Ministry of Defence

Types of Injuries Sustained by UK Service Personnel on Op HERRICK in Afghanistan, 1 April 2006 to 30 November 2014

Published 25 February 2016

Following the end of combat operations in Afghanistan this one-off Official Statistic has been published to provide information on the types and mechanism of Injuries sustained by UK Service Personnel in Afghanistan. This report covers the period from when the UK Field Hospital opened, 1 April 2006, to the closure of Operation HERRICK, 30 November 2014.

UK Service Personnel who sustained a Battle Injury or Non Battle injury may have been admitted to the UK or a Coalition field hospital in Afghanistan. This report provides the number of UK Service Personnel who sustained injuries that required the activation of the UK trauma team, including the types of injuries sustained. In addition information has been provided on the mechanism of injury.

Key Points

Types of Injuries

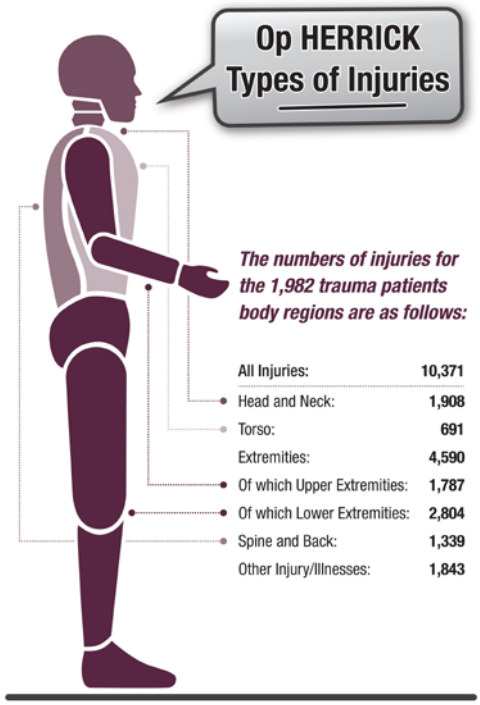
Approximately half of the injuries sustained by UK Armed Forces trauma patients on Op HERRICK were to the extremities, with the largest number of injuries sustained to the knee and lower leg.

Injuries to the head and neck accounted for just under a fifth of the injuries sustained.

Mechanism of Injury

Explosions were the leading mechanism of injury for Battle Injuries, closely followed by small arms fire.

The most frequent mechanism of injury for Non Battle Injuries included climatic injuries, land transport accidents, slips, trips and falls and bites/allergic reactions.



Source: UK Joint Theatre Trauma Register (JTTR)

Please note injuries represented in this graphic may have been sustained on either or both sides of the body.

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Background quality report: The Background Quality Report for this publication can be found here.

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Contents

Supplementary tables containing all data presented in this publication can be found at *link-to-bulletin-page.gov.uk*

Introduction

This report has been provided in response to a number of requests from the public in the form of Freedom of Information (FOI) requests about UK Service Personnel injured in Afghanistan and the types of injuries sustained. The MOD are committed to making information on Operational Casualties public but have to draw a line between how much information is provided in the public domain and information which compromises operational security of UK Armed Forces personnel or which risks breaching an individual's right to medical confidentiality. This report has been published to support the MOD's commitment to release information wherever possible.

This report covers the period 1 April 2006 to 30 November 2014; this corresponds to the opening of the UK Field Hospital at Camp Bastion and the closure of Operation HERRICK. The findings in this report are split into three sections: 1) Field Hospital Admissions; 2) Types of Injury for trauma patients and 3) Injury Mechanism.

The types of injuries sustained have only been provided for UK Service Personnel admitted who required activation of the UK trauma team. It would require disproportionate effort to provide the types of injuries sustained for ALL UK Armed Forces personnel admitted to the field hospital; the level of detail recorded in the field hospital electronic data was too sparse to support coding of the injuries and therefore would require examination of individual medical records.

The mechanism of injury has been limited to four categories to protect operational security: Explosion (Mines, Improvised Explosive Device); Small Arms Fire (Gunshot Wound, Rocket Propelled Grenade etc); Other Battle Injuries; and Non Battle Injuries (Accidents, Transport etc).

Operation HERRICK: The name for UK operations in Afghanistan which started 1 April 2006 and ended on 30 November 2014. UK Forces were deployed to Afghanistan in support of the UN authorised, NATO led International Security Assistance Force (ISAF) mission.

Field Hospital Admissions

From the opening of the UK field hospital in Afghanistan on 1 April 2006 until the closure of Op HERRICK on 30 November 2014, **7,800**[1] UK Service personnel and civilians were admitted to a field hospital. **7,601** of these were UK Service personnel of which **4,220** were the result of injuries and **3,347** the result of natural causes[2]. The remaining **199** casualties admitted to the field hospital were civilians; these patients have been excluded from the figures presented in the report as the focus is on UK Service Personnel.

This report focuses on the 4,220 UK Service personnel who sustained injuries and were admitted to the field hospital. This number includes personnel admitted to the hospital that subsequently died of their wounds/injuries and those that survived to the point of leaving the field hospital. Of the 4,220 admissions approximately half were Battle Injuries (BI) and half were Non Battle Injuries (NBI).

Just under half of the patients admitted to the field hospital with injuries required the activation of the UK trauma team (1,982). However, the patients admitted with Battle Injuries often had more complex injuries, resulting in a higher proportion requiring the activation of the trauma team (74% BI compared to 18% NBI). Hence more information on types of injury sustained was available for those with BI than NBI as this was captured by the Trauma teams.

In order for the trauma team to be activated, the patient had to satisfy the Trauma Activation Criteria (as highlighted within the methodology section). The following section provides the types of injuries sustained for UK Armed Forces personnel whose injuries were of sufficient complexity to result in a trauma team being activated.

[1] Please note these numbers will not align to the published Operational Casualties figures published for Afghanistan. The published Operational Casualties numbers for Afghanistan include seven personnel injured on Op TORAL, who are excluded from this publication.
[2] There were **34 Service** personnel who were admitted to the field hospital that were recorded as Disease/Non Battle Injury and it has not been possible from electronic data held centrally to identify if they were disease or an injury. These people have been excluded from the analysis presented in this report.

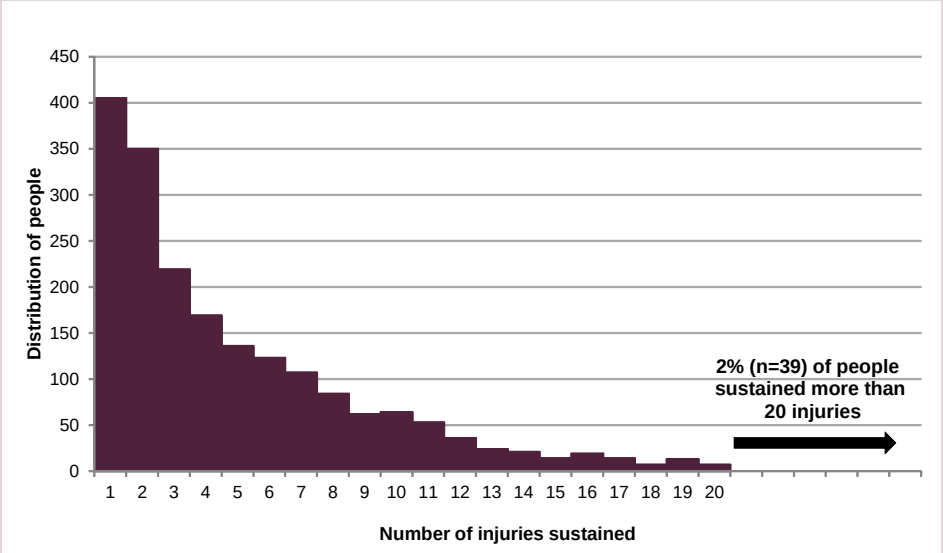
Types of Injury for Trauma Patients

The injury details of all UK Service Personnel with a trauma record[3] have been coded using the World Health Organisation's International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10). This section presents the number of personnel with an injury within each ICD-10 Chapter and the number of injuries sustained, for example an individual may have sustained an amputation to the lower leg and an amputation to the upper arm, both injuries have been counted in the individual ICD chapters but the individual has only been counted once overall.
Please see the background quality report for further information.

The 1,982[4] UK Service Personnel who were admitted to the field hospital with injuries that required the activation of the UK trauma team sustained 10,371 separate injuries. The majority of UK Service Personnel sustained four or less injuries (**58**%)**,** the most frequent number of injuries sustained was one injury (**21**% of all UK Service Personnel).

Figure 1: Op HERRICK UK Service Personnel Trauma patients[1,2], by number of injuries sustained

1 April 2006 to 30 November 2014



Source: UK Joint Theatre Trauma Register (JTTR)

[1] Only includes Trauma patients that were admitted to a field hospital in Afghanistan (excludes attendances)

[2] Includes UK Service personnel who were admitted to the Field Hospital but later died of their injuries.

Approximately half of the injuries sustained by UK Armed Forces trauma patients were to the extremities, with the largest number of injuries sustained to the knee and lower leg.

Injuries to the head and neck accounted for just under a fifth of the injuries sustained.

Within each of the injury categories, open wounds, fractures and fragmentation/shrapnel wounds were the most common types of injury regardless of the body region affected.

[3] A record in the Joint Theatre Trauma Record (JTTR)

[4] Includes UK Service Personnel admitted to the field hospital who died of their wounds/injuries & those who survived to the point of leaving the field hospital.

Table 1: Op HERRICK UK Service Personnel Trauma Patients[1,2] by body region of injury and ICD-10 Chapter, Numbers[3]

1 April 2006 to 30 November 2014

Body Region and ICD-10 Chapter	Number of injuries [2]	Number of UK Service Personnel [3]
All Trauma Injuries/related Illnesses	**10,371**	**1,982**
Extremities	**4,590**	**1,540**
Upper Extremities	**1,787**	**895**
Injuries to the wrist and hand (S60-69)	683	381
Injuries to the elbow and forearm (S50-S59)	512	362
Injuries to the Shoulder and upper arm (S40-S49)	476	361
Other Upper Extremities Injuries (Including T00-T07 where body region can be identified)	115	115
Lower Extremities	**2,804**	**1,121**
Injuries to the knee and lower leg (S80-S89)	1,282	683
Injuries to the hip and thigh (S70-S79)	742	509
Injuries to the ankle and foot (S90-S99)	646	319
Other Lower Extremities Injuries (Including T00-T07 where body region can be identified)	134	134
Head and Neck	**1,908**	**718**
Injuries to the Head (S00-S09)	1,668	665
Injuries to the neck (S10-S19)	240	153
Spine and Back	**1,339**	**552**
Injuries to the abdomen, lower back, lumbar spine and pelvis (S30-S39)	1,321	551
Other Spine and Back Injuries (Including T00-T07 and T81 where body region can be identified)	18	~
Torso	**691**	**339**
Injuries to the thorax (S20-S29)	686	~
Other Torso Injuries (Including T00-T07 and T81 where body region can be identified)	5	~
Other Injury/Illnesses	**1,843**	**158**
Burns and corrosions of external body surface, specified by site (T20-T25)	138	76
Certain early complications of trauma (T79)	23	21
Burns and corrosions of multiple and unspecified body regions (T29-T32)	61	37
Other and unspecified effects of external causes (T66-T78)	8	8
Effects of foreign body entering through natural orifice (T15-T19)	5	5
Burns and corrosions confined to eye and internal organs (T26-T28)	~	~
Toxic effects of substances chiefly nonmedicinal as to source (T51-T65)	~	~
Injuries involving multiple body regions (where body region cannot be identified) (T00-T07)	49	44
Endocrine, nutritional and metabolic diseases (E00 - E90)	~	~
Nervous system disorders (G00 - G99)	15	13
Eye and adnexa diseases (H00 - H59)	9	7
Ear and mastoid process diseases (H60 - H95)	15	11
Circulatory system disorders (I00 - I99)	12	11
Respiratory system disorders (J00 - J99)	7	~
Digestive system disorders (K00 - K93)	~	~
Musculoskeletal Disorders (M00 - M99)	1,447	617
Congenital malformations (Q00 - Q99)	~	~
Clinical and laboratory findings (R00 - R99)	44	40
Factors influencing health status (Z00 - Z99)	~	~

Source: UK Joint Theatre Trauma Register (JTTR)

[1] Only includes Trauma patients that were admitted to a field hospital in Afghanistan (excludes attendances).
[2] Includes UK Service personnel who were admitted to the Field Hospital but later died of their injuries.
[3] Individuals have been counted once for each different injury or illness they sustained, for example if a UK Service person had 2 head injuries they were only counted once, whereas if an individual had a thorax and a head injury they were counted once for thorax and once for head.
~ Data presented as "~" has been suppressed in accordance with Defence Statistics rounding policy (see Further Information section)

In terms of the other Injuries/Illnesses, the most common ICD-10 subgroup was Musculoskeletal Disorders accounting for 1 in 7 of injuries sustained; mainly as a result of soft tissue damage but also due to pain and dislocations.

Injury Mechanism

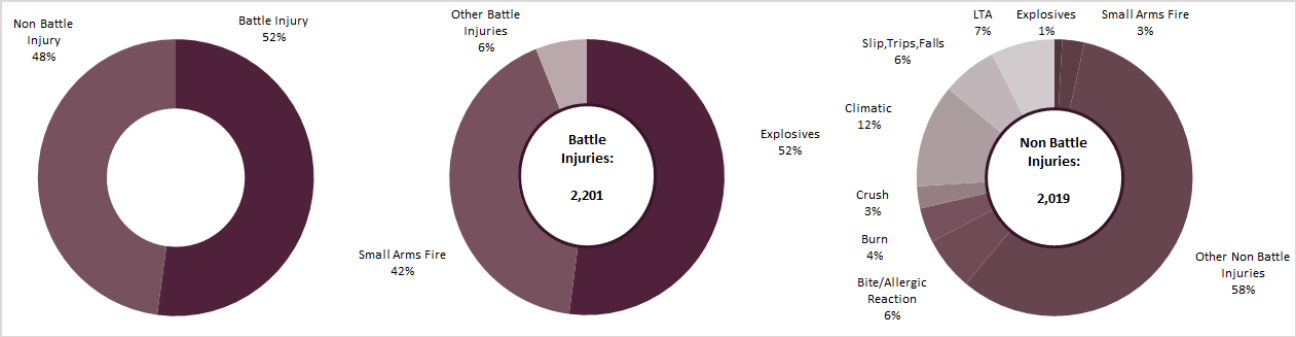
Explosions (which include improvised explosive devices (IEDs) and Mines) were the leading mechanism of injury for Battle injuries, followed by small arms fire (which includes gunshot wounds and grenades).

There were also a small proportion of personnel injured by explosions and small arms fire that were Non Battle injuries, such as negligent discharge. Non Battle injuries comprised a range of mechanism of injury including climatic injuries, land transport accidents and slips, trips and falls.

Rates of injury resulting in admission to the field hospital for Royal Marines and Army were significantly higher than that of the Royal Navy and the RAF[5,6]. The rates in the Royal Marines and Army were higher as a result of a larger number of personnel deployed as front line combat troops. The Army rate is lower than the Royal Marines because they deployed personnel not only in front line combat roles but also in combat support roles, which were at a lower risk of Battle injuries.

Figure 2: Op HERRICK UK Service personnel injured admitted to the Field Hospital by Injury Classification and Mechanism, Numbers, Proportions[1 2 3 4]

1 April 2006 to 30 November 2014[5]



Mechanism of Injury	All		Royal Navy		Royal Marines		Army		RAF	
	Number	*Rate*	Number	*Rate*	Number	*Rate*	Number	*Rate*	Number	*Rate*
All	**4,220**	*28.1*	**40**	*6.9*	**383**	*46.3*	**3,544**	*34.7*	**190**	*5.6*
Explosion	**1,164**	*7.8*	**~**	*0.9*	**138**	*16.7*	**984**	*9.6*	**~**	*0.9*
Explosion (NBI)	***18***	*0.1*	***0***	*0.0*	**~**	*0.2*	**~**	*0.2*	***0***	*0.0*
Small Arms Fire	**974**	*6.5*	**~**	*0.3*	**120**	*14.5*	**827**	*8.1*	**17**	*0.5*
Small Arms Fire (NBI)	***52***	*0.3*	***0***	*0.0*	**~**	*0.6*	**~**	*0.4*	**~**	*0.1*
Other Battle Injury	**133**	*0.9*	**0**	*0.0*	**~**	*1.1*	**119**	*1.2*	**~**	*0.1*
Other Non Battle Injury	**1,949**	*13.0*	**33**	*5.7*	**116**	*14.0*	**1,614**	*15.8*	**139**	*4.1*

Source: UK and Coalition Field Hospital Data and Joint Theatre Trauma Register (JTTR)

[1] Includes UK Service personnel who were admitted to the Field Hospital but later died of their injuries.
[2] Individuals are counted once per injury. If any individual has been injured on multiple events they are counted for each event where the injury reported is not linked to a previous event
[3] This is a subset of the Field Hospital cohort; every individual with a trauma record also has a Field Hospital record.
[4] Data includes admissions to the field hospital, attendances have been excluded.
[5] Data from the UK Medical Facility at Camp Bastion ceased on 22 September 2014. From 23 September 2014 to 30 November 2014 Field Hospital data is sourced from Coalition Medical facilities only.
~ Data presented as "~" has been suppressed in accordance with Defence Statistics rounding policy (see Further Information section)

[5] Here significantly means statistically significant – see Background Quality Report
[6] Using a proportions test: 95% confidence interval (0.03, 0.03) rounded to 2 decimal places

Methodology

This section provides a brief summary of the methodology and data sources; more detailed information is available in the background quality report for this bulletin.

Operational Casualty Data (see Background Quality Report for more information on each data source)

Data on Operational Casualties are compiled by Defence Statistics from the following data sources: Field Hospital Data and Joint Theatre Trauma Registry (JTTR).

Field Hospital

Defence Statistics received Field Hospital Data, from 1 April 2006, which was used to identify injured UK Service personnel who were admitted to the UK Field Hospital in Afghanistan (Camp Bastion) as well as those treated at coalition medical facilities (such as Kandahar and Kabul).

The UK had a Field Hospital at Camp Bastion, which provided deployed hospital care to coalition forces and, when indicated, Afghan National Security Forces and local nationals. Associated support elements included Emergency Medicine, Surgery, Medicine, Intensive Care Unit, and Medium and Low dependency nursing care beds. Advanced diagnostic support was provided by a laboratory and an imaging department that included two CT Scanners. The exact clinical contribution was constantly under review, being mission-tailored to provide the best mix of speciality and support services.

Figure 3: Medical Treatment Facility at Camp Bastion, Afghanistan

Source: Army

The field hospital comprised information collected from three datasets including J97 returns, OpEDAR and the Whole Hospital Information System (WHIS).

The data quality of Field Hospital data was reasonable. Defence Statistics cross referenced the different sources of field hospital electronic data that was available to provide the most accurate statistics possible. However a number of data quality issues remain:

Service numbers and nationalities were sometimes entered incorrectly, meaning UK Personnel may have been occasionally missed from the overall number of casualties.

The level of detail provided in the ‘Nature of Injury’ field, which was used to help determine whether a casualty was correctly recorded as Battle Injury, Non Battle Injury or Natural Cause, could be sparse and therefore difficult to categorise, especially when there were no other casualty records to compare against.

The statistics presented in this report include admissions only; an admission to the field hospital was the result of a patient being allocated a bed; which may have been within the Ward, Intensive Care,

or Surgery. If the patient was not allocated a bed they were recorded as an attendance, they were seen and treated without the need to allocate a bed.

Joint Theatre Trauma Register

The Joint Theatre Trauma Register (JTTR) 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. A casualty was entered onto the JTTR if the incident triggered activation of the trauma team in a deployed field hospital. Trauma team activation criteria are listed in **Figure 5**.

The Joint Theatre Trauma Register has been used to identify UK Service personnel that went to the Field Hospital and required the activation of the UK trauma team. The injuries were recorded by the Trauma nurse on the JTTR have also been used to identify the injuries sustained.[7] The Trauma nurse codes the injuries as Abbreviated Injury Scale (AIS), these have then been recoded by Defence Statistics into ICD-10 codes.

The data quality of JTTR is reasonable. Pre 2010 Service numbers and nationalities were sometimes entered incorrectly, meaning UK Personnel may have been missed from the overall number of casualties. Since 2010 the JTTR data has been linked to the Joint Personnel Administration system (JPA) which resolved this problem. The Type of Injury was recorded for all personnel and aligns with other sources of casualty data.

Figure 4: Medical Emergency Response Team (MERT) recovering a casualty from operations in Helmand Province, Afghanistan

Source: Army

Figure 5: UK Trauma Team Activation Criteria on Op HERRICK

Mechanism/History

Penetrating Trauma
Gunshot or shrapnel wound
Blast injury (mine/IED/grenade)
Stab Wound

Blunt Trauma
Motor vehicle crash with ejection
Motorcyclist or pedestrian hit by vehicle >30 km/h
Fall >5 metres
Fatality in the same vehicle
Entrapment and/or crush injury
Inter-hospital trauma transfer meeting activation criteria

&

ANATOMY
Injury to two or more body regions
Fracture to two or more long bones
Spinal cord injury
Amputation of a limb
Penetrating injury to head, neck, torso or proximal limb
Burns>15% BSA in adults or >10% in children or airway burns
Airway obstruction

OR

PHYSIOLOGY
Systolic blood pressure <90mmHg or pulse >120 bpm (adults)
Respiratory Rate <10 or >30 per minute (adults); SpO^2 <90%
Depressed level of consciousness or fitting
Deterioration in the Emergency Department
Age >70 years
Preg>24 weeks with torso injury

[7] All UK Service personnel with a trauma record have a Field Hospital record.

ICD-10 Classification

The World Health Organisation recognises the use of ICD coding, defined as below:

“The International Classification of Diseases (ICD) is the standard diagnostic tool for epidemiology, health management and clinical purposes. This includes the analysis of the general health situation of population groups. It is used to monitor the incidence and prevalence of diseases and other health problems, proving a picture of the general health situation of countries and populations.”

The Types of Injuries presented are based on ICD-10 chapters (see links below) e.g. Injuries to the head, Injuries to the wrist and hand etc.
http://apps.who.int/classifications/icd10/browse/Content/statichtml/ICD10Volume2_en_2010.pdf
http://apps.who.int/classifications/icd10/browse/2010/en

Glossary

BI	**Battle Injury**	A Battle Injury includes those wounded as a result of hostile action. This includes injuries sustained whilst avoiding direct or indirect fire. Also described as 'wounded in action'.
NBI	**Non Battle Injury**	A Non Battle Injury is any injury that is not caused by a hostile act and includes any accidental injuries such as sports injuries, road traffic accidents etc.
JTTR	**Joint Theatre Trauma Register**	The Joint Theatre Trauma Register (JTTR) 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.
IED	**Improvised Explosive Device**	An IED as defined by NATO: A device placed or fabricated in an improvised manner, which incorporates destructive materials designed to destroy and harass.
LTA	**Land Traffic Accident**	In line with the definitions in ICD-10 a land transport accident is defined as any accident involving a device that has been designed for, or is being used at the time for, the conveyance of either goods or people from one place to another on land.
MERT	**Medical Emergency Response Team**	The MERT team comprised a specialist doctor and nurse and two paramedics, they were accompanied by the appropriate Force Protection asset or the most appropriate method of transportation for the patient at the time of the incident.
BSA	**Body Surface Area**	An estimate of the body surface area containing a burn injury
SpO2	**Peripheral capillary oxygen saturation**	An estimate of the amount of oxygen in the blood
ICD-10	**International Classification of Diseases (ICD-10)**	The World Health Organisation's International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10)
DOW	**Died of Wounds**	A Battle casualty who dies of wounds or other injuries received in action, after having reached a medical treatment facility. This only includes those who have died of wounds whilst under the care of Defence Medical Services.
SAF	**Small Arms Fire**	Small hand held fire arms, UK equivalents would be the British Army's main assault weapon the SA80 and the L115A3 long range high-accuracy, bolt-action sniper system.

Further Information

Suppression of Small Numbers

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.

Pseudo-anonymisation

Prior to analysis the data sources have been 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.

Further Information (cont.)

Contact Us

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https://www.gov.uk/make-a-freedom-of-information-request/the-freedom-of-information-act

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RAF Manpower	01494 496822	DefStrat-Stat-Air-Hd@mod.uk
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