



# Ministry of Defence

## Background Quality Report Tracking Afghanistan VSI/SI Operational Casualties

The purpose of a background quality report is to inform users of statistics about the quality of the data used to produce the publication, and any statistics derived from that data. Existing uses of the statistics and user requirements are also discussed.

This assessment relates to the Annual Tracking Afghanistan VSI/SI Operational Casualties Official Statistic published by Defence Statistics (Health). This can be found at:  
<https://www.gov.uk/government/publications/mod-national-and-official-statistics-by-topic>.

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# 1. Introduction

## 1.1 Overview

These statistics track the treatment of personnel with an initial Notification of Casualty (NOTICAS) of Very Seriously Injured (VSI) or Seriously Injured (SI) caused by injury in Afghanistan through secondary rehabilitation care (including both physical and mental rehabilitation). For personnel that have completed secondary rehabilitation, the outcome of their treatment (return to duty, medical discharge, administrative discharge or death) is also tracked. The statistics display:

- a. The number of personnel with an initial NOTICAS of VSI or SI in Afghanistan by month.
- b. The treatment given to these personnel in secondary rehabilitation including; Field Hospital, Royal Centre for Defence Medicine (RCDM), Defence Medical Rehabilitation Centre (DMRC), Regional Rehabilitation Units (RRUs), Department for Community Mental Health (DCMH) and National Health Service (NHS) and Private Sector Hospital.
- c. The length of secondary rehabilitative care provided
- d. The eventual outcomes of the patients' injury

It should be noted that this report does not include detailed information on the casualty care pathway for those VSI or SI in Afghanistan on Op HERRICK or Op VERITAS between 7 October 2001 (start of Operations in Afghanistan) and 7 October 2007. This is because this time period predates the set-up of the Defence Patient Tracking System (DPTS) on 8 October 2007.

## 1.2 Background and Context

Defence Statistics publishes an Annual Tracking Afghanistan VSI/SI Operational Casualties Report, mainly to inform policy and decision making within the Department. The statistics are also used to inform general debate in government, parliament and the wider public. Following consultation with internal and external stakeholders, this report was changed from a bi-annual release to annual in May 2015. This consultation can be found at [Gov.uk](http://Gov.uk).

## 1.3 Methodology and Production

### 1.3.1 Data Sources

#### Notification of Casualty (NOTICAS)

NOTICAS is the name for the formalised system of reporting casualties within the UK Armed Forces. It sets in train the Ministry of Defence's (MOD) next of kin informing procedure. The MOD's Joint Casualty and Compassionate Policy and procedures set out the guidance under which a NOTICAS report is to be raised. NOTICAS takes precedence over all but the most urgent operational and security matters.

The NOTICAS reports raised for casualties contain information on how seriously medical staff in theatre judge their condition to be. This information is used to inform what the next of kin are told. "VSI" and "SI" are the two most serious categories into which personnel can be classified:

- a. Very seriously injured (VSI) is the definition we use where the injury is of such severity that life is imminently endangered.
- b. Seriously injured (SI) is the definition we use where the patient's condition is of such severity that there is cause for immediate concern, but there is no imminent danger to life.

The VSI and SI categories are defined by Joint Casualty and Compassionate Policy and Procedures. They are not strictly 'medical categories' but are designed to give an indication of the severity of the injury to inform the next of kin and the chain of command.

The NOTICAS system is initiated very early in the patient's admission to the field hospital; the classification of a casualty will change as time progresses. The initial signal listing of VSI or SI may, in some cases, be followed by an updated less serious listing if the case appeared worse on admission than transpires. This report only includes casualties with an initial NOTICAS listing of VSI or SI.

NOTICAS forms are held on the Joint Personnel Administration system (JPA<sup>1</sup>) and are extracted by Defence Statistics on a weekly basis. The forms are then validated against returns provided by the Joint Casualty and Compassionate Cell (JCCC) and entered on to the Defence Health Database.

Once the data has been validated and input it is then extracted on an annual basis and linked to several other datasets to provide information on the specialist care provided and the eventual outcomes of injury. A description of these datasets is found within this Background Quality Report.

The number of Service personnel classified as VSI or SI as a result of injuries sustained on Op HERRICK was published monthly, a fortnight in arrears. A report covering Service personnel classified as VSI or SI as a result of injuries sustained on Op TORAL is now published quarterly, and can be found on [Gov.uk](http://Gov.uk). Please note that the figures presented in this report will not match those reporting in the VSI and SI casualty statistics, as this report includes VSI and SI Personnel that have subsequently Died of Wounds or Died Not Enemy Action.

#### **Defence Medical Information Capability Programme (DMICP)**

The Defence Medical Information Capability Programme (DMICP) commenced during 2007 and comprises an integrated primary Health Record (iHR) for clinical use, and a pseudo-anonymised central data warehouse. It is the source of electronic, integrated healthcare records for primary healthcare and some MOD specialist care providers. Prior to this data warehouse, medical records were kept locally, at each individual medical centre. By 2010, DMICP was in place for the UK and the majority of Germany. Rollout to other overseas locations commenced in November 2011 and is ongoing. Please note DMICP data prior to 2010 is considered incomplete due to rollout of the programme.

DMICP is a live data source and is subject to change.

#### **Defence Patient Tracking System (DPTS)**

The DPTS was set up to monitor the progress of Armed Forces patients undergoing specialist treatment in the UK to ensure that their care is delivered promptly and coherently, and to coordinate clinical, administrative and welfare aspects of their support. The DPTS was set up as previously this information was not stored centrally. This data source has therefore been used to track the VSI/SI casualties through their specialist care pathway.

The DPTS is not a medical or welfare record system; medical records are held on DMICP (Primary Health Care) and by the National Health Service (Secondary Health Care); welfare records are held in single Service welfare databases. The DPTS is not an authoritative record of personnel and demographic details, these details are held on JPA.

The number of patients treated at RCDM and DMRC as a result of Operations in Afghanistan are released on a quarterly basis, one month in arrears, on [Gov.uk](http://Gov.uk).

#### **Aeromedical Evacuation Control Centre (AECC)**

Defence Statistics routinely receive aeromedical evacuation records from the AECC at RAF Brize Norton for Operations in Afghanistan.

Not all Service personnel aeromedically evacuated from Afghanistan will receive specialist medical treatment (i.e. in a hospital, rehabilitation centre or mental health facility) but will be placed under the care of their unit Medical Officer/Medical Centre.

#### **Field Hospital Admissions from J97 Returns and OpEDAR**

There was a UK Field Hospital at Camp Bastion where the more seriously ill and injured were treated. This had an intensive care and high-dependency facility, as well as surgical, medical, A&E, physiotherapy, and dental, mental health, x-ray, CT scanner and laboratory facilities.

Until 30 November 2014 Defence Statistics received information on the patients who are admitted to the UK Field Hospital at Camp Bastion from the J97 Returns. This J97 return also includes those patients admitted to the following two locations:

- The HQ of Multinational Brigade (South) in Kandahar maintained a Field Hospital which provided support for ISAF and Coalition personnel. This facility included additional capabilities to that of the Role 2 including specialist diagnostic resources and specialist surgical and medical capabilities.
- In Kabul, UK Personnel could be admitted to either the French or Greek Field Hospital. There was also a US facility which provided physiotherapy and dentistry.

Until 31 December 2011, Defence Statistics also received information on admissions and attendances at the UK Field Hospital at Camp Bastion from the Operational Emergency Attendance Register (OpEDAR).

The OpEDAR system recorded all patients who attended or were admitted through the A&E department of a UK Operational hospital. The treatment classification broadly grouped the data by injury treatment type. OpEDAR captured information at the initial assessment. It was possible for this to change over the course of treatment or for a patient to have multiple conditions; however, this information was not captured. Whilst most of the data was captured via drop down menus, some fields, including diagnosis, are free text, thus the quality of medical information captured was variable.

These two data sources were used to report on length of stay in the field hospital and outcome from that admission.

### **Amputation Data**

The VSI/SI casualties in Afghanistan were linked with amputation data which were compiled from five sources:

- The Joint Theatre Trauma Register (JTTR), which commenced during 2003 to improve the care of the seriously injured patient from the point of injury to the point of discharge from hospital treatment.
- The Complex Trauma Database managed by DMRC Headley Court, which commenced in June 2008 to record information on patients receiving inpatient care on the complex trauma ward.
- The Prosthetics Database managed by the Defence Medical Rehabilitation Centre, Headley Court which commenced in June 2006 to record information on patients fitted with a prosthetic limb(s).
- The DPTS which commenced on 8 October 2007. The DPTS was set up to enable the capture of tracking data for aeromedically evacuated patients at the place where healthcare is being delivered along the care pathway.
- UK Service personnel who have sustained a partial or complete limb amputation as a result of injuries on Op HERRICK and Op TELIC prior 1 April 2006 have been identified from the dataset used to compile the following research paper: Dharm-datta, S; Etherington, J.; Mistlin A. & Clasper J, 2011, Outcome of amputees in relation to military Service, Journal of Bone and Joint Surgery - British Volume, Vol 93-B, Issue SUPP\_1, 52.

The JTTR, Complex Trauma Database, Prosthetics Database and DPTS were cross-checked against each other and records that don't appear in all datasets were followed up to ensure that an individual is definitely an amputee. Further validation steps were then taken to ensure a unique count of amputees was taken from the four datasets and presented in the publication.

A live UK Service personnel is defined as an amputee if they have an injury coded in the JTTR as Amputation (traumatic), partial or complete, for either upper or lower limbs using the Abbreviated Injury Scale (AIS) Dictionary 2005 (Military Edition), or who had a surgical amputation performed either at the field hospital or at a UK hospital (the majority of these will be at RCDM). A traumatic or surgical amputation can range from the loss of part of a finger or toe up to the loss of entire limbs. Only amputees with an initial NOTICAS listing of VSI or SI was included in this report, though it was noted that some amputees may not have had an initial NOTICAS listing of VSI or SI and were therefore not included in this report.

Live personnel are defined as either those undergoing treatment at Camp Bastion Field Hospital or RCDM or those being discharged from hospital after receiving treatment for the injuries that resulted in an amputation(s).

Doctors may recommend and/or patients may elect to have an amputation at any point during their care pathway, thus any additional live UK Service personnel identified as an amputee from these data sources have been included in this report.

The number of amputations sustained as a result of Op HERRICK are released on a quarterly basis, one month in arrears, on [Gov.uk](http://Gov.uk).

### **Joint Personnel Administration (JPA)**

Service personnel with medical conditions or fitness issues which affect their ability to perform their duties are generally referred to a medical board for a medical examination and review of their medical grading. The patient may be downgraded, to allow for treatment, recovery and rehabilitation. Medically downgraded personnel are those personnel who have been assessed by a medical board and subsequently awarded an MDS of either MLD or MND.

JPA (the Armed Forces personnel system) was used to identify if the Service personnel remained in Service and to identify if an individual was re-deployed once their care pathway was complete (using JPA move and track).

Defence Statistics extracted the latest strength file from JPA and joined this to individual JMES, MDS and PULHEEMS profiles from the DMICP data warehouse. The Derived MDS variable that was created utilised a combination of MDS and PULHEEMS codes on JPA and DMICP. The Derived MDS variable takes the data source with the maximum effective date (i.e. most recent information).

### **Medical Discharge Data**

Medical discharges are the result of a number of specialists (medical, occupational, psychological, personnel, etc.) coming to the conclusion that an individual is suffering from a medical condition that pre-empts their continued service in the Armed Forces. Statistics based on these discharges do not represent measures of true morbidity or pathology. At best they indicate a minimum burden of ill-health in the Armed Forces. Furthermore, the number and diversity of processes involved with administering a medical discharge introduce a series of time lags, as well as impact on the quality of data recorded.

Although Medical Boards recommend medical discharges they do not attribute the principal disability leading to the board to Service. A Medical Board could take place many months or even years after an event or injury and it is not clinically possible in some cases to link an earlier injury to a later problem which may lead to a discharge. Decisions on attributability to Service are made by the Service Personnel and Veterans' Agency.

As part of the medical discharge process outlined in the PULHEEMS Administrative Pamphlet 10 (PAP10), Defence Statistics received copies of all FMED23 forms completed by Naval Service, Army and RAF medical boards, as long as the personnel involved has not refused consent. These forms were entered into our database and any principal or contributory medical conditions associated with the discharge were coded utilising ICD-10 codes. The primary purpose of these medical documents is to ensure the appropriate administration of each individual patient's discharge. Statistical analysis and reporting is a secondary function.

These records were then matched to outflow records obtained from the Department's JPA system, which is used for the administration of all Regular Forces. Any records included in the JPA extract for which Defence Statistics had not received a FMED23 form were then queried with Single Service representatives.

The number of UK Service personnel medically discharged from the Armed Forces by financial year is released annually on [Gov.uk](http://Gov.uk).

### **Medical Deployability Status Data**

DMICP has been used to obtain an individual's Medical Deployability Status (MDS) after injury. Once downgraded from Medically Fully Deployable (MFD), they will be assessed as Medically Limited Deployable (MLD) or Medically Non-Deployable (MND) by a Medical Board from their Service.

### **Mental Health Data**

Defence Statistics receive mental health data covering all new episodes of care among UK Service Personnel at the MOD's Departments of Community Mental Health (DCMHs) for outpatient care, and new admissions to the MOD's inpatient care contractor. Defence Statistics receives data from DCMHs and inpatient providers for all UK regular Armed Forces personnel from the following sources:

- Since January 2007, DCMH have submitted relevant information required to produce this report to Defence Statistics on a monthly basis.
- Since April 2012, system developments enabled DCMH to begin recording on the MOD's electronic patient record system (Defence Medical Information Capability Programme) in a consistent way for reporting.
- Since January 2007, South Staffordshire and Shropshire Healthcare NHS Foundation Trust (SSSFT) and Guys and St Thomas' hospital have submitted relevant information required to produce this report to Defence Statistics.

DCMH staff record the initial mental health assessment during a patient's first appointment, based on presenting complaints. The information is provisional and final diagnoses may differ as some patients do not present the full range of symptoms, signs or clinical history during their first appointment. The mental

health assessment of condition data were categorised into three standard groupings of common mental disorders used by the World Health Organisation's ICD-10.

A rigid pseudo-anonymisation process, and other measures preserving patient confidentiality, enabled full verification and validation of the DCMH and in-patient records, importantly allowing identification of repeat attendances.

This data was been used to identify the VSI/SI patients that attended a DCMH or inpatient care contractor as a new referral after the date of their injury.

The number of new episodes of care among Service personnel who have attended a MOD DCMH for outpatient care, and new admissions to the MOD's inpatient care contractor are released on a quarterly basis, three months in arrears, on [Gov.uk](http://Gov.uk).

## **Deaths**

Defence Statistics receive weekly notifications of all in Service UK Regular Armed Forces deaths from the JCCC. Defence Statistics also receive cause of death information from military medical sources in the single Services. At the end of each calendar year, Defence Statistics cross-reference the medical information it holds against publicly available death certificate information available from the NHS. Regarding suicides and open verdicts, to ensure the highest accuracy of information and that all cases previously recorded as 'awaiting verdict' have been followed up, Defence Statistics carry out an annual audit of MOD data held by the Office for National Statistics and other authorities.

To record information on cause and circumstances of death, Defence Statistics uses ICD-10. In addition, Defence Statistics also record the casualty reporting categories used by the JCCC, used for reporting to the Chain of Command and for notifying the next of kin.

## **Compensation and Pension System (CAPS)**

The CAPS holds the data regarding the Armed Forces and Reserve Forces Compensation Scheme (AFCS). The AFCS came into force on 6 April 2005 to pay compensation for injury, illness or death caused by Service that occurred on or after that date. It replaced the previous compensation arrangements provided by the War Pensions Scheme (WPS) and the attributable elements of the Armed Forces Pensions Scheme.

Under the AFCS, compensation payments include a tariff-based tax free lump sum for pain and suffering associated with the injury or illness, the size of which reflects the severity of the injury or illness. There are 15 tariff levels with associated lump sums. For more serious injuries, in addition to the lump sum, a tax-free index-linked income stream known as the Guaranteed Income Payment (GIP) is paid from service termination for life to recognise loss of future earnings due to the injury or illness. Under the AFCS, a claim can be made and awarded while still in Service.

There are a number of reasons why an individual may have been injured but not received any compensation under the AFCS:

- The figures provided for the AFCS were based on claims awarded as at the latest data currently available. Due to the time taken to process and award claims, and also the time lag in the receipt of CAPS data, there may be other claims that have not yet been fully processed and cleared on CAPS.
- Individuals have up to 7 years to make an injury/illness claim under the AFCS from the date of their injury. Therefore some individuals may not yet have registered a claim, but may go on to do so in the future.
- Some injuries/illnesses may be accepted as predominantly caused by service but do not meet the criteria as set out in the tariff in the AFCS Order 2011, thus falling "below tariff". These claims are rejected and no compensation is paid.

Where death is caused by Service the AFCS provides an income stream known as the Survivor's Guaranteed Income Payment (SGIP). This is payable to the spouse, civil partner or adult dependant for life. Compensation is also paid to eligible children, known as the Child Payment (CP).

There are a number of reasons why some deaths may not result in AFCS compensation:

- Deaths where there is no spouse/eligible partner or dependants will not result in any compensation under the AFCS.
- The figures provided report on awarded claims as at the latest data currently available. There may be additional claims currently being processed by SPVA and therefore the numbers of awards may increase in future updates of these figures.
- Families have up to three years to make a claim under the AFCS following a death in Service. Therefore some families who have not yet made claims may do so in the future.
- Deaths where there is no spouse/eligible partner or dependants will not result in any compensation under the AFCS.
- The figures provided report on awarded claims as at the date of data extract. There may be additional claims currently being processed by the SPVA and therefore the number of awards may increase in future updates of these figures.
- Families have up to three years to make a claim under the AFCS following a death in Service. Therefore, some families who have not yet made claims may do so in the future.

All claims counted in this report occurred after the date of injury. However please note that the claim made under the AFCS may not be attributable to their VSI or SI sustained on Operations in Afghanistan.

Defence Statistics publish a bi-annual AFCS National Statistic which can be found on [Gov.uk](http://Gov.uk).

### **1.3.2 Pseudo-Anonymisation**

Prior to analysis data sources were linked using a pseudo-anonymisation process. The individual identifiers were stripped from datasets and replaced by a pseudo-anonymiser, generated by an automated sequential numbering system. The key to the system is that it recognises previous occurrences of a given Service number and allocates the same pseudo-anonymiser on each occasion. The pseudo-anonymisation process can only be reversed in exceptional circumstances controlled by the Caldicott Guardian under strict protocols.

### **1.3.3 Statistical Analysis**

Information on length of stay and length of pathways has been presented as a median average with an inter-quartile range, rather than a mean average and standard deviation as these statistics are affected less by outliers.

- An outlier is an observation within a dataset that appears to be inconsistent with the remainder of the dataset.
- The median is the value in the centre of the data set when they are arranged from smallest to largest.
- A quartile is any of three values (first/lower quartile, second quartile (median), third/upper quartile) that divides the sorted (from smallest value to largest value) dataset into four equal parts. The lower quartile is the value that at which 25% of the values in the dataset will be below. The upper quartile is the value that at which 75% of the values in the dataset will be below.
- The inter-quartile range is the range in which the middle 50% of the data points fall (i.e. the distance between the lower and upper quartile). The longer the inter-quartile range the wider the spread of data.

The Non-Parametric Mann-Whitney U Test for Independent samples was used to test if the distribution of length of admission time is different for VSI and SI patients at both RCDM and at DMRC. The same test was also used to test if the distribution of length of admission time is different for patients with injuries resulting from hostile or non-hostile action at RCDM and to test if the distribution of the number of admissions to DMRC is different for VSI and SI patients.

Survival analysis was used to investigate the care pathway lengths for:

- a. Personnel with an initial NOTICAS classification of VSI compared to personnel with an initial NOTICAS classification of SI
- b. Personnel with injuries resulting in an amputation compared to non-amputees

Survival analysis is a statistical methodology designed to identify if two or more populations show differences in the rate of a "failure" event over time, and to predict the probability that a failure will or will

not have occurred after a set period of time. Examples of datasets to which survival analysis could be applied include:

- a. Survival time of patients after diagnosis
- b. Lifetime of an engine component
- c. Time taken to pass a driving test

In the context of this report "survival" does not refer to the death of a patient, but to the length of time for which a patient is receiving specialist care for their injury. A "failure" or termination of a patients care can occur as a result of three actions:

- a. The patient no longer requires specialist care (hospital or rehabilitation unit)
- b. The patient leaves the Armed Forces
- c. The patient dies

Please note that the results of survival analysis should not be utilised to estimate the length of specialist care required by individual patients.

An initial analysis of the data was undertaken utilising Kaplan-Meier models. The advantage of this statistical technique is that it is non-parametric, and requires fewer assumptions regarding the data utilised. Two separate Kaplan-Meier models have been produced, one evaluating the difference in care pathway length for VSI/SI patients, and the other the difference in care pathway length for amputees and non-amputees. For further information, please see the supporting tables document.

In addition to producing Kaplan-Meier models, Cox Proportional Hazard models were also undertaken. The Cox Proportional Hazard model has greater predictive power than the Kaplan-Meier model; however the relationship must be proportional. Therefore, this assumption was tested before using such a technique.

#### **1.4 Contact Details**

The Deputy Head of Defence Statistics (Health) is the Responsible Statistician for this Official Statistic:

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## **2. Relevance**

### **2.1 Coverage**

The report is used to inform internal and external stakeholders of the impact of VSI/SI casualties generated on Operations in Afghanistan on the secondary care system maintained by the MOD. It also identifies the outcomes for casualties (return to service, medical discharge etc) and the amount of time personnel require specialist treatment.

It is thought that this information may be of use in predicting the number of casualties that would be sustained if the UK Armed Forces entered a conflict with similar operational parameters in the future, and the burden this would add to Armed Forces healthcare.

This report **does not** include detailed information on the casualty care pathway for those VSI or SI in Afghanistan on Op HERRICK or Op VERITAS between 7 October 2001 (start of Operations in Afghanistan) and 7 October 2007. This is because this time period predates the set-up of the Defence Patient Tracking System (DPTS) on 8 October 2007. The DPTS was set up to monitor the progress of Armed Forces patients undergoing specialist treatment, to ensure that their care is delivered promptly and coherently, and to coordinate clinical, administrative and welfare aspects of their support. The DPTS was set up as previously this information was not stored centrally and could only be accessed through individual medical records. However, it has been possible for this group of patients to provide some information presented in the final section of this report:



- The number of casualties by NOTICAS listing (VSI or SI).
- The number of casualties who died of their wounds/died as a result of their injuries from non-enemy action.
- The number of casualties who have been discharged from Service.
- The number of casualties who have been medically discharged from Service.
- The number of casualties that return to medically fully deployable or medically limited deployable status.

## 2.2 User Needs

The report was provided in response to the increasing number of requests for information about injured UK Service Personnel. The requests varied from requesting more detail on the injuries sustained to understanding the long-term outcome of those injured.

Data from the report is utilised in the annual Health of the Armed Forces report, as well being used to answer parliamentary questions and Freedom of Information requests. The findings presented in this report will also assist in the future planning of medical care for patients VSI or SI on Operations in Afghanistan or in future conflicts where the types of injuries sustained are comparable. This includes estimating the number of casualties that will be treated at hospitals and other medical facilities and the length of time they are likely to be a patient at these locations. The findings will also provide the Permanent Joint Headquarters (PJHQ) and Commanding Officers a guide as the length of time that casualties will be in treatment and therefore non-deployable or deployable in a restricted role.

The principal customers for the medical discharge publication include:

- Single Service Medical Boards
- Defence Business Services (DBS)
- Deputy Chief of Defence Staff (DCDS) Personnel and Training
- Surgeon Generals Department
- Armed Forces Occupational Health
- Department of Health
- External Organisations concerned with ex-serviceman welfare (including charitable organisations)
- Academic Researchers
- Journalists

The report has an accompanying ministerial submission, and a press-release.

## 3. Accuracy

The Tracking Afghanistan VSI/SI Operational Casualties report uses a variety of different data sources, each of which has different properties which affect the difference between published and true values.

### 3.1 Accuracy by Data Source

#### Casualty Data

Defence Statistics use three sources of data to collate the casualty statistics (NOTICAS signals, J97 Field Hospital Returns and Aeromedical Evacuation Control Cell data). Validation routines on each of the datasets are carried out to check on the names and Service numbers of casualties, to ensure that we are accurately counting UK Military casualties and to check whether they've previously been included in the statistics. Defence Statistics also then carry out additional validation of the casualty and fatality data by linking it with two other sources of data, namely the DPTS and the JTTR. This allows us to check on both the Operational Theatre and the classification of injury/illness/death. Any mismatches between the datasets are investigated and amendments are made to the raw data if necessary before the report is processed, ensuring accuracy.

It is possible for Service numbers and nationalities to be recorded incorrectly. If that casualty does not appear in another dataset, Defence Statistics have no other sources to validate against and will assume they have been entered correctly at source. It is therefore possible to exclude a UK casualty if the nationality and service number have been recorded incorrectly.

#### Defence Patient Tracking System (DPTS)

The DPTS is a live system that is constantly being updated. A new extract is taken approximately two months after the end of the reporting period for each report; any changes to historic data since the

previous report will be captured in the new extract and any clinical contacts not recorded by this time will not be included in the report.

### **Amputations**

Defence Statistics use four sources of data to collate the amputation statistics for the period from 1 April 2006 onwards. It is therefore unlikely that an operational in-service amputee will not be picked up in one of these datasets and the figures presented are accurate. Data for amputations prior to April 2006 aren't available from these data sources (due to the systems not being implemented) so data is sourced from the dataset used in a research paper (Dharm-datta et al., 2011). Defence Statistics are unable to validate this data against other sources but it is the most accurate data held by the MOD.

Underreporting may be an issue as it is possible that a UK Service Person may leave service and then later have an elective amputation as a result of the injuries they sustained while on Operations but wouldn't be picked up in our datasets. On occasions, if an amputee only appears in one dataset, it can be unclear whether they are genuinely an amputee as the information provided is sometimes limited. We can normally clarify this with our data suppliers but for older records, this isn't always possible and gives rise to the potential for counting personnel as amputees who aren't actually amputees. Defence Statistics felt on balance it was more prudent to accept a false positive rather than a false negative.

### **Medical Discharges**

In 2013/14 and 2014/15, Defence Statistics did not receive all of the Army discharge paperwork which confirms that an individual has medically discharged and the cause information for the discharge. Therefore, Army medical discharge figures for 2013, 2014 and 2015 are provisional and should be considered a minimum. Please see the Annual Medical Discharges in the UK Regular Armed Forces Background Quality Report which is available on the [Gov.uk](http://www.gov.uk) website for further information.

### **Mental Health**

Efficient methods are adopted to capture the Armed Forces mental health information and considerable validation is undertaken to ensure that the information provided is accurate. Users trust the statistics and Defence Statistics receive numerous requests regarding the information presented.

The principal strength of this data is that it is the presentation of the number of Service personnel who have been seen for a new episode of care at a DCMH or in-patient facility, as reported by clinicians. The inclusion of new episodes of care direct from the legal electronic patient record improves the robustness and integrity of the underlying data. A further strength is the use of the pseudo-anonymised patient identifier to enable DS to validate data therefore improving accuracy and enabling linkage to deployment records to identify any effect of deployment on mental health in the Armed Forces.

### **Compensation and Pension System (CAPS)**

Defence Business Services (DBS, formerly the Service Personnel and Veterans' Agency) are responsible for ensuring the quality of CAPS data supplied to Defence Statistics. The CAPS is a large administrative database and is subject to the data quality issues of any large administrative system with data collated by a large number of staff for operational delivery purposes.

The main sources of potential error in the AFCS statistics are as follows:

- Incomplete data extracts from DBS
- Data processing errors resulting in incorrect data outputs
- Manual error during production of report tables, graphs and commentary

To ensure that potential errors are identified and resolved, Defence Statistics implement a series of data quality checks throughout the report production. These checks involve close liaison with DBS when required, to ensure the accuracy of the figures published

### **Medical Deployability Standard (MDS) and Strength of Armed Forces**

Individual MOD medical centres are responsible for ensuring the accuracy of clinical and registration information in the electronic patient record, which forms the 'front end' of DMICP. All coded (not free text) information is saved into the central data warehouse at regular intervals; usually every three days. The DMICP system is a large clinical and administrative database and is subject to the data quality issues of any large administrative system with data collated by a large number of medical and administrative staff for clinical delivery purposes.

All personnel in the Regular Armed Forces must be recorded on JPA in order for them to receive their pay. Therefore the overall strength figures are fairly accurate. However, more detailed breakdowns relying on the information recorded for each individual can be less accurate due to variable quality for the different fields.

The variation in quality is partly due to key information required for managing individuals being recorded and updated centrally, whereas other information is left to the individual to complete through a self-service tool. There is also a reasonable amount of late reporting which can adversely impact the statistics, particularly for exits and changes of individual's status from untrained to trained. Obtaining the extract on the sixth calendar day and then calculating the strength at the first of the month overcomes much of this late reporting.

The monthly datasets are passed through a range of automatic and manual validation and editing routines in order to make the key fields as accurate as possible, often drawing upon alternative data sources. A range of detailed breakdowns are produced and these are compared with previous month's outputs and discrepancies are examined. The detailed tables are used by the single Services to manage their personnel and inform policy and strategy. Regular feedback ensures DS staff are kept abreast of any changes or potential issues with the data and statistics, which is fed into the data validation and editing process.

### **3.2 Revisions Policy**

Some of the data sources used in this report are live systems that are constantly being updated. This means figures can occasionally change. Any amendments made since the last release have been indicated by an 'r'.

## **4. Timeliness and Punctuality**

Medical discharge data is subject to a series of time lags, introduced by the number and diversity of processes involved in administering a medical discharge, as further discussed in the 'Data Sources' section of this Background Quality Report.

This report is released four months in arrears. This is due to a combination of the time needed for all data sources to have completed data for the reporting period, and the amount of time required for the production and checking of this report. The release schedule for this report can be found on [Gov.uk](http://Gov.uk).

## **5. Accessibility and Clarity**

Users of the Tracking Afghanistan VSI/SI Operational Casualties statistics can access them through the [Gov.uk](http://Gov.uk) website and are available in PDF format under "Other Publications". They can also be searched for using Internet search engines such as Google.

24 hour pre-release access to the report is available to a limited distribution list within the MoD. The full list can be found in the pre-release access list available on the [Gov.uk](http://Gov.uk) website.

Report commentary follows patients throughout their secondary care, and the report includes a flow diagram demonstrating how casualties move through secondary rehabilitation care. Since the 8 October 2007 – 31 March 2014 edition, survival analysis has been added to the report to provide a statistical method of showing care pathway length, and how it varies dependant on the properties of the injury.

## **6. Coherence and Comparability**

### **Coherence**

The Defence Statistics figures on the tracking of Operations in Afghanistan VSI/SI casualties are the definitive statistics in the MOD. There are no other publically available regular publications on the rehabilitation care of VSI/SI casualties with which to ensure coherence. Within the MOD direct queries of DMICP for episodes of care will produce differing results due to quality issues.

The Official Statistics reports covering the period from 8 October 2007 onward are also available on the [Gov.uk](http://Gov.uk) website.

## **7. Trade-offs between Output Quality Components**

Timeliness versus quality of the data and depth of analysis provided are the most notable trade-offs for this report. If additional time was allowed after the reporting period for patients to be further along their

treatment pathway, the data would provide a more accurate picture of the care required and the eventual outcomes of injury. This would however reduce the timeliness of the report. The time allowed to process the raw data and compile the completed report is around four weeks. Counts, medians, inter-quartile ranges, significance testing and survival analysis are all included in the report.

The trade-off between timeliness and accuracy/depth of analysis has ensured that the information is made available as soon as possible after the end of the reporting period.

## **8. Assessment of User Needs and Perceptions**

The report was initially created in response to the increasing number of requests for information about injured UK Service Personnel. The requests varied from requesting more detail on the injuries sustained to understanding the long-term outcome of those injured.

Defence Statistics (Health) invite feedback from customers within the publication and seek feedback from a wider range of internal and external customers.

## **9. Performance, Cost and Respondent Burden**

The number of VSI/SI casualties sustained in Afghanistan is taken from the Operations in Afghanistan casualty and fatality official statistic. This data is then joined to a number of other data sources that are either compiled for other reports or alternatively used as administrative database systems. The majority of the resource utilised in the creation of the report is focused on the cross validation and manipulation of the various datasets, and the construction of the report itself.

## **10. Confidentiality, Transparency and Security**

### **Confidentiality**

In order to protect personnel confidentiality, pseudo-anonymisation was employed. For further information, see point 1.3.2 of this Background Quality Report.

Outputs include counts of personnel that have sustained VSI and SI injury, by the month of injury. Counts and proportions of the number of these personnel with different outcomes (deaths, amputees, medical discharges etc.) are also included in the report.

Some of the tables and figures provided in the report contain potentially disclosive information and are scrutinised to ensure individual identities are not revealed inadvertently. In line with the Defence Statistics' rounding policy for health statistics (May 2009), and in keeping with the Office for National Statistics Guidelines, some numbers less than five are suppressed and presented as '~'. Where there is only one cell in a row or column that is less than five, the next smallest number (or numbers where there are tied values) is also suppressed so that numbers cannot simply be derived from totals. In some cases, numbers less than five are not suppressed; this is to demonstrate the true cost of war in Afghanistan.

### **Transparency**

The Afghanistan VSI/SI Tracking report provides commentary on the key features of the outputs and identifies any issues or caveats to the data. This quality report provides further information on the method, production process and quality of the output.

### **Security**

All staff involved in the production process have signed a confidentiality agreement; all MoD, Civil Service and data protection regulations are adhered to. The data is stored, accessed and analysed using the MOD's restricted network and IT systems, and the access to raw data is password protected. Once the data has been entered on the Defence Statistics database it is converted into a pseudo-anonymised format prior to analysis, to help ensure the confidentiality of the data held.

## 11. References

### **Op Herrick (Afghanistan) Very Seriously Injured and Seriously Injured Tracking: Index**

<http://www.gov.uk/government/collections/op-herrick-afghanistan-very-seriously-injured-and-seriously-injured-tracking-index>

### **Defence Statistics Release Calendar**

[https://www.gov.uk/government/statistics/announcements?utf8=%E2%9C%93&keywords=&topics%5B%5D=&organisations%5B%5D=ministry-of-defence&from\\_date=&to\\_date=&commit=Refresh+results](https://www.gov.uk/government/statistics/announcements?utf8=%E2%9C%93&keywords=&topics%5B%5D=&organisations%5B%5D=ministry-of-defence&from_date=&to_date=&commit=Refresh+results)

### **MOD Statistics Website**

<https://www.gov.uk/government/organisations/ministry-of-defence/about/statistics>

### **UK Code of Practice for Official Statistics**

<http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>

### **Pre-Release List**

<https://www.gov.uk/government/statistics/defence-statistics-pre-release-access-list>

### **Glossary of Terms and Abbreviations**

<https://www.gov.uk/government/publications/defence-statistics-glossary-of-terms-and-abbreviations>

### **Reduction in Frequency Consultation**

<https://www.gov.uk/government/consultations/proposed-reduction-in-frequency-of-afghanistan-operational-casualty-statistics>

### **Defence Statistics Policies**

<https://www.gov.uk/government/publications/defence-statistics-policies>

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