

MELB - Greg Irwin

It's my great pleasure now, the next two presentations are talking about people that have actually done it and actually produced outstanding results and the first one, it's our great pleasure to invite Mr Greg Irwin to speak to us. He's a senior hospital scientist at John Hunter Hospital. You may recall that one of the best practice case studies is from Greg's hospital and he's been the key driver in those improvements. After several years in the haematology department at the John Hunter Hospital, he moved into the blood transfusion department as second in charge and then into the senior hospital scientist position approximately five years ago. His particular operation is benchmark. Greg.

Thanks Leigh. Thank you for inviting me to speak today. It seemed like a great idea at the time and then last night I suddenly remembered how terrified I was of speaking in front of people. As for the mention that we've done it, I think we're still working towards it. The answer to the question I've got no idea. We are trying. I'm not sure where the emphasis should be on whether, how do we get it right or how do we get it right? I'll go through this and we'll try and address some of those issues. I'm from the Hunter Area Pathology Service, otherwise known as HAPS. We're based in Newcastle and our main laboratory is at the John Hunter Hospital. We've got sites around the Hunter Valley.

We're a division of Pathology North and we come under the New South Wales Health umbrella. The HAPS group services the Hunter Valley, which has a population of just over 650,000 people. John Hunter's considered by Sydney hospitals to be a small, regional hospital. We have about 600 beds and we're the busiest trauma centre in New South Wales. In the enlarged map on the right, you can see that we service or we do service the bottom quarter of the map. We also work with laboratories in the top quarter and we rotate stock from them. Our main laboratory's at the John Hunter Hospital and that's what it looks like and the front of the pathology building looks like that when the letters are polished. I've never seen it that clean actually.

We don't have a local blood distribution service centre in Newcastle. We used to but it closed in 2009. Our nearest distribution centre is the Sydney Blood Service. It's about 160 kilometres away. Time-wise it's about two hours on a perfect day but realistically, once you factor in preparation, packaging, traffic and traffic lights, it takes about three and a half to four hours. We get one delivery a day at 10 o'clock Monday to Friday. We get one on a Saturday afternoon and we get one at 2 o'clock in the morning and that's on Tuesday to Saturday. Urgent deliveries come to us by taxi. The cost of a taxi is about \$500. If it's life threatening, the Red Cross pay for it. If it's not, we pay for it. Interestingly enough to date, every delivery has been life threatening.

We also have potentially life threatening deliveries but they're pretty good with that. The stock that we received in the 2012/13 financial year, as you can see there, about 17,000 pack cells, nearly 3000 platelets, a bit over 6000 FFP, 3000 cryo-precipitate and 30,000 manufactured products. As Karen and Peter touched on before, Victoria doesn't have a devolved blood budget but we do in New South Wales and in dollar terms, that amount of stock adds up to about \$20 million. I won't go into that any further but the quickest way we've found to promote

interest in change is to put a dollar value on things. The success we believe, of our stock management is determined by and it begins with ordering. So all of our stock is ordered only by the John Hunter and we use BloodNet.

We started BloodNet a couple of years ago and we love it. We were fortunate enough to order the 2 millionth unit of red cells through BloodNet, which Leigh and his team came up and gave us cupcakes and we had a lovely presentation ceremony. I even contemplated ordering the three millionth unit just so that we could get him back again. We don't allow our other sites to have access to BloodNet. That way they can't order things. They can't receive products and that way we have complete control. As my 2IC says, micro management is a good thing and I assure it's the only way to get things done exactly the way that you want it.

Through experience we've found that it's most successfully performed if it's done by a small number of staff and all of our ordering is only done by senior staff. All of our staff are trained to use BloodNet. They all have access to it and they use it for urgent orders and specific patient orders. We also have a patient, an inventory management system known as eBlood. And it allows us to look at all the stock at all sites very quickly and very easily. eBlood's also now interfaced with BloodNet and that went live in May of this year and it streamlined the process quite significantly. All of the products are delivered only to the John Hunter. They're receipted into stock and processed. Then they're either kept or transferred to our other sites. The diagram at the bottom shows the way that that flows. We also include private pathology laboratories and out of hours we act as a pseudo Red Cross service for urgent products to them. We don't only get red cells from the Blood Service.

They also come from sites that are out of our network such as Narrabri, Moree, Glen Innes and Armidale and they're in northern New South Wales. All red cells are received at the John Hunter. They're receipted, group checked and kept at the John Hunter or they're transferred to our other sites. When we transfer them, we use eskies, which are validated and data logger is, the eskie as you can see in the picture, is what you would buy at a camping store. They're a very robust eskie. They're validated. They'll hold up to about 16 units if you pack them carefully and that includes the ice bricks and the insulators. The data loggers we use, we chose those because they're so easy to use. They're small, they're flat, they're simple. You can configure them any way that you want. They're relatively inexpensive. They're about \$40 or a bit less each and visually, they're very easy to use. Green light's good, red light needs further investigation.

As I said, we also get pack cells from our remote sites or our out of network sites and these are in the north area of New South Wales. This is a process that commenced in 2009. It was instigated by the transfusion medicine improvement project. It's a project that we ran in our area health service from 2009 to 11. Unfortunately, it was terminated due to a lack of funding in 2011 and that was a huge loss for us. 2009 Narrabri and Moree collectively expired 56 and 85% of blood respectively and that equated to about 324 units. Glen Innes and Armidale, 28 and 16% respectively. They expired 397 units so those four sites plus a couple of others, threw out over 900 units in 2009 alone. Once we started rotating them back to the John Hunter, we reduced that to zero so we saved 900 units and in dollar terms that was about, just over \$300,000, which we felt was a great achievement and very significant.

The problem that we found from bringing blood back from those sites is the age of blood, especially this year with the older blood coming out of the Red Cross. To try and overcome this, just this week, we've introduced age restrictions on blood that we get from them. So we've put a 16 day limit on it and we're watching that very closely to see what impact that has but we're hoping that it will certainly help us and not disadvantage them too much. Within our network, only the John Hunter is allowed to expire products due to age, so no other site is permitted to do that and they don't have the ability to. The table there shows our expiry rates for the last eight years. 2010 was our highest expiry and that's where we commenced discarding blood at 35 days of age and this was following a study by Dr Steven O'Mara, who's a haematologist out at Tamworth, which is about three hours west of Newcastle.

The results of his study suggested that red cells greater than 35 days of age, increased the risk of sepsis by approximately 350% and whilst I acknowledge that that's debateable and controversial, we're still waiting to see where that goes but considering we're such a large area, we have such good figures as far as expiry goes and we have such a major trauma centre, that was the best thing that we could do to benefit our patients. Once we started discarding at 35 days, the initial week we did discard a reasonable amount of blood. It was around the 60 to 70 units but after that it settled back down very quickly and we reached the former levels. This year, we're looking at about 2.1% to date and that's mostly because of the age, we believe, of blood that we're getting out of the Red Cross. We do monitor the stock at remote laboratories daily and that's done sometimes a couple of times a day and we recall all units at 21 days of age.

Group O, we commenced holding only Group O with our (9.00) hospital about 18 months ago. We were noticing we were transferring a lot of blood backwards and forwards and we felt that if we changed to Group O, we could improve that data. It worked so well that we then decided that we would implement it at another two sites, which we've done just last week. By changing to Group O only, we could decrease the total stock numbers and at the same time, we could increase the availability or usability for all patients. We constantly change blood groups regardless and it's something that we've always done to avoid wastage and we always go to a compatible group, hopefully and that stops us from expiring blood due to age as well. We don't stock Group AB. We stopped doing that two years ago. I considered that just to be an unnecessary group.

Sorry for those that I offend. We're also considering stopping stocking Group B, which we discussed with the National Blood Authority and the Red Cross last week. B Neg especially, is just another insignificant group in our mind. It also forces patients onto other groups so I'm Group O, my wife's Group A, so we're even trying to breed them out. We've stopped now. Cross matching and dispensing blood. We use eBlood as I mentioned. It's our patient inventory and management system. It's networked to all of our sites including sites without laboratories so we can electronically release blood and that accounts for about 95% of the blood that we release. We only group and save patients unless they've got antibodies, so no antibodies, we don't tag up blood. We don't leave it sitting on the shelf. We only tag blood when it's collected from the laboratory. This means that we can have less blood in stock.

It also means that we're not having blood tied up unnecessarily. If it's sitting on the shelf unnecessarily, it's getting older unnecessarily. As Peter mentioned

before, this also means that we can issue the oldest blood first always. Two weeks ago, we completed the trial from the National Inventory Management framework study. It worked extremely well. It involved holding more appropriate stock levels and I stress, it's not necessarily reduction, it's a more appropriate stock level, so for us it was an overall reduction but it did increase some groups slightly. So initially, we went to a 17% decrease, which was 87 units less than what we were holding beforehand.

It worked so well the only comment I could say from the study was that it was boring. We expected a lot of excitement and a lot of drama but nothing happened. It was so boring that last Monday we decided to decrease by another 16%, which was another 68 units as well as implementing the Group O at two other sites and that's going very well so far but we're watching very closely. Platelets, again, are only received at the John Hunter. They're always given out with haematologist approval no matter what time of day it is. This ensures appropriate usage and it also lets the haematologist know what the stock levels are like. We use the same type of eskie and data logger to transport them. We also work very closely with the private labs. We provide products for them. They replace it. We borrow their products, we replace that.

We also use their couriers to avoid the Red Cross taxis when necessary. FFP and cryoprecipitate, they're all again, received at the John Hunter. They're only held at the John Hunter and Maitland Hospital, which is about 45 minutes from us. All stock comes back to us within three months of expiry. That way we don't expire anything due to age. We've just last week changed Maitland over. They're now only stocking Group AB and FFP so we don't ever expect to get another pack back from them due to age. Breakage accounts for about 3% so that's reasonable though we're trying to improve that. Manufactured products, the same again. They're received only at the John Hunter. They're transferred to other sites and they come back to us before expiry and we monitor that very closely as well so no one's permitted to expire them.

Problems encountered, the big one this year, especially for us, has been the age of blood in combination with the remote sites and the Blood Service. We've had a significant increase in expiry rates but we're working very closely with this. As I said, we've implemented a 16 day rule from the out of network sites. We're hoping that they will hold less stock and transfer it quicker. The second point is that it's very labour intensive. We're constantly checking levels. We check other sites. We look at expiry rates several times a week and we check the age of groups daily and we change blood groups constantly and it's very difficult at times to encourage staff to change from rhesus positive to negative blood or change from Group A to Group O to get rid of your older stock.

And the last point is staff and human variability. Everyone has strengths and weaknesses and you can try and encourage the strengths but you can't always rule out the weaknesses. We always have an open mind to these things. We never assume that we're the best and we always look for opportunity to improve and we're getting there slowly but I don't know that we'll ever get to where we want to be.