Good morning. My name is Andrew and I'm currently working as an unaccredited registrar at the Toowoomba Base Hospital in Queensland.

Today I'd like to share with you my thoughts on this topic: the key challenges in rural surgical education.

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To do this I'm going to start by discussing two of the key challenges facing surgical education in general, because these challenges affect rural-based training just as much as they do city-based. Then I'll turn to look at a few of the challenges particular to rural surgical education. Finally, to close, I'll spend a few minutes discussing what a training model might look like that addresses these challenges in aggregate.

Along the way also I'll venture some ideas that might act, at least in part, as solutions to these individual challenges.

Finally, I should make clear from the outset that in this presentation when referring to surgical education I'm referring in particular to training at a SET and/or pre-SET level. Keeping the bosses' skills sharp is well beyond my experience level and one, potentially, fraught for a junior trainee to opine on.

So what then are these challenges? Well, the first general challenge I want to touch on is this.

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Per year, trainees get less clinical and procedural exposure than they used to. In fact up to 50% less. **Working-time restrictions, service targets**, as well as **increased patient expectations** all conspire to reduce trainees' exposure.

Broadly, I think, these challenges are legitimate although there is scope for debate on working-time restrictions part but, broadly, as I said, I think they're legitimate so it's the training then that needs to adapt. Trainee exposure could be increased by applying the Evans Exposure Equation, named principally for its alliteration.

Taking the first variable, simulation. At present simulation is not used routinely in surgical training and it needs to be; with the key word in that statement being routinely. At the junior level the evidence backing simulation is robust; **it reduces error rate** and **reduces task time** and **theatre time**. The requisite equipment is cheap and readily available so really it comes down to having the right local systems and structures in place, which should be a relatively easy win.

Despite the advancements in simulation which, I think, are incredibly exciting, as it stands in the year 2015 I think we're still a little way off being able to routinely simulate most advanced procedures so here the second variable in the equation, prioritisation, must come to the fore. On this front the College has made two good moves of late; firstly, along with the specialty societies, by re-instating the GSSE as a prerequisite for SET and secondly by reintroducing JDocs. In essence what these do is forward load the fundamentals so as trainees can prioritise more complex clinical and procedural learning later.

A more far-reaching idea with respect to prioritisation is the concept of training targets and tariffs. Right now hospital management accepts funding for training and then focus on service targets because they're the ones for which they get dragged over coals if they don't meet. Think about it,

introduce training targets and then you too could have a go at dragging hospital management over coals for not meeting target. It could be fun?

Of course, I'm not saying administrators neglect training wholesale or that there's a malign intent. What I am saying is that, at a management level, training is not prioritised to the same degree as service delivery but, in order to increase exposure, it needs to be.

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A competency based curriculum. Moving towards it is the second general challenge I want to touch on today because we're not there yet but the promise such a curriculum holds means that it's worth continuing to try.

For example, such a curriculum would allow the College to respond to community concerns more quickly and with more precision. Trainees could take time-off mid training, or indeed train part time, without compromising standards because at defined stages they could clearly demonstrate competency in order to progress. Future changes in the training programme could be more easily and reliably evaluated.

The list goes on. What then is stopping us reaching this nirvana? Essentially the problems are ones of assessment.

As you'll be aware, good assessment tools are valid, reliable and acceptable. The remaining two columns and the table at the bottom come from an article in the ANZ Journal of Surgery by John Collins in September of 2013. Most interestingly, the article wasn't clear on whether these DOPS were occurring in-theatre, but even if they were it's clear that the majority of specialty societies are not using in-theatre assessment, which is the is the gold-standard for validity. Assessing trainees when they're actually in theatre doing what they're supposed to do. Why aren't they being used?

In short because of those top two challenges. In other words, they fail on the acceptability criterion. How do we address that? Well, firstly, by make the assessment as efficient as possible. Procedure based assessments or PBAs are used by Colleges of Surgeons in the UK as in-theatre assessment tools and can reliably assess global competence for a given procedure after two independent assessors have viewed that procedure on two occasions. That's much more efficient than previous assessment tools.

Even so, rolling out PBAs for all trainees Australia-wide would require far more resources or, more precisely, personnel, than are currently available. And even with the promise of nirvana at the end, we're probably not about to get a rush of full-time educators from within the ranks of surgeons.

In other words, to reach the goal of having a competency based curriculum, we're going to have to employ professional educators and some of those will need to be non-surgeons. Of course that's not to replace surgeons, but rather to augment their work.

I now want to turn to discuss the challenges facing rural surgical education in particular. The challenges specific to rural surgical education stem from trying to apply one or the other of two principles that I believe should be borne in mind every time one considers surgical education aimed at improving rural surgery.

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The first of these principles you can see on your screen. I realise, here, I'm more-or-less preaching to the converted so I will simply say that one, sub-specialisation is not a viable option in rural towns but

equally, two, a 'strong' focus on Generalism is not the same as an 'exclusive' focus on Generalism and there is a balance to be found.

Therein lies, of course, perhaps, *the* big challenge for rural surgeons, which in turn affects what should and should not be taught in rural surgical education. What is the right balance? Well, that's a difficult question to answer not least because it's context specific. Now, I appreciate that in this room there are many who have a much stronger experiential grasp on this issue than I do so I will limit myself to two general points.

The first is that having a truly competency-based curriculum would go a long way to putting this issue to bed and is yet another reason why it's worth the effort to head in that direction.

Secondly, in this September's Surgical News the College President's piece discussed the publication of outcomes based data on surgical performance. We should welcome the publication of such data. The challenge is to ensure that the data obtained are reliable, meaningful and comparable across institutions, and for us that means making sure that that's the case across rural institutions.

We know we do it well, but having these data and combining them with a competency-based curriculum would allow us to rationalise the debate on how strong the focus on Generalism should be and thus to what depth, where and how rural surgical trainees should be taught.

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And this is the second principle. Even if metropolitan centres were to place a stronger focus on Generalism, it would still be crucial that surgical education aimed at improving rural surgery took place predominantly in rural settings for reasons of workforce recruitment and retention.

Working in rural towns is different to working in metropolitan ones. The professional demands, the on-call, the learning and professional development, time-off, meeting patients in the street; it's all a bit different in the country compared to the city. Not radically so, but sufficiently so, such that it creates a myriad of small challenges for trainees; ones that they are more likely to meet successfully if they're immersed in the setting and have positive role models.

Even more importantly, and ultimately, I think this is the game-changer, it is around the time of advanced training that you meet an other half, buy property, start a family or put the kids in school and so on. If all of this stuff happens whilst you're in the city it's really hard, even if you are a rurally-minded surgeon, it's really hard to uproot at the end of your training and pursue a career in rural surgery.

In short, what I'm, saying is right now the College's system of training produces excellent surgeons, they just tend not to work in the bush, and that is not a coincidence.

In my introduction I promised to outline a training model that addressed these challenges both general and rural: a somewhat ambitious task.

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Fortunately there are men and women cleverer than myself already blazing the trail.

The model in my mind looks a hell of a lot like the South West Victorian Regional Training Hub developed by Dr Glenn Guest and team. They're not a panacea for all the problems in rural surgical education but nonetheless Rural Training Hubs are an excellent model.

For starts they apply the two principles of rural surgical education I outlined a moment ago. By necessity they have a stronger focus on Generalism and by design most of the training occurs in rural sites. As a group rural hospitals are more effective and resilient at training by virtue of an increased breadth and depth. Finally, as a defined structure, Hubs can act as a focus point for investment of both time and money and their outputs can be measured more easily.

Is there any evidence that rural training models of this nature work? Well, in the surgical sphere in Australian, no, because it hasn't been done yet.

In the medical student sphere there is a decent body of evidence, with recent 10 year reviews of UQ and UWA rural clinical schools demonstrating that their graduates were more likely to practice rurally, even controlling for a trainee's rural upbringing.

Interestingly, if you break down the headline numbers from those studies, the majority of that increase is in regional areas. In other words, in the areas they trained. Whilst that's a problem if the goal is to get doctors to settle rurally, that is, rurally as opposed to regionally; that's not a problem for Rural Training Hubs like Dr Guest and Co.'s. In fact, quite the opposite, it lends strength to the argument that doctors tend to settle where they train.

Looking at the rural GP sphere there is emerging evidence that these models are effective in the post-graduate setting, but the data are too immature to be conclusive at this stage.

I'm going to leave it there on Rural Training Hubs because you're going to hear from the good Dr Guest himself on this very topic and he'll be able to tell you first hand the challenges he and his team have encountered and how they've dealt with them.

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Ok, to wrap up. Today we've talked about a few of the key challenges facing rural surgical education.

I believe that in many respects rural surgical education is the same as surgical education anywhere, and thus faces the same challenges. We talked about the challenge of reduced exposure and how to increase it through the routine use of simulation as well as through prioritisation with forward loading and training targets

We talked about developing a truly competency based curriculum and that what was holding us back were the challenges surrounding assessment. PBAs offer a more efficient in-theatre assessment tool but their proper implementation would require professional surgical educators, some of these folks will necessarily come from outside the ranks of surgeons

There are some challenges particular to rural surgical education. One such is finding a balance between specialisation and Generalism, and I think having a competency based curriculum and combining that with surgical outcomes data would allow us to rationalise the finding of that balance. Another challenge is to find a way to deliver the majority of rural surgical education in rural locations, vital for reasons of workforce recruitment and retention.

Considering these challenges as a group I think the roads lead to Rural Training Hubs and that their value in meeting these challenges is likely to be substantial and we should look at setting them up in different parts of the country.