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13. ABSTRACT (Maximum 200 words) The Army Central Registry (ACR) is a victim-based registry documenting substantiated spouse and child abuse events. ACR data were originally collected for administrative purposes and, without significant adaptation, are not immediately suitable for epidemiological analyses. Our ultimate research goal is to link ACR data for individuals involved in single or multiple events as victims, perpetrators, or both to health behavior, health outcome and demographic data. This will allow us to identify precipitating factors, follow individuals after an event, and understand how different events are related. This report details the steps taken to transform the ACR data into a relational database that allows us to meet these goals. The purpose of this report is to document the process we undertook to create a useful research database from an administrative data source, while also highlighting the unique challenges of the ACR.				
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**TRANSFORMING THE ARMY CENTRAL REGISTRY FAMILY VIOLENCE FILE INTO
A RELATIONAL DATABASE FOR THE PURPOSE OF FACILITATING
EPIDEMIOLOGICAL RESEARCH**

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TABLE OF CONTENTS

List of Tables	iv
Acknowledgments	v
Introduction	1
Background	2
Description of the ACR Data	2
Chapter I. Challenges to Using the ACR for Research	3
No Unique ID	3
Redundancy	3
Abuse Event Date Inaccuracies	4
Problems with Case Ascertainment.....	4
Representativeness.....	5
Chapter II. Transforming the ACR File into a Relational Database	6
The ACR as a Research Tool.....	6
Relational Database Construction Steps	6
Preparing the File	7
Identifying Related Cases	7
Eliminating Redundancy.....	9
Protecting Confidentiality.....	10
Chapter III. Using the New ACR Relational Database	11
Substantiation vs. Incident Date	11
Addressing Case Ascertainment Challenges	11
Addressing Population Representation and Generalizability	12
Chapter IV. Conclusions and Recommendations.....	14
Challenges Related to the Design of the Relational Database	14
Challenges Related to Using the New ACR Relational Database	15
Conclusions	16
References.....	17
Appendix A: ACR Data Collection Instrument	18

Appendix B: ACR Variable Definitions.....	21
Appendix C: Entity Diagram	33
Appendix D: Table Definitions	34
Appendix E: SAS Code to Construct Entity Identifiers.....	37

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Distributions of missing social security numbers	8

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INTRODUCTION

The Total Army Injury and Health Outcomes Database (TAIHOD) is a collection of data files that contains demographic and health information on active duty Army personnel linked through encrypted individual identifiers (1, 2). The database was initially designed with the overriding purpose of conducting injury prevention research. The data are acquired primarily from administrative sources where the data are routinely collected for non-research purposes, including Army personnel agencies, hospitals, the Army Combat Readiness Center, casualty affairs, health promotion programs, and substance abuse and screening programs.

The June 2003 addition of family violence data from the Army Central Registry (ACR) is an important enhancement of the TAIHOD and key to our injury research mission. Intentional injuries resulting from spouse and child abuse are important, preventable events that not only cause extensive emotional and physical harm to the family members and the surrounding communities affected by the abuse events, but also decrease the mission readiness of involved Soldiers. Our current research activities use ACR data to identify modifiable risk factors associated with both the occurrence and severity of spouse abuse in the Army, including alcohol use by perpetrators and victims, demographic characteristics, and healthcare utilization patterns. Because TAIHOD data include longitudinal measurement of demographic, health, and behavioral factors, we are able to explore factors prior to, proximal to, and post-abuse events. We are thus able to not only look at preexisting conditions and behaviors (prior to abuse events), but can also study the social, occupational, and health consequences of abuse among both perpetrators and victims of abuse. Findings from these research efforts may be used to better inform intervention activity in the area of spouse abuse prevention.

While these research activities and the anticipated health benefits of our findings are important, incorporating the ACR data into the TAIHOD and making it useful for research purposes has been challenging due to the way the data have been collected and organized. The ACR is a victim-based registry originally collected for administrative purposes and, without significant adaptation, is not immediately suitable for epidemiological analyses. Our ultimate research goal is to manipulate the ACR data so that we can identify specific individuals involved in single or multiple events as victims, perpetrators, or both. This will allow us to identify precipitating factors, follow individuals after an event, and understand how different events are related. This report details the steps that we took to transform the ACR data into a relational database that allows us to meet these goals. It is important to note that the ACR data discussed in this report reflects the state of the ACR at the time of this report. Changes in the ACR can and will occur due to administrative requirements of the Department of Defense and the Army, as well as technological changes that affect the way the data are reported. The purpose of this report is to document the process we undertook to create a useful research database from an administrative data source, while also highlighting the unique challenges of the ACR.

BACKGROUND

The ACR is a data registry containing information on reported cases of spouse and child abuse and neglect involving *married* Army personnel. Case reports are investigated by a multidisciplinary committee at the nearest Army Medical Treatment Facility (MTF) and determined to be either substantiated or unsubstantiated cases of abuse based on the evidence available. Civilian-sector surveys like the National Crime Victimization Survey (10) contain data on perpetrators as reported by the victims. Other data sources restrict the focus to either perpetrators *or* victims of violence. However, ACR data contain detailed information about both victims and perpetrators and does not rely solely on victim accounts for this information. Therefore, the acquisition of these data is an important addition to the TAIHOD, as it has the potential to overcome some of the research limitations associated with other victim-based data files and to uncover important risk factors for domestic violence.

DESCRIPTION OF THE ACR DATA

The ACR data include information that identifies the victim and alleged offender, as well as details regarding the circumstances surrounding the event and the type and severity of abuse that occurred. This information is originally captured in the child/spouse incident report DA Form 2486, which, at the present time, is completed on all case reports of alleged family violence in the Army (see Appendix A). This includes administrative data on the incident: whether it is an initial, subsequent, or reopened case; the date the incident was reported and to whom it was reported; whether a child or spouse or both were involved; the relationship of the alleged offender to the victim; whether investigations were performed by military or civilian law enforcement; and the type of victim protective actions initially taken. Demographic data are reported on the victim and the alleged offender and whether substance abuse (alcohol, drugs or both) was involved in the incident. Severity of abuse is classified under offender data and is categorized as mild, moderate, or severe. See Appendix B for a description of the ACR variables.

In addition to information on the victim(s) and perpetrator(s), the military sponsor is identified. The military sponsor is defined as an active duty or retired service member or DoD employee through whom the victim is eligible to receive care through DoD medical treatment programs. Sponsor data found in the ACR include name, social security number, rank, and branch of service of the military sponsor.

CHAPTER I. CHALLENGES TO USING THE ACR FOR RESEARCH

There are a number of challenges involved in using the ACR data for research purposes related to both the way the data are organized and to the nature of the data itself. The ACR file is essentially a victim registry and not necessarily intended to be used for research purposes. The data are arranged to fit the needs of those working with families in crisis and, therefore, are not arrayed in a manner conducive to immediate epidemiological analysis, particularly when the analytic goals require identifying specific individuals and events. Several of these challenges are described below. Subsequent sections of this report discuss how we have addressed these limitations in our project work.

NO UNIQUE ID

One key challenge to using the ACR file involves problems identifying and following individuals who may be involved in subsequent incidents, either as a victim, perpetrator, or both. The basic identifier is the social security number (SSN). However, an SSN is not reported for all individuals involved in abuse events, and is particularly likely to be missing when the victim is a child. Each victim involved in a substantiated abuse event is assigned a case number that stays with that individual while they are at the installation where the abuse event was originally reported. However, if the person moves, a new case number is assigned by the MTF into which the individual transfers. Thus, that victim lacks a unique identifier. Another common source of multiple identifiers occurs when a case is closed, and then a separate instance of abuse is later substantiated. Even though the original victim is already in the registry, they may be assigned a new identifier nonetheless. Additional problems occur with multiple marriages and multiple sponsors. Since each active duty person is his/her own sponsor, in a dual active duty couple, different sponsor SSNs can be reported for one incidence of child abuse. In addition, early ACR records sometimes reused victim identifiers meaning that entirely different individuals can carry the same ID (this practice was discontinued in FY 1994).

REDUNDANCY

The ACR file is organized as a flat file with a record created for each individual involved in the event. Every record in the file contains information on the sponsor, the offender, the victim, as well as information specific to the event. Each record represents a single incident of abuse between one victim and one offender. The ACR's flat file structure is problematic for certain kinds of research because redundancy is built into the file. The more victims and offenders participating in an incident, the greater is the redundancy. If care is not taken when trying to identify unique individuals and events, this redundancy can lead to overrepresentation of some of the participants, specifically in the case of child abuse. For example, if one offender abused three victims at one event, there will be three records representing this incident, with the offender information being replicated in each record. The frequency of an offender characteristic like gender would

be misleading because offenders that abused multiple victims could be counted more than once.

Consider a scenario where two parents have abused their three children. Under these conditions, each child's information will be replicated in two records, once for each parent. Each parent's information will be replicated in three records, once for each child. Therefore, the victim information has been duplicated, the offender information has been tripled, and the sponsor information has been sextupled. An individual level analysis would yield an over-count if the redundancy is not corrected first. This is generally only a problem for analyses of child abuse and not a problem for spouse abuse cases because there is only one offender and one victim. Redundancy is a problem when trying to analyze child abuse cases because there is often more than one victim and more than one offender, as was the case in the scenario previously described.

ABUSE EVENT DATE INACCURACIES

The ACR reports both what is referred to as an "incident" and a "substantiation" date. The incident date is not the date on which the incident occurred, but rather the date the alleged incident was reported either to the Family Advocacy Program (FAP) or the Case Review Committee (CRC). The substantiation date is the date on which the CRC makes a determination that the incident is substantiated. The incident date may be unreliable and thus not always suitable for research. Anecdotal information suggests that sometimes caseworkers used the date on which the victim reported they first began experiencing abuse as the incident date rather than the date on which the current event is being reported. On the other hand, the substantiation date can often be considerably different from the incident date due to delays in the investigation process or administrative issues. If researchers intend to focus on factors present prior to the actual abuse event date, reliability of the incident date and the substantiation must be considered carefully. That is, variables measured at the time of the substantiation date may already reflect issues created by the abuse event and may thus not represent indicators of risk prior to abuse but rather potential consequences of the abuse event itself.

In addition, in some cases the incident date for a second event is the same as the incident date for the first event. This situation arises when multiple instances of abuse are reported to the CRC on the same date. Fortunately, there is another variable in the ACR file called SEQ_CODE that ranges from A to Z, identifying separate events and their order of occurrence. So, while incident date may not change, the sequence code will. Though these are identified in the ACR as separate events, they will all have the same incident date.

PROBLEMS WITH CASE ASCERTAINMENT

There is a process for review, evaluation, and submission of reports that may result in delayed reporting of cases to the central registry. Case information can be delayed due to the length of the investigations and can be changed based on further

review, new evidence, or for administrative reasons. Therefore, studies investigating events occurring within the most recent time frame will not capture all recent cases and may be particularly likely to miss highly contested cases. This challenge became apparent after receiving what we expected to be data on recently substantiated cases. We not only received information on cases resolved in the current year, but we also received data on many cases that had occurred years prior. For example, we recently received updated ACR data and expected that we would find the same number of cases from the time period that we already had, in addition to the new cases from that time forward. However, out of 7,750 new cases, nearly 1,000 were from the time period the old file had covered.

This created two problems for our proposed analysis. In trying to make generalizations about the case population under study, we could not be sure that we were accurately capturing the entire population. Similarly, we could not be confident that the data would allow us to distinguish single event offenders from multiple event offenders. Given this information, researchers engaged in cohort studies using recent time period data might choose to evaluate cases substantiated by some established cut-off prior to the end of their most recent data update.

REPRESENTATIVENESS

The information contained in the ACR captures the prevalence of “treated” abuse cases as opposed to the population prevalence of abuse. Though not a problem related to the database, per se, it is likely that the ACR is not representative of all cases of abuse in the Army. The overwhelming majority of events documented in the ACR involved enlisted personnel. While one might expect more cases among enlisted Soldiers because occupational rank co-varies with other risk factors, the paucity of cases among officers in the ACR suggests that there is systematic bias in the collection of case information. Whether other biases exist has not been investigated and is therefore not known.

CHAPTER II. TRANSFORMING THE ACR FILE INTO A RELATIONAL DATABASE

THE ACR AS A RESEARCH TOOL

The ACR has been shown to be a valuable data source from which to study family violence. Rumm et al. used ACR data to study spouse abuse as a predictor of subsequent child abuse (11). It has also been used to study the characteristics of offenders who repeatedly abuse their spouse (9). However, the goals of these studies have allowed these researchers to maintain data at a macro-level and thus avoid some of the problems we describe above.

Our ongoing research efforts have involved studying the individual characteristics of Soldiers who perpetrate violence against their spouse and the circumstances surrounding those incidents (3). Eliminating redundancy is imperative to supporting this research goal. We are also interested in comparing the characteristics of perpetrators of spouse abuse to learn why some people are more likely to repeatedly abuse their spouses than others. This requires that we are able to identify victims, perpetrators, unique events, and relationships.

In order to achieve our research goals and handle the constraints of the ACR data file, we decided to transform the file into a relational database. Others have used a similar strategy when using registry data for epidemiological research. For example, research conducted with twin registry data, which also depends heavily on the ability to preserve unique relationships and eliminate redundancy, has benefited greatly from the relational database model (8).

The relational model represents data in entity tables composed of rows and columns, where the rows represent instances of the entity and the columns contain the fields or attributes that characterize that entity. An entity is typically a person, place, object, event, or concept that is important to the data file. Each entity is contained in a separate table. The relationships between entities in different tables are maintained through identifiers known as primary keys and foreign keys (see below, "Identifying Related Cases," for more details on primary and foreign keys).

RELATIONAL DATABASE CONSTRUCTION STEPS

The first steps in constructing the relational database were identifying the entities and assigning the ACR fields to each of them. We identified three primary entities: the sponsor, the victim, and the offender. A primary entity is an entity that exists independently of other entities. Since this is a registry of substantiated cases of family violence, making the incident of abuse a primary entity would have been ideal. However, in the ACR file it is only possible to identify an incident with respect to a victim, sponsor, or offender, violating the criteria necessary for making the abuse event a primary entity. The tables built for the primary entities must contain fields that remain constant over time, such as date of birth and SSN. Three corresponding weak entities

were identified: sponsor per incident, victim per incident, and offender per incident. A weak entity is an entity whose existence is dependent on other entities. The weak entities contain fields that are not constant over time, such as marital status, grade, alcohol, and drug use. A seventh associative entity was added to the set representing the interaction between an offender and a victim at a particular point in time. The associative entity table contains fields related to the event such as the type and severity of abuse, the investigation undertaken, and treatment (see Appendix C for a diagram that illustrates the relationships between these entities and Appendix D for a definition of the entity tables). Creation of these tables allows for exploration of characteristics of perpetrators separately from those of victims while still maintaining the links between perpetrators and their victims. The inclusion of these data allows us to explore individual as well as event-related factors.

PREPARING THE FILE

Every year ongoing investigations leave some unsubstantiated records in the ACR file. Since these cases will eventually be reviewed and reassigned as substantiated or dropped from the file completely, we eliminated them from our file. The ACR file also contains closed reports and transfers. These records were dropped from the file as well because they gave the impression of separate instances of abuse when they are actually just extensions of previously reported instances of abuse. Finally, a unique identifier, ranging from 1 to N, was assigned to each record based on the order that the record appeared in the ACR file.

IDENTIFYING RELATED CASES

A cardinal rule of a relational database is that every instance of an entity must have a unique identifier, and repeated measures for the same instance can have one and only one identifier. A primary key is an attribute that uniquely identifies each instance in an entity table. By contrast a foreign key is an attribute in an entity table that serves as a primary key for another entity table in the database. The referential integrity constraint rule dictates that each foreign key value must match a primary key value in another table of that relational database. For example, a victim in the new ACR relational database must have an identifier that is unique to that victim alone and is the same in all reports of abuse involving that victim. That unique identifier then becomes the primary key for the victim entity table and a foreign key in all other entity tables of the database to which the victim is linked. In the case of the ACR, the victim is directly linked to the victim per incident table and the victim/offender pair per incident table (see Appendix D).

An obvious choice for an identifier would be the SSN. However, only sponsors have a reliably reported SSN in the ACR file. Table 1 illustrates how often the SSN is missing for each primary entity.

Table 1. Distributions of missing social security numbers.

SSN status	Sponsor		Victim		Offender	
	N	Percent	N	Percent	N	Percent
Missing	0	0.00	57,201	28.35	17,302	8.58
Not missing	201,750	100.00	144,549	71.65	184,448	91.42

Had an SSN been available for all victims and offenders, it could have served as the primary key. Since that was not the case, we needed to assign our own unique identifier to each of the entities. As previously mentioned, the sponsor's SSN is never missing, therefore, it was determined that the sponsor's SSN must be included when assigning identifiers to the entities. After extensive investigation, the following identifiers were assigned (the symbol || stands for concatenate)¹:

Victim ID:

Sponsor's SSN || MTF || Case Number

Victim per Incident ID:

Sponsor's SSN || MTF || Case Number || Sequence Code

Offender ID:

Offender's SSN or
Sponsor's SSN || Offender's Gender ²

Offender per Incident ID:

Offender's SSN || Incident Date || Sequence Code or
Sponsor's SSN || Offender's Gender || Incident Date || Sequence Code²

Sponsor ID:

Sponsor's SSN

Sponsor per Incident ID:

Sponsor's SSN || Incident Date || Sequence Code

Victim / Offender per Incident ID:

Victim ID per Incident || Offender ID per Incident

¹See Appendix E for the SAS code that makes the ID assignments.

²Alternative identifier if offender's SSN is missing.

After defining the entity tables, serious residual problems remained related to identifiers. Most notably we discovered that victims are sometimes assigned more than one identifier. This situation can arise from two different circumstances. The ACR combines the MTF at which the incident occurred and a case number to serve as the victim identifier. When a family with an active ACR report moves to a different location, the victim is assigned a new MTF/case number. All reports of abuse at the new location are filed using the new victim identifier. The fact that the offender has abused the same victim more than once is obscured in the process. It appears in the ACR file as if the offender has abused two different victims.

Secondly, if an incident of abuse is closed but is later followed by another incident, the subsequent incident is not always correctly characterized as a reopened case. Sometimes the incident is reported as an initial event and the victim is assigned a new identifier. This will lead to an over-count of victims. For example, we randomly sampled 287 records and identified 228 victims using sponsor SSN, MTF, and case number. After manual examination of the data, it was clear that 17 of the victims had been counted twice because the same victim had two different identifiers. There were actually 211 unique victims in our sample, revealing an over-count of 1%. A number of different strategies were employed to bring victim records together in spite of being misidentified. These strategies employed using fields other than MTF and case number such as SSN, name, date of birth, and gender. We were able to identify 9,518 individual victims with multiple IDs; however, software applications that employ probabilistic linkage strategies would likely yield even better results. The TAIHOD project has recently added such software, and we will use it to process the next ACR update file.

ELIMINATING REDUNDANCY

We first divided the ACR data into the seven entity tables. This step contained the problem of redundancy within each table making it possible for us to drop redundant information without affecting the other entities. In addition, it became much easier to identify redundant information after all extraneous information was removed. We next applied a sorting strategy based on a carefully selected set of variables, taking the first record in the sort order and dropping all others, while also taking into account completeness of data. Exploration of the data revealed that while information was replicated, it was not always replicated completely. One record in a redundant set was usually complete while the remaining records were often missing fields. For example, victim information might be complete in the primary offender report, but partially missing in the secondary offender report. Choosing the wrong record would lead to missing data when, in fact, those data are available in another record. Our analysis showed that victim data should be taken from the primary offender record, offender data should be taken from the first victim record determined by MTF/case number, and sponsor data should be taken from the primary offender/first victim record. See Appendix E for the SAS code that implemented the sorting strategy.

PROTECTING CONFIDENTIALITY

The final step in the process was to secure the confidentiality of the participants. The identifiers that we created were constructed from variables in the ACR file that carry confidential information like the SSN. In order to protect the anonymity of the participants, these identifiers were dropped in the final analytic database maintained and used by programmers.³ They were replaced by the unique identifier that was assigned to every record during the first phase of processing. The algorithm for replacing the identifiers is straightforward. Consider the following simplified example where there is one victim with two offenders involved in three incidents. This would produce 6 records in the ACR file. We assigned a unique number ranging from 1 to 6 to each of these records. After sorting the file and selecting the first record in a set, there should be one victim record and three 'victim per incident' records. The identifiers would be the following:

<u>Input</u>	<u>Output</u>
Record ID=1: victim1, Incident1, offender1	Victim ID = 1,Victim per 1 st Incident ID = 1
Record ID=2: victim1, Incident1, offender2	Victim ID = 1,Victim per 2 nd Incident ID = 3
Record ID=3: victim1, Incident2, offender1	Victim ID = 1,Victim per 3 rd Incident ID = 5
Record ID=4: victim1, Incident2, offender2	
Record ID=5: victim1, Incident3, offender1	
Record ID=6: victim1, Incident3, offender2	

We made the new ID the primary key, but before dropping the old composite ID, we used it to insert the new ID into related tables as a foreign key. We now had a working relational database.

³ In addition to these efforts to protect the confidentiality of data, our data are maintained on computers without Internet or other outside access, which require passkey access, available only to programmers and the database administrator. All analyses for this project adhere to the policies for the protection of human subjects as prescribed in Army Regulation 70-25, and with the provisions of 45 CFR 46.

CHAPTER III. USING THE NEW ACR RELATIONAL DATABASE

The creation of a relational database solved many of the challenges we encountered when trying to use ACR data for epidemiological research purposes. However, programmatic challenges related to data validity and completeness were not resolved by the relational database and required more investigation and problem-solving before we were able to focus on the specific research goals of our project work. This chapter describes the nature of these challenges and how we resolved these problems.

SUBSTANTIATION VS. INCIDENT DATE

The main focus of our current research efforts is to study the relationship between alcohol consumption patterns among married, enlisted Army Soldiers and subsequent perpetration of spousal abuse. Accurate calculation of the date of the incident is important to understanding causal order in the relationship between risk factors such as drinking patterns and subsequent abuse events. For the most part, published studies on this topic have not been capable of addressing this issue of temporality (4-7, 12). Substantiation dates always occur well after the actual incident and thus are not ideal for a study looking at factors present PRIOR to the abuse event. On the other hand, as noted in Chapter I, incident dates may not always be reliable either.

To evaluate the extent of potential incident date measurement error, we examined the distribution of time between the incident date and substantiation date for all new cases of spouse abuse perpetration among enlisted male Army Soldiers occurring between 1991 and 1998. If the incident date accurately reflected the date on which the abuse event was reported, we then hypothesized the time between incident date and the date on which the event was substantiated would be less than a year. More specifically, we hypothesized that the time would be less than 6 months, as most investigations into abuse are performed rapidly. We discovered that for a very small portion of cases the time between the incident date and substantiation date was in excess of a year, and sometimes even 5 or more years separated the dates. This suggests that for these individuals the caseworker probably erroneously used the date that abuse first started as the incident date. However, for most of the cases (98.9%), the time between incident and substantiation dates was 6 months or less. Because the vast majority of incident dates occurred within 6 months of substantiation dates, we surmised that these incident dates were probably reasonably reliable and would represent the date closest to the actual incident. Concerns about improper handling or coding of some of the incident dates led us to drop those cases where the time between the incident date and the substantiation date was greater than 6 months.

ADDRESSING CASE ASCERTAINMENT CHALLENGES

As noted earlier, the process of reporting new cases to the ACR sometimes results in delayed reporting of cases. Thus, the cases present in the most recent time

period are not necessarily representative of the total case population to date. This affects not only case ascertainment, but also might affect the qualification of a subject for studies focused on recidivism. For our purposes it is important that we are able to differentiate between spouse abuse perpetrators who perpetrate violence repeatedly and those involved in a single documented spouse abuse event. In early exploratory analyses of time between first and second events for known multiple spouse abuse perpetrators, we found that the time between events often exceeded 5 years. Thus, determining whether a perpetrator is involved in single versus multiple events should, ideally, rely on Soldiers who can be followed for at least 5 years from the point of the first documented abuse event date. Given the limitations of the data in later years and possibility of unresolved cases or incomplete data, it was less practical to identify multiple offenders. For our analyses, we opted for the alternative: identifying first time documented offenses. Most of our analyses of risk factors for abuse rely on self-reported survey data from the Army Health Risk Appraisals (HRAs) taken in the early 1990s and later. Given that we have ACR data available from 1980 forward, we have the opportunity to identify potential study subjects (those who have completed an HRA) who had no documented history of spouse abuse prior to taking the HRA. Other researchers interested in evaluating single and multiple abuse perpetrators might opt for a different solution depending upon their study objectives and the data available to them.

ADDRESSING POPULATION REPRESENTATION AND GENERALIZABILITY

Addressing representativeness involves both the selection of an appropriate study design and the generalizability of the findings to the Army at large. There are programmatic and data limitations that need to be considered before an analyst proceeds with epidemiological studies using ACR data.

First, the ACR data include only cases of spouse abuse between married persons. Many civilian datasets do not impose this restriction, so comparison between military and civilian data should only be done with care. This might also affect decisions about how to design the study. In an analysis of perpetrators, we chose a case-control design and required that controls be selected from a pool of Soldiers matched on marital status (only married) at the time of the event. Others opting for a similar design should note that control selection can be prone selection bias with regards to age or time-in-service. In order to avoid this, eligible controls should first be randomly sorted by event date and then selected for inclusion into the study.

Second, as noted earlier, the ACR may underreport violence among officers; the vast majority of the perpetrators are enlisted (97%). Until better data are available on officers, we believed it prudent to restrict our analysis of perpetrators to just enlisted Soldiers.

A third complexity occurs because of the presence of civilian and military personnel in the ACR files. The TAIHOD, on which we rely for most of our exposure, demographic, health, and occupational outcome information, only contains information on active duty service-members (though there are also some limited data available on

nonmilitary victims and perpetrators in the ACR). Thus, we only allowed cases to enter the study if they were on active duty at the time of the event. (We dropped civilian cases because they were not, by definition, active duty.) This was necessary because the data contained in the TAIHOD (the file to which the ACR data were linked) is based only on active duty personnel. Other researchers not limited by this will report widely differing numbers of cases and different proportions by gender (9).

CHAPTER IV. CONCLUSIONS AND RECOMMENDATIONS

Recognizing that our research goals could not be addressed with the flat ACR file, we embarked on a plan to transform the ACR into a usable, relational database. This report documented this process and the steps that were taken to overcome challenges related to the design and utility of the new relational ACR database. Below is a list summarizing those challenges and the ways we addressed them. It is our hope that this report can serve as a guide for other family violence researchers interested in using the ACR for epidemiologic research.

CHALLENGES RELATED TO THE DESIGN OF THE RELATIONAL DATABASE

No Unique ID

Problem 1: Offenders sometimes lack any identifier.

Solution:

- We created our own unique identifiers for each of the entities made up of different combinations of known SSNs, incident dates, MTF, case number, sequence code, and gender.

Problem 2: Victims are sometimes assigned multiple identifiers.

Solution:

- We manually went through the data using SSN, name, date of birth, and gender to try to identify individual victims with multiple identifiers. We suggest, however, that software applications that employ probabilistic linkage strategies may provide even better results.

Redundancy

Problem: Redundancy is inherent in the flat file structure of the ACR. Information about an incident of abuse is replicated for each victim and offender involved in that incident.

Solution:

- A two-step process was employed. We first divided the ACR data into the seven entity tables and then applied a careful, sorting strategy that enabled us to select the best record for each entity.

CHALLENGES RELATED TO USING THE NEW ACR RELATIONAL DATABASE

Dates

Problem: Incident dates do not always reflect the date that the alleged event was reported to either the FAP or the CRC. The dates sometimes represent the date on which any abuse first occurred. However, substantiation dates occur well after the incident and may also not be ideal for longitudinal studies exploring risk factors present prior to the abuse event.

Solution:

- We assessed the time between the incident date and the substantiation date for all cases in our analysis file and dropped cases where the time between the dates was greater than 6 months. Selection of a cut-off time should be considered in relation to the specific research goals.

Case Ascertainment

Problem: Due to delays in the reporting of cases to the ACR, the most recent data will likely not capture *all* recent cases. This affects our ability to differentiate single event offenders from multiple event offenders.

Solution:

- We ended our study period on December 31, 2002, despite the fact that we had data past that date, as we felt more confident that we were capturing all cases that occurred up to that date.
- To address the related limitation in separating multiple from single offenders, we limited our analysis to the first reported event of abuse involving a spouse abuse offender, as we could go back to data prior to our study period (prior to 1991) in order to verify status.

Representativeness

Problem: The majority of abuse perpetrators in the ACR involve enlisted male personnel rather than officers, suggesting that there may be a bias in the way case information is collected. In addition, the ACR program requires that all cases be married.

Solution:

- We restricted our analysis of spouse abuse perpetrators and representative controls to enlisted, male, married Soldiers.

CONCLUSIONS

The goal of this report was to document the process we undertook to create a useful research database from an administrative data source and highlight the unique challenges of the ACR that we have encountered thus far. Due, in part, to administrative requirements imposed by the DoD and the Army, as well as technological changes that affect the way Army family violence data are reported, the format of the ACR and its data elements are likely to change in the future. Therefore, although we have documented our work with the ACR data used in research up until the writing of this report, future challenges may be different. In addition, we recently acquired new software that can employ probabilistic linkage strategies that will improve our ability to deal with data lacking unique identifiers. Despite these impending changes, it is our hope that this report will be helpful to other researchers who might use the ACR, or other similar data registries, for epidemiologic research purposes.

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APPENDIX A
ACR DATA COLLECTION INSTRUMENT

DA CHILD / SPOUSE ABUSE INCIDENT REPORT

PRIVACY ACT STATEMENT

AUTHORITY: DoD Directive 6400.1, "Family Advocacy Program"

PRINCIPAL PURPOSE: To identify and record information on incidents of child and spouse abuse and provide protection and medical treatment to military members and their families.

ROUTINE USES: Service Managers use the data to identify incidence and prevalence rates and trends, track involved families, justify resource allocation and review and control providers of care.

DISCLOSURE: Voluntary; however, failure to provide information may delay the provision of appropriate services to the individual.

SECTION I - ADMINISTRATIVE DATA

1a. Case number (YYYYNNNN)	b. Sequence (A-Z)	2. Installation/MTF Code	3. Date Incident Reported (YYYYMMDD)
4. Type of Victim ☐ a. Child ☐ b. Spouse		5a. Fatality ☐ Off: ☐ 1. Yes ☐ 2. No Vict: ☐ 1. Yes ☐ 2. No	6. Number of 2nd Offenders
7. Initial Referral to Family Advocacy. a. Source (x one)			
1. Military ☐ (a) Law Enforcement ☐ (b) Medical/Dental ☐ (c) Family Center ☐ (d) Child Care/School ☐ (e) Command ☐ (f) Chaplain ☐ (g) Other			
2. Civilian ☐ (a) Law Enforcement ☐ (b) Medical/Dental ☐ (c) Social Services ☐ (d) Child Care/School ☐ (e) Clergy ☐ (f) Other			
3. Other ☐ (a) Neighbor/Friend/Relative ☐ (b) Self-Referral, Victim ☐ (c) Self-Referral, Offender ☐ (d) Defense Logistics Agency ☐ (e) National Security Agency ☐ (f) US Army Recruiting Command ☐ (g) Other			
b. Type of Maltreatment Initially Reported (x all that apply)			
Physical ☐ Sexual ☐ Emotional ☐ Neglect ☐			
8. Relationship of Alleged Offender to Victim (Complete EITHER a or b)			
a. IntraFamilial (x one)		b. ExtraFamilial (x one)	
☐ (1) Parent (Natural, Step, etc) ☐ (2) Spouse ☐ (3) Sibling ☐ (4) Other Family Member		☐ (1) ExtraFamilial Caregiver ☐ (a) Military Child Care Center Personnel ☐ (b) Military Family Child Care Personnel ☐ (c) Military Youth Program Personnel ☐ (d) DoD Teacher/Other DoD School Personnel ☐ (e) Other DoD Caregiver ☐ (2) Relationship Unknown	
9. Incident Chronology. (Enter CRC Date and Either 'a, c and d' or 'b, c, and d')			
CRC DATE _____ (YYYYMMDD)			
a. UNSUBSTANTIATED ☐ (1) Did Not Occur ☐ (2) Unresolved (x all that apply)		Physical ☐ Sexual ☐ Emotional ☐ Neglect ☐	
b. SUBSTANTIATED			
(1) Incident ☐ (a) Initial ☐ (b) Subsequent Incident ☐ (c) Reopen			
(2) Transfer In ☐ (a) From MTF: _____			
(3) Closure ☐ (a) Intervention/Treatment No Longer Needed			
☐ (b) Maltreatment Reduced or No Longer Present			
☐ (c) Sponsor and/or Family Members No Longer Eligible for Care			
☐ (d) Victim Died			
☐ (e) Victim/Offender Refused Treatment			
☐ (f) Transfer Out - MTF trf to: _____			
c. INVESTIGATIONS		d. VICTIM PROTECTIVE ACTIONS	
☐ (1) Child Protective Services		☐ (1) Child Removed for Substitute Care	
☐ (2) Military Law Enforcement		☐ (2) Spouse Sheltered	
☐ (3) Civilian Law Enforcement		☐ (3) Offender Removed from Home	
☐ (4) SWS (Overseas)		☐ (4) Offender Removed from Activity	
☐ (5) None		☐ (5) Other Safety Actions	
		☐ (6) None	
IF UNSUBSTANTIATED STOP!! GO NO FURTHER STOP!!			

SECTION II - SPONSOR INFORMATION				CASE NUMBER: 	
10. SSAN	11. Name (Last, First, MI)			12. Sponsor Role ☐ a. Alleged Offender ☐ b. Victim ☐ c. Neither	
13. Branch of Service ☐ a. Army ☐ b. Navy ☐ c. Air Force ☐ d. Marine Corps ☐ e. Coast Guard				14. Component ☐ a. Regular ☐ b. Reserve ☐ c. Guard	
☐ f. US Public Health Service ☐ g. Nat'l Oceanic Atmos Agency (NOAA) ☐ h. Retiree (any Uniformed Service) ☐ i. Federal Civil Servant ☐ j. Civilian (incl Govt Contr)				15. Pay Grade	
SECTION III - VICTIM INFORMATION					
16. FMP	17. SSAN	18. Name (Last, First, MI)		19. DoB	20. Sex ☐ a. Male ☐ b. Female
21. Race/Ethnicity ☐ a. White (Not Hispanic) ☐ b. Black (Not Hispanic) ☐ c. Hispanic ☐ d. Asian/Pacific Islander ☐ e. American Indian/Alaskan Native		22. Alcohol Involvement ☐ a. Yes ☐ b. No ☐ c. Unknown	23. Drug Involvement ☐ a. Yes ☐ b. No ☐ c. Unknown	24. Disability ☐ a. Yes ☐ b. No ☐ c. Unknown	
25. Clinical Intervention Provided by (X all that apply) ☐ a. FAP Personnel ☐ b. Other DoD Program ☐ c. Non-DoD Program ☐ d. No Treatment Provided				26. Incident Occurred ☐ a. On Installation ☐ b. Off Installation	
SECTION IV - ALLEGED OFFENDER INFORMATION					
27. SSAN	28. Name (Last, First, MI)			29. DoB	30. Sex ☐ a. Male ☐ b. Female
31. Race/Ethnicity ☐ a. White (Not Hispanic) ☐ b. Black (Not Hispanic) ☐ c. Hispanic ☐ d. Asian/Pacific Islander ☐ e. American Indian/Alaskan Native		32. Alcohol Involvement ☐ a. Yes ☐ b. No ☐ c. Unknown		33. Drug Involvement ☐ a. Yes ☐ b. No ☐ c. Unknown	
34. Branch of Service ☐ a. Army ☐ b. Navy ☐ c. Air Force ☐ d. Marine Corps ☐ e. Coast Guard				35. Component ☐ a. Regular ☐ b. Reserve ☐ c. Guard	
☐ f. US Public Health Service ☐ g. Nat'l Oceanic Atmos Agency (NOAA) ☐ h. Retiree (any Uniformed Service) ☐ i. Federal Civil Servant ☐ j. Civilian (incl Govt Contr)				36. Pay Grade	
37. Marital Status ☐ a. Single (Never Married) ☐ b. Married ☐ c. Divorced ☐ d. Widowed ☐ Dual Military			38. Clinical Intervention Provided by (X all that apply) ☐ a. FAP Personnel ☐ b. Other DoD Program ☐ c. Non-DoD Program ☐ d. No Treatment Provided		
39. Type/Severity of Maltreatment (Enter the corresponding severity code for each type of maltreatment alleged in the incident) 1=Mild, 2= Moderate, 3=Severe					
Physical Sexual Emotional Neglect					
40. Relationship of Offender to Victim (Complete EITHER a or b)					
a. IntraFamilial (x one) ☐ (1) Parent (Natural, Step, etc) ☐ (2) Spouse ☐ (3) Sibling ☐ (4) Other Family Member			b. ExtraFamilial (x one) ☐ (1) ExtraFamilial Caregiver ☐ (a) Military Child Care Center Personnel ☐ (b) Military Family Child Care Personnel ☐ (c) Military Youth Program Personnel ☐ (d) DoD Teacher/Other DoD School Personnel ☐ (e) Other DoD Caregiver ☐ (2) Relationship Unknown		
AUTHENTICATING OFFICIAL					
a. NAME and Title of CRC Chairperson (Please Print)			b. SIGNATURE		c. DATE SIGNED

APPENDIX B
ACR VARIABLE DEFINITIONS

DA FORM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD FIELD-NAME		FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED**
	MACOM	*0	1-5	5	Major Command Code			
1a	CASE_NBR	*1	6-13	8	Situation Identifier	Also Known as Case Number. Format is YYYYNNNN where YYYY is the Fiscal Year the Case was initiated and NNNN is a sequential number from 0001 to 9999 used to identify the case.	DDDS-9909	YES
1b	SEQ_CODE	*2	14	1	Situation Sequence Code	Sequence of the Report being submitted to the Central Registry (A - Z).	None	YES
2	MTF	*3	15-20	6	FAP Facility Code	Facility code of the FAP that received the allegation of abuse or maltreatment. (Attached Table)	None	YES
3	INCIDATE	4	21-28	8	Incident Report Date (YYYYMMDD) Format	The Earliest of 2 dates: (1) the date the alleged incident was reported to the FAP or (2) the date the alleged incident was reported to a member of the Case Review Committee (CRC).	None	1/2
4	C_S	*5	29	1	Abused Victim Type Code	Also known as Type of Victim. C - Child S - Spouse	None	YES
5a	FATALITY	6	30	1	Person Status Code	*** Also Known as Fatality Occurred. (Yes/No)	DDDS Candidate	1/2
5b	OKNOWN	7	31	1	Offender Previously Known to the Central Registry	*** Applicable only if Person Status Code (Fatality) = Yes (Deceased person)(Y/N)	None	1/2

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED**
5b	VKNOWN	8	32	1	Victim Previously Known to the Central Registry	*** Applicable only if Person Status Code (Fatality) = Yes (Deceased Person) (Y/N)	None	1/2
6	NBR2OFF	9	33	1	Additional Alleged Offender(s)	Number of Additional Alleged Offenders (0 thru 5).	None	1
7	SOURCEREF	10	34-35	2	Source of Initial Referral to Central Registry	Source of Case Referral to FAP. Coded 11-17 for Military 21-26 for Civilian 31-37 for Other	None	1/2
7b	IA_phys	11	36	1	Initial Allegation-Phy	*** Initial Allegation of Abuse	None	1/2
	IA_sex	12	37	1	Initial Allegation-Sexual	reported by the above	None	1/2
	IA_emot	13	38	1	Initial Allegation-Emot	Referral Source Yes/No	None	1/2
	IA_negl	14	39	1	Initial Allegation-Negl	for each item.	None	1/2
8	Relationship of Alleged Offender to Victim ----- Not Coded/Recorded Here... See Field #40.							
9	SDDATE	*15	40-47	8	Situation Findings Date (YYYYMMDD) Format	Also Known as the Case Status Determination Date. Refers to the date the CRC makes a determination that the alleged incident is substantiated or unsubstantiated.	None	YES
9a	UNSUBRSN	16	48	1	Situation Unsubstantiated Reason	The Reason an Incident was Unsubstantiated. 1 - Did Not Occur 2 - Unresolved	None	2

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED**
9b	REPORTYPE	*17	49	1	Type of Report to Central Registry	Type of report being submitted to Registry: 1 - Initial Report 2 - Subsequent Incident 3 - ReOpened Case 4 - Transfer-In 5 - Closure / Transfer-Out	None	YES
9b	CLOSETYPE	*18	50	1	Closure Type. Used only if Type of Report to the Central Registry is 5-Closure / Transfer-Out	Type of closure: A-Intervention/Treatment no Longer Needed B-Maltreatment Reduced or No Longer Present C-Sponsor and/or Family Mbrs No Longer Eligible for Care D-Victim Die E-Victim/Offender Refused Treatment F-Transfer Out	None	3
9b	MTFxFROM	19	51-56	6	FAP Facility Transferred From	Facility code of the FAP that Transferred the case to this facility. (Applicable only if Type of Report to Central Registry is 4 - Transfer-In)	None	4
9b	MTFxTO	*20	57-62	6	FAP Facility Transferred To	Facility code of the FAP to which this case is being / was Transferred. (Applicable only if Closure Type is F - Transfer Out)	None	4
Investigations Performed for Incident (Logical yes/no fields)***								
9c	ICPS	*21	63	1	1 - Child Protective Services	Enter 'Y'es/'N'o for each item	None	1 / 3
	IMilLaw	*22	64	1	2 - Military Law Enforcement		None	1 / 3
	ICivLaw	*23	65	1	3 - Civilian Law Enforcement		None	1 / 3
	ISWS	*24	66	1	4 - SWS (Overseas)		None	1 / 3
	INone	*25	67	1	5 - None		None	1 / 3

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
Victim Protective Actions Taken (Logical yes/no fields)***								
9d	VPACRem	*26	68	1	1 - Child Removed for Sub. Care	Enter 'Y'es/'N'o for each item	None	1 / 3
	VPASRem	*27	69	1	2 - Spouse Sheltered		None	1 / 3
	VPAORemH	*28	70	1	3 - Offender Removed from Home		None	1 / 3
	VPAORemA	*29	71	1	4 - Offender Removed from Activity		None	1 / 3
	VPAOth	*30	72	1	5 - Other Safety Actions		None	1 / 3
	VPANone	*31	73	1	6 - None		None	1 / 3
10	SP_SSN	*32	74-82	9	Person Identifier	Also known as Social Security Number (SSN) of Sponsor.	DDDS-11185	1 / 3
11	SP_LNAME	33	83-103	21	Person Name Text	Sponsor's Last Name	DDDS-11235	1
11	SP_FNAME	34	104-117	14	Person Name Text	Sponsor's First Name	DDDS-11235	1
11	SP_MNAME	35	118-131	14	Person Name Text	Sponsor's Middle Name	DDDS-11235	NO
11	SP_CADENCY	36	132-135	4	Person Name Text	Sponsor Cadency Name.	DDDS-11235	NO
12	SP_PAYPLAN	37	136-137	2	Pay Plan Code	EM - Enlisted OM - Commissioned Officer WM - Warrant Officer WG - Wage Grade GS - General Schedule GM - Performance Mgmt/Recognition Sys ES - Senior Executive Service	DDDS-20374	1
12	SP_GRADE	38	138-139	2	Pay Plan Grade Ordinal Identifier	The two-digit numerical code designating rank or level of pay, such as 01-15.	DDD-20369	1

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FORM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
13	SP_ROLE	39	140	1	Person Situation Role Code	Sponsor is: H - Victim E - Alleged Offender Z - Neither	DDDS-17063	1
14	SP_SVC	40	141	1	Sponsor Branch of Service	A - Army B - Navy C - Air Force D - Marine Corps E - Coast Guard F - US Pub Health Svc G - NOAA H - Retiree I - Federal Civil Servant J - Civilian (Include Govt Contr)	None	1
15	SP_COMP	41	142	1	Uniformed Service Organization Component Type Code	Applicable only if Sponsor Br of Svc is coded a Unif Svc (A thru G). R - Regular G - Guard V - Reserve	DDDS-17063	1
16	V_FMP	42	143-144	2	Person Family Member Prefix	Family Member Prefix (Relationship to Sponsor) of Victim: 20 - Sponsor 30-39 - Spouse (Current, former, etc) 01-19 - Child	None	1
17	V_SSN	43	145-153	9	Person Identifier	Also known as Social Security Number (SSN) of Victim.	DDDS-11185	1 / 9

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FORM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
18	V_LNAME	44	154-174	21	Person Name Text	Victim's Last Name	DDDS-11235	1
18	V_FNAME	45	175-188	14	Person Name Text	Victim's First Name	DDDS-11235	1
18	V_MNAME	46	189-202	14	Person Name Text	Victim's Middle Name	DDDS-11235	NO
18	V_CADENCY	47	203-206	4	Person Name Text	Victim's Cadency Name.	DDDS-11235	NO
19	V_DOB	48	207-214	8	Person Birth Date	Victim Date of Birth	DDDS-11322	1
20	V_SEX	49	215	1	Sex Category Code	Victim Sex: M - Male F - Female	DDDS-11697	1
21	V_RACE	50	216	1	Victim Race/Ethnicity Code	Victim Race/Ethnicity Code: 1 - White, Not Hispanic 2 - Black, Not Hispanic 3 - Hispanic 4 - Asian/Pacific Islander 5 - American Indian/Alaskan Native	None	1
22	V_ALCOHOL	51	217	1	Beverage Category Code	Victim's Alcohol Involvement: 1 - Yes 2 - No 3 - Unknown	None	1
23	V_DRUGS	52	218	1	Consumable Material Item Type Code	Victim's Drug Involvement: 1 - Yes 2 - No 3 - Unknown	None	1

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
24	V_DISAB	53	219	1	Victim Disability Status Code	Victim's Disability Status at time of incident: Enter 'Y'es/'N'o	None	1
Victim Clinical Intervention Provided by (Logical yes/no)***								
25	VIFAP	54	220	1	FAP Personnel	Enter 'Y'es/'N'o for	None	1 / 3
	VIDoD	55	221	1	Other DoD-funded Program/Individual	each item	None	1 / 3
	VIOth	56	222	1	Non DoD-funded Program/Individual		None	1 / 3
	VINone	57	223	1	No Treatment Provided		None	1 / 3
26	INCI_OCC	58	224	1	Incident Location Code	A - Incident Occurred On Installation B - Incident Occurred Off Installation	None	1
na	O_INDEX	59	225-226	2	Offender Index Code	Offender Index Code: 00 - Primary Offender 01 - First Secondary Offender 02 - Second Secondary Offender etc.	None	1 / 5
27	O_SSN	60	227-235	9	Person Identifier	Also known as Social Security Number (SSN) of Offender.	DDDS-11185	1 / 6
28	O_LNAME	61	236-256	21	Person Name Text	Alleged Offender's Last Name	DDDS-11235	1 / 6
28	O_FNAME	62	257-270	14	Person Name Text	Alleged Offender's First Name	DDDS-11235	1 / 6
28	O_MNAME	63	271-284	14	Person Name Text	Alleged Offender's Middle Name	DDDS-11235	NO
28	O_CADENCY	64	285-288	4	Person Name Text	Alleged Offender's Cadency Name.	DDDS-11235	NO

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
29	O_DOB	65	289-296	8	Person Birth Date (YYYYMMDD) Format	Offender Date of Birth	DDDS-11322	6
30	O_SEX	66	297	1	Sex Category Code	Offender Sex: M - Male F - Female	DDDS-11697	1 / 6
31	O_RACE	67	298	1	Offender Race/Ethnicity Code	Offender Race/Ethnicity Code: 1 - White, Not Hispanic 2 - Black, Not Hispanic 3 - Hispanic 4 - Asian/Pacific Islander 5 - American Indian/Alaskan Native	None	1 / 6
32	O_ALCOHOL	68	299	1	Beverage Category Code	Offender's Alcohol Involvement: 1 - Yes 2 - No 3 - Unknown	None	1
33	O_DRUGS	69	300	1	Consumable Material Item Type Code	Offender's Drug Involvement: 1 - Yes 2 - No 3 - Unknown	None	1
34	O_PAYPLAN	70	301-302	2	Pay Plan Code	EM - Enlisted OM - Commissioned Officer WM - Warrant Officer WG - Wage Grade GS - General Schedule GM - Performance Mgmt/Recognition Sys ES - Senior Executive Service	DDDS-20374	7

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FORM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
34	O_GRADE	71	303-304	2	Pay Plan Grade Ordinal Identifier	The two-digit numerical code designating rank or level of pay, such as 01-15.	DDD-20369	7
35	O_SVC	72	305	1	Offender Branch of Service	A - Army B - Navy C - Air Force D - Marine Corps E - Coast Guard F - US Pub Health Svc G - NOAA H - Retiree I - Federal Civil Servant J - Civilian (Include Govt Contr)	None	1
36	O_COMP	73	306	1	Uniformed Service Organization Component Type Code	Applicable only if the Offender Br of Svc is coded a Unif Svc (A thru G) R - Regular G - Guard V - Reserve	DDDS-17063	1-as directed
37	O_MARSTAT	74	307	1	Person Marital Status Code	Alleged Offender's Marital Status: A - Single (Never Married) B - Married C - Divorced D - Widowed	DDDS-12502	6

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
37	DUAL_MIL	75	308	1	Dual Military Marriage	Dual Military Marriage: Y - Yes N - No	None	1 / 8
Offender Clinical Intervention Provided by (logical) yes/no)***								
38	OIFAP	76	309	1	FAP Personnel	Enter 'Y'es /'N'o for	None	1
	OIDoD	77	310	1	Other DoD-funded Program/Individual	each item.	None	1
	OIOth	78	311	1	Non DoD-funded Program/Individual		None	1
	OINone	79	312	1	No Treatment Provided		None	1
39	O_EMOT	80	313	1	Emotional Abuse/Maltreatment	0 - Unsubstantiated, Unresolved 1 - Mild 2 - Moderate 3 - Severe Blank - Not Applicable/Not Reported	None	1 / 2
39	O_NEGLECT	81	314	1	Neglect	0 - Unsubstantiated, Unresolved 1 - Mild 2 - Moderate 3 - Severe Blank - Not Applicable/Not Reported	None	1 / 2
39	O_PHYSICAL	82	315	1	Physical Abuse/Maltreatment	0 - Unsubstantiated, Unresolved 1 - Mild 2 - Moderate 3 - Severe Blank - Not Applicable/Not Reported	None	1 / 2

*Required Field for 'Short' Reports (Closures / Transfers-Out)

**See Legend Last Page

***Store all Yes/No fields as 'Y' or 'N' Values.

DA FO RM 2486-R

DATA INPUT/ TRANSMITTAL FILE FORMAT TO ARMY CENTRAL REGISTRY:

FIELD	FIELD-NAME	FIELD	POSITION	LENGTH	NAME	DESCRIPTION, CODING INSTRUCTIONS AND REMARKS	REFERENCE	REQUIRED** FIELD
39	O_SEXUAL	83	316	1	Sexual Abuse/Maltreatment	0 - Unsubstantiated, Unresolved 1 - Mild 2 - Moderate 3 - Severe Blank - Not Applicable/Not Reported	None	1 / 2
40	O_RELATION-1	84	317-318	2	Person Association Reason Code	Also Known as Relationship of Alleged Offender to Victim Intrafamilial: AA - Spouse AC - Sibling AD - Parent BN - Other Family Member CA - Extrafamilial Care Provider CC - Relationship Unknown	None	1
	O_RELATION-2	85	319	1	Only Coded if O_RELATION-1 is CA or CC	Extrafamilial A - Mil Child Care Center Personnel B - Mil Family Child Care Pers C - Mil Youth Program Pers D - DoD Teacher/School Pers E - Other DoD Caregiver Z - Relationship Unknown		
na	DATE_REC'D	86	320-327	8	Date Rec'd/Input at Central Registry (YYYYMMDD) Format	System-supplied date		

*Required Field for 'Short' Reports (Closures / Transfers-Out)

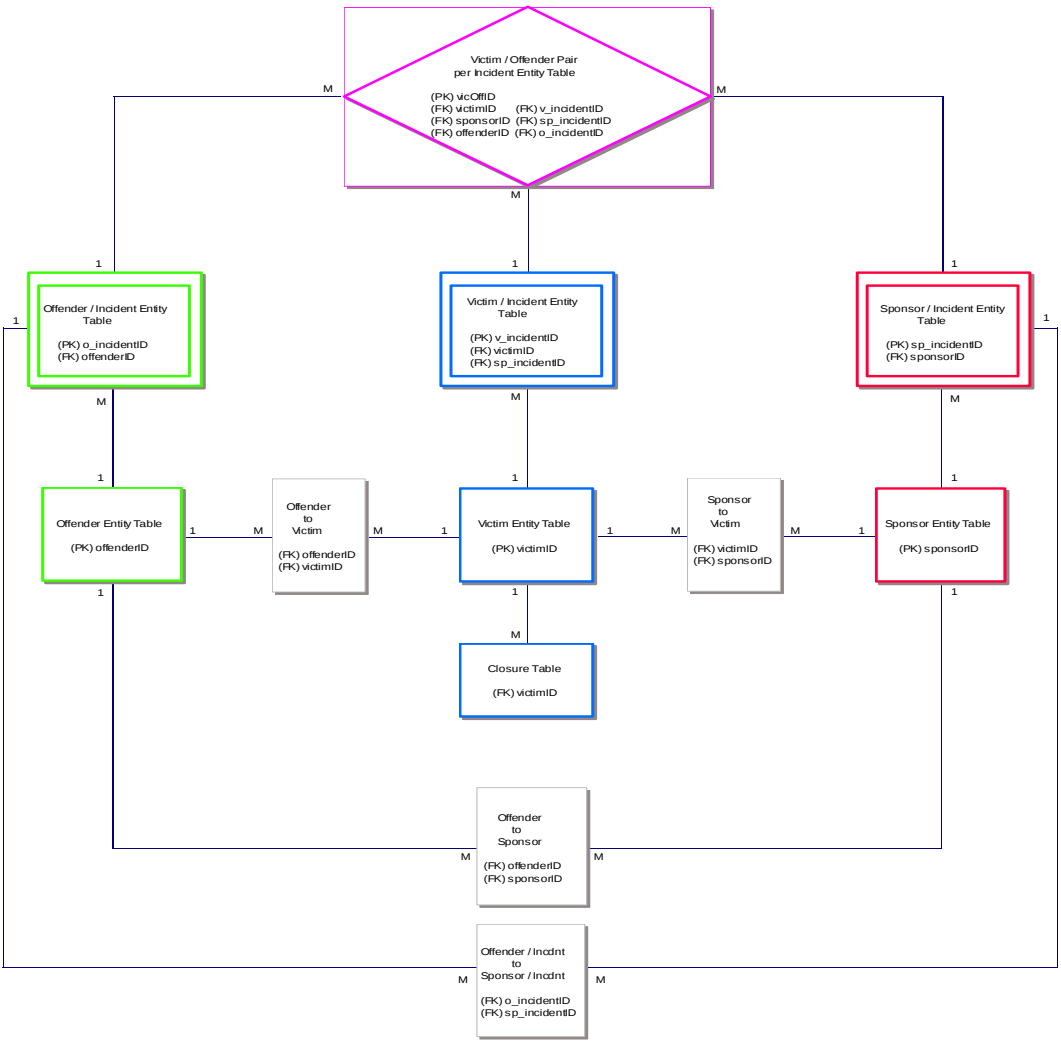
**Required Field Legend:

- 1 - Required for all Substantiated Initial, Subsequent Incident, ReOpened Case or Transfer-In
- 2 - Required for all Unsubstantiated Cases
- 3 - Required for all Closures and Transfer-Out Transactions
- 4 - Required for all Transfers In and/or Out
- 5 - Spouse Abuse Case MAY NOT Report Secondary Offenders
- 6 - Required for Spouse Cases and Child Cases where Intrafamilial Relationship is coded 'AC' or 'AD'
- 7 - Required for all Uniformed Service Member and/or Federal Civil Servants
- 8 - Required for all Spouse Abuse cases

***Store all Yes/No fields as 'Y' or 'N' Values.

APPENDIX C ENTITY DIAGRAM

ACR Relationship
Diagram



Symbol Key:



APPENDIX D TABLE DEFINITIONS

STRONG ENTITIES *Primary Keys

Victim Table:

victimID	(PK) Victim ID
vic_incidentCount	Number of incidents this victim involved in
C_S	Type of Victim
V_DOB	Victim's Birth Date (YYYYMMDD)
V_SEX	Victim's Gender
V_RACE	Victim's Race
V_DOB_S	Victim's DOB - SAS date
V_SSNENC	Encrypted Victim SSN
vic_flag	Record matched DMDC by victim's SSN

Offender Table:

offenderID	(PK) Offender ID
off_incidentCount	Number of incidents this offender involved in
O_DOB	Offender's Birth Date (YYYYMMDD)
O_SEX	Offender's Gender
O_RACE	Offender's Race
O_DOB_S	Offender's DOB - SAS date
O_SSNENC	Encrypted Offender SSN
of_flag	Record matched DMDC by offender's SSN

Sponsor Table:

sponsorID	(PK) Sponsor ID
sp_incidentCount	Number of incidents this sponsor involved in
S_SSNENC	Encrypted Sponsor SSN
sp_flag	Record matched DMDC by sponsor's SSN

WEAK ENTITIES *Primary Keys Foreign Keys

Victim/Incident Table:

v_incidentID	(PK) Victim / Incident ID
victimID	(FK) Victim ID
sp_incidentID	(FK) Sponsor / Incident ID
vic_incidentSequence	Sequential number for victim's set of incidents
MACOM	Major Command Code
CASE_NBR	Case Number
SEQ_CODE	Sequence Code
MTF	FAP Facility Code
FATALITY	Fatality Status Code
VKNOWN	Victim Previously Known to ACR
REPORTYPE	Type of Report
MTFxFROM	Facility Transferred From
MTFxTO	Facility Transferred To
V_FMP	Victim's Family Member Prefix
V_ALCOHOL	Victim's Alcohol Involvement
V_DRUGS	Victim's Drug Involvement
V_DISAB	Victim Disability Status
INCI_OCC	Incident Location Code
INCIDATE_S	Incident Report Date - SAS date
SDDATE_S	Situation Findings Date - SAS date

Offender/Incident Table:

o_incidentID	(PK) Offender / Incident ID
offenderID	(FK) Offender ID
off_incidentSequence	Sequential number for offender's set of incidents
OKNOWN	Offender Previously Known to ACR
O_ALCOHOL	Offender's Alcohol Involvement
O_DRUGS	Offender's Drug Involvement
O_PAYPLAN	Offender's Pay Plan
O_GRADE	Offender's Grade
O_SVC	Offender's Branch of Service
O_COMP	Uniformed Service Organization Component Type Code
O_MARSTAT	Offender's Marital Status
DUAL_MIL	Dual Military Marriage
INCIDATE_S	Incident Report Date - SAS date
SDDATE_S	Situation Findings Date - SAS date

Sponsor/Incident Table:

sp_incidentID	(PK) Sponsor / Incident ID
sponsorID	(FK) Sponsor ID
sp_incidentSequence	Sequential number for sponsor's set of incidents
SP_PAYPLAN	Sponsor's Pay Plan
SP_GRADE	Sponsor's Grade
SP_SVC	Sponsor's Branch of Service
SP_COMP	Uniformed Service Organization Component Type
INCIDATE_S	Incident Report Date - SAS date
SDDATE_S	Situation Findings Date - SAS date

ASSOCIATIVE ENTITY

Victim/Offender Pair Per Incident Table:

vic_offID	(PK) Unique pairing of Victim/Offender per Incident ID
victimID	(FK) Victim ID
v_incidentID	(FK) Victim / Incident ID
sponsorID	(FK) Sponsor ID
sp_incidentID	(FK) Sponsor / Incident ID
offenderID	(FK) Offender ID
o_incidentID	(FK) Offender / Incident ID
IA_phys	Initial Allegation-Physical
IA_sex	Initial Allegation-Sexual
IA_emot	Initial Allegation-Emotional
IA_negl	Initial Allegation-Negligent
ICPS	Investigations: 1 Child Protective Services
IMilLaw	Investigations: 2 Military Law Enforcement
ICivLaw	Investigations: 3 Civilian Law Enforcement
ISWS	Investigations: 4 SWS (Overseas)
INone	Investigations: 5 None
VPACRem	Victim Protective Action: 1 Child Removed for Sub. Care
VPASRem	Victim Protective Action: 2 Spouse Sheltered
VPAORemH	Victim Protective Action: 3 Offender Removed from Home
VPAORemA	Victim Protective Action: 4 Offender Removed from
VPAOth	Victim Protective Action: 5 Other Safety Actions
VPANone	Victim Protective Action: 6 None
SP_ROLE	Sponsor's Role Code
VIFAP	Victim intervention provided by: FAP Personnel
VIDoD	Victim intervention provided by: Other DoD funded
VIOth	Victim intervention provided by: Non DoD funded
VINone	Victim intervention provided by: No Treatment Provided
O_INDEX	Offender's Index Code
OIFAP	Offender intervention provided by: FAP Personnel
OIDoD	Offender intervention provided by: Other DoD funded
OIOth	Offender intervention provided by: Non DoD funded OINone
OINone	Offender intervention provided by: No Treatment Provided
O_EMOT	Emotional Abuse/Maltreatment
O_NEGLECT	Neglect
O_PHYSICAL	Physical Abuse/Maltreatment
O_SEXUAL	Sexual Abuse/Maltreatment
O_RELATION1	Relationship of Offender to Victim
O_RELATION2	Relationship of Offender to Victim - Extrafamilial
NBR2OFF	Additional Alleged Offender(s)
SOURCEREF	Source of Initial Referral
DATE_REC'D	Date Recd/Input at Central Registry (YYYYMMDD)
DATE_REC'D_S	Date Recd/Input at Central Registry - SAS date

APPENDIX E

SAS CODE TO CONSTRUCT ENTITY IDENTIFIERS

VICTIMS

```
vic_id1 = sp_ssn || mtf || case_nbr;
vic_id2 = sp_ssn || mtf || case_nbr || seq_code;

proc sort data=a;
  by sp_ssn mtf case_nbr seq_code o_index;

proc freq data=a noprint;
  tables vic_id1 / out=b;

proc freq data=b;
  tables count;
  title 'COUNT UNIQUE VICTIMS';

proc freq data=a noprint;
  tables vic_id2 / out=b;

proc freq data=b;
  tables count;
  title 'COUNT UNIQUE VICTIMS PER INCIDENT';
```

OFFENDERS

```
if (o_ssn = ' ')
  then do;
    off_id1 = sp_ssn || o_ssn || o_sex;
    off_id2 = sp_ssn || o_ssn || o_sex || incdate || seq_code;
  end;
else do;
  off_id1 = '          ' || o_ssn || ' ';
  off_id2 = '          ' || o_ssn || ' ' || incdate || seq_code;
end;

proc sort data=a;
  by off_id1 incdate seq_code o_index mtf case_nbr;

proc freq data=a noprint;
  tables off_id1 / out=b;

proc freq data=b;
  tables count;
  title 'COUNT UNIQUE OFFENDERS';

proc freq data=a noprint;
  tables off_id2 / out=b;

proc freq data=b;
  tables count;
  title 'COUNT UNIQUE OFFENDERS PER INCIDENT';
```

SPONSORS

```
sp_id1 = sp_ssn;  
sp_id2 = sp_ssn || incdate || seq_code;  
  
proc sort data=a;  
  by sp_id1 incdate seq_code o_index mtf case_nbr;  
  
proc freq data=a noprint;  
  tables sp_id1 / out=b;  
  
proc freq data=b;  
  tables count;  
  title 'COUNT UNIQUE SPONSORS';  
  
proc freq data=a noprint;  
  tables sp_id2 / out=b;  
  
proc freq data=b;  
  tables count;  
  title 'COUNT UNIQUE SPONSORS';
```

VICTIM/OFFENDER/INCIDENT¹:

```
vicOff_id = vic_id2 || off_id2;
```

¹This entity contains no redundant information, which means that for every record in the original ACR file, there is one row in the Victim/Offender/Incident table.