

**Recent military fatalities in Afghanistan by cause and nationality:
(PERIOD 14: 18 April 2011 to 4 September 2011; posted on 14 September 2011)**

*Sheila M. Bird OBE, MRC Biostatistics Unit, CAMBRIDGE CB2 0SR with
Clive B. Fairweather CBE, Consultant to Combatstress, EH39 4BE.*

Note: A surge of 30,000 US troops was deployed to Afghanistan to facilitate Operation Moshtarak, which began in 2010. By PERIOD 11b, US deployment of 90,000 by province was reckoned as 20,000 to Helmand, NK2 to Kandahar and NK3 elsewhere. In June 2011, towards the end of PERIOD 14a, US President Obama announced the start of draw-down of US troops – an initial 5,000 to 10,000 in 2011.

Summary

Impact of surge on combined US/UK/Canadian military fatality rate in fighting seasons

a) Major combat resumed in PERIOD 14 (18 April 2011 to 4 September 2011: Afghan fighting season). The combined US/UK/Canadian military fatality rate has reduced steadily across the fighting seasons of 2009, 2010 and 2011.

PERIOD 9 (18 May to 4 Oct 2009 ~ UPLIFT): **9.8** per 1,000 pys
(95% CI: 8.5 to 10.9, based on 257 fatalities in 26,347 pys).
PERIOD 11b+12a (3 May to 19 Sept 2010): **7.6** per 1,000 pys
(95% CI: 6.7 to 8.4, based on 299 fatalities in 39,539 pys).
PERIOD 14 (18 April to 4 Sept 2011): **5.9** per 1,000 pys
(95% CI: 5.1 to 6.7, based on 234 fatalities in 39,539 pys).

In the 2011 fighting season, the combined fatality rate of 5.9 per 1,000 pys was 20% lower ($p < 0.002$) than in the comparable period for 2010 (7.6 per 1,000 pys), and 40% lower than in the fighting season of 2009 (9.8 per 1,000 pys).

Large clusters of fatalities

b) Two large clusters, each of eight US fatalities, occurred in PERIOD 14a (when two IEDs exploded in a single incident; and when, in small arms fire & apparently after an argument, a senior-ranking Afghan National Army (ANA) pilot opened fire on 8 US personnel at Kabul International Airport, six of them senior officers {Lt. Colonel, 5 majors, 2 captains and Master Sergeant}). In PERIOD 14b there occurred the largest cluster of ISAF fatalities in Afghanistan in 2006-2011 when 30 US military personnel (including special forces and a Lieutenant Commander) and others died - the Taliban having brought down a Chinook helicopter in Wardak.*

*Afghan National Army (ANA)**

*c) Monitoring is needed of the **number deployed** of ISAF-trained ANA personnel; and of **their** fatalities. Publicly, and exceptionally, both UK's Prime Minister and USA's President expressed their condolences on the deaths of ANA as well as US military personnel when a US Chinook was shot down. However, there should be public accountability for ANA fatalities as a rule, rather than exceptionally. Because UK military doctors from the Brigade Assistance Group work alongside Afghan doctors in the hospital to which ANA casualties are evacuated, a weekly count of **hospitalised ANA fatalities** could at least – and should - be kept; and publicly reported.*

IED-only fatalities

*d) In the 80 weeks of PERIODS 9 to 12, there were **396** fatal IED-only incidents in Afghanistan, which caused **545** military deaths (that is: mean of 1.4 deaths per fatal IED-only incident) and the proportion of hostile deaths due to IEDs was **57%** (545/962; 95% CI: 53% to 60%). In PERIODS 13+14 (40 weeks), there were **153** fatal IED-only incidents which caused **205** military*

deaths (that is: mean of 1.3 deaths per fatal IED-only incident) and accounted for **50%** of all hostile deaths (205/409; 95% CI: 45% to 55%).

*e) The proportion of fatal IED (only) incidents which claimed **more than two military lives** declined slightly, but significantly (chi-square on 2df = 6.27, $p < 0.05$), between PERIODS 5+6+7+8 (18/144, 12.5%), PERIODS 9+10 (18/183, 10%) and PERIODS 11+12 (11/213, 5%). In PERIODS 13+14, 11/153 fatal IED-only incidents (7%) claimed **more than two military lives** (three, three and six in PERIOD 13; three, three, three, four, four, four, five, and eight in PERIOD 14).*

*f) The calendar year pattern of **hostile deaths** in Afghanistan among UK's presumed EOD personnel* (1, 4, 12 in 2006+2007+2008, 2009, and 2010) was discordant with the rate at which UK's IED-only military fatalities increased in Afghanistan in the same calendar periods (namely 43, 76, 55: chi-square on 2df = 12.2, $p < 0.005$); also when we focused on **IED-only fatalities** among presumed EOD personnel (1, 4, 9: chi-square on 2df = 7.2, $p < 0.05$) - the difference being two deaths due to hostile fire and one to small arms fire. We continue this monitoring in 2011, when UK commanders changed bomb disposal tactics in Afghanistan: so that a different trend may emerge.*

Changed UK deployment and impact of surge in Helmand

*g) UK military fatality rate in Afghanistan essentially doubled between the initial 160 weeks from 1 May 2006 (**PERIODS 1 to 8: 160 weeks**) and the subsequent 70-weeks of **PERIODS 9+10+11+12a** (18 May 2009 to 19 September 2010) prior to UK-to-US hand-over of counter-insurgency responsibilities in Sangin. Post hand-over, in the 50-weeks of **PERIODS 12b+13+14** (20 Sept 2010 to 4 Sept 2011), UK's fatality rate in Afghanistan reduced to below the level of major combat.*

PERIODS 1 to 8: 7.4 per 1,000 pys (95% CI: 6 to 9, based on 152 fatalities in 20,476 pys)

PERIODS 9 to 12a: 14 per 1,000 pys (95% CI: 13 to 16, based on 178 fatalities in 12,885 pys)

PERIODS 12b to 14: 4.5 per 1,000 pys (95% CI: 3 to 6, based on 43 fatalities in 9,615 pys)

*h) In PERIODS 11b+12a (20 weeks, 3 May to 19 September 2010), wholly in the Afghan fighting season, US troops in Helmand outnumbered UK's military personnel in Afghanistan by 2:1, with 45+45 = 90 US military fatalities in Helmand to UK's 32+23 = 55 deaths in Afghanistan so that US in Helmand and UK in Afghanistan military fatality rates were **not** significantly different:*

PERIOD 11b+12a (fighting season, 2010)

US in Helmand: 12 per 1,000 pys (95% CI: 9 to 14, based on 90 fatalities in 7,692 pys)

UK troops: 14 per 1,000 pys (95% CI: 11 to 18, based on 55 fatalities in 3,846 pys).

Following UK's changed area of operations in Afghanistan from 20 September 2010, some reduction in UK's military fatality rate, vis-à-vis US troops in Helmand, was anticipated and, indeed, seen. More importantly still, at the outset of the fighting season in 2011, fatality rates for both US in Helmand and UK troops in Afghanistan are both significantly lower than in 2010.

PERIOD 12b+13 (post-handover; winter 2010/11)

US in Helmand: 6.8 per 1,000 pys (95% CI: 5.3 to 8.4, based on 79 fatalities in 11,538 pys)

UK troops: 4.5 per 1,000 pys (95% CI: 2.8 to 6.2, based on 26 fatalities in 5,769 pys)

PERIOD 14 (post-handover; fighting season, 2011)

US in Helmand: 6.0 per 1,000 pys (95% CI: 4.4 to 8.0, based on 46 fatalities in 7,692 pys)

UK troops: 4.4 per 1,000 pys (95% CI: 2.6 to 7.1, based on 17 fatalities in 3,846 pys)

1. Background

Since 1 May 2006 we have reported every 20 weeks, more recently 10 weekly, on military fatalities in Afghanistan and Iraq by cause and nationality. Our analyses^{5,3} rely on icasualties.org, to which we make acknowledgement. Date and cause of fatalities on icasualties.org are subject to change as well as to updating. For example, in late July 2009, military fatalities in Afghanistan in the first half of PERIOD 9 were shown as 119, but now as 120. Because the initial phase of Panther's Claw, a major counter-insurgency operation in the run-up to elections in Afghanistan, ended mid-way through PERIOD 9, unusually we reported a mid-point analysis: please see **Journal of the Royal United Services Institute 2009; 154: 30-38 & 40-45**^{35, 36}.

With two mid-point exceptions – determined by UK's withdrawal from Basra City and, as above, the initial phase of Panther's Claw having ended - our analyses, until 2010, have related to 140-day PERIODS: see below. As of PERIOD 11a (22 February to 2 May 2010), we initiated 10-weekly reporting. Reasons included: that our PERIOD 11b followed UK's parliamentary election on 6 May 2010, and change to coalition government in the UK; but, more importantly, even in the 10 weeks of PERIOD 11a that overlapped the end of the Afghan winter, UK military fatalities in Afghanistan had averaged two per week so that, in 2010 and while in military control of Sangin, UK could expect at least as many military fatalities in 10 weeks in Afghanistan as in 20 weeks in 2006. Throughout 2010/11, we therefore make interim 10-weekly reports so that our intensity of monitoring keeps pace with the intensity of combat which UK forces encounter in Afghanistan.

On 20 September 2010 (which marks the start of PERIOD 12b), UK forces in Helmand handed over responsibility for counter-insurgency operations in Sangin to US troops.

PERIOD	From	To
1	01 May 2006	17 September 2006
2	18 September 2006	04 February 2007
3	05 February 2007	24 June 2007
4 (mid-point)	25 June 2007	2 September 2007 11 November 2007
5	12 November 2007	30 March 2008
6	31 March 2008	17 August 2008
7	18 August 2008	04 January 2009
8	05 January 2009	17 May 2009
9 (mid-point)	18 May 2009 <i>(Afghan election: mid)</i>	26 July 2009 04 October 2009
10	05 October 2009	21 February 2010
11 (mid-point)	22 February 2010 <i>(UK election: 6 May)</i>	2 May 2010 11 July 2010
12 (mid-point)	12 July 2010 <i>(UK to US in Sangin: 20 Sept)</i>	19 September 2010 28 November 2010
13	29 November 2010	6 February 2011 17 April 2011
14	18 April 2011	26 June 2011 4 September 2011
15	5 September 2011	22 January 2012
16	23 January 2012	10 June 2012

2. Methods briefly

We report fatality rates per 1,000 personnel-years. Four thousand troops in a theatre of operation for 3 months contribute 1,000 personnel-years (pys). So too do 1,000 personnel in theatre for one year. Analytically, we characterise “major combat” by a military fatality rate of 6 or more per 1,000 pys.

We analyse the lethality of IED (only) incidents. As in Bird and Fairweather⁵, we exclude from this analysis multiply-ascribed deaths, such as IED and small arms fire or IED and rocket propelled grenade/grenades. A singleton fatal IED attack in Iraq during PERIOD 5 in which a suicide vehicle was used has been coded as ‘suicide bomb’ rather than IED; and similarly a suicide car bomb-IED attack in PERIOD 9 in Afghanistan. Unusually, triple hostile fire US fatalities in Afghanistan and a UK singleton SAS death in PERIOD 6 were coded as ‘explosion’; and likewise the death of a UK lance corporal in PERIOD 7. We have **not** counted them as IED deaths.

We need to track changes in deployment. In PERIOD 11a, there was some debate about the totality of UK’s deployment to Afghanistan. We continue to show UK’s deployment as 10,000 troops, although BBC’s Today programme on 14 May 2010 cited 10,500. In 2011, UK reporting has cited UK’s deployment as 9,500. We continue to use 10,000 as our reference count.

History: In PERIOD 5, UK’s deployment to Iraq reduced below 5,000 troops⁶⁻¹² and to Afghanistan was to have increased to 7,700, but seems to have remained at around 7,000¹⁰ until PERIOD 6¹³⁻¹⁵. Withdrawal of some 20,000 US combat troops from Iraq during PERIOD 5 was announced by President Bush: we have assumed that their number has effectively stood at 155,000 throughout PERIOD 5¹⁶⁻¹⁹ whereas US troops in Afghanistan have been reckoned at 31,000¹⁶ throughout PERIOD 5. In PERIOD 6 (7), US troop numbers have been reckoned as 150,000 (149,000) in Iraq and 35,000 in Afghanistan^{16, 20} despite some reports that both UK and US troop numbers were around 10% lower in Afghanistan²¹⁻²³; and as 139,000 and 39,000 in PERIOD 8 with the UK tallies maintained as in PERIOD 7²⁴⁻³⁴. In PERIOD 9, US and UK troop numbers have been taken as 57,000 and 9,000 respectively. By PERIOD 10, US troops were reckoned to be around 100,000 in Iraq and around 90,000 in Afghanistan after a further uplift of around 30,000 personnel was announced by President Obama

(<http://www.cnn.com/2009/POLITICS/12/01/obama.afghanistan/index.html>;

http://news.google.co.uk/news?hl=en&q=spectre+of+endless+wars&um=1&ie=UTF-8&ei=OiqHS9CZJoz00gS0rZDGCw&sa=X&oi=news_group&ct=title&resnum=1&ved=0CAAsQsQQwAA) following a review of military strategy in Afghanistan which was led by General Petraeus (<http://news.bbc.co.uk/1/hi/8527266.stm>; http://news.bbc.co.uk/1/hi/world/south_asia/8389351.stm).

Meanwhile, UK and Canadian troops had increased to 9,500 (which does not include mooted 500 “special forces”, see Straight Statistics (<http://www.straightstatistics.org/article/helicopter-numbers-do-we-have-lift>) and 2,800 respectively in Afghanistan (see CBC News, 24 February 2010: “Brace yourself, Canada, our big fight is just ahead”).

3. Results

3.1 Fatalities in Afghanistan in PERIODS 1 to 14

TABLE 1 summarises coalition military fatalities by nationality in Afghanistan where US personnel accounted for **49%** of all military fatalities in PERIODS 1+2+3+4 (**180/367**; 95% CI: 44% to 54%), for **52%** in PERIODS 5+6+7+8 (**220/420**; 95% CI: 48% to 57%), but for **67%** in PERIODS 9+10+11+12 (**718/1,076**; 95% CI: 64% to 70%).

In PERIODS 13+14, US personnel have accounted for **75%** of all military fatalities (351/465; 95% CI: 71% to 79%). Three large clusters, each of six US deaths - two by small arms fire and one an IED attack - occurred in PERIOD 13; and three clusters in PERIOD 14, two of eight US deaths each – one by small arms fire and the other when two IEDs exploded in a single incident – and one of 30 US fatalities when a Chinook helicopter was brought down.

Non-hostile causes: Non-hostile causes had accounted for 88/367 fatalities in Afghanistan in the 80 weeks of PERIODS 1+2+3+4 (**24%**; 95% CI: 20% to 28%), but for 12% since, namely: for 49/420 military fatalities (**12%**; 95% CI: 8% to 15%) in PERIODS 5+6+7+8; for 114/1,076 military fatalities (**11%**; 95% CI: 9% to 13%) in PERIODS 9+10+11+12. And for 56/465 military fatalities (**12%**; 95% CI: 9% to 15%) in PERIODS 13+14.

A quarter (28) of the 114 non-hostile deaths in PERIODS 9+10+11+12 had occurred in the course of 11 helicopter (or aircraft) accident/crashes [1, 1, 1, 1, 2, 3, 3, 3, 4, 7, **9**]*; none in the winter of PERIOD 13 but PERIOD 14a accounted for four non-hostile helicopter crashes [1 French, 1 Australian, 1 US, 2 US] as well as for one fatality in a hostile helicopter crash. PERIOD 14b accounted for 30 US fatalities in a hostile helicopter crash. *More detail is follows: 10 (1UK+9US) occurred in two separate helicopter accident/crashes in PERIOD 12, eight (3Australian + 1UK+ 3US +1USaircraft) in four helicopter/aircraft accident/crashes in PERIOD 11, while 11 (7US + 4US) occurred in two separate helicopter crashes in PERIOD 10, and six (2+3+1) in three helicopter/airplane crashes in PERIOD 9.

By nationality: Military fatality rates in Afghanistan have been notably different by nationality, as indicated by non-overlapping 95% confidence intervals below for the first 160 weeks of **PERIODS 1 to 8**. In the subsequent **60-weeks of PERIODS 9+10+11**, UK and Canadian fatality rates were not differentiated. Both were very significantly higher than for US troops, for whom the overall fatality rate in PERIODS 9+10+11, although up by nearly a fifth on PERIODS 1 to 8, had remained just below the level of ‘major combat’, which we define analytically as 6 fatalities per 1,000 pys.

Important decreases in military fatality rate became evident in **PERIODS 12+13+14** for both Canadian and UK troops which, for Canadian troops, occurred from the start of PERIOD 12: see summaries below, **TABLE 1**, and **Discussion**. Change of operations resulted in a major decrease in the fatality rate of UK but not US troops in PERIODS 12+13+14 relative to PERIODS 9+10+11.

Summary for PERIODS 1 to 8: 160 weeks

Canadians: 13.9 per 1,000 pys (95% CI: 11 to 17, based on 103 fatalities in 7,412 pys)
UK forces: 7.4 per 1,000 pys (95% CI: 6 to 9, based on 152 fatalities in 20,476 pys)
US forces: **4.4** per 1,000 pys (95% CI: 4.0 to 4.9, based on **400** fatalities in 89,965 pys)

Summary for PERIODS 9+10+11: 60 weeks

Canadians: 10.3 per 1,000 pys (95% CI: 7 to 15, based on 32 fatalities in 3,116 pys)
UK forces: 14.1 per 1,000 pys (95% CI: 12 to 16, based on 155 fatalities in 10,962 pys)
US forces: **5.3** per 1,000 pys (95% CI: 4.8 to 5.8, based on **484** fatalities in 91,154 pys)

Summary for PERIOD 12+13+14: 60 weeks

Canadians: **1.9** per 1,000 pys (95% CI: 0.7 to 4.0, based on 6 fatalities in 3,231 pys)
UK forces: **5.7** per 1,000 pys (95% CI: 4.3 to 7.1, based on 66 fatalities in 11,538 pys)
US forces: **5.6** per 1,000 pys (95% CI: 5.2 to 6.1, based on 585 fatalities in 103,848 pys)

In consecutive recent ‘winter-seasons’ of 30-weeks, see **TABLE 1b**, the combined US/UK/Canadian military fatality rate was steady at **4.3** per 1,000 personnel-years (95% CI: 3.8 to 4.9, based on **257** fatalities in 59,115 pys) in PERIOD 10+11a of 2009/10, and **4.7** per 1,000 personnel-years (95% CI: 4.2 to 5.3, based on **281** fatalities in 59,115 pys) in PERIOD 12b+13 of 2010/11.

However, see **TABLE 1b**, from 2009 to 2011 there have been progressive, significant reductions in the combined US/UK/Canadian military fatality rate during 20-week ‘fighting seasons’ from:

9.8 (95% CI: 8.5 to 10.9, based on **257** fatalities in 26,347 pys, see PERIOD 9) in 2009 to **7.6** (95% CI: 6.7 to 8.4, based on **299** fatalities in 39,539 pys, see PERIOD 11b+12a) in 2010 to **5.9** (95% CI: 5.1 to 6.7, based on **281** fatalities in 39,539 pys, see PERIOD 14) in 2011.

Because of operational changes, the story is somewhat different for US military personnel - their fatality rate *increased* significantly between recent ‘winter seasons’ of 30-weeks from **3.5** per 1,000 pys (95% CI: 3.0 to 4.0) in 2009/10 to **4.9** per 1,000 pys (95% CI: 4.3 to 5.5) in 2010/11; but *decreased* significantly from **8.4** per 1,000 pys (95% CI: 7.2 to 9.6) in the ‘fighting season’ of 2009 to **6.2** per 1,000 pys (95% CI: 5.4 to 7.0) in 2011’s ‘fighting season’.

3.2 Fatal IED (only) incidents: variations

TABLE 2 shows military fatalities in IED (only) incidents, hereafter IED incidents, in Afghanistan. For Iraq, see **APPENDIX**.

Afghanistan: Lethality per fatal IED incident in PERIODS 5+6+7+8 was 216 fatalities in 144 fatal IED incidents in Afghanistan, a mean of 1.5 deaths per fatal IED (only) incident {sd = 0.83}, and consistent with Iraq.

In 560 days of PERIODS 9+10+11+12, fatal IED (only) incidents nearly tripled to 94+89+101+112 = 396 fatal IED incidents (0.71 per day). These 396 fatal IED incidents cost the lives of 136+120+129+160 = 545 military personnel, a mean of 1.4 deaths per fatal IED (only) incident. The proportion of hostile deaths due to fatal IEDs (only) incidents was **57%** (545/962; 95% CI: 53% to 60%).

In the 40 weeks (280 days) of PERIODS 13+14, 153 fatal IED (only) incidents cost the lives of 205 military personnel, a mean of 1.3 deaths per fatal IED (only) incident. The proportion of hostile deaths due to fatal IED (only) incidents was **50%** (205/409; 95% CI: 45% to 55%).

The proportion of fatal IED (only) incidents which claimed *more than two military lives* declined slightly, but significantly (chi-square on 2df = 6.27, p < 0.05), between PERIODS 5+6+7+8 (18/144, 12.5%), PERIODS 9+10 (18/183, 10%) and PERIODS 11+12 (11/213, 5%). During PERIODS 13+14, 11/153 (7%) fatal IED (only) incidents claimed *more than two military fatalities* (three, three and six in PERIOD 13; three, three, three, four, four, four, five and eight in PERIOD 14).

4. Discussion

Operations. A major counter-insurgency operation began in Afghanistan in June 2009 which ended its initial phase midway through PERIOD 9. US operational changes occurred during PERIODS 9+10. These impacted on the Canadians' deployment in Kandahar and, in addition to better air support, may have contributed to the altered fortunes of the Canadians.

Operation Moshtarak began in PERIOD 10 with its second phase, in 2010, timed to mesh with US reinforcements of some 30,000 troops. By the start of PERIOD 11b, 20,000 US troops had deployed to Helmand province. At the start of PERIOD 12b, UK forces in Helmand handed over responsibility for counter-insurgency operations in Sangin to US troops; and in December 2010 took up some duties in Kandahar.

Surge. In Afghanistan, quite substantial winter-related decreases in military fatality rates were evident pre-surge, see PERIODS 2 and 5; and have continued in 2009/10 and 2010/11, see 30-week summaries in **TABLE 1b**. However, there is now clear evidence that the US troop surge and re-deployments have coincided with a very significantly reduced combined US/UK/Canadian military fatality rates across the 'fighting seasons' of 2009 to 2011: from **9.8** (95% CI: 8.5 to 10.9) in 2009 to **7.6** (95% CI: 6.7 to 8.4) in 2010 and further reduced to **5.9** (95% CI: 5.1 to 6.7) per 1,000 personnel-years in 2011. The UK and Canadian forces, which hitherto had faced the worst odds, have benefitted from the re-deployments while the US troops have taken more strain.

Seeing the surge coming, the Taliban may themselves have switched tactics, and even their provincial focus – in part, away from Helmand - to concentrate, for example, on strategic suicide attacks elsewhere which aim to take out Afghanistan's potential future leaders.

Differential deployment of US troops. Following US operational changes during PERIODS 9+10, the observed deaths of US personnel have been consistent with a common-provincial-distribution of US military fatalities across PERIODS 11+12, and - but for the large cluster of 30 Chinook fatalities in Wardak – in PERIOD 13+14 too.

In PERIODS 11 to 14, half of US fatalities (383/749; 95% CI: 47% to 55%) occurred elsewhere than in Helmand/Kandahar.

Location of US military fatalities	Helmand	Kandahar	Elsewhere in Afghanistan/NA	US TOTALS
PERIOD 9	39	18	127	184
PERIOD 10	43	35	58	136

PERIOD 11	51	20	83	164
PERIOD 12	84	48	102	234
PERIOD 13	40	24	72	136
PERIOD 14	46	43	126^{30H}	215^{30H}

Helmand: In PERIOD 11b+12a, there were some 20,000 US troops in Helmand who outnumbered UK military personnel in Afghanistan by 2:1, and there were 90 US fatalities in Helmand versus 55 UK deaths in Afghanistan – fatality rates being therefore comparably high, see below.

Having handed-over responsibility for counter-insurgency operations in Sangin, UK's military fatalities reduced to **4.5** per 1,000 pys (95% CI: 2.8 to 6.2) during PERIODS 12b+13 (winter), when the military fatality rate for US troops in Helmand was 50% higher at **6.8** per 1,000 pys (95% CI: 5.3 to 8.4), $0.05 < p < 0.10$.

With the fighting season resumed in PERIOD 14, remarkably neither UK's military fatality rate nor that of US troops in Helmand increased - both remaining consistent with major combat, however. Both are importantly lower – indeed halved or better - compared to the fighting season of 2010:

PERIOD 11b+12a (fighting season)

US in Helmand: 12 per 1,000 pys (95% CI: 9 to 14, based on 90 fatalities in 7,692 pys)
 UK troops: 14 per 1,000 pys (95% CI: 11 to 18, based on 55 fatalities in 3,846 pys)

PERIOD 12b+13 (post-handover; winter)

US in Helmand: 6.8 per 1,000 pys (95% CI: 5.3 to 8.4, based on 79 fatalities in 11,538 pys)
 UK troops: 4.5 per 1,000 pys (95% CI: 2.8 to 6.2, based on 26 fatalities in 5,769 pys)

PERIOD 14 (post-handover; fighting season)

US in Helmand: 6.0 per 1,000 pys (95% CI: 4.4 to 8.0, based on 46 fatalities in 7,692 pys)
 UK troops: 4.4 per 1,000 pys (95% CI: 2.6 to 7.1, based on 17 fatalities in 3,846 pys)

Post-handover, UK's military fatality rate in Afghanistan has been moderately lower (chi-square on 1df of 4.5, $p < 0.05$) at **4.5** per 1,000 pys than for US troops in Helmand whose rate has been **6.5** per 1,000 pys.

PERIOD 12b+13+14 (post-handover)

US in Helmand: 6.5 per 1,000 pys (95% CI: 5.4 to 7.6, based on 125 fatalities in 19,230 pys)
 UK troops: 4.5 per 1,000 pys (95% CI: 3.2 to 6.0, based on 43 fatalities in 9,615 pys)

Fatal IED-only incidents: As winter ends so, too often, does any let-up in fatal IED incidents. However, when comparing across PERIODS 5+6+7+8, PERIODS 9+10 and PERIODS 11+12, there is some evidence that the proportion of fatal IED (only) incidents that claimed *more than two lives* has decreased from 12.5% (18/144) to 5% (11/213). Despite an exceptional cluster of eight fatalities in a single incident when two IEDs exploded, this decrease was broadly sustained in PERIODS 13+14 when 11/153 fatal IED (only) incidents (7%) claimed *more than two military lives*.

Deaths of UK's presumed EOD personnel to end December 2010: We attempted to identify deaths in Afghanistan among UK military personnel who have been engaged in Explosive Ordnance Disposal (EOD). We listed 17 hostile deaths, 14 by IED-only attack, and three non-hostile deaths which we presumed to fall into this category, see **APPENDIX**. The hostile death rate (and IED-only fatality rate) by calendar period for presumed EOD personnel exceeded the rate of increase in UK's IED-only fatalities, when we should have expected it to hold steady if more IEDs were to mean that a greater proportion could be dealt with by detonation.

Deaths of UK's presumed EOD personnel in 2011: The recent announcement in early February 2011 that UK army commanders were planning to change bomb disposal tactics in Afghanistan to favour the destruction rather than 'exploitation' of IEDs³⁸ suggests a sharing of our logic but does not rule out other contributing factors. We continue to monitor this 20-weekly in 2011, when a new trend may emerge.

Afghan National Army: Public monitoring is needed of the numbers of the Afghan National Army's (ANA) ISAF-trained personnel deployed; and their fatalities. We also need to know how exceptional are treacherous incidents such as those in PERIOD 14 (at Kabul International Airport & Afghan national Civil Order Police Compound) and in November 2009 (PERIOD 10) when five UK military personnel were shot dead by a rogue Afghan policeman.

Currently, fatalities among ISAF-trained ANA troops are listed **neither** on icasualties.org **nor** by UK's Ministry of Defence in the case of ANA-personnel who work alongside UK troops. In response to parliamentary questions by Patrick Mercer OBE, the Minister of Defence replied invariably that: 'this is a matter for the Afghan government'.

We look to UK Ministers to win the necessary political battles to ensure that the British public is properly informed by the Afghan government about how Afghan forces fare on operations, whom ISAF has trained. Such reporting is essential for proper accountability by both UK and Afghan governments. In PERIOD 14, treacherous incidents claimed the lives of at least 10 ISAF personnel, many high ranking . . .

We ask again: how many ISAF-trained ANA-troops were operational alongside UK forces in Afghanistan in 18 April to 4 September 2011, and how many fatalities did ISAF-trained ANA-troops sustain in PERIOD 14? UK military doctors work alongside their Afghan counterparts in the hospital to which ANA casualties are evacuated. They could readily make, and publicly report, a weekly count of the number of hospitalised ANA fatalities.

References

1. Spiegelhalter DJ. Surgical audit: statistical lessons from Nightingale and Codman. *Journal of the Royal Statistical Society Series A* 1999; 162: 46-58.
2. Bird SM. Military and public-health sciences need to ally. *Lancet* 2004; 364: 1831-1833.
3. Bird SM. UK Statistical indifference to its military casualties in Iraq. *Lancet* 2006; 367: 713 – 715.
4. Hodgetts T. UK statistical indifference to military casualties in Iraq (letter). *Lancet* 2006; 367: 1393.
5. Bird SM, Fairweather CB. Military fatality rates (by cause) in Afghanistan and Iraq: a measure of hostilities. *International Journal of Epidemiology* 2007; 36: 841 – 846. (advanced access published online on 21 May 2007, doi:10.1093/iej/dym103).

6. Norton-Taylor R. Brown to make deep cuts in troop numbers and offer asylum deal. *Guardian* 2007; 8 October (<http://www.guardian.co.uk/politics/2007/Oct/08/immigration.iraq>; access 3 April 2008).
7. Holt R. Gordon Brown to cut UK Iraq force to 2,500. *Telegraph* 2007; 8 October (<http://www.telegraph.co.uk/news/main.jhtml?xml=/bews/2007/10/08>; accessed 3 April 2008).
8. Lydall R. Iraq violence puts pull-out of 1,500 UK troops in doubt. *Scotsman* 2008; March 20.
9. Defence Factsheet Operations in Afghanistan: British Forces (<http://www.mod.uk/DefenceInternet/FactSheets/OperationsFactsheets/OperationsInAfghanistanBritishForces.htm>; accessed on 3 July 2007).
10. McGinty S. Their sacrifice is not in vain. *Scotsman* 2008; 1 April.
11. Defence Factsheet Operations in Iraq: Key Facts and Figures (<http://www.mod.uk/DefenceInternet/FactSheets/OperationsFactsheets/OperationsInIraqKeyFactsFigures.htm>; accessed 3 July 2007).
12. Colvin R. UK's next PM on fact-finding visit to Iraq. (http://www.boston.com/news/world/europe/articles/2007/06/11/uks_brown_makes_fact_finding_visit_to_iraq/; accessed on 3 July 2007).
13. Page J. Resurgent Taleban kill French troops. *Times* 2008; 20 August: 3.
14. Sengupta K. SAS spearheads new surge against Taleban. *Independent* 2008; 19 August: 9. (<http://www.independent.co.uk/news/world/asia/sas-spearheads-new-surge-against-taliban-901861.html>, accessed 21 August 2008).
15. Associated Foreign Press (AFP). Brown visits Afghanistan. AFP 2008; 21 August. (afp.google.com/article/ALeqM5iMV4wJqh9xpEkPKcIHTDls2BdhvQ, accessed 21 August 2008).
16. Anonymous at AFT. Despite hints of force cuts, Bush not saying when troops will come home. (<http://afp.google.com/article/ALeqM5gul8fDiSEXA0o7mPTvETX0aS3piA>; accessed on 4 September 2007).
17. Goldenberg S. Petraeus to claim surge success and resist calls for early withdrawal. *Guardian* 2007; 8 September: 29.
18. Martig N. Gates says Iraq troop withdrawals will probably continue. (<http://www.voanews.com/tibetan/archive/2008-02/2008-02-22-voa4.cfm>; accessed 3 April 2008).
19. Goldenberg S. Bush pledges more troops to Afghanistan despite focus on Iraq. *Guardian* 2008; 5 April: 22.
20. Spillius A. US to bolster Afghanistan troop numbers. *Telegraph* 2008; 18 July. (www.telegraph.co.uk/news/worldnews/2304779/US-to-bolster-Afghanistan-troop-numbers.html).
21. Gearan A. Report: US had unrealistic goals in Afghanistan. The Associated Press 2009; 8 January. (see <http://www.google.com/hostednews/ap/article/ALeqM5iWxiu65iLP>, access 12 January 2009).
22. Deen M, Alexander C. Brown says UK forces will leave Iraq in 2009. *Bloomberg.com* (see <http://www.bloomberg.com/apps/news?pid=20601102&sid=ai5.J.1Ln>, access on 12 January 2009).
23. Judd T. UK forces in Afghanistan in worst ever winter campaign. *The Independent* 2009; Sunday 11 January. (see <http://www.independent.co.uk/nnews/world/asia/uk-forces-in-afghanistan>, accessed 12 January 2009).
24. Rivers T. Britain ends combat role in Iraq. *Voice of America* 2009; 30 April. (see <http://www.voanews.com/english/2009-04-30-voa12.cfm>; accessed 28 May 2009).
25. Sky News. British troop rearguard finally flies home. *Sky News* 2009; 27 May. (see <http://uk.news.yahoo.com/5/20090526/tuk-british-troop-rearguard-finally-flie-45dbed5.html>; accessed on 28 May 2009).
26. Carter CJ, Vogt H. Troops in Iraq, Afghanistan honor their fallen. *Associated Press* 2009; 25 May. (see http://news.yahoo.com/s/ap/20090525/ap_on_re_mi_ea/ml_two_wars_memorial_day; accessed on 28 May 2009).
27. Associated Press. US withdrawal from Iraq 'on track' despite violence: Mullen. *Associated Press* 2009; 24 May. (see http://news.yahoo.com/s/afp/20090524/pl_afp/usiraqmilitary; access 28 May 2009).
28. Vina G. UK finishes withdrawal of its last combat troops in Iraq. *Bloomberg* 2009; 26 May. (see http://www.bloomberg.com/apps/news?pid=20601102&sid=asLB2Laf_hWs&refer=uk; accessed on 28 May 2009).
29. Mail Foreign Service. 700 extra British troops on their way to Afghanistan as Brown outlines new strategy to win war that has lasted SEVEN years. *Mail Online* 2009; 30 April. (see <http://www.dailymail.co.uk/news/worldnews/article-1175036/700-extra-British-troops-way->

- [Afghanistan-Brown-outlines-new-strategy-win-war-lasted-SEVEN-years.html](#); accessed 28 May 2009).
30. Starr B. Obama approves Afghanistan troop increase. CNN Politics 2009; 18 February. (see <http://edition.cnn.com/2009/POLITICS/02/17/obama.troops/index.html>; accessed 28 May 2009).
 31. Jackson D. Obama's Afghanistan plan calls for 4,000 more U.S. troops. USA Today 2009; 30 March. (see http://www.usatoday.com/news/washington/2009-03-26-afghanistan-troops_N.htm; accessed on 28 May 2009).
 32. Jakes L. US troops in Afghanistan won't be sent to Pakistan. Associated Press 2009; 7 May. (see http://www.google.com/hostednews/ap/article/ALeqM5iHJ_mmyzSO5vLdDwuAyMaHxEbcJgD981AAHG0; accessed 28 May 2009)
 33. Reid T, Page J. US 'to send 7,000 extra troops to Afghanistan'. Times Online 2008; 5 May. (see <http://www.timesonline.co.uk/tol/news/world/article3871915.ece>; accessed 28 May 2009).
 34. Griffin J, Fishel J. More than 17,000 troops headed to Afghanistan. Fox News 2009; 17 February. (see <http://www.foxnews.com/politics/2009/02/17/troops-headed-afghanistan/>; access 28 May 2009).
 35. Bird SM, Fairweather CB. IEDs and military fatalities in Iraq and Afghanistan. *Journal of the Royal United Services Institute* 2009; 154: 30 -39.
 36. Grouille O. Bird and Fairweather in context. Assessing the IED threat. *Journal of the Royal United Services Institute* 2009; 154: 40 -45.
 37. Neild B. inquest ignored role of stress in bomb officer's death, says wife. The Observer 2011; Sunday 13 February: 11.
 38. Rayment S. Commanders to change bomb disposal tactics. The Telegraph 2011; Saturday 12 February. (see <http://www.telegraph.co.uk/news/newstoppers/politics/defence/8320560/Commanders-to-change-bomb-disposal-tactics.html>; accessed 14 February 2011).
 39. http://www.longwarjournal.org/archives/2011/04/afghan_pilot_kills_8.php
 40. <http://www.10news.com/news/28034763/detail.html>.

TABLE 1a (Afghanistan): Coalition military deaths in Afghanistan and estimated fatality rates per 1,000 personnel-years in consecutive 140-day periods

Theatre	Afghanistan							
Period	1	2	3	4	5	6	7	8
Dates	1 May 2006 to 17 Sept 2006	18 Sept 2006 to 4 Feb 2007	5 Feb 2007 to 24 June 2007	25 June 2007 to 11 Nov 2007	12 Nov 2007 to 30 Mar 2008	31 Mar 2008 to 17 Aug 2008	18 Aug 2008 to 4 Jan 2009	5 Jan 2009 to 17 May 2009
Total fatalities (non-hostile)	117 (41)	40 (4)	96 (27)	114 (16)	59 (10)	136 (20)	123 (6)	102 (13)
US deaths* (troops) personnel-years	54 (23,300) 8,962	18 (22,000) 8,462	50 (24,800) 9,538	58 (25,000) 9,615	25 (31,000) 11,923	88 (35,000) 13,425	53 (35,000 or 31,000 ²¹) 13,425	54 (39,000) 14,615
UK deaths (troops) personnel-years	33*** (4,500) 1,726	6 (up to 5,250) 2,014	15 (5,250 to 6K to 6,900) 2,186	22 (6,900) 2,654	8 (7,000) 2,692	24 (8,000) 3,068	23 (8K or 7,300) 3,068	21 (8,000) 3,068
Canadian deaths (troops) personnel-years	17 (2,250) 865	12 (2,250) 865	16 (2,500) 962	11 (2,500) 962	10 (2,500) 962	9 (2,500) 962	16 (2,500) 962	12 (2,500) 962
Other deaths	13	4	15	2	16	15	31**	15
<i>Estimated fatality rates per 1,000 personnel-years (95% Poisson uncertainty)</i>								
US	6 (4.6 to 7.9)	2 (1.3 to 3.4)	5 (3.8 to 6.7)	6 (4.5 to 7.6)	2.1 (1.3 to 2.9)	6.6 (5.2 to 7.9)	4.0 [@] (2.9 to 5)	3.7 (2.7 to 4.7)
UK	19 (13 to 27)	3 (1 to 6)	7 (4 to 11)	8 (5 to 11)	3 (1 to 6)	8 (5 to 11)	7 [@] (5 to 11)	7 (4 to 10)
Canada	20 (11 to 31)	14 (7 to 24)	17 (9 to 27)	9 (3 to 16)	10 (5 to 19)	9 (3 to 16)	17 (9 to 27)	12 (6 to 22)
UK/Canada	19 (14 to 25)	6 (4 to 11)	10 (7 to 14)	8.2 (5.4 to 11)	4.9 (2.9 to 7.8)	8.2 (5.4 to 11)	9.7 (7 to 13)	8.2 (5.6 to 11)
US/UK/Canada	9.0 (7 to 11)	3.2 (2 to 4)	6.4 (5 to 8)	6.9 (5.5 to 8.3)	2.8 (1.9 to 3.6)	6.9 (5.7 to 8.2)	5.3 (4.2-6.3)	4.7 (3.7 to 5.6)

* For PERIODS 1- 4, US deployments were ascertained retrospectively from Department of Defense Active Duty Military Personnel Strengths (309A): with acknowledgement to Olivier Grouille, RUSI.

** includes large cluster of 10 French fatalities in hostile fire

*** large cluster of 14 Nimrod deaths

@ US fatality rate in Afghanistan in PERIOD 7 would be 4.4 (3.2 to 5.6) and UK rate would be 8 (5 to 12) if their troop numbers were 31,000 {and hence 11,923 pys} and 7,300 {and hence 2,808 pys} rather than as shown in Table 1.

TABLE 1b (Afghanistan): Coalition military deaths in Afghanistan and estimated fatality rates per 1,000 personnel-years in consecutive 70-day (a/b) or 140-day periods.

Theatre	Afghanistan – Periods a or b are 70 days' duration, not 140 days							
Period	9 UPLIFT	10 SURGE	11a SURGE	11b SURGE	12a SURGE	12b SURGE	13 SURGE	14 SURGE
Dates	18 May 2009 to 4 Oct 2009	5 Oct 2009 to 21 Feb 2010	22 Feb 2010 to 2 May 2010	3 May 2010 to 11 July 2010	12 July 2010 to 19 Sept 2010	20 Sept 2010 to 28 Nov 2010	29 Nov 2010 to 17 April 2011	18 April 2011 to 4 Sept 2011
Total fatalities (non-hostile)	293 (33)	213 (25 ^{1H})	79 (9 ^{4H/A})	182 (20 ^{4H})	165 (9 ^H)	144 (18 ^{9H})	179 (21 ^{0H})	286 (35 ^{5H+1FF})
US deaths* (troops) personnel- years	184 (57,000) 21,923	136 (90,000) 34,615	47 (90,000) 17,308	117 (90,000) 17,307	117 (90,000) 17,308	117 (90,000) 17,308	136 (90,000) 34,616	215 ^{leivihan+30H} (90,000) 34,616
UK deaths (troops) personnel- years	60 (9,000) 3,462	44 (9,500) 3,654	19 (10,000) 1,923	32 (10,000) 1,923	23 (10,000) 1,923	8 (10,000) 1,923	18 (10,000) 3,846	17 (10,000) 3,846
Canadian deaths (troops) personnel- years	13 (2,500) 962	9 (2,800) 1,077	2 (2,800) 538	8 (2,800) 539	2 (2,800) 538	0 (2,800) 539	2 (2,800) 1,077	2 (2,800) 1,077
Other deaths	36	24	11	25	23	19	23	52 ^{=NATO}
<i>Estimated fatality rates per 1,000 personnel-years (95% Poisson uncertainty)</i>								
US	8.4 (7.2 to 9.6)	3.9 (3.3 to 4.6) 30 weeks: 3.5 (3.0 to 4.0)	2.7 (1.9 to 3.5)	6.8 (5.5 to 8.0) 6.8 (5.9 to 7.6)	6.8 (5.5 to 8.0)	6.8 (5.5 to 8.0) 30 weeks: 4.9 (4.3 to 5.5)	3.9 (3.3 to 4.6)	6.2 ^{30H} (5.4 to 7.0)
UK	17.3 (13 to 22)	12.0 (8 to 16) 30 weeks: 11.3 (8.5 to 14.1)	9.9 (6 to 15)	16.6 (11 to 25) 14.3 (10.8 to 18.6)	12.0 (8 to 18)	4.2 (2 to 8) 30 weeks: 4.5 (2.9 to 6.6)	4.7 (2.9 to 7.5)	4.4 (2.6 to 7.1)
Canada	13.5 (7 to 23)	8.4 (4 to 16) 30 weeks: 4.3 (3.8 to 4.9)	3.7 (0.5 to 13)	14.8 (6 to 29) 9.3 (4.4 to 17)	3.7 (0.5 to 13)	30 weeks: 1.2 (0.1 to 4.5)		1.9 (0.2 to 6.7)
US/UK/ Canada	9.8 (8.5-10.9)	4.8 (4.1 to 5.5) 30 weeks: 4.3 (3.8 to 4.9)	3.4 (2.6 to 4.3)	7.9 (6.7 to 9.2) 7.6 (6.7 to 8.4)	7.2 (6.0 to 8.4)	6.3 (5.2 to 7.4) 30 weeks: 4.7 (4.2 to 5.3)	3.9 (3.3 to 4.6)	5.9 (5.1 to 6.7)

^{1H} Total of 25 non-hostile deaths in PERIOD 10 includes 11 US fatalities (7+4) in two helicopter crashes.

^{4H} /A PERIOD 11a includes 4 US fatalities (3+1) in helicopter + aircraft crashes.

^{4H} PERIOD 11b includes 3 Australian + 1US fatalities (3+1) in 2 helicopter crashes.

^{1H} PERIOD 12a includes 1 UK fatality in a helicopter accident.

^{9H} PERIOD 12b includes cluster of 9 US fatalities in a helicopter crash.

^{5H} PERIOD 14a includes 5 deaths in 4 non-hostile helicopter crashes (1France, 2US, 1 Austral, 1US).

30H PERIOD 14b includes major cluster of 30 US fatalities in hostile-fire Chinook helicopter crash in Wardak.

TABLE 2a (Afghanistan): IED (only) fatalities in Afghanistan

Theatre	Afghanistan								
Period	Baseline (A)	3	4	5	6	7	8	9	10
Dates	1 Oct 2001 to 4 Feb 2007	5 Feb 2007 to 24 June 2007	25 June 2007 to 11 Nov 2007	12 Nov 2007 to 30 Mar 2008	31 Mar 2008 to 17 Aug 2008	18 Aug 2008 to 4 Jan 2009	5 Jan 2009 to 17 May 2009	18 May 2009 to 4 Oct 2009	5 Oct 2009 to 21 Feb 2010
Duration	1,953 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days
Deaths in fatal IED incidents	76 in 46 fatal IEDs	22 in 12 fatal IEDs	44 in 27 fatal IEDs	37 in 29 fatal IEDs	62 in 39 fatal IEDs	62 in 42 fatal IEDs	55 in 34 fatal IEDs	136 in 94 fatal IEDs	120 in 89 fatal IEDs
Number of fatalities in a fatal IED incident									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
<i>1</i>	28	8	19	22	25	29	20	71	70
<i>2</i>	11	1	3	6	8	7	9	11	13
<i>3</i>	2	2	3	1	3	5	3	7	3
<i>4</i>	5	0	1		3	1	2	4	2
<i>5</i>	0	0	0					0	
<i>6+</i>	0	1	1					1	1*
TOTAL fatal IED incidents	46	12	27	29	39	42	34	94	89
Fatal IED incidents per day	0.02	0.1	0.2	0.2	0.3	0.3	0.2	0.7	0.6
Mean deaths per fatal IED incident	1.7	1.8	1.6	1.3	1.6	1.5	1.6	1.45	1.35

* Seven fatalities in apparently a single IED incident – the highest per-incident toll in Afghanistan to date.

TABLE 2b (Afghanistan): IED (only) fatalities in Afghanistan

Theatre	Afghanistan								
Period	9+10	11a	11b	12a	12b	13	14		
Dates	18 May 2009 to 21 Feb 2010	22 Feb 2010 to 2 May 2010	3 May 2010 to 11 July 2010	12 July 2010 to 19 Sept 2010	20 Sept 2010 to 28 Nov 2010	29 Nov 2010 to 17 April 2011	18 April 2011 to 4 Sept 2011		
Duration	280 days	70 days	70 days	70 days	70 days	140 days	140 days		
Deaths in fatal IED incidents	256 in 183 fatal IEDs	34 in 31 fatal IEDs	95 in 70 fatal IEDs	88 in 58 fatal IEDs	72 in 54 fatal IEDs	83 in 66 fatal IEDs	122 in 87 fatal IEDs		
Number of fatalities in a fatal IED incident									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
1	141	28	51	38	41	55	70		
2	24	3	16	15	10	8	9		
3	10	0	1	1	1	2	3		
4	6	0	1	3	2		3		
5	0	0	1	1	0		1		
6+	2*	0	0	0	0	1	1		
TOTAL fatal IED incidents	183	31	70	58	54	66	87		
Fatal IED incidents per day	0.65	0.4	1.0	0.8	0.8	0.5	0.6		
Mean deaths per fatal IED incident	1.4	1.1	1.4	1.5	1.3	1.3	1.4		

Consistent with our methodology⁵, excluded from the above analysis of PERIOD 9 are 11 multiply-ascribed IED-related deaths in four IED + small arms fire incidents (2, 1, 2, 1 fatalities) and in three IED + rocket propelled grenade incidents (1, 1, 3 fatalities). In PERIOD 11b, there were two IED+RPG incidents (1, 1). In PERIOD 12a, there was one New Zealand fatality in an IED+RPG+small arms fire incident. In PERIOD 12b, there was one US fatality and four Italian fatalities in two separate IED attack+small arms fire incidents. In PERIOD 13, there was one US fatality in IED+saf, and 2 US personnel died in an IED+RPG attack.

APPENDIX for REFERENCE on AFGHANISTAN

3.3 Explosive Ordnance Disposal and IEDs.

Below we list UK military fatalities since 1 May 2006 whose regiment/unit suggests to us that they may have served as explosives experts. We list these 22 men by date and cause of death, rank, surname and regiment with a further 12 listed whose duties just possibly included Explosive Ordnance Disposal (EOD). In addition, we list the death of dog-handler Lance Corporal Liam Richard Tasker of the Royal Army Veterinary Corps.

Deciding whether to detonate or dismantle a detected IED is influenced by the need to prevent casualties to military personnel or civilians, likely damage to property, the desire to track whether bomb-makers' materials or techniques have changed, and professional curiosity. However, unless bomb-makers alter their techniques and sources with high frequency, the learning to be gained from dismantling must be weighed against the risk to EOD personnel whose lives and skills we can ill afford to expend, and who may be vulnerable to hostile fire while they work. In the week when the Truro coroner's inquiry into the death of Staff Sergeant Olaf Schmidt, who was awarded the George Cross, reached its verdict of unlawful killing³⁷ (verdict: 11 February 2011, date of death: 31 October 2009), Sean Rayment reported that army commanders are planning to change bomb disposal tactics in Afghanistan "to destroy rather than exploit" IEDs³⁸. Exploitation refers to the intelligence gained about bomb makers' tactics from the dismantling of IEDs.

By calendar year, the following table summarises IED-only fatalities (by our definition) that occurred among UK military personnel together with i) hostile deaths by any cause and ii) IED-only fatalities among UK's presumed EOD personnel. The data display a significantly enhanced rate of i) hostile deaths for UK's presumed EOD personnel in 2010 (chi-square on 2 degrees of freedom of 11.2, $p < 0.01$); and also ii) when particularised to IED-only fatalities (chi-square on 2 degrees of freedom of 6.06, $p < 0.05$).

IED-only fatalities among UK's presumed EOD personnel had increased *more than* the rate at which UK's IED-only fatalities increased – when we might have expected them to hold steady, precisely because the dismantling of a threshold number of IED for learning purposes can be achieved via a higher detonation rate when there are more IEDs to deal with. Instead, we see that presumed EOD personnel were 1/43 (2%) and 4/76 (5%) of UK's IED-only fatalities in 2006-2008 and 2009 respectively, but **9/55 (16%)** in 2010.

It is too early to know whether a different pattern has been established in 2011, except to underscore that there has been a very marked reduction overall in UK's IED-only fatalities compared to 2010.

Calendar year	UK IED-only fatalities	i) Hostile death of UK presumed EOD personnel { expectations by trend in IED-only fatalities }	ii) IED-only death of UK presumed EOD personnel { expectations by trend in IED-only fatalities }
2006+2007+2008	1+12+30 = 43	1 { 4.20 }	1 { 3.46 }
2009	76	4 { 7.43 }	4 { 6.12 }
2010	55	12 { 5.37 }	9 { 4.42 }
Total	174	17 chi-square on 2df = 12.2, $p < 0.01$	14 chi-square on 2df = 7.2, $p < 0.05$
<i>Will a new pattern emerge in 2011?</i>			
2011 to 4 Sept	17	1 (or 2 = dog-handler)	1

Date of death	Cause of death	Rank	Surname	Regiment
19 April 2011	IED attack	Captain	Head	321 EOD Squadron
1 March 2011	Small arms fire	Lance Corporal	Tasker	Royal Army Veterinary Corps
14 Feb 2011	NH – fire	Private	Hutchinson	Royal Logistics Corps
14 Feb 2011	NH – fire	Private	Wood	Royal Logistics Corps
28 Dec 2010	IED attack	Warrant Off 2	Wood	Royal Logistics Corps, 23 Pioneer Regiment
30 Oct 2010	Hostile fire	Sapper	Blanchard	Engineer Regiment (EOD)
19 Oct 2010	IED attack	Acting Corporal	Barnsdale	33 Engineer Regiment (EOD)
18 Sept 2010	IED attack	Sergeant	Jones	Royal Engineers

26 July 2010	IED attack	Sapper	Smith	36 Engineer Regiment
17 July 2010	IED attack	Staff Serg.	Linley	Royal Logistic Corps: 11 EOD* Regiment
27 June 2010	Small arms fire	Corporal	Kirkpatrick	101 Engineer Regiment (EOD)
3 May 2010	NH* vehicle accident	LanceCorporal	Buxton	21 Engineer Regiment
3 May 2010	IED attack	Sapper	Roy	21 Engineer Regiment
26 Feb 2010	IED attack	Not reported	Fox	28 Engineer Regiment
15 Feb 2010	IED attack	Sapper	Mellors	36 Engineer Regiment: Counter-IED Task Force
8 Feb 2010	IED attack	Warrant Off. 2	Markland	36 Engineer Regiment
11 Jan 2010	Hostile fire	Captain	Read	Royal Logistics Corps: 11 EOD Regiment
31 Dec 2009	IED attack	Sapper	Watson	33 Engineer Regiment (OED): Royal Engineers
15 Nov 2009	IED attack	Corporal	Marlton-Thomas	33 Engineer Regiment: Royal Engineers
31 Oct 2009	IED attack	Staff Serg.	Schmid	Royal Logistics Corps
20 July 2009	IED attack	Captain	Shepherd	Royal Logistics Corps: 11 EOD Regiment
6 July 2009	NH helicopter crash	Captain	Babington-Browne	22 Engineer Regiment: Royal Engineers
10 Sept 2008	IED attack	Warrant Off.2	O'Donnell	Royal Logistics Corps: 11 EOD Regiment
9 Aug 2006	NH vehicle accident	Private	Reeves	Royal Logistics Corps

16 June 2011	IED attack	Craftsman	Found	Royal Electrical and Mechanical Engineers (REME)
25 Sept 2010	IED attack	Corporal	Thomas	Royal Electrical & Mechanical Engineers (Special Forces Support Group)
13 Aug 2010	Small arms fire	Sapper	Gurung	21 Engineer Regiment: 69 Gurkha Field Squadron
13 Aug 2010	Small arms fire	Sapper	Foster	21 Engineer Regiment
2 Sept 2009	IED attack	LanceCorporal	Brandon	Corps of Royal Electrical & Mechanical Engineers (REME)
4 Aug 2009	IED attack	Craftsman	Lombardi	Royal Electrical & Mechanical Engineers (REME)
23 May 2009	IED attack	Sapper	Rossi	38 Engineer Regiment: 5 Field Squadron
21 Dec 2008	IED attack	Corporal	Deering	Commando Logistics Regiment
12 Dec 2008	Suicide bomber	Marine	Davies	Commando Logistics Regiment
27 June 2008	NH vehicle accident	Warrant Off.2	Shirley	Royal Logistics Corps: 13 Air Assault Support Regiment
9 Nov 2007	NH vehicle accident	LanceCorporal	Alderton	36 Engineer Regiment: 20 Field Squadron
17 Sept 2007	IED attack	LanceCorporal	Violini	36 Engineer Regiment: 20 Field Squadron
6 Aug 2006	Small arms fire	Private	Cutts	Royal Logistics Corps: 13 Air Assault Support Regiment

* EOD = Explosive Ordnance Disposal; NH = non-hostile

3.4 Suicide bombings and senior ranks.

Suicide bombings: In the 160+80 weeks since 1 May 2006 to 28 November 2010, 33 suicide bombings have caused 63 military fatalities (out of 1,863 deaths in 240 weeks: **3.4%**). The mean has been **1.9 military fatalities per suicide bombing** in Afghanistan (15 single fatalities, 12 pairs, three triple fatalities, and single incidents of 4, 5, and 6 deaths).

Of these 63 military deaths in suicide bombings, there were four (1+3) in PERIOD 12b, none in PERIOD 12a, eight fatalities in PERIOD 11b (2+6), one death in PERIOD 11a, six fatalities (4 + 2) in PERIOD 10 and seven (1+2+1+3) in PERIOD 9. There were thus 26 military fatalities in 11 suicide bombing incidents

in the 80 weeks of PERIODS 9+10+11+12, of whom 24 were US/UK/Canadian personnel (in 144,771 pys) – a clearly low US/UK/Canadian military fatality rate by suicide bomb of **17 per 100,000 pys**. Of the earlier 37 military fatalities in 22 suicide bombing incidents in the 160 weeks of PERIODS 1 to 8, 25 were US/UK/Canadian in 117,853 pys, a similarly low rate of **21 per 100,000 pys**.

Suicide bombing claimed five military fatalities in PERIOD 13 and seven (2+5) in PERIOD 14, one of them a German major (out of 465 deaths in 40 weeks: 2.6%).

Senior ranks: In the 160+80 weeks since 1 May 2006, there have been 17 military fatalities at the senior rank of Lieutenant Colonel or Colonel: nine in PERIODS 1 to 8 (8US + Italy), seven in PERIODS 9 to 12 (4US + US in helicopter crash + UK + Canadian + Georgian in IED attack which killed four Georgians in total). Twenty-two majors also died: 13 in PERIODS 1 to 8 (9US + UK + 2Canada + Denmark), and nine in PERIODS 9 to 12 (3US + UK + Canada + Germany; US in helicopter crash and UK in RPG attack; and US in NH helicopter crash that killed 9 US personnel in total).

The reason that we first drew attention to these fatalities in PERIOD 11b was *data-inspired*: on 18 May 2010, a suicide car bombing in Kabul claimed six coalition military lives, four of them ranked Lieutenant Colonel/Colonel. This one incident claimed the lives of a US colonel, a Canadian colonel and two US Lieutenant Colonels as well as US Specialist and US Staff Sergeant. *Prior to this major incident in Kabul*, suicide bombings had caused the death of only one other person ranked Major/Lieutenant Colonel/Colonel – a US Lieutenant Colonel who died on 26 May 2009 (in PERIOD 9): that is one out of 30 *prior* fatalities ranked Major/Lieutenant Colonel/Colonel (3%) was by suicide bombing, no different from the all-ranks rate.

In PERIOD 13, heart attack caused the death of an US major, IED attack caused the death of an UK major, and hostile fire the death of a Norwegian Lieutenant Colonel. In PERIOD 14a, US Lt Colonel (and a sergeant) died by small arms fire at the Afghan National Civil Order Police Compound in Helmand, a German major (and Hauptfeldwebel) died by suicide bomber, and a US Lt Colonel and four majors (together with two captains and master sergeant) died by treacherous small arms fire at Kabul International Airport. In PERIOD 14b, one of the 30 US fatalities when a Chinook helicopter was brought down was a Lieutenant Commander (major-equivalent).

PERIODS 1 to 12 & 13+14 have seen the deaths of 16 & three = 19 military personnel ranked Lt Colonel/Colonel and of 22 & eight = 30 majors among 1,863 & 465 = 2,328 military fatalities. Overall, about 1 in 50 military fatalities in Afghanistan ranked major or higher.

3.5 Friendly fire and small arms fire

In PERIOD 13, two fatalities (one Italian in Badghis, one UK in Helmand) were ascribed to ‘friendly fire – small arms fire’ and two US hostile-deaths to ‘drone fire’; in PERIOD 14, one French fatality was ascribed to ‘non-hostile friendly fire’.

Thirty-two other fatalities in PERIOD 13, which included two clusters, each of six US deaths (at Konar and Nangarhar) were also recorded to small arms fire. In PERIOD 14a, 31 fatalities due to small arms fire included a large cluster of eight fatalities at Kabul International Airport (where an Afghan military pilot murdered 8 US personnel) and two US fatalities at the Afghan National Civil Order Police Compound; in PERIOD 14b, there were 19 fatalities from small arms fire (saf) and one from ‘saf and RPG’.

Of all 409 hostile deaths in PERIODS 13+14, a fifth (82) were specifically from small arms fire (only).

APPENDIX for REFERENCE re IRAQ

Iraq: For detail on military fatalities in Iraq in PERIODS 1 to 8, please see **Journal of the Royal United Services Institute 2009; 154: 30-38 & 40-45^{35, 36}**. By PERIOD 9, UK's deployment to Iraq had effectively ceased. All 52 military fatalities in PERIOD 9 in Iraq were US personnel: 21 deaths were non-hostile, 21 occurred in fatal IED (only) incidents, and 10 were from other hostile causes. In PERIOD 10, all 30 military fatalities in Iraq were US personnel: 24 deaths were non-hostile, one occurred in an IED (only) incident, two from small arms fire, and one from IED and small arms fire, a US military fatality rate of **0.8** per 1,000 personnel-years (95% CI: 0.5 to 1.1). In PERIOD 11, all 34 military fatalities in Iraq were US personnel: 22 were non-hostile, two deaths were from hostile fire, six in four fatal IED incidents, one in RPG, one small arms fire, one indirect fire and one in mortar attack. In PERIOD 12, there were 15 US fatalities in Iraq (4 non-hostile, 3 by small arms fire, 1 indirect fire, 1 by grenade, 1 by IED, 1 NH vehicle roll-over, and 3 apparently non-hostile but also attributed to small arms fire). In PERIOD 13, there were 18 US fatalities in Iraq (9 non-hostile, 2 small arms fire, 3 by IED, 2 indirect fire, 1 sniper fire, 1 by RPG). **In PERIOD 14, there were 27 US fatalities in Iraq (4 non-hostile, 2 hostile fire, 10 by IED, 9 by rocket fire/attack, 1 by RGP, and 1 by grenade).**

TABLE 2 (Iraq): IED (only) fatalities in Iraq.

Theatre	Iraq								
Period	Baseline (I)	2	3	4	5	6	7	8	9
Dates	1 Jan 2001 to 17 Sept 2006	18 Sept 2006 to 4 Feb 2007	5 Feb 2007 to 24 June 2007	25 June 2007 to 11 Nov 2007	12 Nov 2007 to 30 Mar 2008	31 Mar 2008 to 17 Aug 2008	18 Aug 2008 to 4 Jan 2009	5 Jan 2009 to 17 May 2009	18 May 2009 to 4 Oct 2009
Duration	260 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days
Deaths in fatal IED incidents	271 in 183 fatal IEDs	217 in 135 fatal IEDs	280 in 155 fatal IEDs	136 in 86 fatal IEDs	78 in 48 fatal IEDs	62 in 49 fatal IEDs	11 in 10 fatal IEDs	15 in 12 fatal IEDs	21 in 12 fatal IEDs
Number of fatalities in a fatal IED incident									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
1	128	88	97	57	35	39	9	11	7
2	33	23	22	13	4	8	1	0	2
3	14	14	20	12	4	1		0	2
4	5	9	10	3	3	1		1	1
5	3	1	1	1	1				
6+			5		1				
TOTAL fatal IED incidents	183	135	155	86	48	49	10	12	12
Fatal IED incidents per day	0.7	1.0	1.1	0.6	0.34	0.35	0.07	0.09	0.08
Mean deaths per fatal IED incident	1.5	1.6	1.8	1.6	1.6	1.3	1.1	1.3	1.7

There was a single IED (only) fatality in PERIOD 10 in Iraq; 6 IED (only) fatalities in four IED attacks (2+1+1+2) in PERIOD 11 in Iraq; and one IED (only) fatality in a single IED attack in PERIOD 12a.