

UK ARMED FORCES UNINTENTIONAL FIREARM INJURIES

T Stansfield, G Rushforth

UK Med Group, OP TELIC 11, BFPO 641

Abstract

Objectives: To report on the incidence of unintentional firearm discharge and injury across the UK Armed Forces and present several cases of this wounding phenomenon.

Method: Munitions Incidents and Defects (MID) Cell data on UK Military Negligent Discharges and unintentional firearm injuries from 01 Jan 03 to 31 Dec 07 was categorised according to cause of injury, wound, service affiliation, incident context and weapon type. The injuries of three patients are described.

Results: Over the 5 year period there were 1158 Unintentional firearm discharges, forty three (4%) of which resulted in injury. Fifty five military personnel sustained unintentional firearm injuries during the review period, more than half of which were gunshot wounds and this included one fatality. The Regular Army suffers an average of 7.7 unintentional firearm injuries per 100 000 Regular Army person years.

Conclusion: Unintentional firearm injury is well recognised across the civilian and police sectors worldwide. Despite the recent tempo of high grade training and operations that currently engage UK Armed Forces this form of injury remains uncommon. We hope to facilitate discussion with the chain of command to manage the risk of these injuries.

Introduction

Injury from a firearm may be classified on the basis of intent as:

1. Intentional against others such as homicide, war and law enforcement
2. Intentional against self such as suicide and deliberate self harm
3. Unintentional against self or others

Unintentional firearm discharge is not new [1-3] and injury sustained from such a discharge is clearly of interest to the military medical profession. We chose to investigate the incidence of this wounding phenomenon at the individual level (firearm, operational circumstances, type of wound), the service level (number of negligent discharges by service and enlistment) and relate this to the experience of those outside the UK Military. The intention of this review is not only to highlight the frequency but also, hopefully to reduce the incidence.

In order to identify data sources for UK Military unintentional firearm injuries it is useful to delineate the reporting chain. Queens Regulations [4] do not describe negligent discharge (ND) and the usual Service sources do not openly publish on the nature of injury sustained [5]. Box 1 describes the service definition of a ND and unintentional firearm wounding (known officially as an accident involving explosives). NDs and accidents involving explosives are reported to the Technical Explosive Authority [6], which equates to the Ammunition Technical Officer for the Army, and may also be investigated by the Land Accident Investigation Team. The information in turn is fed to the Munition Incidents and Defects (MID) Cell at Ensligh who collate the data on a Triservice basis and recommend appropriate action [7].

Negligent discharge: A negligent discharge is a term that is only used with Small Arms Ammunition (SAA) up to and including 9mm in calibre. A ND is deemed to have occurred when the initiation of the SAA is unauthorised and unintentional or inadvertent. No death injury or damage to equipment or property is to have occurred, and the weapon and ammunition performed to the designed specification.

Accident involving explosives: Any damage or injury caused by an unauthorised, unintentional or inadvertent discharge of SAA up to and including 9mm in calibre.

Box 1. Adapted from JSP 482 Vol 1 [8] Unintentional Firearm Discharge and Wounding Definitions.

Methods

Following a request directly to the MID cell [9], data regarding UK Military NDs and unintentional firearm injuries from 01 Jan 03 to 31 Dec 07 was obtained in Excel® spreadsheet format and analysed. This spreadsheet data was categorised into cause of accident, type of wound, service affiliation of firer, incident context and weapon type. Rates of Regular Army unintentional firearm injury were calculated. Three anonymised clinical cases are illustrated.

Results

Over the period 01 Jan 03 to 31 Dec 07 there were 1158 unintentional firearm discharges, 43 (4%) of which resulted in injury. The cause of these events is shown in Table 1 with regard to the procedure being conducted at the time. In addition to these 43 injured individuals there were a further six injuries recorded in the MID cell data not as a result of an unintentional discharge but rather due to individual's proximity to the firer. These were all comparatively minor injuries; for example a superficial facial burn sustained from a spent cartridge ejection onto an adjacent soldier's cheek. With regard to NDs (i.e. not causing injury) the Unknown/ Other category in Table 1 accounts for those events described by MID either simply as "negligent discharge", or gave uncertainty as to which

Corresponding Author: Major Tim Stansfield, ST3 General Surgery, Queen Margaret Hospital, Whitefield Road, Dunfermline, Fife, KY12 0SU
Tel: 07833 514290
Email: timstansfield@doctors.org.uk

particular element of weapon handling caused the unintentional discharge. Other single cases of ND included, for example, firing on automatic when single shot was ordered, safety catch thought to be applied when in fact not, playing with the trigger, firing early during an ambush and an ND by a REME armourer servicing a challengingly blocked rifle. Figure 1 shows the proportion of the 1115 negligent firearm discharges by training and enlistment status. Fifty five UK Military personnel sustained unintentional firearm injuries during the review period. This included one male fatality from a self-inflicted wound - a mortality rate of approximately 0.05 per 100000 Regular and Reservist Personnel Years. Figure 2 shows the classification of the 55 wounded individuals by the category of injury sustained (more than half were gunshot wounds) and Figure 3 by the Service of the individual inflicting the wound. There were no RN unintentional firearm discharge injuries. Except for ITC Catterick with seven injuries, no single unit has had more than three incidents resulting in wounding over the last 5 years. One female was injured and the remainder of victims were male. Forty one of the 55 unintentionally injured personnel had their wounds inflicted by others and 14 were self-inflicted. The split bar graph at Figure 4 shows the annual incidence of these wounds and the circumstances in which they were inflicted. Table 2 shows calculations of the Regular Army annual unintentional firearm injury rate, which forms a mean of 7.7 unintentional firearm injuries per 100000 Regular Army person years. The Weapon type causing the wound is shown in Table 3.

Cause of All Negligent Discharges	Number of Events
Taking control of weapon	10
Patrolling	11
Function Test	13
Movement during live firing	25
Normal Safety Precautions	29
Cleaning Weapons	34
Load	37
Stoppage Clearing	52
Making Ready	77
Making Safe	142
Unknown/Other	234
Unload	451
Total	1115

Cause of Unintentional Firearm Discharge resulting in Injury	Number of Events
Stoppage Clearing	1
Normal Safety Precautions	1
Making Ready	1
Making Safe	1
Climbing into firing trench	2
Other	2
Unload	3
Cleaning Weapon	5
Movement during live firing	7
Unintentional Discharge Unknown Cause	20
Total	43

Table 1. Cause of Negligent Discharge 01 Jan 03 to 31 Dec 07 the top table shows all events, the bottom table shows numbers for those events resulting in wounding.

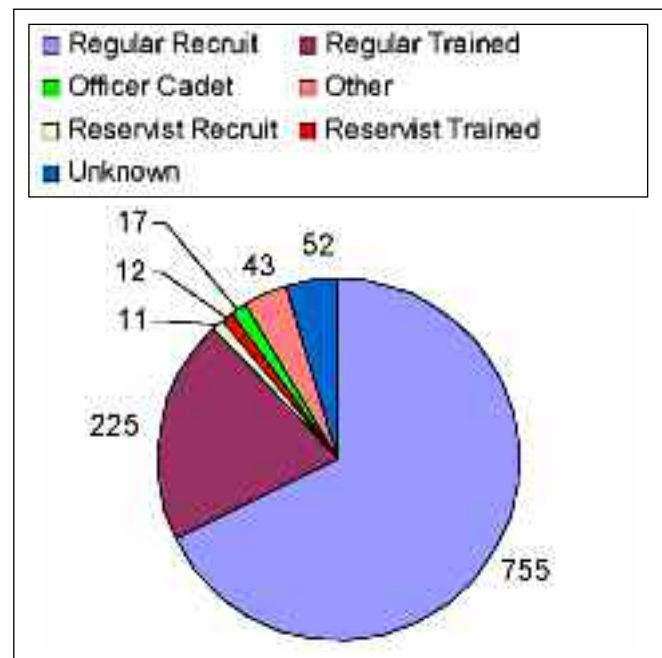


Figure 1. Proportion of Negligent discharges by training and enlistment status.

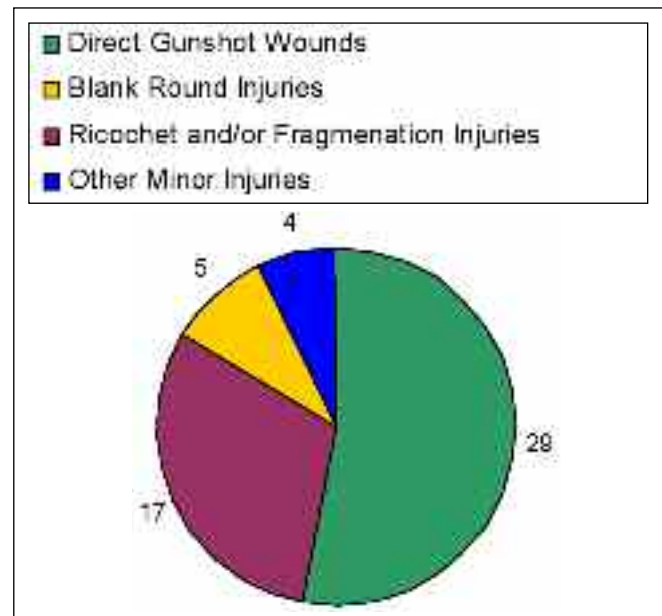


Figure 2. Type of Unintentional Firearm Injury sustained.

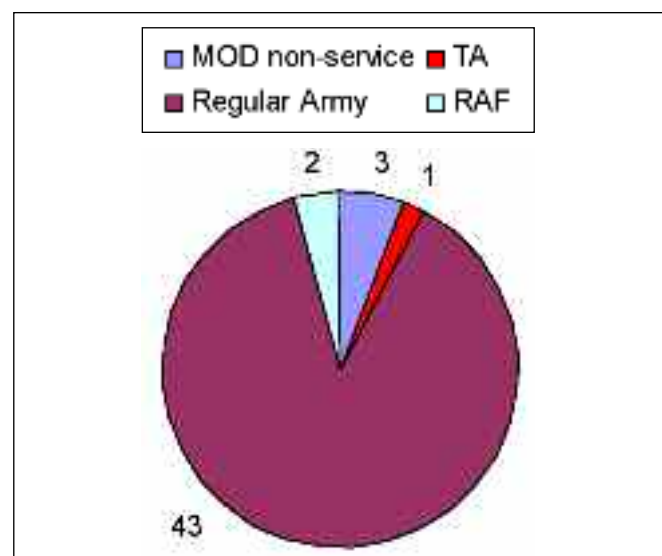


Figure 3. Proportion of wounds inflicted by service type. Regular Army includes Gurkha Rifles.

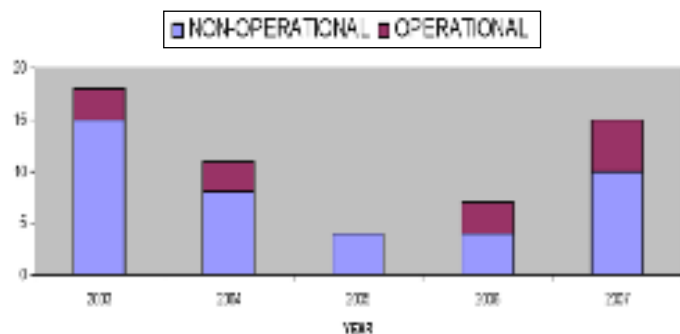


Figure 4. Number of injuries sustained from unintentional firearm discharge.

Year	Regular Army Personnel (5)	Regular Army Injuries	Injuries/100000 person year
2003	112,130	13	11.6
2004	112,750	11	9.8
2005	109,290	3	2.7
2006	107,730	5	4.6
2007	106,170	10	9.4
Mean	109,614	8.4	7.7

Table 2. Regular Army injuries per 100000 person years caused by unintentional discharge of firearms.

WEAPON TYPE	NUMBER OF INCIDENTS
Pistol	9
Sub- Machine Gun	2
Machine Gun	15
Rifle	22
Not Recorded	1

Table 3. Unintentional Firearm Injuries inflicted by weapon type.

Cases

Figure 5 shows a serviceman with entry and exit gunshot wounds to the left shoulder caused by the unintentional discharge of a SA80 rifle. His wound was debrided and underwent delayed primary closure but fortunately he did not suffer any major structural or neurovascular deficit. Figure 6 shows a separate lower limb wound caused by unintentional firearm discharge. The wound initially underwent vascular damage control surgery for a venous and lateral popliteal nerve injury. Figure 7 shows a GSW to the left hand sustained by a close protection soldier while "testing the responsiveness of the trigger" of his 9mm pistol in an operational environment. After debridement and dressing he was aeromedically evacuated to the UK for definitive surgery and closure.



Figure 5. Serviceman with a left shoulder GSW sustained from an unintentional discharge



Figure 6. Exit (A) and Entry (B) GSW of left lower limb in service person sustained from an unintentional discharge of a 7.62mm round.



Figure 7. GSW to Left (non-dominant) hand sustained accidentally from a 9mm pistol during ablutions. (Courtesy of Major Mike Roger RAMC)

Discussion

MID holds a comprehensive database of negligent discharges and unintentional firearm injuries. Data quality will depend on the information supplied through the reporting system described

above. Analysis is occasionally hampered by the limited description of the event. There is certainly a stigma attached to NDs in the military and civilian communities both at an individual and unit or group level and this may lead to under reporting of events. The MOD recognises this as a concern [7] and has simplified the reporting procedure accordingly [6]. It is worth mentioning that accidental civilian casualties and accidental firearm injuries from anything other than Small Arms Ammunition are beyond the scope of this paper. NDs may be passed off as intended fire: a Retired Sergeant Major regaled one of the authors with his experience when deployed in the Korean Conflict. While on sentry duty in a harbour area he had fallen into a fitful sleep and fired an ND. Realising his potential court martial he bellowed "CONTACT" and proceeded to rapidly fire with his colleagues into an empty jungle.

There is no reason why gunshot wounds from NDs should not follow the same wounding pattern seen in the field and the three illustrative cases reported support this. The proximity, however, is potentially far closer in unintentional firearm injuries with the potential for high energy transfer and consequently greater tissue damage.

The UK Armed Forces unintentional discharge rate must be put into context. Other country's militaries do not actively place this sort of information in the public domain. UK society and Police Forces have a low rate of intentional and unintentional firearm injuries and deaths [10-12] compared to other countries [13-15], although the accuracy of some of this data is disputed [16]. The comparatively low rate of UK gun ownership [17] may be one explanation; nevertheless UK unintentional general injury fatalities are significantly lower than elsewhere [18,19]. UK Police Forces recognise unintentional firearm injuries as a concern [20] and have suffered several deaths [21]. There has been one recorded fatality from unintentional firearm injury in the UK military in the last 5 years. UK Police Forces, including the MOD Police, have seen recent interest, through Freedom of Information Act requests, regarding their ND rates [22-25]. The civilian causes of unintentional firearm discharge remain disparate [26,27]. Involuntary muscle activity is recognised experimentally [28] and by UK Police Forces as a valid cause of unintentional firearm discharge [20]. The MID data indicates that unintentional firearm injury is principally caused by unintentional firearm discharge. The root cause of the vast majority of NDs is probably through leaving the magazine *in situ* while performing a rifle drill. All UK military personnel are trained to handle and use firearms and virtually all complete their Service specific annual weapons training. Any objective comparison between Military and Civilian data will need to control for training level, the hours of firearm use and the circumstances of use. That ITC Catterick has been related to a higher proportion of injuries is unsurprising given its level of intensive firearms training to new recruits. Prevention strategies in the civilian literature largely concern children [29,30], and the case for widespread adoption of loaded chamber indicators and magazine safeties is discussed elsewhere [31,32]. It is worth recalling that Road Traffic Collisions continue to be the leading cause of service death closely followed by enemy action [5].

As military doctors we should be aware of unintentional firearm injury; indeed medical cover for ranges is based on this eventuality, and there is no evidence that this particular injury rate is declining. Continued vigilance and a reduction in NDs would clearly be to everyone's benefit and those wounds sustained through a firearm drill error should all continue to be seen as potentially avoidable. However these threats must not encourage the enforcement of penal safety codes that would limit training and as a consequence cost lives in the field. The British Armed Forces should continue to be world leaders in safe and effective training.

Conclusion

Armed Forces doctors should be aware of the incidence of UK Military unintentional firearm injury and the context in which they occur in order to facilitate informed discussion with the chain of command about preventing (preferable) or responding to these injuries.

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