Background Quality Report

Annual Afghanistan and Iraq Amputation Statistics

1. Introduction

Overview

The Amputation Statistic was first published in February 2010, providing statistical information on the number of UK Service personnel who as a result of an injury sustained whilst deployed in Iraq or Afghanistan have suffered a traumatic or surgical amputation. This ranges from the loss of part of a finger or toe up to the loss of entire limbs. In addition, the numbers of "significant multiple amputees" are provided on an annual basis, as are the number of surviving amputees that have been medically discharged. Defence Statistics have also incorporated an annex to include the number of UK Service personnel that have had an amputation as a result of injuries or illness sustained in locations that were not Afghanistan or Iraq, to give a fuller picture of amputees within the UK Armed Forces.

This report was provided in response to the increasing number of requests for information about injured UK Service personnel. The MOD are committed to making information on operational casualties public but have to draw a line between how much information is provided regularly in the public domain and information which compromise operational security of UK Armed Forces personnel or which risks breaching an individual's right to medical confidentiality. This report is supporting the MOD's commitment to release information wherever possible.

Methodology and Production

The annual statistic includes:

- Counts of the number of surviving amputees from Iraq and Afghanistan, by quarter and financial year.
- Counts of significant multiple amputees from Iraq and Afghanistan, by financial year.
- Counts of surviving amputees as a result of injuries sustained in locations other than Iraq and Afghanistan, provided by financial year.
- Counts of the number of surviving UK Service personnel amputees that have been medically discharged.

The annual statistic is published in July of each year following the 'Medical Discharges in the UK Regular Armed Forces' report. This enables Defence Statistics to provide an update of the number of UK Service personnel amputees medically discharged.

The amputation figures presented are by the quarter/year an amputation was sustained, for patients that have a surgical and/or elective amputation this may not be in the same quarter/year in which the injury was sustained. If a UK Service person suffers more than one amputation over a period of time as a result of injuries sustained in the same incident then in this statistical publication they will be counted within the quarter/year where they sustained their first amputation. In the Significant Multiple Amputees (SMA) table, individuals are counted in the financial year in which they become an SMA. As

such, figures presented are provisional and subject to revisions with each new publication.

Data Sources

The amputation data is compiled from five separate sources:

1. UK Service personnel who have sustained a partial or complete limb amputation as a result of injuries on Op VERITAS, 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_I, 52.

From 1 April 2006 onwards, the data is compiled from four sources;

2. The Complex Trauma database managed by the Defence Medical Rehabilitation Centre, Headley Court which commenced in June 2008 to record information on patients receiving in-patient care on the complex trauma ward
3. 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).
4. The Defence Patient Tracking System (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.
5. 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.

All data sources are cross-checked against each other and records that don't appear in all datasets are followed up to ensure that an individual is definitely an amputee. Further validation steps are then taken to ensure a unique count of amputees is taken from the four datasets and presented in the publication.

Once the data is confirmed as being accurate, the tables can be populated. The figures released in previous publications are checked to see if they require revisions and numbers smaller than five are suppressed, to avoid providing disclosive information on individuals. If suppression is needed, previous publications are also checked to ensure numbers cannot be derived from totals and would therefore need to be revised.

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 the Royal Centre for Defence Medicine). A traumatic or surgical amputation can range from the loss of part of a finger or toe up to the loss of entire limbs.

Live personnel are defined as either those undergoing treatment at Camp Bastion Field Hospital or the Royal Centre for Defence Medicine (RCDM) or those being discharged

from hospital after receiving treatment for the injuries or illness that resulted in an amputation(s).

This publication does not include UK Service personnel who have had an amputation since leaving the Armed Forces. Defence Statistics consulted with a subject matter expert in the Complex Trauma team at the Defence Medical Rehabilitation Centre, Headley Court to gauge how many personnel have had an amputation that is attributable to their Service in Iraq or Afghanistan after leaving the Armed Forces. They advised that Service personnel are unlikely to have amputations performed after they leave Service unless involved in further trauma (for example, motorbike accidents/collisions) or for older personnel, disease-related conditions such as peripheral vascular disease or diabetes.

The data from the JTTR is cross referenced with the Complex Trauma Database, the Prosthetics Database and the DPTS. 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. These data sources are live systems that are constantly being updated. This means that occasionally figures can change, any amendments made since the last release have been indicated by an 'r'.

The Abbreviated Injury Scale (AIS) was introduced by the American Medical Association and the Association for the Advancement of Automotive Medicine in 1971 to provide researchers with a simple numerical method for ranking and comparing injuries by severity and to standardise the terminology used to describe injuries.

Table 1 is presented by the quarter/financial year in which the amputation was sustained, for patients that have a surgical and/or elective amputation this may not be in the same quarter/year in which the injury was sustained. If a UK Service person suffers more than one amputation over a period of time as a result of injuries sustained in the same incident then in this statistical publication they will be counted within the quarter/financial year where they sustained their first amputation **(Table 1)**. If any subsequent amputation results in the individual being a significant multiple amputee then in these statistics they will be counted within the year where they became a significant multiple amputee **(Table 3)**. The figures for Iraq amputees **(Table 2)** and non-Iraq and Afghanistan amputees **(Table A1)** are presented by the financial year in which the amputation was sustained.

Information on the numbers or types of amputations sustained was not provided because it would increase the risk of an individual being identified and compromising their right to medical confidentiality. In addition, there is a risk of compromising operational security by providing information that could be used by the enemy to assess the effectiveness of their attacks, therefore putting UK troops currently in theatre at risk.

The tables in this report have been scrutinised to ensure individual identities have not been revealed inadvertently. In line with Defence Statistics rounding policy (May 2009), in keeping with the Office for National Statistics Guidelines, all numbers fewer than five have been suppressed and presented as '~'. Where there is only one number in a row or column that is fewer than five, the next smallest number (or numbers where there are tied values) has also been suppressed so that numbers cannot simply be derived from totals.

To ensure that statistics presented in these tables do not disclose individuals' identities we do not present cumulative totals in **Table 1** and **Table 2** and significant multiple amputees are only presented annually in **Table 3**. Non-Iraq and Afghanistan amputees are presented annually in **Table A1**.

Since 2001, the Royal Centre for Defence Medicine (RCDM), based at the University Hospital Birmingham Foundation Trust (UHBFT), has been the main receiving unit for military casualties evacuated from an operational theatre. In the Birmingham area, military patients can benefit from the concentration of five specialist hospitals (including Queen Elizabeth) to receive the appropriate treatment. Queen Elizabeth is at the leading edge in the medical care of the most common types of injuries (e.g. polytrauma) our casualties sustain, and the majority of casualties will be treated there, but others may be transferred to another hospital (in Birmingham or elsewhere) if that is where the best medical care can be given.

Military patients will require further rehabilitation care following initial hospital treatment, in most cases they are referred to the Defence Medical Rehabilitation Centre (DMRC) at Headley Court in Surrey, which provides advanced rehabilitation and includes inpatient facilities. The prosthetics department is also located at the DMRC at Headley Court, fitting limbs to amputee patients.

Operation VERITAS is the name for UK operations in Afghanistan which started in October 2001 and ended in March 2006. The UK was involved in Afghanistan alongside Coalition forces, led by the US under Operation Enduring Freedom (OEF), from the first attacks in October 2001.
Operation HERRICK is the name for UK operations in Afghanistan which started 1 April 2006 and ended on 30 November 2014. UK Forces are deployed to Afghanistan in support of the UN authorised, NATO led International Security Assistance Force (ISAF) mission.
Operation TORAL which started 1 December 2014, is the UK's post 2014 contribution to operations in Afghanistan under the NATO RESOLUTE SUPPORT MISSION.
Operation TELIC is the name for UK operations in Iraq which started in March 2003. There was a drawdown of troops in July 2009 and Operation TELIC closed on 21 May 2011. UK Forces were deployed to Iraq to support the Government's objective to remove the threat that Saddam posed to his neighbours and his people and, based on the evidence available at the time, disarm him of his weapons of mass destruction. The Government also undertook to support the Iraqi people in their desire for peace, prosperity, freedom and good government.

Medical Discharges

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.

Information on amputees medically discharged was sourced from electronic personnel records and manually entered paper documents from medical boards. 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.

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.

This report presents the number of amputees who have been discharged from Service on medical grounds as at 31 March 2016, regardless of the primary or secondary conditions for which they have been medically discharged.

If a decision has been taken to medically discharge an individual from the Military, the specific Defence Medical Services health team who have been caring for that individual will begin a liaison with appropriate civilian healthcare providers (e.g. General Practitioner / Primary Health Care Team / civil mental health team / NHS Trust) to ensure the transfer of care and patient history takes place.

Additionally the MOD have specialist health social workers who manage the individual's wider resettlement issues, liaising with relevant civil agencies such as local housing authorities, financial authorities, service welfare and charitable organisations; again to endeavour that the individual's transfer into the civilian environment is as smooth and as seamless as possible.

The MOD also published an Official Statistic on British Casualties in Afghanistan, which can be found on the Gov.uk website:
https://www.gov.uk/government/organisations/ministry-of-defence/about/statistics
This statistic provides the number of casualties with a Notification of Casualty (NOTICAS) signal raised of Very Seriously Injured (VSI) and Seriously Injured (SI). This report is presented by calendar year rather than financial year but the peaks in VSI and SI numbers follows the same trend as the amputation statistics, with the highest numbers occurring in 2009 and 2010 when operational tempo was highest.

The Annual Amputation Statistic is an Official Statistic and is produced in line with the UK Code of Practice for Official Statistics. The publication date is pre-announced on the UK National Statistics Publication Hub. 24 hour pre-release access is provided to an agreed list of people, with the list being available on the Gov.UK website (https://www.gov.uk/government/publications/defence-statistics-pre-release-access-list).
A ministerial submission accompanies the pre-release publication, which contains the key information about the publication and also lines to take for Defence media communications.

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We welcome feedback on this Background Quality Report or any of the statistics mentioned.

2. Relevance

These statistics are provided in response to the increased number of requests for information on the injuries sustained by UK Service personnel on operations. During 2009 the Department had numerous requests for information regarding the number of UK Service personnel who have sustained an amputation as a result of injuries in Iraq or Afghanistan; these included an e-petition request to 10 Downing Street and a question being raised in Prime Ministers Questions about whether the Prime Minister would release amputation numbers. The Prime Minister agreed that the stats would be produced annual and published on the internet.

The release is used to answer parliamentary questions and Freedom of Information requests. The report is also useful for internal customers in Surgeon General's department as, for example, the statistics are used to inform policy and funding decisions in the Prosthetics department at the Defence Medical Rehabilitation Centre (DMRC).

This report is currently limited in terms of the amount of information it can include, specifically in relation to the type of amputations seen (e.g. lower limb/upper limb), as it can harm the operational security of Service personnel that are still deployed on operations. At a time when UK Service personnel are no longer deployed in Afghanistan, there will be scope to review the content of the report with key stakeholders, with a view to potentially including more information.

3. Accuracy and Reliability

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.

Due to the lack of statistical analysis in this report, there are no estimates or potential for

bias. The main sources of error within the report sit in the source data itself. 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.

4. Timeliness and Punctuality

The report for the latest financial year is published in July of each year, the report will be published on 31st July (or the nearest available date). Data is requested from the relevant suppliers at DMRC in the first few days after the end of the latest financial year. It takes approximately 3 weeks for the data to be returned to our IT team, pseudo-anonymised, processed and the report produced.

All external publication deadlines have been met. Historic and planned publication dates can be found on the Publication Release Dates section of the Defence Statistics website and on the UK National Statistics Publication Hub.

The report was previously presented by calendar years but was changed to present by financial year in December 2010 at the request of Surgeon General, in order to align with the Defence planning and business cycle. Historical publications that were produced by calendar year were removed from the website to avoid the potential for suppressed figures to be derived from totals.

5. Accessibility and Clarity

The reports are published on the Gov.UK website at:

https://www.gov.uk/government/publications/mod-national-and-official-statistics-by-topic.

They can also be accessed via the UK National Statistics Publication Hub or through an internet search engine 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 website.

The statistics provided are straightforward counts in tables, with no deeper analysis provided. The associated commentary identifies the key changes in the data and explains the reasons for the changing time trends, where possible. Each table has a number of footnotes clarifying what is included/excluded and provides appropriate caveats. A detailed methodology presents the user with the data sources used and collection methods.

6. Coherence and Comparability

The Defence Statistics figures on operational amputations to UK Service personnel are the definitive statistics in the MOD. There are no other publically available regular publications on the numbers of amputees with which to ensure coherence.

Statistics on coalition amputees can be found on the internet although the definitions used for amputations differ, or are at least are unclear on how they're counted, making it difficult to compare trends with other nations.

The numbers of UK Service personnel suffering amputations is comparable over time as there have not been any changes in the way amputees are defined or counted. Changes seen over time are merely reflective of changes in operational tempo and tactical approach as operations in Iraq and Afghanistan have progressed.

7. Trade-offs between Output and Quality Components

The main trade-off is between the level of information presented in the output, without breaching medical confidentiality or compromising operational security.

The MOD are committed to making information on operational casualties public but have to draw a line between how much information is provided regularly in the public domain and information which compromise operational security of UK Armed Forces personnel or which risks breaching an individual's right to medical confidentiality.

8. Assessment of User Needs and Perceptions

Defence Statistics developed the Amputation Statistic in response to increased interest from the general public and Ministers in the injuries sustained by UK Service Personnel on Operations.

Users are encouraged to provide feedback on the publication itself and Defence Statistics also welcome feedback from any other internal and external customers**.** Defence Statistics seek advice from key internal stakeholders to ensure the commentary provided helps to adequately explain the trends seen in the data for users.

There is currently no process in place to assess the satisfaction of users for this report, though it is an objective of Defence Statistics (Health) to assess each part of the quality report for all of our Official and National Statistics. This will result in an assessment of user needs and may lead to a consultation process for internal and external users to assess their satisfaction with the report.

9. Performance, Cost and Respondent Burden

To develop each annual report, it takes approximately 0.1 FTE to perform the analysis and compile the report. The burden on the data providers in DMRC is low as the upkeep of the databases forms part of their daily routines and they just provide us with the latest cut of data when we request it. Respondent burden is low as the data is obtained from administrative, clinical audit systems, namely the JTTR and Defence Patient Tracking System. These systems are maintained by other teams in Defence Statistics and MOD.

10. Confidentiality, Transparency and Security

Security

All Defence Statistics (Health) staff involved in the production of the amputation statistics has signed a declaration that they have completed the Government wide Protecting Information Level 1 training and they understand their responsibilities under the Data Protection Act and the Official Statistics Code of Practice. 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. The databases supplied by our external customers are password protected.

Confidentiality

Defence Statistics receive data from the Complex Trauma and Prosthetics team which contains service numbers. The data first goes to a different team in Defence Statistics to convert service numbers into random pseudo-anonymised personal identifiers, so the analysts never see service number level data. This enables the data to be linked with the other data sources, which have also already been pseudo-anonymised.

In line with JSP 200 (April 2016), the suppression methodology has been applied to ensure individuals are not inadvertently identified dependent on the risk of disclosure. Numbers fewer than five have been suppressed and presented as '~'. Where there was only one cell in a row or column that was fewer than five, the next smallest number has also been suppressed so that numbers cannot simply be derived from totals. If a disclosure control method has been applied to a table, the method is stated in the footnotes.

Transparency

The Annual Amputations Statistic provides 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.