG), which may have distinct subordinate installations.

Each USAG is typically commanded by a Lieutenant Colonel, except in rare cases that the USAG contains multiple installations, in which case the USAG is commanded by a Colonel and each installation is commanded by a Lieutenant Colonel. The installation commander is responsible for ensuring that the local community has "the full range of ASAP services" and that clinical and non-clinical aspects are "operationally integrated and...co-located." (HQDA, 2012,

---

[17] The Total Army includes the Regular Army (i.e., active duty), the United States Army Reserve, and the United States Army National Guard.

p. 9) The installation commander is also responsible for designating the non-clinical staff, including the Alcohol and Drug Control Officer (ADCO), Prevention Coordinator (PC), Employee Assistance Program Coordinator (EAPC), Drug Testing Coordinator (DTC), installation breath alcohol technician (IBAT), and Risk Reduction Program Coordinator (RRPC) (p. 9). The garrison or installation commander is also responsible for establishing the Installation Prevention Team to "develop and implement" the installation prevention plan with the Provost Marshal (senior military law enforcement official on the installation), the ADCO, Clinical Director, Prevention Coordinator, Criminal Investigation Division (CID), social work services, and suicide prevention. Furthermore, the installation commander is responsible for reporting to the MTF commander if the clinical component of ASAP is not executed in accordance with Army Regulations. Finally, the installation commander is responsible for the coordinated efforts of the ASAP clinic, the Provost Marshal, and CID.

The Alcohol and Drug Control Officer (ADCO) has "direct supervision and management over all garrison [i.e., non-clinical] ASAP staff and programs," meaning that the ADCO is responsible for the Prevention Coordinator, and Drug Testing Coordinator.[18] (p. 10) The ADCO is chiefly responsible for the ASAP clinic's budget, policies, and procedures. The ADCO is also required to "monitor and evaluate the commander referral rate, separation actions, and the evaluation completion rate"; notifying law enforcement and unit commanders of positive urinalysis results; provide "extracts" from the daily blotter[19] to the clinical director on "all incidents involving

---

[18] The ADCO is also responsible for the EAPC and RRPC. Since this thesis will only cover the military aspects of the program and is limited in scope to drug and alcohol issues, I will not examine the EAPC or RRPC's roles individually.
[19] The blotter is a record of all potentially criminal behavior published by the installation's military law enforcement.

24

alcohol, drugs, and other substance abuse"; supervising the medical review process; and managing data input into the Drug and Alcohol Management Information System (DAMIS).

The Prevention Coordinator (PC) is primarily responsible for developing and providing "training and other services" to deter drug and alcohol abuse on the installation. The PC is also responsible for training the Unit Prevention Leaders (UPLs) and tracking all ASAP prevention training on the installation, of which the PC is encouraged to give one class to each unit on the installation annually.

The Drug Testing Coordinator (DTC) is responsible for operating a "secure installation drug and alcohol testing program control point." (p. 11) The DTC (not the PC) is responsible for instructing the UPLs on drug testing procedures and for generally serving as a "subject matter expert on urinalysis collection and testing." The DTC is further responsible for ensuring that urinalysis testing is conducted in accordance with AR 600-85, mailing samples to the Forensic Toxicology Drug Testing Laboratory (FTDTL), retrieving results from the "FTDTL portal", initiating the medical review process, and notifying company commanders[20] of positive test results and the clinical director for all positive rehabilitation test results.

The clinical director is responsible for the clinical aspects of the program. (p. 13) They are required to provide periodic reports to the ADCO, ensure screenings and rehabilitation team meetings are performed, enter patient intake records and period progress reports into DAMIS, train and supervise the ASAP counselors and ensure that the counselors maintain privileges, and notify unit commanders and the ADCO when rehabilitation has not been conducted.

---

[20] The DTC is also responsible for notifying the first General Officer in the Soldier's chain of command of all positive urinalysis results. This two-level notification leaves out the Battalion and Brigade Commanders.

Finally, the ASAP counseling staff is responsible for the screening and rehabilitation of Soldiers referred to ASAP. The counseling staff coordinates with command teams, either the company commander or first sergeant, during rehabilitation team meetings.

US Army Medical Command (MEDCOM)

The Surgeon General of the Army (TSG), who is also the commander of MEDCOM, is responsible for the medical aspects of the Army Substance Abuse Program to include evaluation, counseling services and medical identification. (p. 6) The TSG is responsible for credentialing review and continuing education and training for ASAP's clinical staff and executes oversight of the clinical program through regional medical commands. The TSG is also responsible for the FTDTL and, again through the regional medical commands, the medical review missions.

Commanders of medical treatment facilities (MTFs) are responsible for ensuring accreditation of the local ASAP clinics, designating a physician as the clinical consultant (CC), designating the clinical director (CD), and appointing medical review officers (MROs). (p. 8) The MTF commander is also responsible for providing "staff supervision and management" of the local ASAP's clinical staff. Some MTFs also have residential treatment facilities (RTFs) for substance abuse.

The clinical consultant (CC) primarily provides medical support for medical screening and evaluation for more serious needs. The CC performs the medical evaluations for transfer to a partial inpatient or residential treatment facilities, including medical evaluation for toxicity and withdrawal. (p. 54) The CC also evaluates the performance of the clinical director but only with direct input from the ADCO. (p. 8)

Medical review officers (MRO) are responsible for the medical review process, which is used to determine if use of a prescription medication (e.g., codeine) was authorized. Upon notification by the ADCO, the MRO reviews the Soldiers medical records and potentially interviews the Soldier to determine if the use was legitimate. (p. 35) After making the findings, the MRO notifies the ADCO of the result.

Other Commands ("The Unit")

The commanders of Army commands (e.g., US Army Forces Command), Army service component commands (e.g., US Army Europe), and direct reporting units (e.g., United States Military Academy) are responsible for appointing a liaison officer to work "with ACSAP on substance abuse issues." (p. 6) Commanders at the corps-level, division-level, and brigade-level are required to ensure that their subordinate units execute the drug testing program, appoint designated prevention leaders, execute prevention training, and refer identified Soldiers to ASAP for screening. (pp. 8-9) Corps, divisions, and brigades are connected through normal command and staff channels although this is not always the case.

Battalion-level organizations typically belong to a brigade-level organization. Commanders at the battalion-level are required to execute a drug testing program, assign an officer or non-commissioned officer as the battalion prevention leader (BPL), and generally ensure that the responsibilities of company commanders are fulfilled. The battalion commander is assisted by the BPL, who in turn provides some supervision and assistance to the companies' unit prevention leaders. (p. 16)

Company commanders have responsibilities to implement the drug testing program along with the battalion commander, ensure all Soldiers in their command receive four hours of prevention

training each year, appoint an officer or NCO as the unit prevention leader (UPL), notify CID for drug offenses (e.g., possession) other than positive urinalysis results, initiate separation of Soldiers under certain circumstances, report to the ADCO on the final disposition of those separation actions, and refer identified Soldiers to the ASAP for evaluation and screening. (pp. 15-16) The company's UPL is responsible for providing prevention training to the company's Soldiers and provide subject matter expertise to the company commander. (p. 17)

In general, leaders are expected to lead by example while providing training, education, and motivation to their subordinates. (p. 17) If a soldier's leader suspects substance abuse, then the leader is required to refer Soldiers to the company commander or ASAP. Finally, AR 600-85 posits that individuals be held responsible for their actions and to support and encourage their peers to seek help.

Important Changes Since 2001

The main organizational change since 2001 was the separation of garrison management from combat formation. The separation of garrison management may have created a situation where reporting requirements to the garrison from tenant units are under-used or ignored (as the garrison has little authority over units) and where reporting requirements through command channels is hampered by lack of access to shared data systems (e.g., DAMIS). This may have exacerbated a pre-existing situation in which those who need the data to supervise the processes in real time in the chain of command have no access to immediate data in ASAP.

An organizational design structure matrix for the organization of ASAP as specified by the 1986 regulation[21] is shown in the design structure matrix (DSM) in Figure 3 below. The column on the left, "Element Name", specifies the specific entity. The columns on the right, when filled with a "1", represent an interaction or communication. Because of the back-and-forth nature of communication, I have chosen to represent this as a symmetric matrix rather than as a directional matrix.[22] Boxes in red are medical assets while blue boxes generally represent the unit. Together, the colored boxes represent the MTF, ASAP clinic, and then the unit, from top-left to bottom-right.

Figure 3: Organizational Design of the Army Substance Abuse Program[23], 1986-2001 (HQDA, 1986)

Element Name		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
US Army Criminal Investigation Command	1	1			1		1												1		1
Medical Center (MEDCEN) / Medical Activity (MEDDAC)	2		2	1	1				1	1									1		
Clinical Consultant	3		1	3		1		1	1												
Installation Commander	4	1	1		4	1	1			1	1		1		1						
Installation ADCO	5		1	1	1	5	1	1	1	1										1	
Installation Prevention Coordinator	6				1	1	6		1										1		1
Clinical Director, ASAP*	7			1		1		7	1												
Clinical Staff, ASAP	8			1		1	1	1	8										1		1
Law Enforcement Activity Commander/Provost Marshal	9	1	1		1	1				9									1		1
Corps Commander	10				1						10	1	1								
Corps ADCO	11										1	11		1							
Division Commander	12				1						1	1	12	1	1						
Division ADCO	13											1	1	13		1					
Brigade Commander	14				1								1		14	1	1				
Brigade ADCO	15												1		1	15		1			
Battalion Commander	16													1		1	16	1	1		
Battalion UADC	17															1		17		1	
Company	18	1	1				1		1	1							1		18	1	1
Company Unit Alcohol and Drug Coordinator	19					1												1	1	19	1
Soldier	20	1					1		1	1									1	1	20

Of note, prior to the creation of IMCOM, installations were the responsibility of Major Commands (MACOMs), the predecessor term for what is now collectively Army commands,

---

[21] This regulation existed until the 2001 revision, thus its relevance.

[22] It is important to note that this DSM and the following DSMs represent normative interactions from the regulations and may not reflect the actual implementation of the program at a given location and time.

[23] During this period, the program was known as the Alcohol and Drug Abuse Prevention and Control Program (ADAPCP). In order to prevent confusion, I have taken the liberty to retroactively rename the program in this thesis.

Army service component commands, and direct reporting units. Every level in the unit chain of command from MACOM to Brigade had a designated or appointed ADCO in addition to the installation ADCO while battalions and companies were supported by the Unit Alcohol and Drug Coordinator (UADC), which fulfilled much the same role as today's UPL. The ADCO also fulfilled the role of the Drug Testing Coordinator, which was not a separate position until the 2001 regulation. As one can see, the Company Commander enjoyed a high degree of interaction within the entire enterprise, but from bottom-to-top was supported by full- or part-time officers and/or NCOs that supported the ASAP mission within the unit command and staff channels.

The complexity of the enterprise can be estimated using a structural complexity metric, which can be compared to later structures below for a numeric comparison. This structural complexity metric is useful as it combines the measurements of the organizational complexity, the interface complexity, and the topological complexity (Sinha, 2014). The definition for the structural complexity is given by:

$$C = C1 + C2*C3$$

Here, C is the structural complexity, C1 is the organizational complexity n, C2 is the interface complexity (sum of all interactions in the DSM, m), and C3 is the topological complexity, given as the sum of the absolute values of the eigenvalues for the DSM divided by the number of components. Using MATLAB to obtain the eigenvalues for the DSM, the structural complexity for the ASAP enterprise as captured above is:

$$C = 20 + 92*(32.5/20) = 169.5$$

The overall structure changed slightly with the 2001 revision. As can be seen in Figure 4 below, this publication introduced the Medical Review Officers as well as witnessed the degradation of

30

ASAP positions in support of the program. The ADCO position at MACOM remained in place but the positions at Corps, Division, and Brigade were changed from an ADCO as an "officer" (HQDA, 1986, p. 10) to a UPL in the rank of "E-5 or above." (HQDA, 2001, p. 7) The UADC position at Battalion and Company was also renamed as the "UPL".

Figure 4: Organizational Design of the ASAP, 2001-2006 (HQDA, 2001)

Group/Element	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
US Army Criminal Investigation Command	1	1				1		1													1		1
Medical Center (MEDCEN) / Medical Activity (MEDDAC)	2		2	1	1	1					1	1									1		
Clinical Consultant	3		1	3			1			1	1												
Medical Review Officer	4		1		4		1														1		1
Installation Commander	5	1	1			5	1	1	1			1	1		1		1						
Installation Alcohol and Drug Control Officer	6		1	1	1	1	6	1	1	1	1	1									1	1	
Installation Prevention Coordinator	7					1	1	7			1										1	1	1
Installation Biochemical Test Coordinator	8						1		8												1	1	
Clinical Director, ASAP	9		1				1			9	1												
Clinical Staff, ASAP	10		1				1	1		1	10										1		1
Law Enforcement Activity Commander/Provost Marshal	11	1	1			1	1					11									1		1
Corps Commander	12					1							12	1	1								
Corps UPL	13												1	13	1								
Division Commander	14					1							1		14	1	1						
Division UPL	15													1	1	15		1					
Brigade Commander	16					1									1		16	1	1				
Brigade UPL	17															1	1	17		1			
Battalion Commander	18																1		18	1	1		
Battalion UPL	19																	1	1	19		1	
Company	20	1	1		1		1	1	1		1	1							1		20	1	1
Company UPL	21						1	1	1											1	1	21	1
Soldier	22	1			1			1			1	1									1	1	22

Using the structural complexity equation from above, the structural complexity "C" for the ASAP enterprise from 2001 to 2006 was 206.9, up from 169.5 for the period 1986 to 2001. While this represents an increase in the complexity of the program, this is mostly due to the additional functionality (medical review process) and components (MRO and Installation Biochemical Test Coordinator).

By 2006, the US Army had activated the Installation Management Agency, later the Installation Management Command, represented in the DSM in Figure 5 as green boxes. As an apparent result of the transformation, the requirement for the MACOM ADCO was changed to a liaison

position between the MACOM and IMCOM and ACSAP. (HQDA, 2006, p. 5) The UPL

positions at Corps and below remained unchanged.[24]

Figure 5: Organizational Design of ASAP, 2006-2009 (HQDA, 2009)

Group/Element	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
US Army Criminal Investigation Command	1	1				1		1				1										1		1
Medical Center (MEDCEN) / Medical Activity (MEDDAC)	2		2	1	1	1					1	1									1		
Clinical Consultant	3		1	3			1			1	1										1		1
Medical Review Officer	4		1		4		1														1		1
Installation Commander	5	1	1			5	1	1	1			1	1		1		1						
Installation Alcohol and Drug Control Officer	6		1	1	1	1	6	1	1	1	1	1									1	1	
Installation Prevention Coordinator	7					1	1	7			1										1	1	1
Installation Biochemical Test Coordinator	8						1		8												1	1	
Clinical Director, ASAP	9			1			1			9	1												
Clinical Staff, ASAP	10		1	1			1	1		1	10										1		1
Law Enforcement Activity Commander/Provost Marshal	11	1	1			1	1					11									1		1
Corps Commander	12					1							12	1	1								
Corps UPL	13												1	13		1							
Division Commander	14					1							1		14	1	1						
Division UPL	15													1	1	15		1					
Brigade Commander	16					1									1		16	1	1				
Brigade UPL	17															1	1	17		1			
Battalion Commander	18																1		18	1	1		
Battalion UPL	19																	1	1	19		1	
Company	20	1	1		1		1	1	1		1	1								1	20	1	1
Company UPL	21						1	1	1												1	21	1
Soldier	22	1			1			1			1	1									1	1	22

The 2009 revision of the regulation saw the elimination of the requirement for additional duty

positions at the Corps, Division, and Brigade levels and the renaming of the Battalion-level UPL

as the Battalion Prevention Leader. The current specified organization of the ASAP is shown in

Figure 6: Organizational Design of ASAP, 2009-Present below.

---

[24] The structural complexity for this era is unchanged as the changes to the structure happened above the level of abstraction captured here.

Figure 6: Organizational Design of ASAP, 2009-Present

Group/Element	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
US Army Criminal Investigation Command	1	1				1		1				1						1		1
Medical Center (MEDCEN) / Medical Activity (MEDDAC)	2		2	1	1	1					1	1						1		
Clinical Consultant	3		1	3			1			1	1							1		1
Medical Review Officer	4		1		4													1		1
Installation Command	5	1	1			5	1	1	1			1	1	1	1					
Installation Alcohol and Drug Control Officer	6		1	1	1	1	6	1	1	1	1	1						1	1	
Installation Prevention Coordinator	7					1	1	7			1							1	1	1
Drug Testing Coordinator	8					1	1		8								1	1	1	
Clinical Director, ASAP	9			1			1			9	1							1		1
Clinical Staff, ASAP	10		1	1			1	1		1	10							1		1
Law Enforcement Activity Commander/Provost Marshal	11	1	1			1	1					11						1		1
Corps	12					1							12	1				1		
Division	13					1							1	13	1					
Brigade	14					1								1	14	1				
Battalion	15														1	15	1	1		
Battalion Prevention Leader	16								1							1	16	1		
Company	17	1	1		1		1	1	1		1	1				1		17	1	1
Company UPL	18						1	1	1								1	1	18	1
Soldier	19	1			1			1			1	1						1	1	19

Taken together, the Army Transformation and the degradation and elimination of the specified ASAP positions at the Brigade to Corps levels may not necessarily have led to degradation and elimination of staff oversight but did give the opportunity to lose some oversight and control over the program. Table 2 shows the major changes in the program's structure and complexity since the 1986 regulation. The level of structural complexity is not indicative of the "goodness" of the complexity; some complexity is simply the result of added functionality. The addition of the MRO position, leading to increased complexity, gave the program additional functionality to detect prescription drug abuse. Similarly, the elimination of ASAP positions above the battalion level led to decreased complexity but may have removed related functionality from those staffs.

Table 2: Summary of Changes and Complexity Organizational Structure

Summary of Changes	1986-2001	2001-2006	2006-2009	2009-Present
Unit	Baseline	Change of rank requirement for ASAP positions above BN from officer to NCO	Reflected removal of installation management from MACOM	Elimination of requirement for ASAP positions above BN
MEDCOM		Introduction of MRO		Removal of CONUS ASAP Counselors to IMCOM control (2010)
IMCOM			Reflected removal of installation management from MACOM	Removal of CONUS ASAP Counselors to IMCOM control (2010)
ASAP		Split of duties for ADCO into ADCO and IBTC (later DTC)		
Structural Complexity (n)	20	22	22	19
Interface Complexity (m*2)	92	112	112	102
Topological Complexity (E(A)/n)	1.6	1.6	1.6	1.7
Complexity (n + 2m*E(A)/n)	169.50	206.29	206.29	197.23
Change in Complexity		21.71%	0.00%	-4.39%

Process Architecture

Unlike the organizational architecture, the process architecture has not changed significantly at the installation level since 1986. The processes, or routines, largely support the capabilities listed in Figure 1. Those that are most important and applicable at the installation and lower levels are examined below.

Awareness Training

Typically, the awareness training can be conducted by the Unit Prevention Leader or by an ASAP representative, either the Prevention Coordinator or one of the counselors. All Soldiers on active duty are required to receive four hours of awareness training each year, with the intent of disseminating "information that provides an individual with the basic knowledge [or] understanding" of the program. (HQDA, 2012, pp. 57-62) For an active Army of 500,000 Soldiers[25], this translates into an average requirement of around 167,000 man-hours of training each month. However, Army Regulation 350-1 Army Training and Leadership Development, most recently published in 2014, specifies only an annual and redeployment training requirement for ASAP, giving an average baseline monthly training requirement of near 42,000 man-hours, not including redeployment numbers.[26] (HQDA, 2014, p. 167)

Identification

Key to the identification capability is the drug testing program (DTP). The DTP allows for commanders to test Soldiers under various bases, depending on the situation. Some examples

---

[25] The size of the Army has been over 500,000 until February 2015, so the actual training requirement in man-hours shown is underestimated. These numbers also do not show reserve component requirements (two hours per year per Soldier on reserve status or four on active duty).
[26] The previous version published in 2011 had the same requirements.

include "Inspection Unit" for unit sweep, during which every soldier in the unit is tested; "PO" for probable cause, in which the commander has established sufficient evidence of drug use; and "RO" for rehabilitative testing for soldiers enrolled in the program. Each sample is tested for a listing of drugs or panel; some of drugs are tested for each sample collected and while others are tested on a rotational basis. As before, unit commanders are required to test four percent of their unit each week. Over the course of a year, this would equate to over 200% of the unit by testing, equating to slightly over a million samples per year across the Army.

The testing process consists of three phases: pre-collection, collection, and post-collection. (HQDA, 2012, pp. 32-34) During pre-collection, the commander determines the timing of the test and the population to be determined. After he has notified the UPL, the UPL coordinates for supplies (if not immediately available) and for turn-in with the installation DTC. Immediately before the test, the commander or his representative briefs both the soldiers and selected observers. Immediately after the pre-collection phase, the UPL identifies soldiers through identification cards, verifies name and social security numbers on the sample forms, and collects the sample through the observer. The UPL then acknowledges receipt of the sample by signing the roster next to the soldier's name while the observer also verifies that the specimen was collected according to regulation. After all samples have been collected, the UPL brings all samples to the Drug Testing Program control point for inspection by the DTC. The DTC notes any discrepancies, verifies the paperwork with the UPL, and then signs for the specimens. The specimens are then mailed to the Forensic Toxicology Drug Testing Laboratory for analysis. (HQDA, 2012, pp. 127-129) For the purposes of this thesis, the FTDTL is treated as a black box. I only assume that all samples sent in the mail are received by the FTDTL and that are samples received are tested. After the drug test results are posted on the FTDTL portal, the DTC has five

business days to retrieve the results, look for previous positive results from that Soldier in DAMIS, and notify the commander.

Drug testing is just one of several methods of identification. Soldiers are encouraged to voluntarily self-identify and seek treatment.[27] Supervisors can identify substance abuse by observing declining "job performance, social conduct, interpersonal relations, physical fitness, or health." (p. 50) Alternatively, commanders can identify alcohol abuse through alcohol breath or blood testing although there is no requirement to conduct such identification activities on a regular basis. (p. 20) Soldiers can also be identified through law enforcement through such arrests (e.g., DUI, drunk and disorderly conduct) or investigations. Finally, Soldiers can be identified through routine or emergency medical treatment. The health care provider is then required to notify the commander if the substance abuse is current or under special circumstances. (p. 51)

Referrals

Commanders are required to refer all Soldiers identified or suspected of substance abuse to the ASAP using DA Form 8003. In the case of identification through law enforcement activity or drug testing, these referrals are required within five days of identification. (p. 52) Medical providers who identify are required to use Standard Form (SF) 513 (Medical Record – Consultation Sheet) to refer Soldiers to the ASAP. See Appendix 4 for blank forms.

---

[27] An example of this encouragement is that the service characterization for the separation of a Soldier due to illegal drug use that is identified voluntarily is limited to an "Honorable" characterization. Alternatively, identification through drug testing could result in a reduction of benefits after service through a "General" or "Other than Honorable" discharge. This method of identification falls under the Army's "Limited Use" policy. (HQDA, 2012, p. 71)

In the case of self-referrals, a Soldier can be screened by ASAP without involving his or her

chain of command. If the counselor decides that treatment or education services are required,

then the ASAP counselor is required to coordinate with the unit commander for a signed referral.

In this case, screening is no longer anonymous for any soldier.

Screening

Any method of identification and referral is required to result in screening by a qualified ASAP

counselor. This evaluation is required within 12 business days. (p. 52) The counselor is

ultimately responsible for the evaluation decision, but is required to consult with the commander.

In the case that dependence is suspected, the counselor, commander, clinical director, or Soldier

can request a medical evaluation. Furthermore, medical evaluations are required before entry

into residential treatment programs. All screenings are recorded on DA Form 4465 (Patient

Intake/Screening Record, or "PIR") by the counselor. (p. 87) The clinical director is required to

input DA Form 4465 into DAMIS within 10 days of the evaluation. Based on the results of the

screening, the counselor may recommend that a referral for alcohol and other drug abuse

prevention training (ADAPT) and/or enrollment in inpatient or outpatient rehabilitation services.

(p. 52) Not all screenings result in enrollment into rehabilitation services; if the counselor does

not recommend enrollment in the program, the Soldier will at a minimum attend ADAPT, which

consists of a minimum of 12 hours of classroom training.

Rehabilitation

If the unit commander and counselor agree to enroll the Soldier in rehabilitation, then the Soldier

is entered into Level I or Level II rehabilitation. Level I rehabilitation, which is based on non-

residential or outpatient services, is the most common form of rehabilitation and involves

individual and group counseling. Soldiers are entered into the program for a minimum of 30 days and a maximum of 365 days. (p. 54) Level II rehabilitation involves either intensive outpatient care (partial hospitalization) or residential care (inpatient). A Soldier may enter directly into Level II treatment after screening or after enrollment in Level I care.

The Army considers rehabilitation appointments as the "place of duty" for Soldiers enrolled in rehabilitation. As such, failure to appear for rehabilitation may be considered as a punishable offense under the Uniform Code of Military Justice (UCMJ) Article 86. AR 600-85 requires that counselors schedule around the Soldier's duty. Appointments can only be canceled by the Soldier's Company Commander or First Sergeant for "field exercises", in which case the counselor is required to reschedule the appointment. Field exercises are generally the training events that build individual skills or organizational routines to prepare for combat. In this manner, the Army explicitly allows for commanders to prioritize operational or mission readiness over institutional readiness.

The counselor is required to fill out DA Form 4466 (Periodic Progress Report) every 90 days or at the time of major transitions, such as disenrollment, permanent change of station (PCS), or separation, or for a change in diagnosis. The form captures the progress of the Soldier, whether the treatment was successful, and under which conditions the Soldier is being released from the program.

Investigation

After identification for substance abuse, the unit commander is required by AR 600-85 to coordinate with law enforcement for a possible investigation into drug and alcohol abuse. (p. 51) The local office of the US Army Criminal Investigation Command, known as "CID", is required

to investigate all drug offenses. (HQDA, 2014-2, pp. 6-7) For the purposes of this report, the

conduct of any investigation, whether conducted by CID or the command, is a "black box."[28]

Separation

Finally, unit commanders are required to initiate or "process" Soldiers for separation under the

following situations (pp. 67-68):

- Rehabilitation failure or subsequent alcohol or drug-related incident within 12 months of completion of the program
- Illegal drug abuse, trafficking, distribution, possession, or sale
- Illegal drug use for the second time in a career
- Involved in two serious alcohol-related incidents within 12 months
- A second DUI/DWI conviction in a career[29]

Separations are typically initiated by the company commander and are finalized by the

separation authority. After legal review, the commanders below the separation approval

authority in the chain of command make recommendations on retention and characterization of

service. The characterization of service can have lasting impact on the soldier's access to

treatment through the Department of Veterans Affairs, among other things. The separation

approval authority is neither bound by these recommendations nor required to approve separation

at all. In general, the separation authority is the brigade commander if the Soldier is enlisted in

the ranks of Private to Specialist for whom the company and battalion commanders

---

[28] Coordination between law enforcement and ASAP is conducted at a local level. For the data set that is used for this thesis, there is no way to conclusively and simply prove that either a positive drug test results in an investigation or that an investigation or any other law enforcement activity resulting in the identification of substance abuse by a Soldier results in a referral to ASAP.

[29] Curiously, AR 600-85 still also states that if the unit commander believes that the Soldier does not have potential for future service, then the Soldier will be processed for separation (p. 52). This leaves open the possibility that a commander, believing that the Soldier has potential for future service, chooses not to process separation.

40

recommended a service characterization of "General" or "Honorable." Otherwise, the separation authority is the first general officer in the chain of command.

Like treatment and investigations, the separation process is mostly a black box for this thesis. However, the Periodic Progress Report data in DAMIS can indicate whether Soldiers were separated from the Army but only if that action occurred while enrolled in the program.

Architecture Synthesis

The execution of the processes from testing to separation in the Army Substance Abuse Program are mostly non-iterative, with clearly defined processes and without an unnecessary amount of rework. Figure 7 below shows the processes represented in DSM form; unlike the organizational DSM from above, here an "X" shows dependence of one process on another rather than just a connection or communication. As an example, process #3, determine timing and test type, is dependent on the implementation of the drug testing program. Not all dependencies are deterministic; due to the peculiarities of the circumstances, there may be multiple pathways, which are marked with a "P" rather than an "X". Commanders may be notified of substance abuse identifications (process #16) through law enforcement or through drug testing, hence "P" is used. Alternatively, there is no alternative workflow leading up to process #11; only sample results that have been tested are posted so an "X" is used. Iterative sequences are shown with an 'X' above the diagonal in the upper right-hand corner.

Figure 7: Current Process Design Structure Matrix

Group/Element	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Implement DTP	1																																						
Detect Soldier by other means	2																																						
Determine timing and test type	3	X																																					
Gather testing material	4		X																																				
Develop roster for test	5			X																																			
Prepare materials	6				X																																		
Provide samples	7						X																																
Inspect, seal, and turn-in Sample	8							X																															
Receive, inspect, and mail samples	9								X																														
Test samples	10									X																													
Post results to FTDTL portal	11										X																												
Retrieve results from FTDTL portal	12											X																											
Check DAMIS for previous positives	13												X																										
Request MRO review	14													X																									
Perform MRO review	15														X																								
Notify CDRs	16	P										P		P																									
Notify law enforcement	17	P								P				P																									
Retrieve test results	18																X																						
Coordinate investigative efforts	19																	X	X																				
Investigate substance abuse	20																		X																				
Initiate separation	21																		P		P		X																
Provide legal review of separation	22																					X																	
Recommend separation	23																						X																
Approve separation	24																							X															
Provide command referral	25	P																	P																				
Evaluate Soldier	26																									X													
Conduct initial rehabilitation team meeting	27																									X													
Complete PIR and provide to CD	28																										X		X										
Review and enter PIR into DAMIS	29																											X											
Conduct rehabilitative training	30																												X										
Conduct rehabilitative treatment	31																												X										
Conduct Detoxification	32																									P							P		P				
Transfer to IOP or IP Care	33																									P							P	P		X			
Confer with Clinical Consultant	34																									P									P				
Record treatment	35																															X							
Conduct interim or final RTM	36																																X						
Complete PPR and provide to CD	37																																				P		P
Review and enter PPR into DAMIS	38																																						X

A comparison of the organizational and process architectures in Figure 8 shows that the bulk of responsibility for a large number of those processes is among a small number of stakeholders, particularly the company commander, the counseling staff, and the drug testing coordinator. For the company commander's responsibilities, the processes are non-synchronous and there are time gaps in the processes.

Figure 8: Current Processes and Organization DMM

Domain Mapping Matrix: Current Processes to Organization	#	US Army Criminal Investigation Command (45)	Medical Center (MEDCEN) / Medical Activity (MEDDAC) (46)	Clinical Consultant (47)	Medical Review Officer (48)	Installation Command (49)	Installation Alcohol and Drug Control Officer (50)	Installation Prevention Coordinator (51)	Drug Testing Coordinator (52)	Clinical Director, ASAP (53)	Clinical Staff, ASAP (54)	Law Enforcement Activity Commander/Provost Marshal (55)	Corps (56)	Division (57)	Brigade (58)	Battalion (59)	Battalion Prevention Leader (60)	Company (61)	Company UPL (62)	Soldier (63)	FTDTL (64)
Implement DTP	1		X													X		X			
Detect Soldier by other means	2	X	X									X						X		X	
Determine timing and test type	3														X			X			
Gather testing material	4																X		X		
Develop roster for test	5																X		X		
Prepare materials	6																X		X		
Provide samples	7																			X	
Inspect, seal, and turn-in Sample	8																		X		
Receive, inspect, and mail samples	9								X												
Test samples	10																				X
Post results to FTDTL portal	11																				X
Retrieve results from FTDTL portal	12								X												
Check DAMIS for previous positives	13								X												
Request MRO review	14								X												
Perform MRO review	15								X												
Notify CDRs	16								X												
Notify law enforcement	17								X												
Retrieve test results	18																	X	X		
Coordinate investigative efforts	19	X																X			
Investigate substance abuse	20	X																X			
Initiate separation	21																	X			
Provide legal review of separation	22													X							
Recommend separation	23													X	X	X	X	X			
Approve separation	24												X	X							
Provide command referral	25																	X			
Evaluate Soldier	26									X											
Conduct initial rehabilitation team meeting	27									X								X		X	
Complete PIR and provide to CD	28									X											
Review and enter PIR into DAMIS	29								X												
Conduct rehabilitative training	30					X															
Conduct rehabilitative treatment	31										X										
Conduct Detoxification	32		X																		
Transfer to IOP or IP Care	33			X																	
Confer with Clinical Consultant	34									X	X										
Record treatment	35										X										
Conduct interim or final RTM	36										X							X		X	
Complete PPR and provide to CD	37										X										
Review and enter PPR into DAMIS	38								X												

However, the requirement to ensure company-level actions by higher commands may be hindered by incomplete information. Mapping information systems to processes (Figure 9) and stakeholders (Figure 10) reveals the divide in information in general. For most processes, no formal information technology exists beyond email, telephones, and paper files. ASAP-specific processes are supported by DAMIS and the FTDTL portal while law enforcement investigations are recorded in the Centralized Operations Police Suite (COPS).

Similarly, the recording of rehabilitation care may be conducted in local paper files or in AHLTA.[30] The lack of reliable access to AHLTA by ASAP counselors could hinder coordination of care within behavioral health (e.g., a soldier is being treated both by ASAP and the Department of Behavioral Health) and transitions in care (e.g., a soldier is transferred from outpatient care to a residential treatment facility).

Figure 9: Current Information Systems to Processes

Domain Mapping Matrix: Current Information Systems to Processes Group/Element	#	1 Implement DTP	2 Detect Soldier by other means	3 Determine timing and test type	4 Gather testing material	5 Develop roster for test	6 Prepare materials	7 Provide samples	8 Inspect, seal, and turn-in Sample	9 Receive, inspect, and mail samples	10 Test samples	11 Post results to FTDTL portal	12 Retrieve results from FTDTL portal	13 Check DAMIS for previous positives	14 Request MRO review	15 Perform MRO review	16 Notify CDRs	17 Notify law enforcement	18 Retrieve test results	19 Coordinate investigative efforts	20 Investigate substance abuse	21 Initiate separation	22 Provide legal review of separation	23 Recommend separation	24 Approve separation	25 Provide command referral	26 Evaluate Soldier	27 Conduct initial rehabilitation team meeting	28 Complete PIR and provide to CD	29 Review and enter PIR into DAMIS	30 Conduct rehabilitative training	31 Conduct rehabilitative treatment	32 Conduct Detoxification	33 Transfer to IOP or IP Care	34 Confer with Clinical Consultant	35 Record treatment	36 Conduct interim or final RTM	37 Complete PPR and provide to CD	38 Review and enter PPR into DAMIS
None (personal, email, telephone, paper)	39	X	X	X														X	X	X	X	X	X	X	X	X		X	X			X				X	X	X	X
DOD DTP	40				X																																		
DAMIS	41													X	X	X														X				X					X
FTDTL Portal	42										X	X	X																										
COPS	43		X																					X															
AHLTA	44		X																													X	X	X		X			

There are two interesting transitions to consider from a command perspective from the DMM above in Figure 9. First, commander notifications and referrals are done outside of DAMIS and so these processes are not recorded. Using the DAMIS data can only show which Soldiers were tested positive and which Soldiers were screened. The notification of the commander is conducted manually, meaning that some proportion of Soldiers who are never screened may have been a result of the commander never being notified. The referral of a Soldier also happens outside of DAMIS and thus there is no guarantee that a referral will result in a screening.

---

[30] Some ASAP clinics have direct access to AHLTA while in others the counselors are required to "remote in." Based on field research, this latter situation is noteworthy for its unreliability and for the distribution that it causes in continuity of care. Also, since ASAP is an IMCOM program and MEDCOM controls AHLTA, it is unclear who would provide the funds to equip the ASAP clinics with direct access.

Second, identifications outside of the drug testing program (e.g., law enforcement or medical) are not recorded within DAMIS; collectively, the lack of systems interoperability hampers measurement of compliance with referrals. While it is likely (and required in some cases) that these actions are recorded at the local level, it's important to consider what information is accessible to whom. Checking company commander compliance would involve either manually cross-walking information from ASAP's centralized and local systems or from company-level reporting.

Figure 10: Current Information Systems and Stakeholders DMM

Domain Mapping Matrix: Current Information Systems to Stakeholders	#	US Army Criminal Investigation Command (45)	Medical Center (MEDCEN) / Medical Activity (MEDDAC) (46)	Clinical Consultant (47)	Medical Review Officer (48)	Installation Command (49)	Installation Alcohol and Drug Control Officer (50)	Installation Prevention Coordinator (51)	Drug Testing Coordinator (52)	Clinical Director, ASAP (53)	Clinical Staff, ASAP (54)	Law Enforcement Activity Commander/Provost Marshal (55)	Corps (56)	Division (57)	Brigade (58)	Battalion (59)	Battalion Prevention Leader (60)	Company (61)	Company UPL (62)	Soldier (63)	FTDTL (64)
Group/Element																					
DOD DTP	40																X		X		
DAMIS	41					X				X	X										
FTDTL Portal	42								X												X
COPS	43	X									X										
AHLTA	44		X	X	X						X										

Mapping information systems to stakeholders in Figure 10 shows the gaps and seams of knowledge within the program's aspects discussed above. Commanders at all levels are not supported by information systems beyond the DOD Drug Testing Program (DOD DTP) application, which is accessed prior to testing to generate rosters and labels for the urinalysis samples. The implication for the program's supervision within the unit chain of command is that there is no simple way for commanders to determine if or when unit level commanders comply

with regulations besides reporting, the receipt of paperwork, or information gathering or reporting from the local ASAP. There is a lack of visibility into the processes at the levels above the company that can lead to a systemic lack of control.

Conclusion

In summary, the architecture of the program may inhibit whether the system's effectiveness in meeting the Army's intent. While the organizational architecture has changed significantly since the 1980s, the process architecture has not kept pace; processes still tend to be clustered around a few key actors within the system. Furthermore, process owners within ASAP have no formal authority over units while unit commanders have limited access to data. The lack of specified positions for staff oversight in the unit chain of command and the lack of real-time information from DAMIS may make it difficult to accurately assess and ensure compliance with the program's requirements. These positions should be reinstituted and given access to information from DAMIS for real-time staff oversight. Discrepancies in actions (e.g., soldiers were never referred for evaluation) can then be resolved and/or justified.

Additionally, information flow for a large part of the process architecture is non-systematic; processes are tracked locally by informal systems (paper, email, etc.). These informal systems are not easily accessible by unit commanders and thus present a challenge to compliance. By itself, DAMIS only captures a small part of the processes throughout, and what data is gathered is available to few personnel. Data is not captured for identifications outside of the drug testing program, commander notifications, and commander referrals. Data capture should be expanded to cover these key touch points in order to allow supervisors and ASAP staff to immediately see and solve problems. As every installation presumably has similar issues with information

46

coordination, the Army should create interfaces between appropriate data sources (e.g., ASAP and COPS, ASAP and AHLTA) in order to find and fix compliance issues.

Thirdly, access to AHLTA by the ASAP counseling staff is limited. This limited access impairs coordination of care across organizational boundaries. Any funding issues regarding expanded access should be resolved by the Army and not left to local interpretation or prioritization. The Army regulation should be updated to include this facet of the program, with expanded discussion on what type of information gets recorded into AHLTA.

In Figure 11, the conclusions from above are highlighted.

Figure 11: Organizational Flow of ASAP

1. Implement Drug Testing Program
2. Detect Soldiers by other means
3. Determine timing and population
4. Gather Testing Material
5. Develop Roster for test
6. Prepare Material
7. Provide Sample
8. Inspect, seal, and turn-in samples
9. Receive, inspect and mail samples
10. Test samples
11. Post results to FTDTL Portal
12. Retrieve results from FTDTL Portal
13. Check DAMIS for previous positives
14. Request MRO Review
15. Perform MRO Review
16. Notify CO CDR
17. Notify Law Enforcement
18. Retrieve test
19. Coordinate investigation efforts
20. Investigate substance abuse
21. Initiate Separation
22. Provide legal review of separation
23. Recommend Separation
24. Approve Separation
25. Provide Command Referral
26. Conduct initial evaluation
27. Conduct Rehabilitation Team Meeting (RTM)
28. Complete PIR and provide to CD
29. Review and File PIR into DAMIS
30. Conduct rehabilitative training
31. Conduct treatment
32. Record treatment
33. Conduct detoxification
34. Transfer to IOP or RTF
35. Confer with Clinical Consultant
36. Conduct interim RTM
37. Complete PPR and provide to CD
38. Review and file PPR into DAMIS

47

Chapter 3: Dynamic Behavior within the Army Substance Abuse Program

Dynamic Behavior

As stated in Chapter 1, the US Army experienced a tremendous increase in the level of identified substance abuse during the recent wars in Afghanistan and Iraq. The demand for Soldiers to fulfill wartime missions forced the active Army to grow significantly. During a time in which the US Army experienced growth, the number of Soldiers who were not tested within the fiscal year for drugs more than doubled from 34,808 Soldiers in Fiscal Year (FY) 2001 to over 78,517 Soldiers in FY 2009. (HQDA, 2010, p. 51) The percentage of Soldiers tested versus overall active duty strength fell from 93% in FY 2001 to 86% in FY 2009, as shown in Figure 12 below.

Figure 12: Urinalysis Testing Rate FY2001-2009. Adapted from the "Red Book" (HQDA, 2010, p. E4)
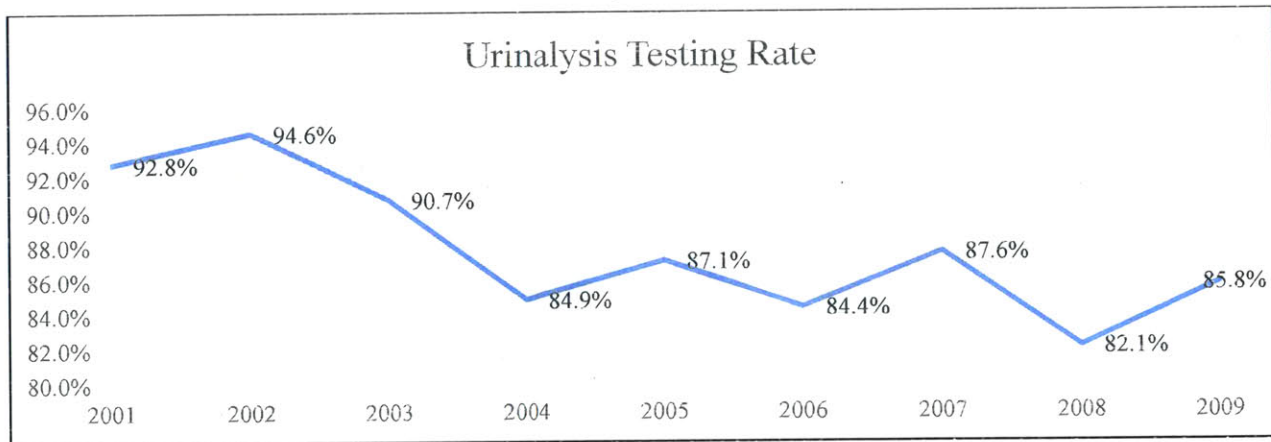
During the same period, the US Army experienced a large increase in the number of positive urinalyses. Positive urinalyses jumped from 1976 in FY 2001 to 8882 in FY 2009. The number of DUI charges also jumped, going from 850 in FY 2001 to 3543 in FY 2009. Normalizing the

number of offenses for each year for each category's value in FY 2001 and plotting the results

shows a very similar pattern for both types of offense, as can be seen in Figure 13 below.

Figure 13: Growth in DUIs and Positive Urinalyses FY2001-2009 (HQDA, 2010, p. E7). There were 1976 positive urinalyses and 850 DUIs in FY 2001.
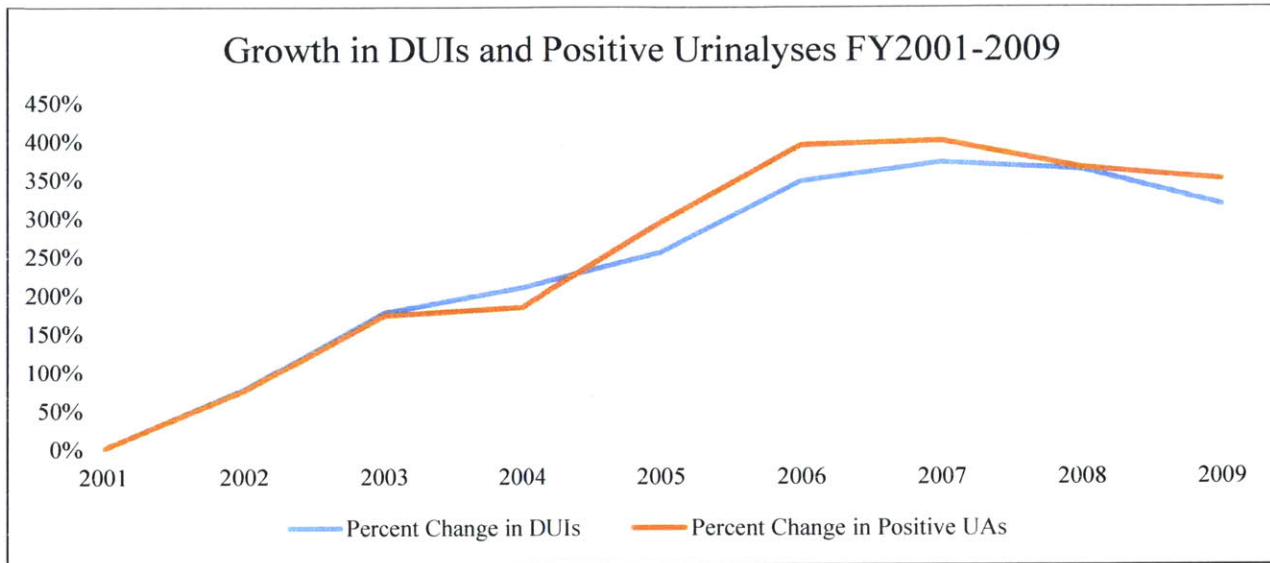
This period also saw some an increase in the number of referrals and the referral rate for

substance abuse as indicated by positive urinalyses and DUIs. The governing regulation clearly

states that *all Soldiers identified or suspected of substance abuse must be referred by their*

Commanders to the ASAP clinic. (HQDA, 2012, p. 16) Figure 14 (below) shows the relatively

flat referral rates from FY 2001-2009.

ASAP Referral Rates FY2001-2009

Figure 15 shows the dramatic change in the number of ASAP referrals that resulted from the even more dramatic change in detected substance use. Although not a subject of this paper or incorporated into this model, this drastic change in demand for clinical services may be important when understanding the role of increased patient loads on providers and a possible resulting decline in quality of care (as the same number of providers seek to provide care to a vastly increased number of Soldiers).

Figure 15: Growth in ASAP Referrals FY 2001-2009. Adapted from the "Red Book" (HQDA, 2010, p. E7)

Change in ASAP Referrals FY 2001-2009
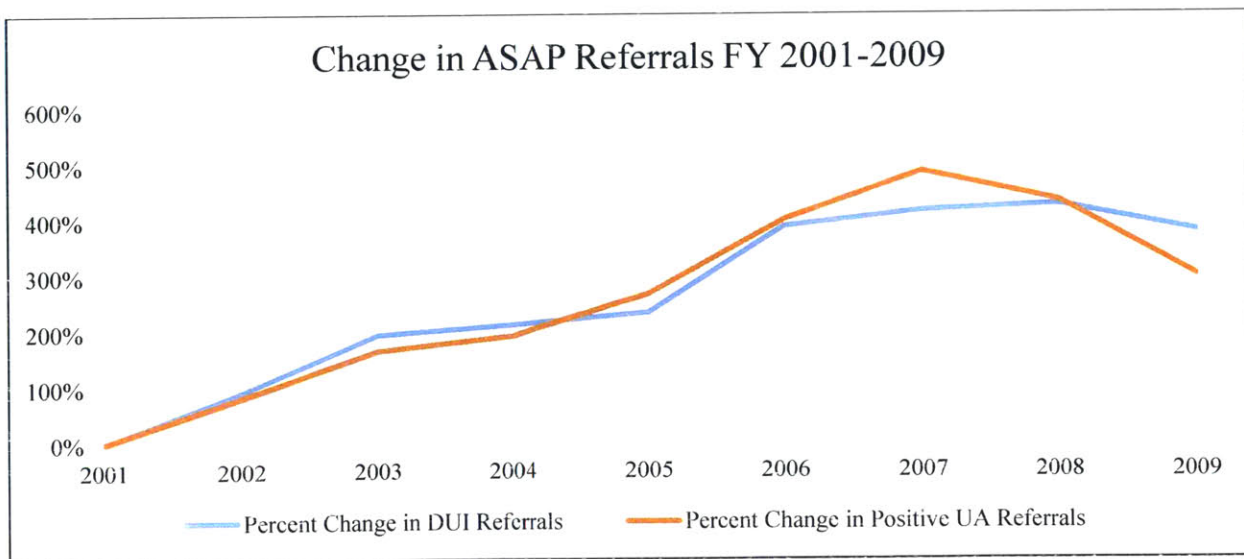
However, this possible decrease in the quality of care is not necessarily reflected necessarily in the US Army reports. In 2010 report, the US Army reported an average of 2,208 rehabilitation failures each year from FY 2001 to 2009 (HQDA, 2010, p. 66). In the nine years captured by the report, there were around 19,872 rehabilitation failures in the US Army alone that resulted in just 2,490 separations for rehabilitation failure (HQDA, 2010, p. E5). This figure has dropped to 3857 unique soldiers from FY 2012 to FY 2014. As can be seen in Figure 16, the number of separations under Chapter 9 for drugs and alcohol actually declined from FY 2001 to 2006 before nearly doubling by FY 2011.

Figure 16 also presents a pattern of behavior for separations for misconduct (illegal drug use) under Chapter 14 of Army Regulation 635-200. Separations under Chapter 14 increased from around 1000 in FY 2001 to around 2600 in FY 2009. While this may seem to be adequate, it represents a modest 160% growth in separations compared to the 350% increase in positive urinalyses during the same period.

Figure 16: Separations for Drug and Alcohol Abuse FY 2001-2009 (Reprinted from HQDA, 2012, p. 33)
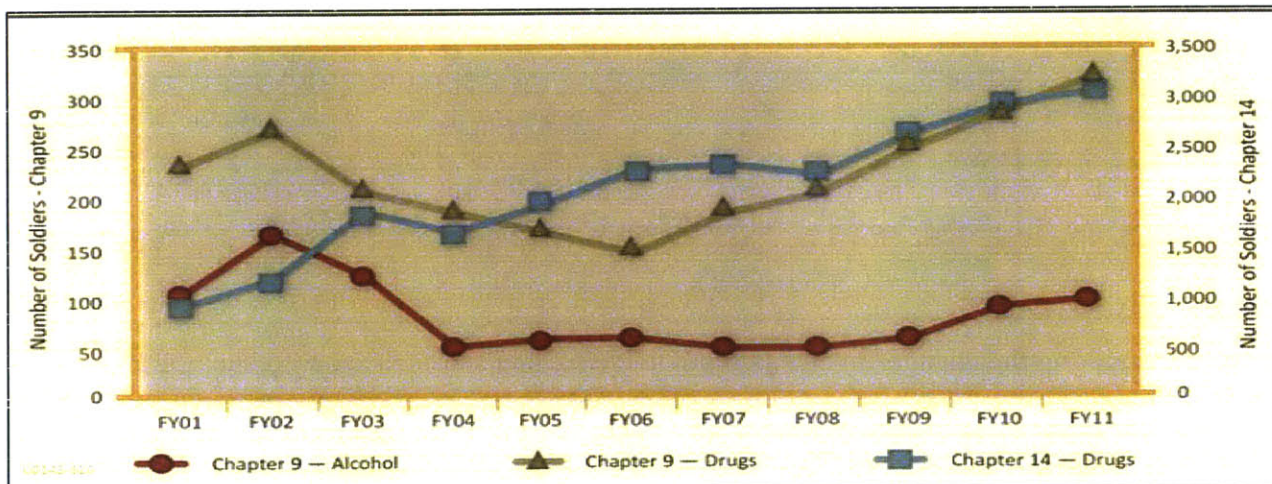
Figure 17 captures the effects of the modest growth of separations compared with acts of misconduct and substance abuse. In FY 2001, there were 8.6 DUIs and positive urinalyses for

every separation under Chapter 9. By FY 2006, that number had grown to 70 before declining to

41.8 in FY 2009. Similarly, there were 0.56 DUIs and positive urinalyses for every separation

under Chapter 14 in FY 2001, a number which grew to 2.4 by FY 2006 before dropping to 1.71

in FY 2009. This data provides two very interesting conclusions. First, the likelihood of

separation for drug or alcohol misconduct or rehabilitation failure decreased over time. Soldiers

who were detected were at significantly decreased odds of separation compared with data from

FY 2001. Secondly, Soldiers who were detected for drug or alcohol abuse were much more

likely to be separated under Chapter 14 than Chapter 9.

Figure 17: Total DUIS and Positive UAs per Type of Chapter FY 2001-2009. Adapted from the "Red Book"
(HQDA, 2010, pp. E5-E7)
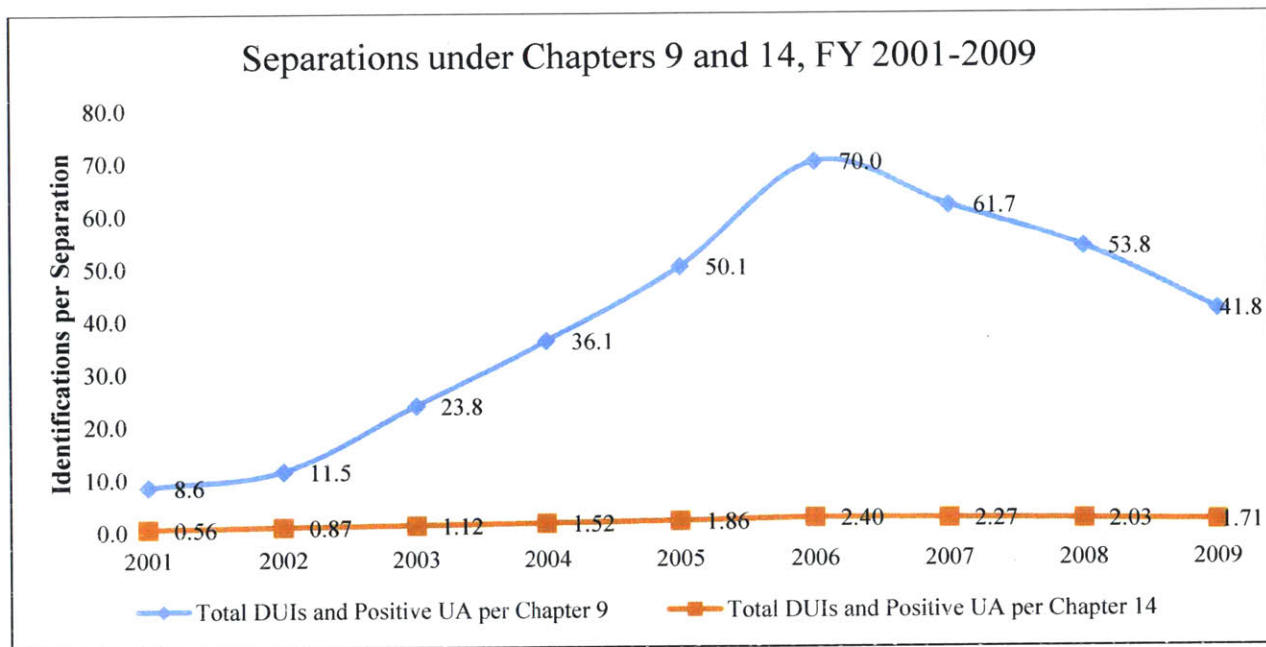
Finally, comparing the changes in end strength to changes in substance abuse behavior and

related command-driven actions (referrals and separations) in Figure 18 shows that the increase

in total Army end strength cannot alone account for the rise in drug and alcohol incidents (DUIs

and positive urinalyses). While the change in referrals to ASAP is shown to be relatively

consistent with the change in incidents, there was no large scale change in the number of

separations.
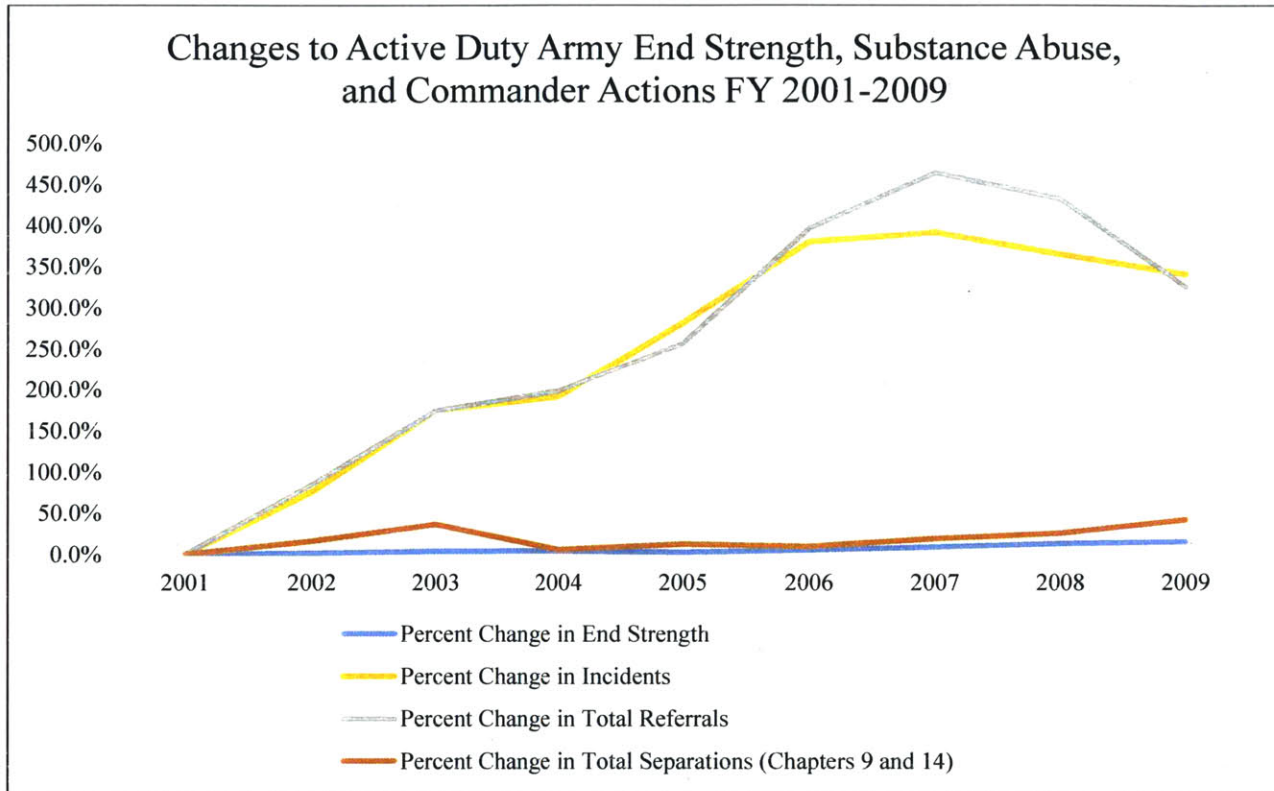
In the 2010 report, the authors asserted that there was a "lost art of leadership in garrison";

leaders were "consciously and admittedly assuming risk by not enforcing good order and

discipline" and were not utilizing health systems to the full extent. (HQDA, 2010, p. 4)

However, as can be seen in Figure 18 and Figure 19, commanders were referring to the health

system (as seen by referrals) at a rate at least consistent with their predecessors and in some

years at a higher rate. Clearly though, leaders did assume risk by not separating Soldiers they

detected for drug or alcohol abuse. This large increase in the number of separation actions that

were required to be processed may have imposed a significant burden on the Army's legal system, similar to that which the ASAP clinic's underwent due to the large number of referrals.

The cause of this disparate behavior is a fundamental question that the Army needs to answer in order to assess whether the Army Substance Abuse Program's architecture is sufficient to meet the program's stated intent under circumstances which the Army may again find itself. The conclusion by the US Army team was that skills needed to effectively lead "in the garrison environment" had eroded. (HQDA, 2010, p. 36) As stated in Chapter 1, this outcome may be the result of trade-offs that commanders felt obliged to make within the context.

Examining the number of service members deployed in each fiscal year in Figure 19 gives an idea of the level of pressure on unit readiness. Although this captures the other services contributions (e.g., the US Navy and US Air Force, the US Army contributed far more troops than any other service. In FY 2008, the US Army contributed 47% of the 187,900 service members deployed (Belasco, 2009, p. 41). In the same year, 26% of the active duty Army was deployed, accounting for nearly 136,000 Soldiers. Practically speaking, for the Army to maintain the number of Soldiers deployed each year requires one Soldier training for every Soldier deployed. Years in which there were increases to the number of soldiers deployed required more than one Soldier training for every Soldier deployed in the year prior. Soldiers that are enrolled into the ASAP (and the leaders that escort them) have less opportunities to participate in unit activities outside of field training exercises prior to deployment, and thus create even more pressure.

Average Number of Service Members Deployed Each Month
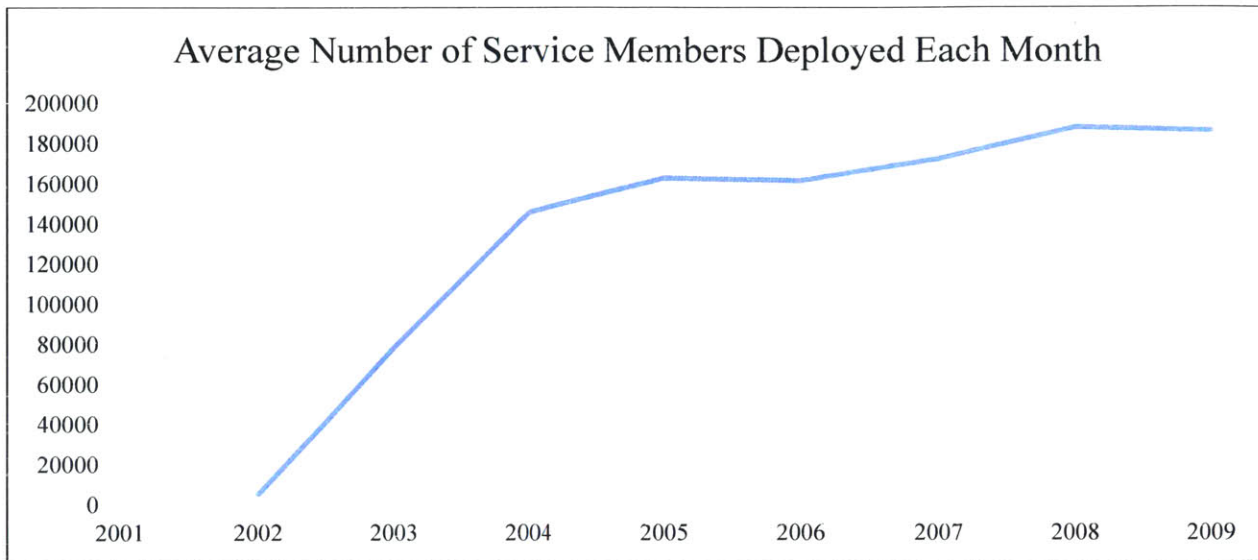
This increase in pressure for manpower can be measured in other ways. A 2008 RAND study found that enlistment bonus expenditures increased more than 200% between FY 2001 and 2008 (Asch, et al., 2010, p. 29) while the amount of the reenlistment bonus expenditures increased from $110 million in FY 2001 to $686 million in FY 2008 (Asch, et al., 2010, p. 48). The number of reenlistments in the same period increased by only 13.7%. In terms of supply and demand, the number of Soldiers who were willing to reenlist with bonuses for a given price declined at the same time that the US Army needed them most and thus the US Army was willing to pay nearly 280% more in bonuses per reenlistment.

As General Chiarelli stated that the US Army "cannot simply deal with health or discipline in isolation" and that the two required "interdisciplinary solutions" in the Army's 2012 report, one can also assume that the US Army cannot deal with health and discipline in isolation from the mission.

Causal Loop Diagram for Substance Abuse in the US Army

Depicting the structure of the Army Substance Abuse Program and associated parameters surrounding the system in a causal loop diagram (CLD), particularly those that impact unit readiness and discipline, is useful for "communicating the important feedbacks" (Sterman, 2000) that are responsible for the behavior of the command teams and ASAP. The full CLD is given below in Figure 20. This model closely follows the structure of the Army Substance Abuse Programs, its stated goals, and other relevant variables that may impact substance abuse in the Army.

Figure 20: Causal Loop Diagram for Substance Abuse in the US Army

The CLD is composed of several feedback loops[31], identified by clockwise or counterclockwise arrows. This diagram is meant to depict behavior within garrison environments and may not apply to deployed environments. I will now explain the justification for each loop, starting with the balancing loops.

B1 Treatment: In this diagram, the number of identified soldiers is the number of soldiers who have an identified active substance abuse problem. As the number of identified soldiers increases, this causes an increase to the number of soldiers referred. This increases the number of soldiers in treatment. Over time, this this increases the amount of soldiers who have been successfully treated and thus decreases the number of identified Soldiers. This loop follows the logic of the Army Substance Abuse Program.

In general, the pattern expected is that as identifications rise, there is an associated but delayed rise in screenings and enrollments. This delay comes from the average time of retrieving the record, notifying the commander, and referring the soldier, in addition to any time between the referral and the screening.

This expectation was verified through the Army's Drug and Alcohol Management Information System for the cohort of soldiers from FY12 through FY14. Figure 21 gives the raw data for positives, screenings, enrollments, and releases from the program. As anticipated, changes in the number of positive samples (blue line) resulted in changes in screenings (orange line) at the ASAP clinic, of which a certain portion were enrolled (gray line) into ASAP care. Following

---

[31] Note: A variable is written in text and has one or more arrows connecting the variable to others. The direction and negative or positive polarity of the arrow indicates the causal direction and relationship. A positive arrow from X to Y indicates that a change in X will cause a change in Y in the same direction. A negative arrow from X to Y indicates that a change in X will cause a change in Y in the opposite direction.

after some delay, there is an associated change in the number released from ASAP care (yellow line).

Figure 21: Positives, Screenings, Enrollments, and Releases FY12-FY14
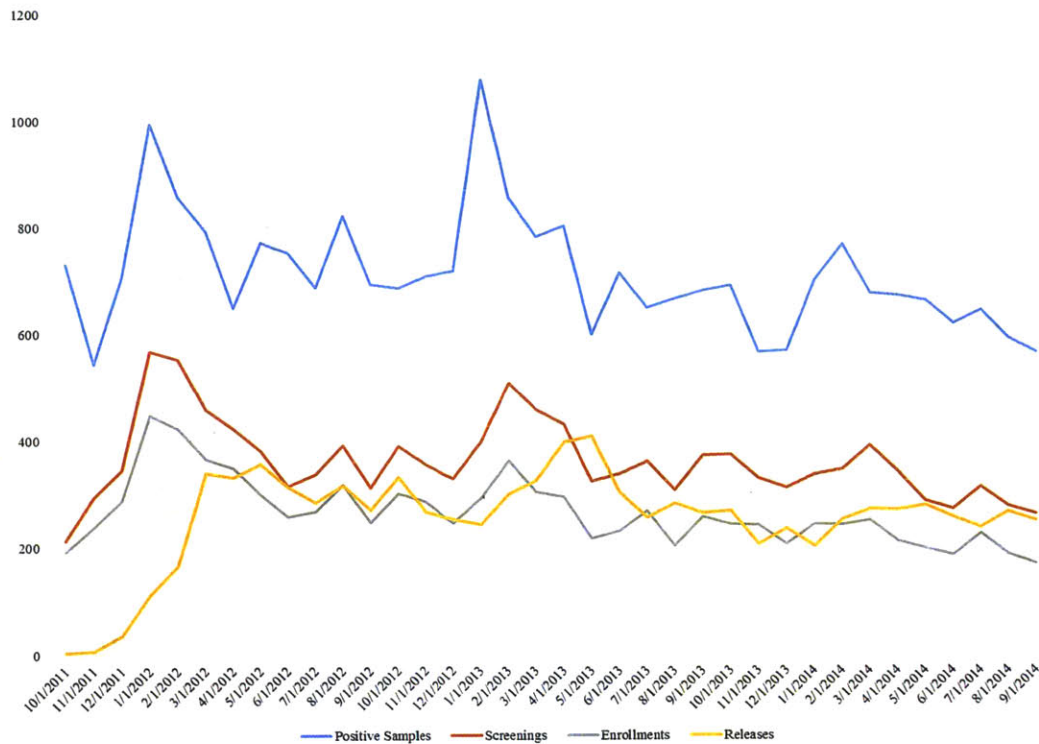
B2 Failed Treatment: As in B1, the number of identified soldiers increases the number of soldiers in treatment. This also increases the number of soldiers who have failed rehabilitation. This increases the number of separations through Chapter 9, thus decreasing the number of identified soldiers. This loop is also informed by the structure of the Army Substance Abuse Program espoused in AR 600-85.

Using the DAMIS data set for the FY12-14 cohort, this pattern is shown in Figure 22. Changes in enrollments lead to changes in the number of positive samples in the program, leading to a change in the number of soldiers separated for rehabilitation failure.[32]

Figure 22: Enrollments, Positive Drug Tests while Enrolled, and Rehabilitation Failure Separations
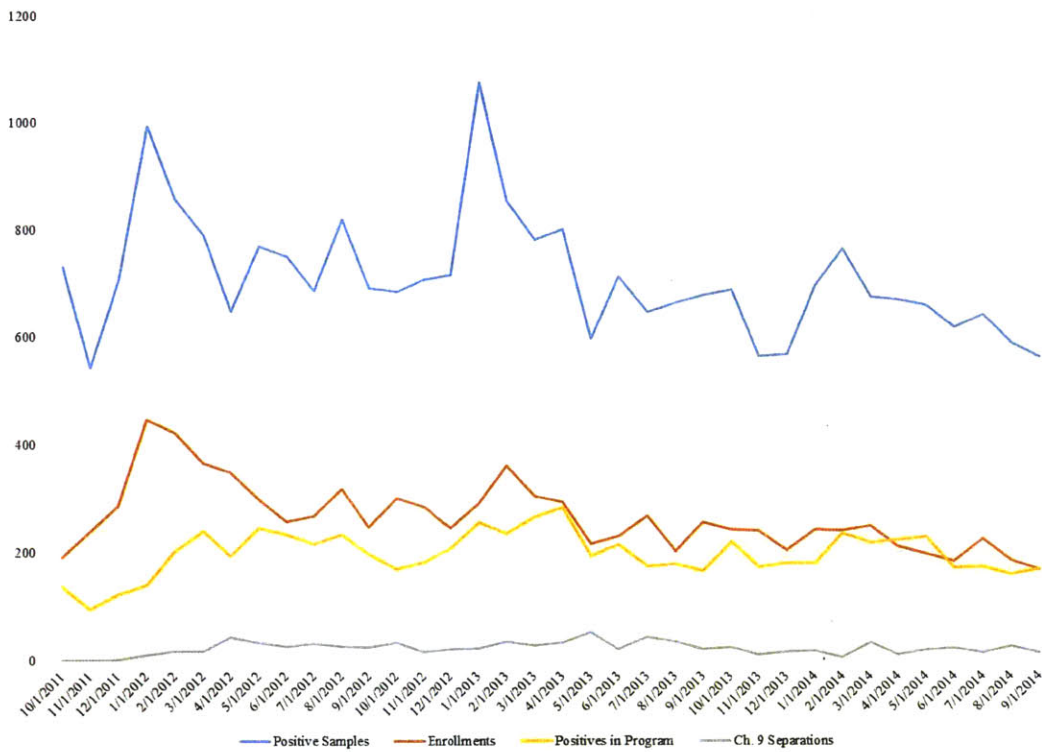
B3 Misconduct: An increase to the number of identified soldiers causes an increase in the number of separations initiated under Chapter 14. This increases the number of separations, thus reducing the number of identified soldiers. This loop is also informed by the structure of the Army Substance Abuse Program espoused in AR 600-85.

---

[32] The two most common "chapters" applicable to the Army Substance Abuse Program are the Chapter 9 (Rehabilitation Failure) and Chapter 14 (Misconduct). The term "chapters" derives from the location with Army Regulation 635-200 Active Duty Enlisted Administrative Separations. A separate regulation covers separations (called "dismissals") for officers.

Unfortunately, for this thesis data complete legal records were not available. However, a useful comparison of the number of enrollments and the number of releases with a release basis code for a separation for drug or other misconduct is presented in Figure 23. As can be anticipated, changes in the number of enrollments are followed by changes in the number of misconduct separations.

Figure 23: Enrollments and Misconduct Separations
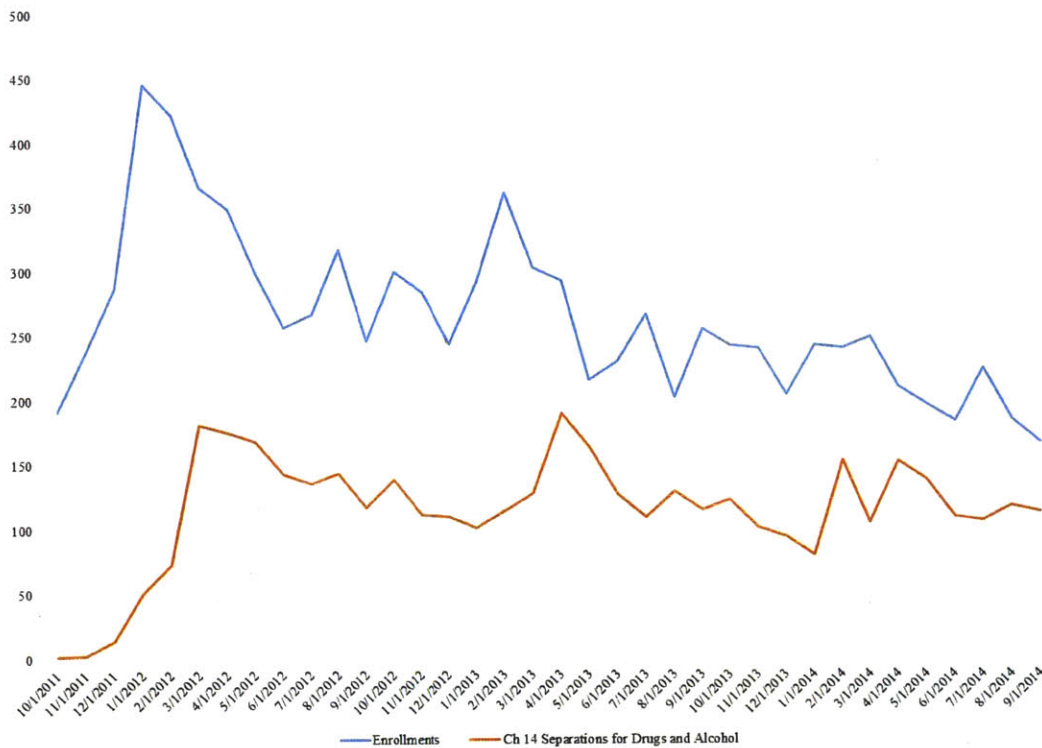
B4 Manpower Pressure: An increase in the number of separations decreases the number of assigned soldiers. This causes the manpower gap (difference between requirement/authorization for soldiers and number of soldiers assigned) to increase, causing an increase to the manpower pressure felt by commanders. This causes the number of separations to decrease from what it would otherwise be. This loop is informed somewhat by the personal experience of the author

but has backing in the literature. Civilian supervisors' efforts to control alcohol at a manufacturing facility were minimized by production priorities (Ames & Delaney, 1992).

B5 Maintaining Discipline: An increase in the number of separations causes the "separation gap"[33] to decrease, causing an increase in the negative perceptions of substance use. Increased negative perceptions of substance use may cause soldiers to abuse substances less (Grube, et al., 1994)[34], causing a decrease in unidentified substance abusers. The decrease in unidentified substance abusers causes a decrease in the number of soldiers identified through the drug testing program (DTP), thereby causing a decrease in the number of identified soldiers. This decreases the number of Chapter 14 separation initiations, thereby causing a decrease in the number of separations.

While the association between enrollments and separations has been demonstrated above, there remains the issue of whether increased separations cause a decrease in the detected behavior. The evidence supporting this connection is not conclusive. Data captured at nine major installations in the continental United States (CONUS) was used to determine the correlation between the misconduct separation rate (the number of releases that were coded for misconduct separations divided by the number of releases) and the positive sample rate (the number of positive samples divided by the number of samples collected for each installation). The correlation between the probability of enrollment and separation for a first time offense and the number of positives per sample collected was negative ($R = -0.28$)[35] but not statistically

---

[33] Separation gap is defined in the model as the difference between the number of soldiers identified for substance use and the number of separations for substance abuse.

[34] Grube et al (1994) found that negative expectancies of workplace drinking such as disciplinary action were much more strongly related to problematic drinking than positive expectancies.

[35] R-values throughout are from the Pearson product-moment correlation coefficient unless otherwise noted.

significant for the nine installations sampled. The data for the nine installations is given below in Table 3.

Table 3: Positive Sample Rates and Misconduct Separation Rates, FY12-14

Installation	Positive Sample Rate	Ch 14 (DA) Rate
A	0.12%	54.10%
B	0.29%	61.64%
C	0.26%	42.35%
D	0.31%	47.85%
E	0.33%	44.40%
F	0.45%	41.79%
G	0.26%	35.00%
H	0.28%	36.43%
I	0.31%	33.92%

Trend analysis at the Army level for these same variables in Figure 24 below indicates a negative relationship between the likelihood of separation for misconduct after enrollment and the number of positives per sample.[36]

---

[36] This relationship is moderately negative correlated (Spearman Rho = -0.4365, $p < 0.05$).

Figure 24: Probability of Misconduct Separation after Enrollment and Positive Samples per Sample Collected (Six Month Moving Average)
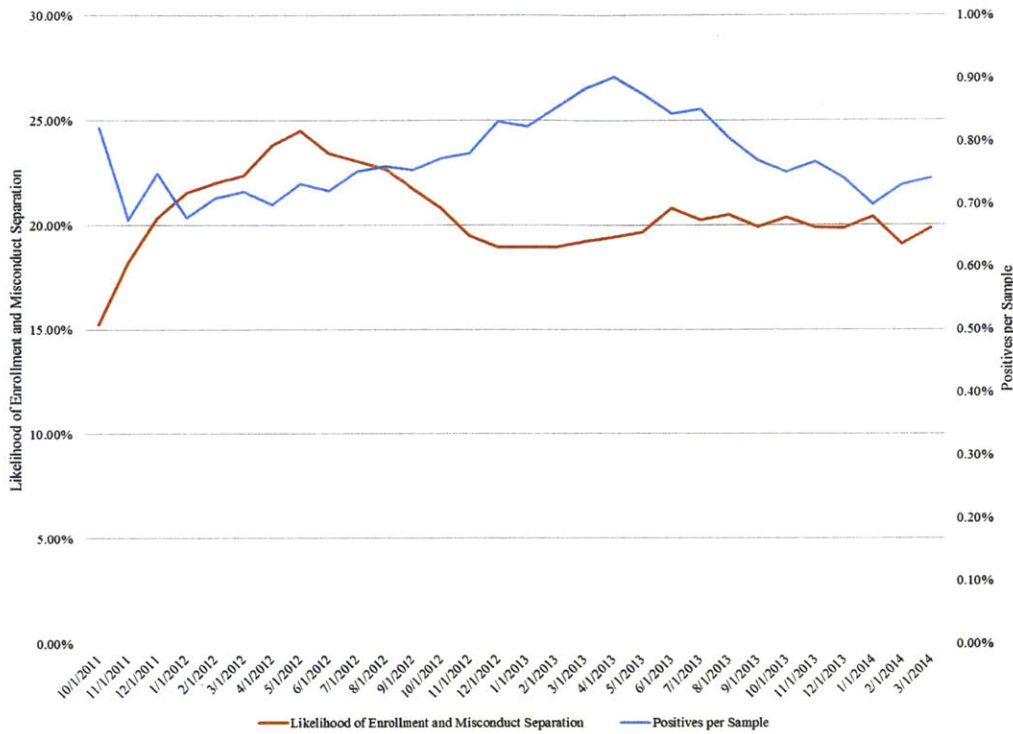
Finally, a similar time-based analysis was performed at the installation level (for more details, see Appendix 3) for 23 installations and two US Armies (US Eighth Army in Korea and US Seventh Army in Europe). Twelve of the installations/communities had statistically significant correlations ($p < 0.05$) between the 6-month trends[37] of the misconduct separation rate and the positive sample rate, of which six were negative (not surprising) and six were positive (very surprising). The overall effect that separations have on the underlying behavior seems to be mixed and highly "sticky" to the local environment. The correlation coefficients are given below in Table 4.

---

[37] A six-month average was used here instead of raw data. At the installation level, noise significantly complicates time-based analysis.

Table 4: Spearman Correlation of Misconduct Separation Rate and Positive Sample Rate

Installation	A	B	F	H	I	L*	Q	R	S	T	U	Y
Misconduct Separation Rate and Positive Sample Rate	0.423	0.470	0.676	-0.866	0.640	0.826	-0.392	-0.477	-0.648	-0.381	0.443	-0.439
n	29	29	29	28	29	26	31	31	31	31	26	26

Legend	$p < 0.05$	*Outside Continental United States
	$p < 0.005$	**Korea or Europe
	$p < 0.001$	

Reinforcing Loops

R1 and R2 Runaway Misconduct: An increase in the number of identified soldiers causes the separation gap to increase all else being equal, thereby lowering the negative expectations of substance abuse. This causes an increase in the amount of substance abuse and the number of unidentified substance abusers. This increase in the number of unidentified substance abusers causes an increase to the number of identified soldiers that are detected either through the drug testing program (Loop R1) or through other acts of associated misconduct, such as those identified through command or leadership enforcement channels (Loop R2). The number of identifications continues to grow, all else being equal, unless halted by balancing forces.

This analysis is limited by the exclusion of Soldiers who were not enrolled in the program and the dynamics of leader behaviors that may lead to non-referrals or non-enrollments. There may be different separation outcomes between those enrolled and those that are not as the likelihood of screening (referral) and enrollment may be influence in part by the soldier's command's dynamic emphasis on health and/or discipline. In short, commanders who view positive drug tests as more of a discipline problem may not refer as frequently as commanders who equally view positive drug tests as a health problem. An analysis using the Army's legal records and the DAMIS data could possibly verify the relationship between separations and positive drug tests per sample.

Explaining the Dynamics of Substance Abuse Behavior 2001-2008

The increase in warzone requirements during this period caused an increase to the readiness pressure felt by command teams at home station. This caused an increase to the manpower pressure and training pressure. The increase in training pressure resulted in a higher home station operations tempo (OPTEMPO). This increase in OPTEMPO had three effects: to decrease the availability of Soldiers for testing, thereby lowering the testing rate; to decrease the time available for leaders to address sub-threshold conditions[38] as leaders prioritized combat readiness over institutional readiness; and to increase sub-threshold conditions directly. The decrease in the time available for leaders to address sub-threshold conditions caused a decrease in the focus on sub-threshold conditions, thereby causing the level of sub-threshold conditions to be higher than it would otherwise be.[39] This increase in sub-threshold conditions caused an increase in the substance abuse risk, thereby increasing substance abuse and in turn the number of unidentified substance abusers.

Warzone requirements were also a direct source of increased risk of substance abuse. Deployments in general have been linked to increased substance use (Bray, et al., 2010) while length and recentness of deployments have been shown to be problematic as well (Federman, et al., 2000). A 2008 study found that combat exposure was linked to increased alcohol use (Jacobson, et al., 2008) while some studies have established links between specific combat experiences and alcohol misuse (Wilk, et al., 2010; Hooper, et al., 2008).

---

[38] A 2005 study found that operations tempo was a significant predictor of work-family conflict (Adams, et al., 2005). Further research in 2008 found that work overload was associated with increased alcohol and illegal drug use at certain times related to work but not in general (Frone, 2008).

[39] Research has found that sub-threshold conditions such as family and relationship issues and health concerns were strongly associated with increased alcohol misuse but that leadership had a mitigating effect (Fink, et al., 2013).

Under normal conditions, wartime pressure on the US Army should not have encouraged such a large growth in substance abuse because of the mitigating effects of treatment and separation. As it was, the increase in the number of Soldiers required for warzone missions may have decreased the likelihood of a substance abuse offense resulting in a separation by strengthening the manpower pressure balancing loop as the Army had to train more than one soldier for combat for every soldier deployed. This may have caused a decrease in negative expectations through the runaway misconduct loop and further exacerbated the substance abuse problems.

In 2006, the US Army revised AR 600-85, which had previous revisions in 1986 and 2001. One of the major changes was to clarify the requirement for mandatory initiation of separation for substance abuse[40] (HQDA, 2006). This caused the number of separations to increase in the years after 2006, which resulted in an increase in the negative expectancies of substance abuse through the maintaining discipline loop, which resulted in the number of drug and alcohol abuser identifications decreasing after 2007.[41]

After the surge in Iraq ended in 2007, warzone requirements experienced a steady decrease, with all US combat troops departing Iraq at the end of 2011. This may have caused a decrease in manpower pressure, as the US Army continued to grow through 2012 (Office of Army Demographics, 2014). This drop in manpower pressure may have contributed to the increase in the number of separations for drug and alcohol abuse, especially for rehabilitation failures.

---

[40] The Army had previously given more leeway to commanders to determine whether or not to pursue separation in the 1986 and 2001 versions of AR 600-85. The 2006 revision of AR 600-85 was the first time that the initiation of separation was clearly mandatory.
[41] Referrals for substance abuse may have declined slightly after 2007 due to the expectation of separation in instances where dependence was not suspected.

Analysis of Exogenous Variables

While the pressure from the mission cannot be measured in this thesis, two analyses were conducted regarding the training rate and the testing rate. The training rate was used as a proxy for a unit's ability to address sub-threshold concerns. Thus, a measure of any impact that ASAP prevention training has on the level of identified drug behavior can be made directly. An increase in the level of prevention training should result in a decrease in the level of identified drug behaviors.

Using data provided by the Army, I compared the positives sample rate with the percentage of population trained (soldiers trained divided by the post population) and the hours of training per soldier. For the same nine installations tested above, there was no statistically significant correlation between the number of positives per sample and the level of training measured by either the training rate (average percentage of soldiers trained; $R = -0.58$, $p = 0.09$) or training density (average annual number of soldier-hours per soldier, $R = -0.57$, $p = 0.10$). The data for the nine installations is given below in Table 5.

Table 5: Positive Sample Rates, Training Rates, and Training Densities FY12-FY14

Installation	Positive Sample Rate	Training Rate	Training Density
A	0.12%	2.11	3.17
B	0.29%	1.01	0.95
C	0.26%	1.51	3.75
D	0.31%	1.74	1.94
E	0.33%	0.50	0.61
F	0.45%	0.87	0.89
G	0.26%	0.61	0.81
H	0.28%	1.08	0.99
I	0.31%	1.32	1.72

A separate time-based analysis for the 25 locations found that the six-month trends for the

training rate and positive sample rate were positive and statistically significant for 10

installations and were negative and significant for 5 installations. Correlation coefficients are

given in Table 6.

Table 6: Spearman Correlation Coefficients for Training Rates and Positive Sample Rates

Installation	B	C	D	E	F	I	M*	N*	P	S	T	V	W	X	Y
Training Rate and Positive Sample Rate	0.462	-0.756	0.754	0.675	-0.389	0.596	-0.443	0.435	0.403	0.359	-0.781	0.418	0.357	0.727	-0.749
n	29	29	29	28	29	29	24	25	25	31	31	31	31	14	26

Legend		
	$p < 0.05$	*Outside Continental United States
	$p < 0.005$	**Korea or Europe
	$p < 0.001$	

This analysis is complicated by the circumstances under which ASAP awareness training is

conducted. Army Regulation 350-1 specifies annual and reintegration (upon return from

deployments). For ASAP training that is reintegration related, it may stand to reason that an

increase in training would be correlated with an increase in substance abuse in the same manner

that deployments are correlated with increased substance abuse. (Federman, et al., 2000;

Hooper, et al., 2008; Jacobson, et al, 2008) Further analysis would be required to determine the

effect of other variables of training, including timing, topic and quality, on the prevalence of

drug abuse.[42]

The second analysis was conducted to determine if the sampling rate impacted the positive

sample rate. An increase in the sampling rate should result in a decrease in the identified drug

---

[42] The recording of training is also subject to the conditions reported under the architecture. The installation prevention coordinator is responsible for compiling the information for training conducted by units which is possibly recorded under a different information system, the Digital Training Management System (DTMS).

behavior because of an increased perceived threat of detection. Here, the data from the selected nine installations is somewhat clearer than that for training.

Comparing the average annual sampling rate and positive rate shows that, if installations had similar deployment histories over the past three years, the negative relationship between the sampling rate and positive sample rate may be true in general. The correlation between the average annual sampling rate and the positive sample rate is negative and significant ($R = -0.82$, $p < 0.05$).

Figure 25: Average Annual Sampling Rate and Positive Sample Rate
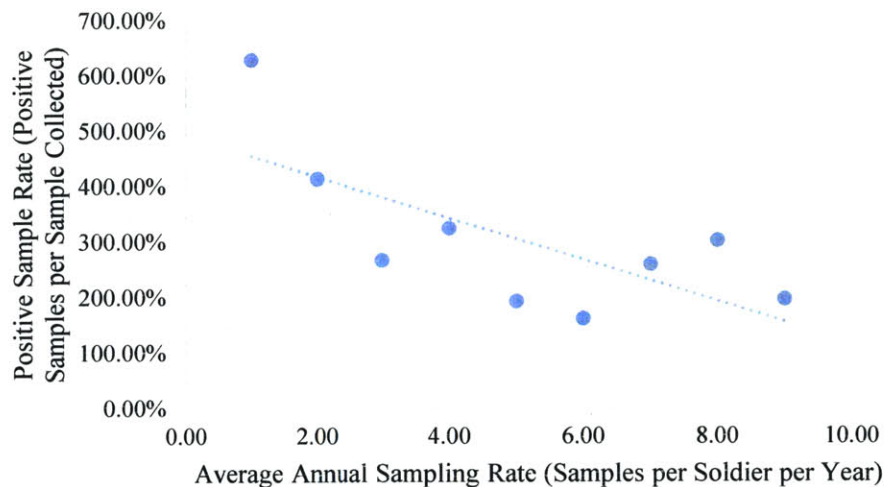
Figure 32 shows the general relationship between the monthly sampling rate and the positive sample rate by installation (see legend); installations that test at higher rates generally have consistently lower positives per sample that installations that test at lower rates. However, this relationship has an apparent lower bound around 0.25%. This may represent the lowest expectation of the positive rate that the drug testing program can achieve.

Figure 26: Monthly Sampling Rate and Positive Sample Rate
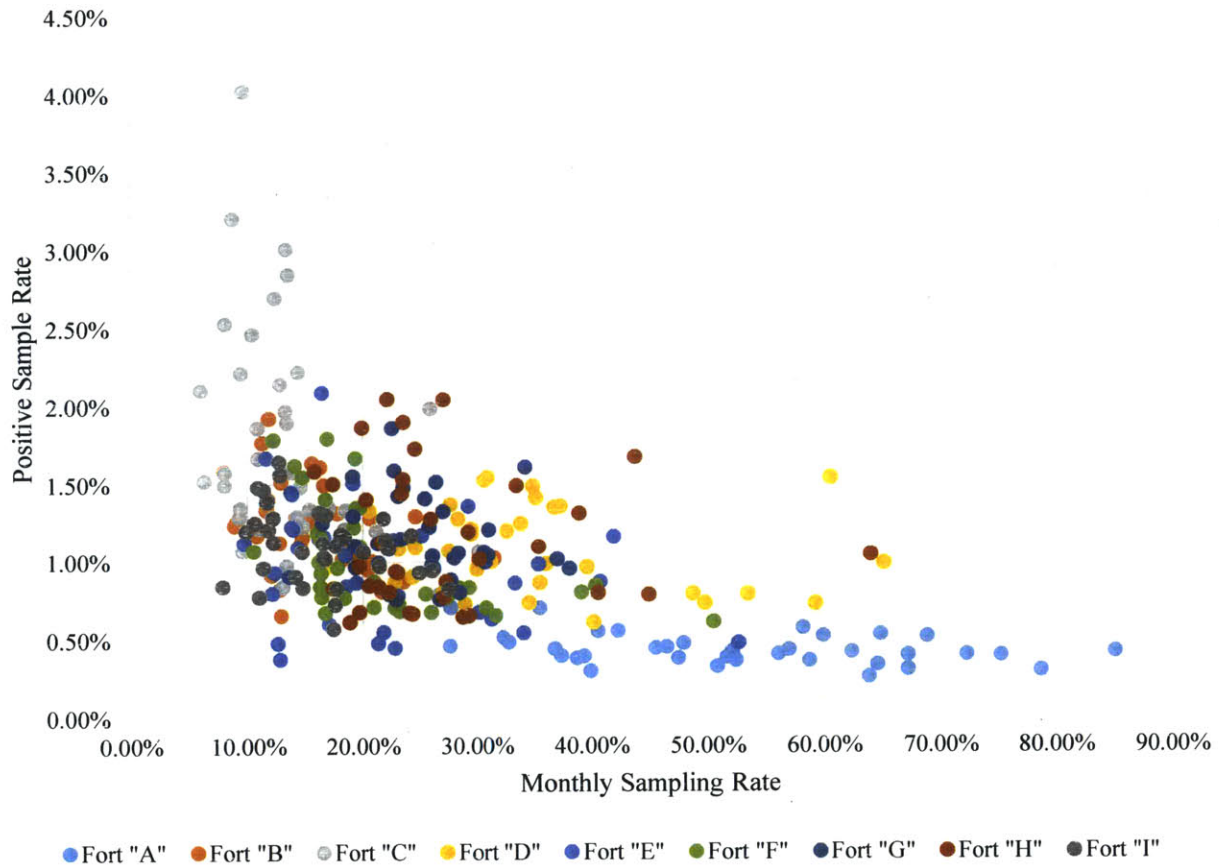
A time-based analysis was also conducted for each installation, again using six-month moving averages. Five of the 25 locations demonstrated the expected behavior with statistical significance; as the sampling rate increases, the positive sample rate decreases. Here though, none of the nine installations (A through I) and only two of the other communities had statistically significant positive correlations between the sample rate and positive sample rate. The Spearman correlation coefficients are given in Table 7, below.

Table 7: Spearman Correlation Coefficients for Sample Rates and Positive Sample Rates, FY12-14

Installation	A	B	E	F	J**	L*	T
Sampling Rate and Positive Sample Rate	-0.564	-0.881	-0.671	-0.842	0.449	-0.709	0.395
n	29	29	28	29	28	26	31

Legend		
$p < 0.05$	*Outside Continental United States	
$p < 0.005$	**Korea or Europe	
$p < 0.001$		

This analysis is limited however due to the lack of any information in this thesis regarding deployment that could impact the time-based analysis. Deployments obviously correspond to a smaller number of Soldiers currently residing at the base at any given time; because testing in the deployment area is conducted under a different "base area code" any testing conducted there is not reflected in the installation's statistics. Additionally, those deployments may be associated with higher levels of substance abuse. Thus, one could have a condition of higher than average deployment rates at an installation that leads both to a lower testing rate and a higher positives per sample that may also explain the behavior above.

Finally, neither the random sampling rate nor the unit sweep rate seemed to have any statistically significant impact on the positive sample rate. As stated before, the number of urinalysis samples collected for unit sweeps is required to be less than 75% of the number of samples collected for random inspections. Four of the nine installations studied exceeded this bound while five fell below this threshold. The ratios for each of the nine installations is given below in Table 8.

Table 8: Unit Sweep / Random Inspection Ratios, FY12-14

Installation	Unit Sweep/Random Inspection Ratio
A	119.6%
B	67.8%
C	93.1%
D	250.2%

E	72.2%
F	188.6%
G	37.5%
H	13.3%
I	24.1%

Testing above the threshold does not seem to give an advantage or disadvantage to those installations, nor does it necessarily have any impact on the sampling rate. Installations are able to test at high levels without having to utilize unit sweeps. With the apparent minimum positive sample rate at 0.25%, it may make more regulatory sense to leave the sampling method up to the units as long as the sampling rate does not exceed a certain threshold, after which it does not necessarily add any value.

Conclusion

Overall, there is evidence that supports the causal loop diagram, particularly in the areas that are supported by data from DAMIS. Events in the program (e.g., screenings and releases) tend to ebb and flow with the same periodicity as identifications through the drug testing program. A large percentage of those screened are enrolled, and of those enrolled a significant percentage are separated for misconduct or rehabilitation failure. However, a significant portion of those who are identified through testing are never screened, and so outcomes cannot be assessed.

However, effect loops of the causal loop diagram presented in this chapter have mixed results for the period before the identification of drug abuse. The quantity of ASAP awareness training, as a proxy for the mitigation of sub-threshold conditions, has no apparent impact on the positive rate; units that train more soldiers for more hours each year have similar positive sample rates as those that train less. A time-based analysis showed that for most installations that had a correlation between the training rate and the positive sample rate had positive correlations.

72

Unlike sampling in which quality can be expected to be uniform, the quality of training is probably highly variable and so the assessment of effectiveness would also have to include more qualitative analysis.

Like training, the effect of separations on the positive sample rate are mixed. The separation rate appears to not have any statistically significant effect on the positive rate using locations as the independent variable. The time-based analysis yielded mixed results; half of installations had a positive correlation while the other half had a negative correlation. While this does not disprove the negative effect expected, it does suggest that more research is needed to clarify the relationship, including expanding the data analysis to cover separations not captured by DAMIS.

High sampling rates though are strongly correlated with lower positive sample rates; installations that sample at lower rates may benefit in the long term by increased sampling. At installations with low sampling rates, sampling could be increased until the positive sample rate settles to a new local norm.

Finally, there were two unexpected correlations. The annual sampling rate was positively correlated with the misconduct separation rate (R = 0.67, p < 0.05) and the annual training rate (R = 0.68, p < 0.05). The underlying causal factors to explain this relationship could be related to the mission and/or, more simply, local command policy emphasis. A further time-based analysis was conducted to gage this effect at the installation level for the nine CONUS installations. Five installations had a moderately negative correlation between the sampling rate and the misconduct separation rate, while two had positive correlations. Similarly, three installations had a positive correlation between the sampling rate and the training rate, while for three this correlation was negative (see Table 9, below). While the command emphasis may influence these three variables simultaneously in general, the time-based analysis shows mixed

results. In any case, the relationship of this variables at locations is certainly not predictable from one location to the next based on time, and the only plausible explanation is the level and discretion of command emphasis. Considering the mental model developed in the causal loop diagram at the beginning of this chapter, expansion into a working stock and flow model would have to account not only for the effect that the mission has on the program but also for the effect of command emphasis on particular facets of the program and the effect of mission pressure on command emphasis.

The data analysis of this chapter has two assumptions. The first is that the population demographics of installations have not changed significantly. While this is easily verifiable through the Army's published demographic profiles, this was not verifiable for installations for this thesis. The second main assumption is that installation's surrounding environments are comparable, when in fact they may not be. Law enforcement records and demographics of installations' surrounding communities could be used to some extent to explain soldier patterns of behavior.

Further inquiry into the deterrent effect of separations should also be conducted. Some 15,719 unique Soldiers tested positive through drug testing from October 1, 2011 to September 30, 2014, of whom 5235 were enrolled into the program prior to separation for misconduct. The misconduct separation rate is not statistically correlated with the baseline level of behavior measured by the positive sample rate. A limitation with this analysis is the level of abstraction; while the installation provides a convenient way to compare outcomes across the Army, future work should use the Brigade as the level of analysis. However, the data set as is does not support analysis at those levels, as the corresponding fields in the data, the base area code and the unit identification code, only support aggregation by installation, battalion, and company, leaving out

the intermediate levels of command. This is problematic for the analysis as many decisions that affect soldier outcomes occur at the brigade and division levels and, especially within Brigade Combat Teams, those levels of command account for the timing of the Army Force Generation cycles in regards to deployments.

Additional analysis is also required to validate the deterrent effect of the testing rate on the illegal drug use. Although the indication is that higher testing rates is associated with lower positives per sample, additional analysis should include dynamic populations of the installations to account for the effects of deployments on both the sampling rate and the positive rate or simply use the Brigade as the unit of analysis.

Chapter 4: Conclusions and Recommendations

Conclusions

The Army Substance Abuse Program is probably not a "program in distress" as asserted by

Zoroya but rather a program in which the supporting architecture allows for a wider range of

behaviors that may be necessary or advisable. The analysis of the organizational architecture in

Chapter 2 demonstrated that the relative complexity of the program increased during the time

period under examination as a result of increased functionality and the degradation and

elimination of the requirements for specific staff positions in Brigades, Divisions, and Corps.

The process architecture analysis that followed showed that while the processes (not including

training) are non-iterative as a whole (i.e., they are mostly sequential), the process chain is very

centralized and iterative for stakeholders. Supervision of the process is further inhibited by lack

of direct access to information systems which are not integrated. Access to the Armed Forces

Health Longitudinal Technology Application (AHLTA) by ASAP's clinical providers is spotty

based on field research, with part of the reasons being given funding discrepancies between

IMCOM and MEDCOM. As a whole, stakeholders across the system may make decisions that

affect soldier outcomes without full information.

The nature in which information is recorded in the ASAP is also problematic. The transitions

from identification to referral to screening is required to be supervised by the installation ADCO

(HQDA, 2009, p. 10).[43] Examining the data set as a whole, one can only see urinalysis results,

screenings, progress reports but not the intermediary steps; a soldier may have never been

---

[43] Identifications by the local law enforcement activities are provided to ASAP at a local level only, and it is unknown how ASAP becomes aware of other identification methods like command/leader identification without referrals. I assume each ADCO ensures that soldiers identified by the former method receive referrals in the same method as drug testing identification.

76

screened because of lack of commander notification (the commander did not know the results), lack of commander referral despite knowledge, soldier non-availability (e.g., the soldier was separated prior to screening), referrals that did not generate screening appointments, and otherwise missed appointments. It is unknown if attempts are made locally to justify why screenings for some soldiers never happen.

The ADCO is also responsible for monitoring separation rates, which may be difficult as the ADCO presumably has no direct access to separation actions. DAMIS only records separation actions that lead to a release from the program; soldiers who are never screened and separated or separated after an otherwise successful release from the program may not be counted in their analysis. This data point also only records separations that were processed and resulted in an affirmative separation decision by the separation decision authority and not those soldiers whose separations were never processed (to include non-initiation) or those that the separation decision authority decided to retain (non-separation). Thus, the ADCO may be limited in enforcing or even accurately reporting compliance with AR 600-85's requirement to process separation packets, which is a major aspect of the program.

Similarly, commands may be limited in enforcing this requirement from the top-down by lack of access to DAMIS. Although the ADCO is required to notify the chain of command of the command that ordered the test (HQDA, 2009, p. 10), rectifying the positive tests to actual separation actions occurs across an "air gap." Although the requirement exists to process all separations for certain offenses outlined in AR 600-85, the separation initiation still occurs at the company level. This mostly closely resembles a "push" system, in which the company commander is responsible for the initial push of the packet to higher levels of command that may be more or less aware that a separation action is being conducted.

The result of the program's architectural dissonance is a wide range of behaviors across locations, time, and perhaps units. While positive sample results undoubtedly lead directly to screenings, enrollments, and program successes in the manner in which the program is built, the evidence supporting links between increased awareness training and increased separation rates (of those who were enrolled) to decreased positive sample rates is inconclusive. Likewise, there was no significant relationship between the program success rate and the positive sample rate; seemingly healthier individuals did not necessarily result in healthier units. The evidence for the link between testing and the detected prevalence is more conclusive, and sampling rates are correlated with separation rates and training rates. While this may be a result of different levels of command policy emphasis, this does not necessarily discount if command policy emphasis is dependent to some degree on mission priorities. Much more work will be required to confirm or deny these links made in the causal loop diagram.

Distressingly, there are still a large number of positive samples that never result in screenings. In the period from October 1, 2011, to September 30, 2014, there were 4,237 positive samples for which there was not a screening on file. This represents 3,371 soldiers that the US Army identified for drug abuse, sometimes more than once, that were never seen by a clinical provider in the ASAP. This rate of failure is unexplainable and potentially unjustifiable. In light of the view that positive drug tests are associated with a variety of other areas that the Army is deeply concerned about, this represents a touch point that is not utilized to the fullest extent to improve the health of the force or, at least, screen soldiers before they exit the Army.

Recommendations

Aside from the areas of further research mentioned in above, there are three main buckets of recommendations. The first, information completeness, details major requirements for filling in

78

the "holes" in the information as currently processed. The second details the need for increased

functionality at the levels above battalion as part of the normative architecture of the program.

The third recommendation addresses regulatory minutia that needs to be clarified.

Information Completeness. These gaps in the information systems were seemingly identified

by the Army in 2010 in the "Red Book", which recommended that the Army "design integrated

databases...to narrow gaps in the Army's reporting, investigation, referral, discipline and

separation policies." The report's writers lamented the difficulty of an Army-level team in

collecting and understanding the data from disparate systems. The consequence of this

incongruence at the local level is no less significant as the Army also recognized when the report

stated "it is no surprise that our leaders are not getting an accurate, timely, aggregate picture of

the consequences of Soldiers' risky behavior." (HQDA, 2010, pp. 42-43) While this is certainly

true to some extent today, these same information sources could be used to enforce compliance

to existing standards and show the consequences of those standards and leader behaviors on the

health and discipline of their organizations. To the extent possible, non-medical information

systems, in particular the Centralized Operations Policy Suite (COPS) and legal information

systems, should be provide appropriate feeds to DAMIS and vice versa to ensure compliance

with existing standards. As these information sharing requirements are universal and all

installations have the same problems with data integration, the Army should develop a means to

conduct this automatically, without requiring local, spreadsheet-based solutions.

Information systems for medical care should also be standardized. ASAP counseling clinical

records for active duty soldiers should be moved away from paper records and into AHLTA to

the maximum extent possible. This should ensure closer coordination with and supervision by

the clinical consultant.

Finally, DAMIS should be expanded to record the intermediate steps between drug test certification and screening as discussed above. The rate at which soldiers are never screened is an unacceptable risk to the Army and its soldiers and needs to be rectified or explained. By expanding the data capture to include the intermediate steps, installation ADCOs and commanders can identify the faults and resolve or justify discrepancies in real time and reduce risk for the Army.

Increased Functionality. As noted in the second chapter's analysis of the organizational architecture, much of the detailed functionality above the battalion level in the typical soldier's chain of command was degraded and then eliminated. Although this move undoubtedly made the structural architecture of the program less complex, the price was the ability of commands to supervise the execution of the program. The designated positions at brigade, division, and corps levels should be reestablished as a regulatory requirement and allowed access to DAMIS, with the expanded data capture and information system integration discussed above, so that units can track their own and their subordinate unit data accurately. This access should be limited to a list of UICs and by time, such that commanders or their representatives can only access relevant information relevant to their units.

Regulatory and Other Minutiae. The analysis of the ASAP has surfaced three regulatory details that should also be fixed. The first is general non-compliance with the threshold for the ratio of samples for random inspections and samples for unit sweeps. As mentioned in the third chapter, at least four major installations in the US have exceeded the established maximum, seemingly without consequence in terms of the positive sample rate. As this excess unit sweep testing does not seem to impact the total sampling rate or positive sample rate, this facet of the policy may be ineffective. A much clearer policy recommendation would be to generally limit

80

the monthly (or weekly) sampling rate, as increased sampling is seemingly ineffective over a certain threshold. Although a range of 50-60% for the installation seems correct based on Figure 32, this would be difficult to translate into commander actions. Further analysis at company and/or battalion levels should be conducted prior to establishing a period sampling rate limit.

The second issue regarding the regulation in general is the requirement to refer all soldiers identified through the drug testing program. As the outline of the method used to pair positive drug tests to screenings demonstrates, there are actually multiple conditions under which *not* referring a soldier may be appropriate. The regulation does not match this reality, which seems to be Army-wide. The ACSAP needs to establish exactly when a positive drug test should result in a referral and not leave it for individual installations to interpret.

The last regulatory minutiae issue is that concerning the recording of training. The training record provided for this thesis had 9,148 different entries for training topics across 7,704 units variously described using the unit identification code or other identifier (e.g., 'A CO'). The training record did not collect rank information, so it is impossible to tell if training is tailored to the individual audiences as recommended by the regulation. To the extent possible, the names of training topics should be standardized and demographic information collected. Standardized use of the Digital Training Management System should alleviate these issues. Furthermore, AR 600-85 specifies one hour per quarter for awareness training while AR 350-1 only specifies one hour per year plus redeployment training. This discrepancy should be resolved by a clear statement of which regulation holds precedent.

A summary of the recommendations is included in Table 9, below.

Table 9: Table of Conclusions and Recommendations

Conclusion	Recommendation
The organizational architecture is more complex than previous architectures but lacks key functionality in the chain of command	Add specified staff oversight positions for Brigade and higher levels in future revisions, with specific authority to monitor and rectify testing, referrals, and separation actions.
The chain of command does not have direct, real-time access to information and thus cannot easily see and solve problems as they occur.	Provide staff oversight positions with access to DAMIS to oversee required actions
The data captured by DAMIS is incomplete	Expand data capture fields to include acknowledgement of command notification and command referral for all identifications.
	Develop automated interfaces between COPS and ASAP to lessen the burden of local coordination for law enforcement identifications and investigations and increase data capture.
	Develop automated interfaces between AHLTA and ASAP to lessen the burden of local coordination for medical identifications and increase data capture.
Access to AHLTA by ASAP counselors is spotty and inhibits coordinated care.	Provide all ASAP clinics with direct access; resolve funding issues at the Army level
Unit sweep restrictions are not effective	Provide installations and units with clarification on testing limits in general, but not specific to type.
The referral requirement does not identify under which circumstances a soldier should *not* be referred to ASAP	Standardize the situations under which the chain of command should not refer soldiers to ASAP and publish in the next revision.
Increased awareness training does not necessarily lead to better unit outcomes as measured by the positive sample rate. The data captured does not allow for qualitative analysis.	Standardize the method that information is recorded for training. This is an area for further research.
Increased separations do not necessarily lead to lower positive sample rates.	This is also an area for further research.
Increased sampling can lead to lower positive sample rates	Installations should define local minimum expectations by increasing sampling until a minimum expectation for the positive sample rate can be established.

Appendix 1: The Drug and Alcohol Management Information System

The US Army's Drug and Alcohol Management Information System (DAMIS) is the repository for all urinalysis results, screenings, and periodic evaluations. Urinalysis results are the outcome of unit testing programs and other sources. Screenings are the result of the command-referral or self-referral, and capture the decision to enroll the Soldier into clinical care or provide the reason why the Soldier was not enrolled. For a Soldier enrolled in care, counselors provide periodic evaluations in coordination with the Soldier's Company Commander or First Sergeant (all three together are the Rehabilitative Team) and record the progress, performance, and conduct of the Soldier, as well as recommendations for continuing or terminating care. The following section describes each one of these records in detail.

Drug Test Results

In accordance with the Army's drug testing program, the vast majority of Soldiers are tested for drugs by urinalysis. Based on the information in this report, one can determine for a unique location and/or unit the number of samples collected under which authorization during a given time period, the number of positive samples for a specific drug, and the MOS or rank breakdown of the testing or results. The report records the following fields:

Table 10: Drug Test Report Fields and Explanations

Field Code	Variable Name	Explanation
IND_SYS_SEQ_NR	Individual System Sequence Number	The individual system sequence number is a Soldier's unique identifier within the system.
DA_ACCSN_NR	Drug-Alcohol Accession Number	This is the unique identifier for the sample.
DA_US_SPC_SA_CD	Drug-Alcohol Urinalysis Specimen Service Area Code	This identifies the location (common) or unit (rare) that the sample was collected.
DA_US_CRT_DT	Drug-Alcohol Urinalysis Certification Date	This identifies the date that the sample was certified, formatted as 'mmddyyyy'.
DA_US_UNT_ID_CD	Drug-Alcohol Urinalysis Unit Identification Code	This is the unique unit identification code (UIC) of the unit that conducted the urinalysis.
DA_ML_TST_BS_CD	Drug-Alcohol Military Test Basis Code	This identifies under which conditions the sample was collected, such as "IR" for a random individual inspection or "RO" for a rehabilitative sample.
DA_SPEC_COLL_DT	Drug-Alcohol Specimen Collection Date	This is the date that the sample was collected by the unit.
DA_URNLS_DRG_CD	Drug-Alcohol Urinalysis Drug Type Code	This is the drug that the sample was tested for. All samples are tested for multiple substances but not all urinalyses test for the same set of drugs.
DA_DTL_RSLT_CD	Drug-Alcohol Urinalysis Specimen Laboratory Result Code	This identifies whether the sample was positive, negative, or not tested for the drug type code.
DRUG_POS_CD	Drug Positive Code	This identifies the drug that was identified during testing for that drug type code.
DA_MRO_EVAL_CD	Drug-Alcohol Medical Review Officer Evaluation Code	This identifies whether the Medical Review Officer (MRO) found the use to be authorized.
DA_MRO_EVAL_DT	Drug-Alcohol Medical Review Officer Evaluation Date	This is the date that the MRO concluded his/her findings.

SLDR_NONAVL_RSN_CD	Soldier Non-Availability Reason Code	If the Soldier is unavailable for the MRO's investigation, then this field explains why. Possible explanations include Absent Without Leave (AWOL).
DRUG_PRESCRIBED	Drug Prescribed	This is the drug prescribed to the Soldier which explains the positive test result and MRO evaluation.
PRESCRIPTION_DT	Prescription Date	This is the date for the prescription drug identified during testing.
IND_DY_MOSE_ID	Individual Duty MOS Enlisted	This is the enlisted individual's primary military occupation specialty.
IND_DY_MOSWO_ID	Individual Duty MOS Warrant Officers / Officers	This is the (warrant) officer's primary military occupation specialty.
IND_AGE_QY	Individual Age	This is the individual's age.
IND_MPC_CD	Individual Military Pay Category (?) Code	This identifies the individual as an enlisted soldier ("E"), a warrant officer ("W"), or commissioned officer ("O").
IND_ML_PY_LVL_NR	Individual Military Pay Level Number	This, along with the MPC Code, identify the pay grade. This field contains numbers from 1 to (presumably) 10. An entry of "E" in the previous field and a "01" in this field would identify the individual as a Private, while an "O" and "03" would identify a Captain.

Screening Records

Screening Records reflect the initial evaluation by ASAP counselors and the information collected on the Patient Intake Sheet. Like the Drug Testing Report above, one can examine cohorts to determine for a given location and time period the number of Soldiers screened and enrolled. There are 22 fields in the Screening Records, explained in Table 11 below.

Table 11: Screening Report Fields and Explanations

Field Code	Variable Name	Explanation
IND_SYS_SEQ_NR	Individual System Sequence Number	*This is the same identifier from the drug testing report.*
PIR_SEQ_NR	Patient Intake Report Sequence Number	This is a unique number identifier for a Soldier's enrollment in ASAP.

DA_ENRL_DEC_DT	Drug-Alcohol Enrollment Decision Date	This is the date that the decision to enroll or not to enroll the Soldier into ASAP is made.
DA_ENRL_SA_CD	Drug-Alcohol Service Area Code	This is the service area code for the enrollment decision, which is not necessarily the same as the patient's service area code.
DA_PTNT_SA_CD	Drug-Alcohol Patient Service Area Code	This is the service area code for the patient, which is not necessarily the same as the enrollment service area code.
DA_IND_ELIG_CD	Drug-Alcohol Individual Eligibility Code	This is a one-letter code that identifies whether the Soldiers is active duty, on active duty training, a cadet, a family member, etc.
CASE_FND_MTHD_CD	Case Finding Method Code	This is a two-letter code that identifies how the case was brought to ASAP, such as a DUI ("DW") or Self-Referral ("SR").
DA_ENRL_DEC_CD	Drug-Alcohol Enrollment Decision Code	This is a one-letter code that identifies whether the screening resulted in enrollment into the ASAP clinical program.
DA_ENRL_FAC_CD	Drug-Alcohol Enrollment Facility Code	This is a one-letter code that identifies the type of facility that the individual will be enrolled in. The most common is "A", or an Army facility.
DA_NENRL_RSN_CD	Drug-Alcohol Non-Enrollment Reason Code	This is a one-letter code that identifies the reason that a Soldier is not entered into medical treatment (e.g., "enrolled"), such as soldier refusal or commander decision.
DA_PRI_ENR_BAS_CD	Drug-Alcohol Primary Enrollment Basis Code	This is a three-letter code that identifies the primary substance for which the Soldier is being evaluated.
DA_SEC_ENR_BAS_CD	Drug-Alcohol Secondary Enrollment Basis Code	This is a three-letter code that identifies the secondary substance for which the Soldier is being evaluated.
DA_TERT_ENR_BAS_CD	Drug-Alcohol Tertiary Enrollment Basis Code	This is a three-letter code identifies the tertiary substance for which the Soldier is being evaluated.
DA_PRI_DIAG_CD	Drug-Alcohol Primary Diagnosis Code	This is a five-digit code that identifies the primary diagnosis for the patient, such as alcohol dependence or cocaine misuse.

86

DA_SEC_DIAG_CD	Drug-Alcohol Secondary Diagnosis Code	If the Soldier has more than one diagnosis, then this is a five-digit code that identifies the secondary diagnosis for the patient.
DA_TERT_DIAG_CD	Drug-Alcohol Tertiary Diagnosis Code	If the Soldier has more than two diagnoses, then this is a five-digit code that identifies the tertiary diagnosis for the patient.
IND_DY_MOSE_ID	(Enlisted) Individual Duty MOS	*Same as Drug Testing Report.*
IND_DY_MOSWO_ID	(Warrant Officer or Officer) Individual Duty MOS	*Same as Drug Testing Report.*
IND_AGE_QY	Individual Age	*Same as Drug Testing Report.*
DA_US_UNT_ID_CD	Drug-Alcohol Urinalysis Unit Identification Code	*Same as Drug Testing Report.*
IND_MPC_CD	Individual Military Pay Category Code	*Same as Drug Testing Report.*
IND_ML_PAY_LVL_NR	Individual Military Pay Level Number	*Same as Drug Testing Report.*

Progress Reports

The ASAP counselor periodically completes the Periodical Progress Report (PPR) for Soldiers that are enrolled in ASAP for input into DAMIS through the Clinical Director. By itself, this report can be used for any location and/or period to determine outcomes of clinical care or patient load. Unfortunately, this report by itself cannot be used to determine final outcomes for the Soldier, which may include separation from the service after release from the program, or the frequency that the Soldier is treated by a counselor as the report does not contain any information about the episodic care. The Progress Report has 30 fields, which are explained in Table 12 below.

Table 12: Progress Report Fields and Explanations

Field	Variable Name	Explanation
IND_SYS_SEQ_NR	Individual System Sequence Number	*Same as the Drug Test Report and Screening Report.*
PIR_SEQ_NR	Patient Intake Record Sequence Number	*Same as Screening Report.* A single Soldier may have multiple PIRs.
PPR_SEQ_NR	Periodic Progress Report Sequence Number	This is the unique numeric identifier for the PPR.
DA_PROG_RPT_DT	Drug-Alcohol Progress Report Date	This is the date of the PPR.
DA_PPR_RSN_CD	Drug-Alcohol PPR Reason Code	This one-letter code identifies the reason that the report was filed.
DA_PROG_SAC_CD	Drug-Alcohol Progress Service Area Code	This is similar to the other service area codes from above, but meant to identify where the PPR was originally filed.
CSL_PROG_ASMT_CD	Counselor Program Assessment Code	This is a one-letter code that the counselor uses to assess the patient's progress in treatment.
DA_CSL_RCMD_CD	Drug-Alcohol Counselor Recommendation Code	This is a one-letter code that the counselor uses to record his/her recommendations for continued treatment.
CDR_APRSL_PRF_CD	Commander Appraisal Performance Code	This is a one-letter code based on the commander's assessment of the Soldier's performance since the last Rehabilitation Team Meeting (RTM).
CDR_APRSL_CDT_CD	Commander Appraisal Conduct Code	This is a one-letter code based on the commander's assessment of the Soldier's conduct since the last RTM.
CDR_DIR_DSP_CD	Commander Directed Disposition Code	This is a one-letter code that indicates the commander's direction for the continuation or termination of treatment.
DA_RTF_ADMIT_DT	Drug-Alcohol Rehabilitation Treatment Facility Admission Date	If the purpose of the PPR is to enter a Soldier into in-patient treatment, then this field captures the date of the actual admission.
DA_RTF_CD	Drug-Alcohol Rehabilitation Treatment Facility Code	This indicates the facility that the Soldier was admitted for in-patient treatment.

88

DA_RTF_DISC_DT	Drug-Alcohol RTF Discharge Date	This indicates the date that the Soldier was discharged from the residential treatment facility.
DA_LOSS_SAC_CD	Drug-Alcohol Individual Losing Service Area Code	If the Soldier changes locations during treatment, this field indicates the losing service area, most often the losing installation.
DA_GAIN_SAC_CD	Drug-Alcohol Individual Gaining Service Area Code	The follow on to the previous field, this is the gaining service area, most often the gaining installation.
DA_PRI_ENRL_BAS_CD	Drug-Alcohol Primary Enrollment Basis Code	If the PPR reason code is to change the primary enrollment basis code, then this field indicates the new primary enrollment basis code, which are the same codes used in the similar field in the screening report.
DA_SEC_ENRL_BAS_CD	Drug-Alcohol Secondary Enrollment Basis Code	Similar to the field above, this reflects the new secondary enrollment basis code.
DA_TERT_ENRL_BAS_CD	Drug-Alcohol Tertiary Enrollment Basis Code	Similar to the two previous fields, this reflects the new tertiary enrollment basis code.
DA_PRI_DIAG_CD	Drug-Alcohol Primary Diagnosis Code	If the PPR reason code is to change the primary diagnosis, then this field indicates the new primary diagnosis using the same five-digit code used to designate the primary diagnosis in the screening report.
DA_SEC_DIAG_CD	Drug-Alcohol Secondary Diagnosis Code	Similar to the Primary Diagnosis Code, this field indicates the new secondary diagnosis.
DA_TERT_DIAG_CD	Drug-Alcohol Tertiary Diagnosis Code	Similar to the two previous fields, this field indicates a new tertiary diagnosis.
DA_RELS_BAS_CD	Drug-Alcohol Program Patient Release Basis Code	If the PPR type is to release the Soldier, then this field indicates under which condition the soldier is being released from ASAP services. Examples include program completion and patient noncompliance.
DA_REHB_ASMT_CD	Drug-Alcohol Rehabilitation Assessment Code	This field indicates whether the Soldier was a success or failure in the program.
IND_DY_MOSE_ID	Individual Duty MOS (Enlisted)	*Same as previous reports.*

IND_DY_MOSWO_ID	Individual Duty MOS (Warrant Officers and Officers)	*Same as previous reports.*
IND_AGE_QY	Individual Age	*Same as previous reports.*
DA_US_UNT_ID_CD	Drug-Alcohol Urinalysis Unit Identification Code	*Same as previous reports.*
IND_MPC_CD	Individual Military Pay Category Code	*Same as previous reports.*
IND_ML_PY_LVL_NR	Individual Military Pay Level Number	*Same as previous reports.*

Comparing Reports

Because of the unique Individual System Sequence Number assigned to every Soldier in

DAMIS, it is possible to compare these reports. The Drug Testing and Screening Reports can

be used to evaluate whether a positive drug test result was followed by a screening, or the reverse

scenario of determining whether a screening was the result of a positive drug test result. The

Screening and Progress Reports can be compared to determine total length of enrollment for any

particular Soldier, which can be aggregated to the Service Area Code (SAC) for possible

comparison across installations. The Drug Test and Progress Reports can be compared to

determine compliance with rehabilitative testing or requirements for Soldiers that are

rehabilitative failures as defined in AR 685-20.

Appendix 2: Data Analysis

The primary source of data for this the numerical analysis in Chapter 3 came from data provided by the Army Center for Substance Abuse Programs. This data consisted of four files: training data, tests, patient intake records (PIR), and periodic progress reports (PPR). All data analysis was conducted with MATLAB unless otherwise noted.

Prior to starting analysis, I created two "master" files to ease later analysis. The first, "Master Samples", was generated from the test data and contained the individual sequence number (i.e., the identifier of the Soldier tested), the date of sample collection, the base area code (BAC), test type, and pay grade. The Master Sample record only retained the unique sample information, discarding other information relating to the actual drug testing.

The second, "Master Positives", was also generated from the test data. Only tests that were positive for which the MRO Evaluation Code was "N" (Evaluation Not Required) or "U" (Unauthorized Use) were retained. This eliminated negative test results and positive but authorized use cases.

Pairing Positives to Screenings

A unique problem was that positive test results did not always result in a screening for a variety of reasons, listed below:

- The test type was "RO", or rehabilitative, indicating enrollment in the program

- The sample was collected during enrollment

- The Soldier was previously screened but not enrolled

- The sample was collected after release from the program

The pairing was further complicated by the differences in case finding method codes. A positive drug test should result in a command referral (case finding method "CI", "CU", "CD", or "UA"); however, some soldiers have been allowed to self-refer (case finding method code "SR") and other screenings were conducted for alcohol (case finding method codes "DW" for a DWI or DUI offense and "CB" for alcohol breathalyzer). Furthermore, case finding methods could have been through law enforcement or medical referrals, further complicating any pairing. Lastly, some soldiers with positive drug tests did not have an evaluation in the record, indicating that they had never been screened.[44]

A script was executed in MATLAB to conduct the pairing of positive drug tests to screenings, appending the screening result to the appropriate Master Positive row. The script followed the logic below:

- For each positive drug test, the soldier's individual sequence number was compared to three files to pull all records for that Soldier. All of the positive drug tests in the Master Positives file for that soldier were collected into a temporary "Positives" variable, all of the screenings for that soldier from the PIR data were collected into a temporary "Screenings" variable, and all of the program releases from the PPR data were collected into a temporary "Completions," using the PPR reason code field entry of "F" to signify release from the program.

- In addition, for each screening, the release date, if any, from the associated PPRs (comparing the PIR number in both the PIR file and PPR file) was appended to the screening data.

- If the test type was "RO", then the screening result was "Rehab Positive." Otherwise...

  o Otherwise, if the number of screenings and completions were both zero for that particular soldier, then the screening result was "Never Screened."

---

[44] That is to say, those soldiers had no screenings in the three year data set. It is possible that they had screenings before the start of FY12 and after the end of FY14.

o Otherwise, if the soldier had only been screened once and only had a single positive drug test, the drug test certification date in the Master Positive file was compared to the evaluation decision date in "Screenings."

- If the drug test certification date was before the evaluation decision date

  • And the case finding method was "SR", then the screening result was "Self Referral"

  • And the case finding method was "DW" or "CB", then the screening result was "Screened for Alcohol"

  • And the case finding method was "CI", "CU", "CD", or "UA", then the screening result was "Command Referral"

  • For other case finding methods, the screening result was "Other Referral"

- Otherwise, the drug test certification date was after the evaluation decision date.

  • If the enrollment decision code was "B" for "Do Not Enroll", then the screening result was "Screened before Positive not Enrolled." Otherwise, it was assumed that the soldier was enrolled in the program.

    o If the number of completions was not zero and the PPR release date associated with that PIR (found by comparing PIR numbers) was after the positive drug test's certification date, then the screening result was "Positive in Program." If the release date was before the positive drug test's certification date, then the screening result was "Positive after Completion"

    o If the number of completion was zero, then the screening result was "Positive in Program, possibly still enrolled"

- o For multiple positives and/or multiple screenings for a soldier, the positive test result was compared against all screenings. If the positive test result was between an enrollment decision code of "A" and a release, then the screening result was "Positive in Program." Otherwise, the "Next Screening" was found by finding the smallest positive difference between the evaluation decision date and the certification date. The "Next Screening" was then used to find the "Last Positive", the positive drug test for the soldier that was nearest precedent to the "Next Screening."
  - If the certification date for the Master Positive record was the same as the certification date of the "Last Positive", then the screening result was determined according to the case finding methods used above (e.g., "SR" for a self-referral)
  - If the certification date for the Master Positive record was before the certification date of the "Last Positive", then the screening result was "Screened after Subsequent Positive"
- o If none of the screenings were after the positive drug test result's certification date, then the "Last Screening" (i.e., the most immediate preceding screening for the positive test result) was found. If the enrollment decision code was "A" and the release date was after the certificate date, then the screening result was "Positive in Program." If there was no release date, then the screening result was "Positive in Program, possibly still enrolled."

The PIR number from the Next Screening or Last Screening, enrollment decision date, number of PPRs associated with the PIR, program release date, and program release basis code were appended to the positive drug test result for easy "lifetime" analysis

Trend Data

Using the "lifetime" data from above and the Master Sample file, I computed the number of samples collected, positive drug samples, screenings, enrollments, releases, and releases by type

for each month for the whole Army and for selected installations using the specific Base Area Codes, utilizing MATLAB. The raw data was then imported into Microsoft Excel to generate charts and create adjusted statistics. The raw data by installation is given below.

The adjusted statistics created were the following:

- The sampling rate was calculated as the number of samples collected each month divided by an estimate of the installation's (or Army's) population. Installation population numbers were based on estimates of the 2012 population numbers in a 2013 *Army Times* article (Tan, 2013). Army population numbers were taken from the Defense Manpower Data Center's "DOD Personnel, Workforce Reports & Publications" website. The sampling rate is the number of samples collected divided by the population.

- The positive sample rate is simply the number of positive sample results (not to be confused with the number of positive soldiers[45]) divided by the number of samples collected (not to be confused with the number of unique soldiers tested).

- The "never screened rate" is the number of positive samples for which the soldier was never screened (as determined by the pairing algorithm outlined above) divided by the number of positive samples.

- The "screening rate" is the number of positive samples that resulted in a screening (as determined by the pairing algorithm) divided by the number of positive samples.

- The "enrollment rate" is the number of screenings that resulted in an enrollment (evaluation decision code "A") divided by the number of screenings.

---

[45] Each sample is tested for a variety of drugs and so a single sample can yield multiple positive tests (e.g., cocaine and marijuana). Soldiers provide multiple samples, any of which may be positive for illegal use.

- The "rehab failure rate" is the number of program releases that had a program release basis code "C" divided by the number of program releases.

- The "success rate" is the number of program releases that had a program release basis code "A" divided by the number of program releases.

- The "Chapter 14 (DA) rate" is the number of program releases that had a program release basis code "D" divided by the number of program releases.

- The "Chapter 14 (Other) rate" is the number of program releases that had a program release basis code "E" divided by the number of program releases.

- The "Training Rate" is the number of Soldiers trained divided by the number of soldiers on the installation.

- The "Training Density" is the number of soldier-hours reported for training divided by the number of soldiers on the installation.

Raw data and the adjusted statistics for selected installations are given below in Tables 13 and 14. Correlation coefficients for the adjusted statistics are given in Table 15.

Table 13: Raw Data for Selected Installations, FY12-FY14

Installation	Population	Samples	Positive Samples	Never Screened	Drug Screenings	Enrollments	Releases	Successful Releases	Rehabilitation Failures	Ch 14 (DA) Separations	Ch 14 (Other) Separations	(Misconduct) Seps	Soldiers Trained	Soldier-Hours Trained
A	27500	518231	1853	424	916	623	610	128	73	330	39	369	174023	261318.5
B	22700	281925	2468	593	1220	943	889	117	26	548	67	615	68641	64710
C	40900	327237	2552	215	1534	1333	1242	353	119	526	85	611	185092	459984.5
D	17200	167314	1554	180	683	427	418	72	40	200	41	241	89649	100177.5
E	42700	246865	2435	369	1213	1060	1027	279	68	456	30	486	64614	78580.5
F	29200	141596	1932	329	855	556	536	140	48	224	42	266	76228	77676.25
G	16600	129093	1015	195	500	293	280	71	37	98	38	136	30622	40256.75
H	31000	281078	2387	427	1033	662	656	185	59	239	33	272	100681	92151.75
I	21100	124234	1149	207	602	502	454	156	53	154	22	176	83517	108727.25

Table 14: Adjusted Statistics for Select Installations, FY12-FY14

Installation	Annual Testing Rate	Positive Sample Rate	Never Screened Rate	Screening Rate	Enrollment Rate	Rehab Failure Rate	Success Rate	Ch 14 (DA) Rate	Ch 14 (Other) Rate	Training Rate	Training Density
A	628.16%	0.12%	22.88%	49.43%	68.01%	11.97%	20.98%	54.10%	6.39%	2.11	3.17
B	413.99%	0.29%	24.03%	49.43%	77.30%	2.92%	13.16%	61.64%	7.54%	1.01	0.95
C	266.70%	0.26%	8.42%	60.11%	86.90%	9.58%	28.42%	42.35%	6.84%	1.51	3.75
D	324.25%	0.31%	11.58%	43.95%	62.52%	9.57%	17.22%	47.85%	9.81%	1.74	1.94
E	192.71%	0.33%	15.15%	49.82%	87.39%	6.62%	27.17%	44.40%	2.92%	0.50	0.61
F	161.64%	0.45%	17.03%	44.25%	65.03%	8.96%	26.12%	41.79%	7.84%	0.87	0.89
G	259.22%	0.26%	19.21%	49.26%	58.60%	13.21%	25.36%	35.00%	13.57%	0.61	0.81
H	302.23%	0.28%	17.89%	43.28%	64.09%	8.99%	28.20%	36.43%	5.03%	1.08	0.99
I	196.26%	0.31%	18.02%	52.39%	83.39%	11.67%	34.36%	33.92%	4.85%	1.32	1.72

Table 15: Cross Correlation Analysis of Adjusted Statistics

	Annual Testing Rate	Positive Sample Rate	Never Screened Rate	Screening Rate	Enrollment Rate	Rehab Failure Rate	Success Rate	Ch 14 (DA) Rate	Ch 14 (Other) Rate	Training Rate	Training Density
Annual Testing Rate		-0.828	0.505	-0.019	-0.217	0.021	-0.407	0.674	0.055	0.679	0.463
Positive Sample Rate	-0.828		-0.286	-0.313	0.033	-0.324	0.259	-0.283	-0.040	-0.588	-0.578
Never Screened Rate	0.505	-0.286		-0.316	-0.262	-0.141	0.219	0.380	0.035	-0.075	-0.360
Screening Rate	-0.019	-0.313	-0.316		0.726	0.081	0.497	-0.022	-0.138	0.135	0.615
Enrollment Rate	-0.217	0.033	-0.262	0.726		-0.377	0.460	0.095	-0.681	-0.071	0.251
Rehab Failure Rate	0.021	-0.324	-0.141	0.081	-0.377		0.047	-0.626	0.359	0.297	0.336
Success Rate	-0.407	0.259	0.219	0.497	0.460	0.047		-0.256	-0.071	-0.418	-0.149
Ch 14 (DA) Rate	0.674	-0.283	0.380	-0.022	0.095	-0.626	-0.256		-0.052	0.332	0.167
Ch 14 (Other) Rate	0.055	-0.040	0.035	-0.138	-0.681	0.359	-0.071	-0.052		-0.038	-0.057
Training Rate	0.679	-0.588	-0.075	0.135	-0.071	0.297	-0.418	0.332	-0.038		0.819
Training Density	0.463	-0.578	-0.360	0.615	0.251	0.336	-0.149	0.167	-0.057	0.819	

| $p < 0.05$ |
| $p < 0.005$ |
| $p < 0.001$ |

Appendix 3: Time Based Analysis

The time based analysis presented in Chapter 3 used a six-month trend to determine correlations. The six-month average was used to remove noise from the data set, which becomes more prevalent the smaller the level of analysis (e.g., a company-level analysis would be noisier than the Army-level analysis). For each of the installations, statistics were computed in the same manner as in Appendix 2, but by month rather than as an overall average. For the 16 installations that were not included in Appendix 2, I made the assumption that the populations and demographics remained the same. (This assumption was also made for the data analysis in Appendix 2.) The Spearman correlation coefficient was then computed for each pair of variables using MATLAB. The complete results of the analysis are included below in Table 16.

Table 16: Spearman Correlation Coefficients for 25 Installations, FY12-14

Installation	A	B	C	D	E	F	G	H	I	J**	K**	L*	M*	N*	O	P	Q	R	S	T	U	V	W	X	Y
SR:TR	0.072	-0.531	0.060	-0.408	-0.517	0.372	-0.025	0.725	0.579	0.126	0.672	0.326	-0.634	0.184	0.216	0.742	-0.327	-0.278	0.505	-0.361	0.798	-0.153	0.008	0.270	-0.095
SR:PSR	-0.564	-0.881	-0.277	-0.299	-0.671	-0.842	-0.095	0.219	0.091	0.449	0.126	-0.709	0.039	-0.189	-0.337	0.145	0.109	-0.132	0.241	0.395	-0.307	-0.190	0.081	-0.020	0.372
SR:MSR	0.336	-0.458	0.478	-0.518	-0.006	-0.493	0.435	-0.391	-0.467	-0.109		-0.587	0.189	-0.084	0.522	0.584	-0.511	0.144	-0.354	0.402	-0.009	-0.408			-0.109
TR:PSR	-0.164	0.462	-0.756	0.754	0.675	-0.389	0.251	0.226	0.596	-0.077	-0.113	0.065	-0.443	0.435	-0.152	0.403	-0.209	-0.179	0.359	-0.781	-0.225	0.418	0.357	0.727	-0.749
TR:MSR	0.081	0.528	-0.061	0.144	0.221	0.031	0.171	-0.389	0.129	-0.223		0.250	-0.729	-0.884	-0.387	0.825	0.155	-0.189	-0.499	0.382	-0.067	-0.361			0.189
MSR:PSR	0.423	0.470	-0.242	-0.006	0.223	0.676	-0.177	-0.866	0.640	-0.129		0.826	0.449	-0.373	0.016	0.197	-0.392	-0.477	-0.648	-0.381	0.443	0.137	NA	NA	-0.439
n	29	29	29	29	28	29	29	28	29	28	31	26	24	25	28	25	31	31	31	31	26	31	31	14	26

Legend			
	p < 0.05	TR: Training Rate	SR: Sampling Rate
	p < 0.005	PSR: Positive Sample Rate	
	p < 0.001	MSR: Misconduct Separation Rate	

Appendix 4: Sample Forms

A sample referral form is shown below. A company-commander is required to provide signed copy of this form whenever a soldier is identified or suspected of substance abuse.

Figure 27: DA Form 8003

In the case of medical referrals, medical providers use Standard Form 513 to refer soldiers for substance abuse evaluations. A blank form is given below.

Figure 32 shows a sample DA Form 4465, or PIR. This form is used for the initial evaluation of soldiers identified for substance abuse and is filled out by the counselor.

After a soldier is enrolled, his or her progress is periodically recorded on DA Form 4466 Patient

Progress Report. A blank copy of this form is given below.

Figure 30: Sample DA Form 4466 Patient Progress Report

PATIENT PROGRESS REPORT *(PPR)* For use of this form, see DA PAM 600-85; the proponent agency is ODCSPER	REQUIREMENTS CONTROL SYMBOL CSGPA-1400

SEE FOLLOWING PAGE FOR PRIVACY ACT STATEMENT

SECTION I - IDENTIFICATION

1. DATE OF REPORT *(YYYYMMDD)*	4. REASON FOR REPORT *(Check one)*
	☐ A. Patient PCS/Reassignment *(Complete sections II and VII)*
2. PATIENT IDENTIFICATION	☐ B. Change in Diagnosis *(Complete section III)*
	☐ C. Change Basis for Enrollment *(Complete section IV)*
	☐ D. RTF Enrollment/Discharge *(Complete section V)*
3. SERVICE AREA CODE	☐ E. Progress Evaluation *(Complete section VI)*
	☐ F. Release from Program *(Complete sections VI and VII)*

SECTION II - PATIENT PCS/REASSIGNMENT

5. GAINING SERVICE AREA FOR PCS LOSS	6. NEW PATIENT MACOM FOR PCS GAIN/ REASSIGNMENT

SECTION III - CHANGE TO DIAGNOSIS *(Physician Use Only)*

7a. PHYSICIAN DIAGNOSIS *(List primary diagnosis first)*	7b. DIAGNOSIS CODE
8. TYPED NAME AND GRADE OF PHYSICIAN	9. SIGNATURE OF PHYSICIAN

SECTION IV - ENROLLMENT

10a. CHANGE TO BASIS FOR ENROLLMENT	10b. PRIMARY	10c. SECONDARY	10d. TERTIARY

SECTION V - INPATIENT RTF ENROLLMENT

11. DATE OF ADMISSION *(YYYYMMDD)*	12. RTF CODE	13. NAME OF FACILITY	14. DISCHARGE DATE *(YYYYMMDD)*

SECTION VI - IN PROGRESS EVALUATION

15. COUNSELOR'S ASSESSMENT OF PROGRESS ☐ G. Good ☐ F. Fair ☐ P. Poor	16. COUNSELOR'S RECOMMENDATION *(Check one)* ☐ A. Continue Treatment ☐ B. Terminate Treatment, Retain on Active Duty ☐ C. Terminate Treatment, Separate	17. COMMANDER'S APPRAISAL OF PERFORMANCE ☐ S. Satisfactory ☐ U. Unsatisfactory
18. COMMANDER'S APPRAISAL OF CONDUCT ☐ S. Satisfactory ☐ U. Unsatisfactory	19. COMMANDER'S DECISION *(Check one)* ☐ A. Continue Treatment ☐ B. Terminate Treatment, Retain on Active Duty ☐ C. Terminate Treatment, Separate	

SECTION VII - RELEASE FROM PROGRAM

20. REASON FOR RELEASE FROM PROGRAM *(Check one)*

☐ A. Program Completed, Returned to Duty	☐ F. Patient Refuses Further Treatment
☐ B. Completion of Tour of Duty/Leaving Active Federal Service	☐ G. Commander Terminated the Enrollment Against Medical Advice
☐ C. Separation/Termination as an Alcohol/Drug Abuse Rehab Failure	☐ H. Erroneous Enrollment
☐ D. Separation/Termination, Misconduct - Abuse of Illegal Drugs	☐ X. Other *(USAF/NAVY PCSing, death confinement, etc.)*
☐ E. Separation/Termination for Other than Alcohol/Drug Reasons	

21. COMMANDER'S ASSESSMENT ☐ S. Success ☐ F. Failure	22. NAME, GRADE OF COMMANDER	23. SIGNATURE OF COMMANDER
24. SIGNATURE OF COUNSELOR	25. NAME, GRADE OF CLINICAL DIRECTOR	26. SIGNATURE OF CLINICAL DIRECTOR

DA FORM 4466, NOV 2001 DA FORM 4466-R, NOV 1991, IS OBSOLETE APD LC v1.00

References

Ames, G. & Delaney, W., 1992. Minimization of Workplace Alcohol Problems: The Supervisor's Role. *Alcoholism: Clinical and Experimental Research,* 16(2), pp. 180-189.

Asch, B. J. et al., 2010. *Cash Incentivies, Military Enlistment, Attrition, and Reenlistment,* s.l.: The RAND Corporation.

Belasco, A., 2009. *Troop Levels in the Afghan and Iraq Wars, FY2001-2012: Cost and Other Potential Issues,* s.l.: Congressional Research Office.

Bray, R. M. et al., 2010. Substance Use and Mental Health Trends Among U.S. Military Active Duty Personnel: Key Findings from the 2008 DoD Health Behavior Survey. *Military Medicine,* Volume 175, pp. 390-399.

Federman, E. B., Bray, R. M. & Kroutil, L. A., 2000. Relationships between Substance Use and Recent Deployments among Women and Men in the Military. *Military Psychology,* 12(3), pp. 205-220.

Grube, J. W., Ames, G. M. & Delaney, W., 1994. Alcohol Expectancies and Workplace Drinking. *Journal of Applied Social Psychology,* 24(7), pp. 656-660.

Hooper, R. et al., 2008. Cigarette and alcohol use in the UK Armed Forces, and their association with combat exposures: A prospective study. *Addictive Behaviors,* Volume 33, pp. 1067-1071.

HQDA, 1986. *AR 600-85 Alcohol and Drug Abuse Prevention and Control Program.* Change 1, 1988 ed. Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2001. *AR 600-85 The Army Substance Abuse Program.* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2005. *Army Regulation 635-200 Active Duty Enlisted Separations.* Rapid Action Revision Issue Date: 6 September 2011 ed. Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2006. *AR 600-85 The Army Substance Abuse Program.* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2009. *AR 600-85 The Army Substance Abuse Program.* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2010. *Army Health Promotion, Risk Reduction, and Suicide Prevention Report 2010,* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2012. *Army 2020: Generating Health and Discipline in the Force Ahead of the Strategic Reset,* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2012. *Army Regulation 600-85: The Army Substance Abuse Program.* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2014-2. *AR 195-2 Criminal Investigation Activities.* Washington, D.C.: Headquarters, Department of the Army.

HQDA, 2014. *AR 350-1 Army Training and Leadership Development.* Washington, D.C.: Department of the Army.

IMCOM, n.d. *About IMCOM.* [Online]
Available at: http://www.imcom.army.mil/About.aspx
[Accessed 2 12 2014].

IMCOM, n.d. *IMCOM Regions and Garrisons.* [Online]
Available at: http://www.imcom.army.mil/About/Garrisons,Regions.aspx
[Accessed 2 December 2012].

Jacobson, I. G. et al., 2008. Alcohol Use and Alcohol-Related Problems Before and After Military Combat Deployment. *Journal of the American Medical Association,* 300(6), pp. 663-675.

Mitchell, R. K., Agle, B. R. & Wood, D. J., 1997. Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *Academy of Management Review,* 22(4), pp. 853-886.

Office of Army Demographics, 2014. *Demographics.* [Online]
Available at: http://www.armyg1.army.mil/hr/demographics.asp
[Accessed 26 October 2014].

Rechtin, E., 1991. *Systems Architecting: Creating and Building Complex Systems.* 1 ed. Englewood Cliffs, NJ: Prentice Hall.

Sinha, K., 2014. *Structural Complexity and Its Implications for Design of Cyber-Physical Systems.* Ph.D. Thesis, Massachusetts Institute of Technology.

Sterman, J. D., 2000. *Business Dynamics Systems Thinking and Modeling for a Complex World.* Kingsport: Irwin McGraw-Hill.

Tan, M., 2013. *The Huge BCT Overhaul.* [Online]
Available at: http://archive.armytimes.com/article/20130702/NEWS/307020002/The-huge-BCT-overhaul
[Accessed 4 April 2015].

Wilk, J. E. et al., 2010. Relationship of combat experiences to alcohol misuse among U.S. soldiers returning from the Iraq war. *Drug and Alcohol Dependence,* Volume 108, pp. 115-121.

Zoroyoa, G., 2015. *Investigation: Army substance-abuse program in disarray.* [Online]
Available at: http://www.usatoday.com/story/news/nation/2015/03/11/army-substance-alcohol-abuse-clinics-poor-treatment/24251091/
[Accessed 15 March 2015].