CELL SALVAGE INCIDENT REPORTING – THE UK EXPERIENCE

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Background
Cell salvage is an integral part of Patient Blood Management and when used correctly and safely it effectively reduces the use of allogeneic transfusion in surgical patients. The basic process remains the transfusion of human blood and therefore needs to be monitored in the same way as other transfusions. The UK haemovigilance scheme, SHOT (Serious Hazards of Transfusion), has been collating incidents relating to autologous transfusion since 2008, with electronic reporting since 2010. We aimed to review the UK experience of incident reports relating to cell salvage.

Methods
SHOT databases, from 2010 to 2016, were interrogated to capture all incidents relating to autologous transfusion. Reports were categorised by acuity, surgical specialty, incident type and outcome.

Results
125 incidents were reported, of which 124 related to cell salvage. It appears that the practice of predeposit and acute normovolaemic haemodilution has almost completely disappeared from clinical practice in the UK. The largest number of incidents (42) was reported in 2011 with the smallest number in 2016 (9). The majority of incidents occurred in elective surgery (102), with orthopaedic procedures being the highest reported category (60).

The type of cell salvage used was predominately intra-operative cell salvage (ICS, 78), with 42 incidents in post-operative procedures (PCS) and 2 peri-operative (combined). In PCS, 24 adverse events (1 device failure, 23 human errors) and 18 adverse reactions (1 hypotension, 14 pyrexia/rigors, 3 other) resulted in 15 minor morbidities. In ICS there were 47 adverse events (18 device failures, 26 human errors, 3 other) and 33 adverse reactions (27 hypotension, 1 pyrexia/rigors, 5 other), leading to 26 minor and 7 major morbidities including 2 deaths not directly attributed to cell salvage.

Summary
Cell salvage is an invasive intervention that requires adequate standards, training and competency assessment to avoid unnecessary adverse events. Of particular note was the very high percentage of adverse events related to human error and human factors highlighting the need for adequate training and ongoing assessment of competency. Adverse reactions are by definition unforeseen, but data trends show consistent themes for the types of cell salvage used. The most harmful reaction appears to be sudden onset severe hypotension. Further work is needed to elucidate the mechanism by which this occurs.

Conclusions
We cautiously endorse the safety of cell salvage but recognise that many adverse events may be unrecognised or not reported. A campaign to highlight the importance of reporting cell salvage related incidents may be necessary to ensure robust data capture.