SHOT 2014: The Lowry Centre, Salford Keys, Manchester. July 9th 2014.

First impressions:

A sunny day in Manchester provided the backdrop to what would be an illuminating and, sometimes alarming, Symposium in the Lowry Centre, Salford Keys. Home of Coronation Street (love it or hate it) a television soap opera that has survived for many years on intrigue, cause and effect and not least blame and retribution.   Haemovigilance can be similar as plots thicken and root causes and effects are tortuously interwoven. Dramatis personae add the colour while the system provides the sets within which events are worked out and sometimes resolved …

Enough lyricism … for now.

The Patient's Story:

Real life experience is a great teacher and we were presented with a Patient Story by Julia, a Sickle Cell Disease (SCD) sufferer who bravely recounted the effect of this cruel and incurable disease on her life. She stated that she had three SCD crises by the time she was 21 but it was afterwards that things got much worse. Her adult life was ruled by SCD ultimately requiring transfusions every three weeks with periods between transfusions becoming increasingly uncomfortable and reliant on healthcare support. The clinic she was attending had been pioneering a new regime of exchange transfusion by red cell apheresis for SCD patients and she was invited to participate. She readily agreed and the benefit was, for her, life-changing. Not only was the period between treatments extended to 6 to 8 weeks but she was able to enjoy the intervening period with an increased quality of life and without the risk of iron overload. Her gratitude for this was obvious to all and everyone appreciated her candour and willingness to share her experience of both the good and the bad of current SCD Transfusion Therapy.

SHOT Update: main lessons and update from 2013. (The Good, the Bad and the Ugly …)

Dr Paula Bolton-Maggs began her review of this year's report with reference to "The Lego Movie" which demonstrated many aspects of the SHOT Team ("Everything's Awesome!"), and how best to avoid human error ("Checklist for Everything"). Following her contemporary dance routine (which would surely have kept Brucie in a job), Paula outlined the main statistics of this year's reports with comparison to previous years and also the latest data from MHRA's SABRE reports. SHOT and SABRE are continuing to work closely together with the aim of enabling us to report to both organisations with as little duplication as possible. This year's report illustrates again that while blood components are extremely safe, their transfusion to patients is subject to human error which increases the risk of severe morbidity or even death.   It is becoming clear that training and competency, while necessary, is not improving this. The engagement of Human Factor specialists by HTCs etc with the support of SHOT, may be a way forward with a willingness to examine and possibly redesign the transfusion process to reduce avoidable risk. So the scene was set for the day with human factors being the thread as we were encouraged to think in terms of Transfusion Safety rather than Blood Safety …

Anti-D sensitization – why is it still happening?: Dr Jane Keidan, Consultant Haematologist.

Dr Keidan began with a very helpful presentation on the aetiology of Haemolytic Disease of the Newborn (HDN) and the introduction of anti-D prophylaxis.   She then went on to discuss, with reference to recent SHOT data, the reasons why anti-D sensitisation is still being detected. Data from the recent (not yet published) NCA Anti-D audit showed that for the 2-dose RAADP regimen just over 50% of women received the correct dose at the right time compared to almost 90% of women on the single dose regimen. (98.5% of women received post delivery anti-D correctly). Three types of error were identified: Omission, Execution and Commission. Omission was by far the largest category with inadequate knowledge of HDN and anti-D prophylaxis being cited as examples. The lack of robust data is being addressed through the SHOT anti-D Questionnaire which will, in time, provide evidence for additional guidance regarding effective dosing and improvement in the management of sensitizing events.

Recommendations were that:

> Robust systems should be put in place to identify women eligible for prophylaxis.
> Effective communication within and between medical teams.
> Anti-D should be made available in emergency areas.

Audit of Platelet Transfusion in the Belfast Trust: Dr Chris McCauley, Haematology Registrar, NIBTS.

Dr McCauley presented the results of a 2013 Audit of Platelet usage against local and BCSH guidelines which identified that 8% of platelet transfusions were inappropriate. The audit also revealed that 28 of the requests were for 'double' or 'multi' dose platelets and that there was no significant difference in platelet increment between single and multi- dose transfusion. Multi-dose prescribing was possibly due to perceived difficulties in supply. A 5% rate for time expired platelets was noted and this was considered to be indicative of over ordering (as a result of over prescribing). Recommendations to resolve these points were made and an action plan was developed which included sharing of the audit data with the clinical teams; development of a platelet ordering protocol and providing a remote 'platelet bank' on the major site. Improved clinical guidance was formulated with the involvement of ICU and Cardiac Surgery. Chris then shared the results of the 2014 re-audit which showed absolutely no difference in the percentage of inappropriate transfusions but did reveal a significant overall reduction in the numbers of multiple doses requested, with zero multi-dose requests coming from the regional ICU making– success in part! Another positive outcome was a reduction in the percentage of time expired platelets. Following this audit a more detailed action plan was drawn up to further improve platelet stock management and prescribing. During questions it was refreshing to hear that the audit outcomes and action plans were being devised and used in collaboration with, and education of, clinical staff with obvious success. The nurturing of mutually agreeable contact between different professional teams is fundamental to a successful change of culture and understanding of the requirements for safe and appropriate transfusion. Where this is established our job is so much easier.

Human Factors: Why we need to change practice.   Guy Hirst.

Guy Hirst, a retired BA Pilot, took us on a fascinating journey through the world of aviation safety and various error management systems with several striking slides and video clips, including the world acclaimed landing of an airliner on the Hudson River by a pilot who embodied the maxim "Standardize until you absolutely have to improvise". Guy informed us that where airlines took the management of Human Factors seriously the number of major accidents reduced significantly. In airlines where resources do not allow such research and implementation there has been no similar safety improvement. Be careful who you fly with …

While he was impressed with SHOT UK's influence on safe transfusion in the UK we were encouraged to look at things from a different perspective … value what goes well; be serious about no blame; encourage reporting and view errors and their investigation as an important part of safety (a mistake is a mistake whatever the consequences). He considered that there are three reasons why things go wrong – the human difficulty with perception, assumption and communication, not to mention multi-tasking! The use and importance of checklists was described along with the need to examine and if necessary change procedures, equipment and environments in order to reduce the possibility of error. The story behind a video of a passenger's view of a cowl-less engine in flight demonstrated how a number of events resulted in a pre-flight engineer performing routine maintenance on the wrong plane.   Having the correct mental picture of a situation leads to effective decisions and a safe outcome. An incorrect mental picture leads to ineffective decisions and disaster (cf the Hudson River landing).

The importance of a no blame culture was vital to ensure that we learn and improve. The importance of communication, teamwork and leadership was emphasized with the flattening of hierarchy (opportunity to challenge the decisions of those in a leadership role) and improved adaptation to new systems being essential. The collection of data on errors is relatively easy – the measurement and understanding of the influence of human factors is harder but equally necessary in order to ensure we operate as safely as 'humanly' possible. There is an increasing number of resources available to help us in this and several books were referred to - including "Thinking Fast and Slow" by Daniel Kahneman (available for preview on Amazon).

I think my main response to this talk was to realise that there is another way of dealing with errors apart from our obsession with numbers, who, what, how and why, closure and review. A holistic view of staff, environment and policy taking into account how we, as humans, have a capacity for error should engage us more than our belief that we are capable of being right in all circumstances, given adequate training, being assessed as competent and with the right written policies in place. Another book was referred to, "Being Wrong: Adventures in the Margin of Error" by Katherine Schulz. We were treated to a video clip of the author delivering a presentation on how we perceive error which resonated with me at least – so much so that I bought the book!

It will be interesting to see how, if at all, the ideas shared by Guy will be integrated into the NHS in the years to come.

Evaluation of an App supporting correct use of irradiated and CMV negative blood components. Karl Monsen, Post-Graduate Student, University of Edinburgh.

An App is the name given to programmes (Applications) designed for smart phones and Tablets (ie portable computers) which enable the user to perform some 'useful' task or facilitate the rapid acquisition of information. They can be very useful little things if you're into such technology – and those who aren't are blissfully unaware of what they're missing.

Karl's presentation focused on an App he has developed which can be used by junior doctors to help them in the prescription of blood components for patients who have special requirements. He used SHOT data on Special Requirements Not Met (SRNM) to introduce why such assistance was needed with approximately 100 events reported annually. The App uses national guidelines (BCSH and SaBTO) for the use of Irradiated and CMV Negative components to guide users to the correct decision on what to transfuse. A quiz was also incorporated to provide an educational element (to put the brain back into the equation).

Having created the App it needed evaluation for ease of use and relevance. The App was presented to final year medical students at a large teaching hospital. They were asked to give it a go and leave feedback online. As may be expected from an IT expert, all interactions with the App were recorded electronically using the same technology which records our use of websites etc. This showed that 70% of the students (186/270) were tempted to play (for an average of 8 minutes!) with 54 of them recording their opinions. The response was very positive and most of them found it easy to use and helpful. Conciseness of information was particularly liked which is perhaps where Apps score over pocket manuals because you can find the exact relevant paragraph (which because of memory and screen limitations has to be as concise as possible) more easily. The quiz was also well liked with some students suggesting that it be developed further with explanatory answers and overall score etc.

The next step is to incorporate these suggestions and evaluate with practicing doctors.

I believe that the use of mobile computing is obviously going to impact increasingly on how healthcare professionals carry out their tasks. It is interesting that, in this case at least, a non-healthcare scientist has designed an App which doesn't just 'do the job for you' but educates you so that you can eventually rely on your own experience and understanding still keeping the App as back-up for those rare occasions when you need to check what the guidelines say …

The App is available at www.OptimalBloodUse.eu/app/ give it a go, I did and it is very good!

Computers as Team Players? Professor Harold Thimbleby.

After a refreshing lunch, viewing of the posters and a wander around the sponsors' displays we reassembled to an unexpectedly disturbing account of IT based errors. Just when we thought it was safe to go back to work, Prof. Thimbleby proceeded to enlighten us to the dangers of over reliance on IT and failure to adequately validate systems to a degree which reveals significant anomalies or confusing functions when in use. The difference in the worlds inhabited by software programmers and end-users was highlighted and a disturbing account of one nurse's tragic suicide following her reporting of an error which may or may not have been her fault reminded us that a 'no blame' culture requires more than lip service for it to be an effective part of our learning and development.

Prof. Thimbleby explained how there is a trade off between Efficiency and Thoroughness which immediately introduces conflict between manufacturers' desire for profit and user need for fool-proof design. We were shown evidence of IT failure to display the correct information including one where a handheld device displayed a different result depending on the orientation of the screen! Equipment design was shown to be an important source of error in examples ranging from the ability to programme exact volumes to the confusing appearance of digits in a 7-segment display as seen from different angles. Ultimately, this was attributed to poor User Centred Design (something we are all familiar with – but perhaps take for granted and work around). Designers need to include the end user in their design process well before the equipment evaluation stage. Software and Hardware designers live in their own cocooned environment where their only focus is on perfecting their code or meeting a production deadline. Users, in the real world are not interested in the beauty of the algorithm or the styling of the box – only that it reliably and consistently helps them to do their job and save their patients from additional distress. When designing IT and equipment designers must take account of the human factors that will be present in the workplace. The ISO Standard 9241 Ergonomics of Human System Interaction (look it up on Wikipedia) describes how manufactures can achieve this …

Awareness of the limitations and in some cases, dangers of IT systems should be included in our investigations of adverse events especially when the human assumption is that a human is at fault (as sadly demonstrated by the account of one nurse's horrific experience following her admission of an error with an infusion device). Technology is not neutral and the root cause of an error may not lie with the human operator ("user error" is not a good term – "system error" is more appropriate).

Overall this was an effective session which complemented the 'Human Factors' theme. It made us think about something that clinical staff often take for granted, don't understand and use with minimal training and awareness of their error inducing potential. For more of the same visit the Professor's website at www.haroldthimbleby.net

Simon Goodwin: Informed Consent Action Group – The ICAG-Pad. A regional initiative for informed consent to blood transfusion.

Despite there being specific guidance on consent for transfusion being available there is widespread inconsistency of their application with many factors influencing and interfering with the obtaining and granting of informed consent. Simon presented the case that Consent is not absolute; not just one conversation and not the sole responsibility of the doctor …

He went on to describe the aims of consent from the patient and staff perspectives and highlighted the limitations of what can be achieved with certain patients. He also described how our attitudes to patients can affect how we manage consent (Paternalistic or Equal Partnership). Other factors such as workload and the patient's ill gotten information (via the Internet) sometimes conspire to make the giving of information and obtaining of consent more traumatic for the staff and less valuable for the patient. Lack of transfusion knowledge was a key factor in staff's ability to engage too deeply with their patients for fear of being caught out with an awkward question.

In an attempt to resolve these and other issues an 'Informed Consent Action Group' (ICAG) was formed. A Record of Decision to Transfuse Label was developed and piloted. Initial response was

that doctors were more reluctant than nurses to use it partly because they felt it threatened their professional independence!

An improved version was developed which built on Simon's 4 categories of risk and 4 sets of mitigating actions. These provided more information to staff on the risks of transfusion and how to minimise them eg. Patient Identification. The decision to Transfuse Label now includes target Hbs for different conditions.

The trial is still underway. My thoughts are that there is scope for a lot more transfusion information such as this to be made available for staff at the critical points in transfusion. We are making headway in this but through different approaches and with different formats. Short of an App which can record that the actions and decisions have been carried out appropriately we are limited to a paper based system (which is not necessarily a poor alternative until we achieve Star Trek capability) which should be designed to improve staff confidence and assist them in delivering appropriate and safe transfusion. This presentation showed one way that this can be achieved.

Fruit Salad: SHOT Cases an Interactive Session.

In an attempt to keep us in our seats until the closing bell we were invited to participate in some interactive educational therapy using a variety of fruit and veg. Once we had got our laminated cards sorted out and could lift our choice into the air we were off. Based on reported cases we were asked to make decisions on the best action to take in difficult situations ranging from emergency transfusion complicated by antibodies to mis-labelling of samples.

Given the number of attendees there was some variety in the responses and some discussion on which action was most appropriate … just like real life!

Conclusion:

Another excellent Symposium with outstanding contributions from people with a keen interest in improving transfusion safety attended by delegates who were stimulated by the variety of presentations and appreciative of the recognition of their own role at the coal face / bedside.

Unlike Coronation Street, we are not just viewers but active participants in a developing storyline. However, just as in TV dramas, the interaction of set, script and actors combine to produce the desired effect. We also manage human and system factors in the delivery of healthcare – specifically in the realm of safe and appropriate transfusion. This year, SHOT has proposed the need to examine more closely the environment in which we operate and the systems we have designed with the aim of identifying those factors which interfere with and, in some cases, negate the training and assessment which we have been at pains to provide.

Watch this space …

Graham Oakes
Transfusion Practitioner.
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September 2014.