I wish to move on from considering changes on a global scale, as Graham Wright has done, to their effect on health service, information, technology and on the way nurses and other health professionals work.

I was interested in the whole subject of information technology, it was very high on my agenda before I left Scotland. On arrival in England in 1991, I joined Guy's Hospital which had been a resource management development centre in the first tranche over about eight years. It was interesting to see the flush of expectation in Grampian where I had come from, because we had not begun, to the downside of disillusionment at Guy's. I think part of the dilemma was the high expectations of what technology was going to do. Nursing Specialist Group members will have a more realistic view of what technology can offer, and what it cannot.

Is information technology our friend or foe? Alan Hyslop, in Scotland in the 1980s, gave a presentation using superb computer graphics to illustrate this theme with a gun and a gherkin: the two ends of the spectrum of technology.

The task facing us all at the moment is clear, it is around centring far more on our consumers, around how we are going to develop our services to deliver appropriate outcomes to them. While considering acute services, because that is where I happen to work, the same attributes, techniques and thinking apply to all areas of healthcare, or even wider to all areas of one's life.

Getting started on change

I wish to describe some of the work I have been involved with over the last three and a half years, which has started to make a step-change in the way we deliver care, and what impact technology has had on that, what we might be looking for, and the future.

Starting with the simple tenet of "is the quality of the service we want to give?". We want to look at it from the customer's point of view, from the patient's point of view and follow the whole transaction, analyse it and examine it in relation to the whole health care process. We want to acknowledge that quality is about adding value to that process, not just establishing an absence of defects.
As the NHS is exhorted more and more to respond to central Charters we sometimes miss that critical little area in the middle - what the person feels and values. You want the dynamic to bring the two together but at the moment they are not quite engaging together. At the end of the day this should be an exciting approach, something that creates a pay-off for everyone.

So there we were, eight years into resource management, asking what was our service like: what had we achieved in reality? We had achieve quite a lot of knowledge. The nursing system had been turned off one and half years before my arrival - which is interesting in itself.

I would hesitate to say that the impact of all this information on the delivery of patient care was a huge one. There was knowledge about providing information for billing which was beginning to emerge. But was it making much difference to the overall issue?

One of the first things was that we needed to look at the shape of the hospital. Particularly the configuration in which we were giving care. We were running a service which was based on the assumption that once the patient was under the roof of this centre of excellence then the patients problems were beginning to disappear. For example, being admitted with a myocardial infarction and ending up in a gynaecological ward did not matter because the patient had entered this ambience of care, and that was the main thing. It does not take a genius to see that was not a particularly clever way to try to look after someone. The problem of people waiting for hours in the Accident and Emergency Department to be seen by someone who had a specific knowledge in their field of disorder, was quite a common occurrence. Looking at the relationships between wards, between patients' needs, the service and the roles of people with that Ñ then the connection was loose. It was traditional, it had not been analysed, it was not seen as an incremental part of the whole process of care.

It had parallels in Aberdeen with its 'Aberdeen Formula' for nurse staffing. I was a strong critic of that workload measurement system, not that it did not give information at a point in time. It did. It measured the status quo. But the more important thing was what was done with the information. If you are to base a decision on the status quo you have to be confident that the status quo is meeting all your needs.

That was the biggest problem. At Guy's Hospital the information was meeting all the organisational needs in terms of the organisation itself, although for some it probably did not meet their needs. But it was not looking critically at what impact relationships and care delivery have on the whole process of the patient's care and the outcome. Today you might call it 'process re-engineering', or you might just call it 'common sense' and somebody having the strength of character and mind to say "hold on - this is pretty terrible, how can we do it better."

Information for patient care

It starts you looking for the benchmarks. Asking where are these people with coronaries ending up? What is happening to the patient with a gynaecological emergency who is ending up in a ward, cheek by jowl, with a male patient because a mixed ward is seen as OK because we treat people OK in this place. Then you find that this raft of technology, which had been around for ten years, could not give the answers. Not a thing.
People came in. They were treated. We knew that. In some cases we knew what the diagnostic coding was, although in quite a lot of other cases we did not. In effect we had no quality benchmarking. The system was measuring the status quo. It did not lend itself to looking at protocols and standards, because people were complacent about what they were.

Protocols were very much in the ownership of individual consultants. This may ring bells with the reader. To change this situation it was necessary to start by analysing what was happening to the patient and to care. It very quickly highlighted the skill-mix. That getting the right people in the right place at the right time depended on knowing what was actually going on.

We started off by agreeing what would be the goals for success at changing the status quo. One of the items high on our agenda was living within a declining budget. We wished to remain open for local emergencies all the time. In London, the teaching hospitals have a long and magnificent record in tertiary care but they have been rather less focused on the care of the local population. In some cases that is now changing as the introduction of purchasing has an impact.

There was regular cancellation of elective work, which as a paper exercise is relatively simple, but for the patient or relatives, coming into hospital is surrounded by anxiety, there are arrangements to make and sacrifices to see that all goes well. To be cancelled at the last minute, not once, not twice, but sometime three times, that was a pretty terrible service.

The discharge arrangements: the care across hospital and community, needed to be improved. We needed to look at meeting targets being set by the purchasers. Achieving them in a way that was meaningful for patients, getting a better result. We needed to look at a decreasing length of stay, to knock a few days off with out changing anything else is not a good service. It is the worst thing that one can do.

**Tracking an episode of care**

In order to change this we had to look critically at the process and the relationships. Obstetrics and Gynaecology is one example. It was one of the first areas we examined in detail. We started by looking at how to track a whole episode of care. How to relate across it. Obstetrics had a great advantage. It had a thirty to forty week time span. Starting with the pathway of ante-natal care, the contact with a woman begins. We looked at the overall level of activity, refining it to what was done: what was midwife activity, what was GP activity in relation to hospital activity. We found there was quite a lot of activity around the nine to twelve week time period.

Then as time progresses there was a period of less activity with one small peak from 'mums' who were having glucose tolerance tests, and then on to a period of intense activity around the birth of the baby. That information told us quite a lot about when the activity was happening. That was useful. It gave us the opportunity to break these episodes down into what is happening to whom and where. One of the first things it illustrated was that Guy's was a million miles away from 'Changing Childbirth' type targets. We had everybody logged under a consultant obstetrician. We had long consultant obstetrician clinics, where they would add on two 'mums' with complicated pregnancies, such as cardiac problems, at the end of a clinic of 30 people with normal pregnancies. Clearly there was room for a qualitative approach to clinic work.
We then looked at the detail and its relationship to length of stay. At this time nobody was managing the process, it was all happening as it had traditionally always happened. Once we looked at elective caesarean section and tracked the length of stay we could see quite a range: some 'mums' were discharged on the 5th day, quite a number on the 6th day, a fair number on the 7th day, and so on. On looking closely at what this data meant in reality, it showed length of stay was entirely random. The assumption that mothers who stayed seven days had some sort of complication was not borne out - the length of stay was related to consultant ward rounds, or to consultant preference. On talking to the midwives it became apparent that they knew the pattern very well, but had not felt that their role was in any way to change it. Once the room is unlocked by indicating that these practices are up for change, then by far and away the most creative people in making the changes are the nurses and midwives. In other areas the therapists may have the leading role.

The first things we did, before we had even completed the study, was to arrange for midwife-discharge. That immediately reduced the length of stay. At the same time we started to look at the whole developing role of the midwife and midwifery practice. We also looked at the support roles. We started to see where to begin training support workers in particular areas. Also we looked at the junior doctors hours. This was quite interesting as quite of chunk of their hours could be taken over by support workers with extra training.

**Changes in gynaecology**

We also examined information about abdominal hysterectomy in the same way. Again we saw the discharges on the 6th day, with quite a few on the 7th, 8th, 9th and 10th days. Those discharged on the 10th day were totally related to a particular consultant preference. This was a four-day cost for the same outcome as the others.

One of the significant outcomes of the exercise was that by looking at the very detailed information the whole issue of information for patients began to emerge, along with the role of information-giving. The consultant's name was attached to each line recording length of stay. Such data becomes a very powerful tool when you are trying to change practice. Particularly when trying to change the practice of a multi-disciplinary team, involving the whole team.

If there is any core theme for the present it must be one surrounding the whole area of liaison. I hope the 1990s and beyond will be the time of the team approach to health care. No single group can reach the sort of changes that need to happen.

Another stark example was the termination of pregnancy. The graphics showed that there was a small number of women treated as day cases and a much larger group was admitted for a 24 to 48 hour hospital stay. Again, these differences were entirely related to consultant choice. When we talked around the issues we found that these women were receiving a very poor deal. There was no dedicated service and no particularly outstanding counselling automatically given. Now we have a much better, dedicated service. We are looking at a fully day-case service. The situation has been changed dramatically.
Obtaining the necessary data

Providing such detailed information helps to change practice. Yet even after eight years of resource management it was difficult to extract from case-mix by consultant. The reasons included the type of system used at the time, the problems of accessing data which the system had not been set up to do and also some of the attitudes of the people who were the custodians of data.

Looking at a model for these developments, a general pathway was developed: without every specific blood test included in detail to avoid it looking like a minefield. A pathway needs to include the benchmark events which must happen to get the best outcomes for length of stay. By doing that you can add protocols. On a computer system you can add a box listing the ideal blood tests to be done. This should put peoples' minds at rest who feel that you have to capture every detail or you have failed.

The main issues you need, to get to a fix on price are: the manpower activity, the projected demand, the activity-manpower demand, the direct costs and overheads. Then you can reach a diagnostic pricing. When we looked at our pricing more critically it was fairly poor in some respects.

Overall we were seeking to agree pathways, establish the quality protocols, by analysing the activity we could see where we wanted to go. Looking at what we did now, we could look at resource planning in terms of human resource and other resources. We could cost the pathways and continue to develop this method to inform the rest of our practice. That allowed us to demonstrate the sensitivity of costs in relation to skill-mix, length of stay and care time, with the type of treatment given. Over time we should be really well informed on outcomes. At that time we had to make assumptions on some of the outcomes by not using outliers, on the presumption that they had a particular problem, and looking at them separately. Almost all our outliers were due to clinician choice, failure to treat promptly or to treat in an inappropriate setting.

The audit of current arrangements needs the right people involved Ñ those with the knowledge, able to build up a picture of the process as it actually is. It must be all the disciplines involved in the care, with clarification of what staff are doing and the analysis of that activity to say who should be doing it. In the team concept there is already a blurring at the margins, particularly between the nurse and junior doctor. In some cases it is between the nurse and senior doctor, with the nurse taking on a specific role such as running an entire clinic as a specific enterprise. There is also blurring at the margins around the role of support worker, in some cases the support being to junior doctors.

In some cases it needs a re-examination of the use of clerical assistants and the handling of cleaning and portering. In the early stages of resource management we tackled these groups by shifting the jobs so that the nurses and junior doctors took the patient to X-ray. We are looking at empowering people. Giving them the right to think, to be assertive and to believe they had ownership of their own work. The UKCC gave a magnificent lead when they changed the regulations surrounding the role of the nurse and the responsibility of the nurse for personal practice. This empowerment enables people to be very creative, to come up with some excellent ideas. We have some very good job-sharing programmes by nurses, and with doctors
in things like cannulation and blood-letting. It is very interesting that, in starting to make these job-shares and interchanges, the understanding and mutual working also improves.

The building of pathways is a real skill now. We have some real super stars among the nurses in working with others. A unidisciplinary pathway such as a nursing one is really of little help. You need one in which the whole transaction is outlined, bring predictability into patient care. It is one of the best things that we have done, in that we now can discuss with people what is going to happen, you can discuss with them what their choices are within that. It is not a pathway with no variation. We must be more sensitive to the patient's right of informed choice. It raises these issues and provides an opportunity to look at the options. The practical steps to "achieve and promote change" may seem trite, but it is key to all of this. Staff have to feel good about it, feel excited by it and that it has an effect on how we treat our patients. This brings me back to my early point. There is something in this approach for everyone.

Preparing ourselves for the future

All of this has implications for training. In terms of opportunities for nursing these are tremendous. An area we are now looking at is translating some of these managed regimes into care-managed regimes, with the nurse as manager of care; co-ordinating the work of other care-givers, extending this out into the community. This provides the nurse with a wider view of the total care package: part of the training for this lies in social as well as physical assessment.

One of the downsides of early resource management was the very poor performance of some nurses in terms of assessment and the stereotyping of assessment to comply with very narrowly structured programmes. This system challenges the whole way of working.

For the future, no development will be complete without partnership. It extends beyond health care into the community, involving social workers and the voluntary sector. In health care it extends across all of the players. It is important that all of the elements merge together. One of the biggest problems that we encountered in trying to do this work was the stand-alone activity, which measured the status quo. To bring the bits of activity together into an integrated system has been very difficult and in some cases impossible. The wider agenda is the delivery of healthcare. Giving better informed care and what information technology can do to assist that. Information technology by itself cannot create the change N it can't and it shouldn't. We should be able to specify clearly what we want from information technology to enable us to deliver a better service, not only to measure the immediate qualitative effects of delivery but also the ongoing evaluation and definitive outcomes of the sort of service we are giving, so we can plan effectively for the future in health care.

Discussion

Anne Casey, Great Ormond Street, and the NHS Centre for Coding and Classification

I enjoyed your overview and it certainly does put into context the kinds of changes that people are facing across the board. I was just concerned and would like your opinion on how you looked at lengths of stay. It is obvious, as you said, that consultant preferences really did make the difference, but how could you say that and
that outcomes were not any different when you were not looking at outcomes. I worry about the development of pathways and changes, like reducing length of stay, without looking at short and long-term outcomes.

Wilma McPherson

I think that in looking at each consultant in terms of case-mix it is relatively easy, once you get into the system. We can see from the data display where there is a predominance of consultant X’s patients with a length of stay of 5 days compared with consultant Y’s patients with a length of stay of 10 days. In terms of outcomes you have to make assumptions. If you look at the criteria those parties used for discharge, in the majority of cases it was the same reasons. In the case of midwifery: the baby was thriving, for the mother there were no obvious post-natal complications: no spiking of temperature, good bonding with the baby and so on. Interestingly that level of detail was not gone into, instead there was a value judgement about the mother and baby being ‘ready for discharge’.

In terms of pathways, I totally agree with you at one level. If you are talking about a group of people sitting in a darkened room, possibly smoke-filled, coming up with a pathway of care they believed in their terms is ideal you get something which is about five miles away from what you are doing now, you are putting no one in with training, support and all other things to get there, then I believe it will be a fiasco.

If, however, you are looking at existing practice and building on it, which was what I was doing, it can be different. We were looking at the best, average length of stay with the outcomes as I described. Within that we also looked at significant readmissions for the same episode. That is important for medical patients and some of the other specialities. If you looked at best average being achieved now, it is not some mythical, superhuman person achieving it. You could look fairly critically at what they were doing that the other people, the whole team, were not doing. You could make an informed step-change. The other good thing about doing this is that it gives you the benchmarks and data-bases you did not have before. Because nothing is an absolute, over time these should give greater information to continue the improvement process, it is not prescriptive, it is about practitioners themselves using the information to build. It only becomes a threat for the people who stand back and say that "this is the way to do it, it is the only way to do it and by the way, it is the way I do it". I hope I have answered your question.

Anne Casey

I think you have. It just feels like a missed opportunity that the people were not writing down the criteria for the end result, which had been met, for example for women after abortion there was no bleeding. Adding that final bit would begin to provide data to indicate the result achieved.

Wilma McPherson

I shot myself in the foot, because I should have described the resulting changes in the service. We have a dedicated service. There is a gynaecological nurse who provides family counselling. The service has improved significantly. Now there are outcome criteria. The only criteria there before were from a pejorative view that the consultant had of women in general and their ability to comply with pre-admission processes.
Maggie Wheeller, Central Public Health Laboratory.

A comment about what Anne was saying about length of stay. One of my colleagues, Ros Ploughman is co-ordinating a Department of Health project on the socio-economic burden of hospital acquired infections. You did not mention these, but I think most of us feel quite a proportion of the extra length of stay is due to the five to ten per cent of patients who get an infection.

Wilma McPherson

We looked at all these factors. If you had that sort of difference in length of stay you wonder if patients had a fulminating or serious infection. As for socio-economic factors, many people said our patients were in longer because they were from low socio-economic groups. Interestingly the data did not sustain either argument. There were infections but they were picked up as outliers N they were outside the average on which we were focused.

Maggie Wheeller

The study I was alluding to is looking at all the costs associated with having a hospital acquired infection. There is a lot of American data which indicates infection is one of the biggest avoidable costs.

Wilma McPherson

This sort of analytical study, and collecting the data, helps you to look at that. Over the last three years we have run a series of infection prevalence studies. Over those years our rate has gone down in specific areas, but where the rate has gone up very sharply is in the area of MRSA (Methycillin Resistant Staphylococcus Aureus). It has created a particular problem and for certain patients seriously skews the length of stay. In many cases the reduction in the length of stay reduces the patients' exposure to infections. Florence Nightingale said "the hospital should do the patient no harm".

All of these factors, the socio-economic and home factors, were taken into account where these were relevant. We are doing a paediatric study where there appears to be a preference to keep children in for a longer period. We are looking at the factors surrounding that.

It is not some sort of ploy to make healthcare slick and smart and without proper analysis. It is the most detailed work in which I have been involved. Looking at our performance against detailed criteria is real challenge.