

AUDIO INTERVIEW TRANSCRIPT

Will, Eric: transcript of an audio interview (04-Nov-2016)

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Will, Eric: transcript of an audio interview (04-Nov-2016)*

Biography: Dr Eric (Es) John Will BM BCh, MA, FRCP, FBRs went from Grammar School to read Physiology on a Bosanquet Open Scholarship at New College, Oxford 1963-1966. He qualified medically in 1969 from clinical training at Guy's Hospital, London, with House appointments that included renal transplantation. He passed MRCP in 1972 and took up a Medical Registrar and then Lecturer post in Nottingham. He spent two years (1975-1977) in Leiden, The Netherlands, in day-to-day clinical and laboratory research, especially exploring crystallisation relevant to renal stone disease. Subsequently, he became Senior Registrar in the Renal Unit in Nottingham City Hospital and then in 1980 Consultant Nephrologist at the regional renal unit at St James's University Hospital, Leeds. His main activities became the creation of haemodialysis satellite units and the development of clinical renal computing. He later chaired the Hospital Staff Committee until the amalgamation of the two Leeds trusts. Nationally, he chaired the British Renal Computing Group (1982-1988) and was Secretary to the UK Renal Registry (UKRR), 1997-2007. He was co-opted to represent the Renal Association in several peri-informatics roles, including coding in the Clinical Terms Project and HRG Casemix development. An Honorary Fellowship of the British Renal Society acknowledged a career-long concern for the development of multi-disciplinary working and psychosocial issues. In the research tradition of nephrologists, he developed a research programme of clinical investigation with a computerised (expert) advisory system for the departmental management of renal anaemia, including theoretical papers and several large RCTs. In the UKRR he focussed on clinical audit and data presentation, justifying, in particular, the mechanisms of applied research and collaborative audit. He retired in 2007.

TT: Tilli Tansey

EW: Eric Will

TT: You're mainly known as Es - where did that come from? I was trying to work out if it was an abbreviation or a nickname, that you got known as the Esteemed or something.

EW: Eric was a sort of inter-war name and perhaps it's coming back in places. Yes, it was very time related, I think, for my parents. Oh no, fear not, no not Esteemed. I have been on calendars as Ezekiel where people didn't know whether it was S or Z, but it's, yeah, it stuck and it was a reasonable thing to do.

TT: You were born in London?

EW: I was born in West London. And spent most of my early life there and I went to school in West London.

TT: Did you have any science or medicine in your family?

* Interview conducted by Professor Tilli Tansey, for the History of Modern Biomedicine Research Group, 04 November 2016, in the School of History, Queen Mary University of London. Transcribed by Mrs Debra Gee, and edited by Professor Tilli Tansey.

EW: Not at all. My father was a tool-maker and although he was interested in foreign languages, and there was a strong German strand in the family, there was absolutely nothing academic, apart from self-teaching. One of the remarkable things, in retrospect, is how little books or reading actually featured. I was reminiscing recently that the only bookshop between Shepherd's Bush and Uxbridge was the W H Smith's in Ealing. There was nothing else at all. So even in society in general reading was not a sort of standard, frequent habit. But that caught me out later because I was, from that point of view, relatively illiterate and was a beneficiary of the grammar school development. But that had its downsides as far as the reading was concerned, so I was spotted as a potential candidate for Oxbridge by the school and the advice the headmaster gave the group that was going to Oxbridge, or attempting to go to Oxbridge, was to read. 'Just read,' he said. And I had absolutely no idea what he meant. And I remember very well, 'Where would one search for such a thing?' And where would you start? And I started I think with some adventure stories from my aunt and I really had absolutely no idea what that was about, even though people had obviously seen some potential in me from the start.

That's I think what determined that I would go down a biological or scientific route; I clearly was not a candidate for literary or the humanities because I really had absolutely no background.

TT: Were you an only child, or did you have siblings?

EW: I've got a younger brother. We went to ordinary primary school and they spotted that I might have some potential. I remember one very affectionate teacher at the time, one of these lacunae of things that you remember, but I remember one. But I was fiercely bullied at primary school. And that was probably the thing that I recall most specifically. But actually they detected that I might be someone to benefit from a scholarship at a public school, so I went to interviews for Christ's Hospital, I think it was at the time, in London with my mother. A big event. A day out. And I didn't get in. Whose loss that was remains to be seen but it, it was evidence that they saw some educational potential in me. But there was no, preparation for that in any way at all and I imagine that that had something to do with what their impression might have been. But I did pass the 11+, I did go to the grammar school, in the event.

TT: Which school did you go to?

EW: The Ealing Grammar School, on Ealing Green, which flowered for a brief time. It was a good experience generally speaking because I did pretty well there, from their point of view. And it wasn't as overstated as some of the para-public school grammar schools were. But, as I say, I had no sort of background in general awareness, but I was pointed towards zoology in particular at the time.

TT: So you did a wide raft of 'O' levels and then specialised in the sciences?

EW: Yes, in zoology particularly and I did, at that time, they had these so-called state scholarships, which I did and in retrospect, it was somewhat out of date. The way of getting through the scholarship at the time in zoology was to memorise, effectively to memorise, a book about the invertebrates, and I remember doing that, although I can't remember any invertebrates any more. But it was that kind of semi-rote thing. And one can only marvel at the teenage intellect that could actually do that because now I certainly would find that a memory feat that would be very difficult.

TT: Were there any teachers in particular who inspired you?

EW: Well, the zoology man took a good deal of interest in me and they had an embryonic Sixth Form for Oxbridge. They did set it up quite nicely in the event. But I think there was an interest in the academic side and then the headmaster there used to have separate meetings with the scholarship group. But it had this flavour which I found very difficult to get hold of, from a very non-academic background and whether they really understood where one was coming from, remains to be seen. Of course you don't have that self-consciousness necessarily as a teenager and I didn't know what I didn't have, as it were. You just don't really know that.

TT: Did the fact that your father was a tool-maker, a practical man, influence you, did you have any skills?

EW: No. He was really quite modest about that but in retrospect he could make more or less anything and he designed a number of original tools and various devices, but I'm afraid his capacity passed me by at the time. No, these were enviable skills but they weren't passed on in practical terms, no. Whether I was reacting to the practical, I don't think so, no. I think I held onto the academic things partly because they were things that I could manage and partly striking out a separate path, which was very difficult for them to understand. They respected it but they, because it was part of the social sequence, as it were. But we were detached and I became really quite independent in that area very quickly.

TT: When you were doing your Oxbridge scholarship, were you already veering towards medicine? Is that what you were going to read? Or were you thinking of natural sciences?

EW: No, I had some kind of sort of feeling of responsibility and I remember I thought, and I think this was an original thought, I thought that forensics was something where I could combine some intellectual interest with biology. So actually, for what it was worth, one presented as, 'Yes, I'm going to be a forensic scientist,' and then, of course, one realised that this would be better done through a medical channel. And that meant yes, starting that training. At Oxford, in the event, one did a degree in physiology first and then did clinical training afterwards.

TT: Why New College? Did you have family connections, antecedents?

EW: Nothing, no. I think there must have been some connections. I think the headmaster, as I recall, knew Alan Bullock and that was, there was a big Oxbridge link there, or Oxford link. But no, I don't think there was anything else particular about it, no.

TT: What about your physiology degree? Did that inspire you? Did you consider it tedious before you got onto the real medicine?

EW: Well, yes, absolutely. There are huge paradoxes in this but I remember at the time that one was ruminating over the membrane potential of squid or something like that, and it drove me completely mad. And I remember having a period where I didn't want to look at another graph. , I just had a sort of, I became graph-phobic, which is remarkable really because most of my later work has been around time-series and graphics. But that was the case at the time and the tutorial system wasn't particularly well-g geared to the medical part of the physiology because they just threw the large textbook at you and said, 'Get on with it.' It wasn't really a tutorial issue. Most of it was presented as cut and dried, there wasn't really very much to discuss. There wasn't very much from that level that one could add to the topic and I think I got very frustrated. But the main thing was, at the same time, you can imagine I was trying to come to terms with the social and cultural environment that I'd been pitched into and there were some very sort of characteristic features to that. New College was very linked to Winchester and Winchester seemed to regard New College, or at least it felt like this was a kind of finishing school, or pre-finishing school. And there were a lot of class and social tensions in there. And it took me a long time to really come to and I think that probably scuppered my performance at finals. I think I was just too confused and embroiled with these sorts of contests, which other people have described, very, very clearly, even in recent times. They had so-called moral tutors but these were obviously rather distant, nunnish figures who certainly couldn't really relate and didn't really attempt to relate to the sort of predicament that I was in anyway. And so there wasn't a lot of external support there and the idea when you see now in the universities, this welcome culture, there's this plurality which I think most people feel is slightly overdone [laughs]. But nevertheless that whole atmosphere was completely missing. You were on your own. You were just simply left to it. And I must say I probably floundered for a good deal of the time.

TT: But you survived.

EW: Well, one does after a fashion. For example, I never participated in any of the sporting things. You think of the range of things that was possible. It never, it almost never occurred to me to do it. Having said that, obviously there were some wonderful experiences within it, and the other interesting thing is, and this comes back when you go back there and you talk to people, is that medical people were generally regarded really as missionaries. So even in the mid-1960s or early 1960s, a lot of the undergraduates had in mind a career in law or business or whatever, mostly in the traditional professions and they had an idea that they were going to perform well, they were going to achieve, they were going to become wealthy, they were going to replace elements of the establishment. And this was completely unself-conscious in them but a complete mystery to me, and I didn't see this at all. And I certainly wasn't a missionary in that sense. I hadn't formulated how this was going to go. And just let things unfold. So I didn't get a particularly good degree. I didn't disgrace myself, I guess, but in retrospect it would have been quite different if I hadn't had the social pressures and the adjustment to make, which went on for some time.

TT: Where did you do your clinical?

EW: So I went to Guy's.

TT: So that would be rather different, would it? Or was it a continuation?

EW: Yes. Yes, there was an Oxbridge insertion into Guy's medical course on an annual basis and so I joined up in there with half a dozen other people from Oxford and Cambridge. And of course these places change a lot with time. This was a period where generalists were still pretty much in control and medicine hadn't specialised particularly. There were speciality interests but it hadn't actually been refined. There were a lot of wonderfully skilled qualified intermediate, what we would call senior junior staff, senior registrars, and there was still a sort of apprenticeship model going on, but these were people who were wonderful generalists. And there were some very talented people there. But in retrospect it's interesting that there were a lot of people with medical connections in the year, which wasn't apparent to me at the time, but in retrospect one can see that that was the case. And people, I suppose, were from a fairly narrow social background and so things like being a professional and professional standards and all that sort of thing, people simply absorbed that or they had it already. They didn't need that to be taught, they didn't need that to be isolated as a topic. That was sort of part of what it was to operate. But I enjoyed the clinical part of that pretty well and I used feats of memory to achieve what I could. Again, obviously now far gone, but then there were things you could memorise for prizes and that kind of thing. And I think I never really thought about surgical or practical things so it was always rather more cerebral, more physician type of activity.

TT: Was there any particular topic, as you were going through your clinical training? Any particular firm you enjoyed? Any particular specialty?

EW: No, I don't think so. And in particular I was never involved with any of the renal physicians.

TT: Was Stuart Cameron there then?

EW: Yes, he was, that's right. Nephrology - that was burgeoning at the time. They were very active and were enjoying the development that they'd started. No, I didn't get involved at that time. What I think I did more than others was convert the theory into practice pretty quickly, so I think that by the time I qualified in 1969 I had a very strong handle on how to be clinically, which in retrospect I think other people took time to come to that. And then I had house jobs in medicine and surgery. The medicine job was with John Butterfield, that was in Guy's. This was before he became vice-chancellor at Nottingham, I think it was.

And I think that was the second job I had. And the first job I had was a surgical job, which involved the renal transplants. So this was 1969-1970 and it was a very active unit and the surgeon was Mick Bewick was who was absolutely a live-wire, so I had a very broad introduction to that. He was doing research work at

the Royal College of Surgeons, I think it was in Surrey, and I would go down and assist him with that.

TT: Was this Down House?

EW: It may well be. I've forgotten exactly what it was but I remember going down and assisting him. And the other thing was that he was transplanting like mad and the tissue-typing thing was not entirely settled by then. So he would go out to retrieve the kidneys and the HO would stay behind and prepare the organ recipient. So that's what I did for some time, which was very exciting. But it was also very exhausting. One was up till two and three in the morning, many, many nights, and so it was very exhausting. In fact, when I finished that job, the patients told me that I looked a lot worse than they did. One was run absolutely ragged. And in Guy's the surgical wards were at the top of New Guy's House and I remember I was on the run so much I'd never wait for a lift, and you'd run up, and I can't remember, five or six floors probably. But it was very lively. But then the hepatitis struck in Edinburgh and then in Guy's and I got hepatitis. Hepatitis B. And I was feeling a bit off-colour, I don't quite remember. I went down for breakfast and I just couldn't face the bacon and egg. Just could not face it. And so I had a blood test and I was assisting at some other operation at the time and the phone rang and said, 'I'm afraid you've got this.' So I spent some days in the fever hospital in Lewisham, I think it was, wondering whether I was going to survive or not [laughs]. But everybody did from that part of the outbreak. I think, I seem to remember there was an exchange transfusion on a nurse, I recall. I think that was the most severe. It had a consequence, not only in the funding of maintenance haemodialysis, but also in that other centres had hepatitis and Bewick and I were the only (surgical) people who were immune, so I would travel once or twice with him, , to the far end of the country to do intercurrent surgery. And people tried in a certain sort of way, and I wasn't part of the strategy of course, just the tactics, but they tried I think to transplant patients out of this scenario, but the problem was that not only was transplantation itself involved often with bleeding, and this is all before the really powerful immunosuppressives, so people were prone to getting bleeding ulcers and all sorts of other complications. And it really didn't work. It was a desperate way of trying to deal with it. But then the Rosenheim Review and the precautions then dealt with it. But one never found out how one acquired it. With dialysis there was, obviously, a good deal of infected blood around the whole time.

TT: Did a lot of people in your unit go down with it?

EW: Yes. But I didn't really know them because the transplant element was sort of on the side of the dialysis unit, so I didn't actually, I didn't know that people ever came together or there was any kind of integration of the experience in that sense for the individuals. But I think in the dialysis unit there were rather more infections, absolutely. And of course there was some relief, reading about it now, there was some relief in the Department of Health that they might not have to invest so much in maintenance dialysis if hepatitis was going to be the thing.

TT: So you stayed, you did a house job and an SHO job?

EW: No, there were two house jobs and I was being considered for a rather, I think, senior SHO job, at one point but they didn't pursue that, so I did a locum at the Hammersmith.

TT: What did you do that in?

EW: That was one of the gastro firms, I think. I've forgotten the names of the people involved (Dr Graham Neale). One of them actually went to Guy's as one of the first specialist physicianly appointments (Dr R Hermon Dowling) but I'm afraid I've forgotten the label for it. And I did speak to Professor Booth at the time about, what would a young man do in this situation, and generally got the advice to go to America, which was fair enough.

TT: Although at that time that would have been, yes, I can almost hear Chris Booth saying that. BTA was a well-recognised qualification.

EW: Absolutely right. I don't really know why it didn't appeal to me. I may not have been secure enough generally speaking to feel that I could venture that kind of uncertainty. I don't know. But I didn't take that advice. I then went to the Whittington in North London and got Membership from the Whittington.

TT: You got Membership very early, didn't you?

EW: Yes, it went through pretty well, they had a good course. But, I'd already converted a lot of the theory into a practical approach so I think I probably, just created a head-start system for myself and that wasn't such a problem. But I remember in Membership, I had a rather curious case and I thought that the patient probably had porphyria [laughter]. And I can't remember the detail now, but of course to diagnose something seriously rare in the middle of the Membership exam was a tremendous risk. And I can't remember exactly what the circumstances were but I do remember the collywobbles about 'dare I say this is what it is?' I got through so I must have made sense of it somehow, whether the patient had it or not. It's those, one remembers those kinds of anxious occasions. But just putting it all together I couldn't come up with anything else. And I appreciate it may have been the justification of the thought rather than the thought itself that's the issue [laughs]. I think the gift of the gab was important too, probably.

TT: After you got your Membership, did you have any idea of where you might want to go? I get the sense you've got a lot of options open because you're not really very sure where you want to go.

EW: I think that's right. I wanted to do something physicianly by then. And I think I dropped, I never really deeply investigated the forensic thing, although in retrospect one can see how it might have fitted together. No, and I went to a registrar, general registrar job, in Nottingham. For some reason the flavour of London didn't attract me. I didn't feel competitive and I felt probably somewhere that that's what it was going to be and that's not where I thought I should be. These retrospective things are very difficult. Anyway I went to Nottingham and that was interesting for a time but it's easy in retrospect, certain things stick in the mind. I remember being on a medical ward and seeing an elderly patient trying to get a drink, and I said to the ward sister, this must have been only after a few months, 'It would make sense for them to have a bottle of water hanging on the bed and a tube that was pinned to their shirt that they could actually drink.' And I'd never seen anything like that I thought, so I mentioned it to the ward sister and was immediately ridiculed for this suggestion. And, of course, one didn't have the confidence to say, 'Let's try it.' I just had no research experience, anything like that. But in retrospect it might not have been a bad idea [laughs], and still might not be a bad idea, and it got developed with new materials for runners and athletes and all sorts. But it's just an example of how thoughts can develop but then are quickly scotched if you don't have the confidence to pursue it.

TT: It's a question of confidence, isn't it?

EW: Absolutely, yes, and to see other people having done such things and to have models of, well that's what you can do and that's what you should do. And it leads one to respect ideas that cover a margin of what you're doing, I think. In retrospect, a lot of what's different about people is how far they pursue their intuitions at the margin of activities and how much they persist.

TT: But you may be more aware of that having often been at the margins yourself. Because already the story you're telling me is of somebody who's not quite one thing or the other.

EW: Yes. Well then, just to emphasize that further, I got this lecturer post in Nottingham, under Tony Mitchell who was a very admirable man to work with and to know. He was Professor of Medicine and the Medical School at Nottingham was in a phase of expansion.

TT: It was a very new Medical School, wasn't it?

EW: Exactly. And so they were in the hiring mode and I went in there. They were much more interested, they were interested in atherosclerosis and vascular disease; this was before standard coronary (Care) and other

interests. They had been interested in platelets and platelet stickiness, and this kind of thing. None of that quite suited me but he was sensitive to giving people a certain amount of scope. And I think because the thing was being set up there was a certain amount of scope there. And I ended up being preoccupied with bone and I played around for some time, and I say that, not in a sort of play in the practical sense, but I incubated rodent calvaria with prostatic tumours to see whether I could identify that there was some stimulation of osteogenesis. Because even then I was aware that osteogenesis is one of the more difficult things to provoke in bone, such as sclerotic prostatic metastases in one area of medicine and that sclerotic prostatic metastases for one area of medicine. And this was being pursued elsewhere I think, in London for example (Dr Powles, Royal Marsden), but it was all hopeless, as far as I was concerned, it was very amateur. And that really was a sort of sign of the times. I remember a peer being told to 'investigate the platelet' as if that was something that you just sort of did. And there was a minor sort of pre-molecular medicine naivety about this. And of course it had a point in the sense that people would have completely novel ideas, coming at things from a completely untutored background. The problem was then how to support that and how to play it. And this was as a time when molecular medicine and biology was developing quite strongly but I was simply outside that carrying on.

So I did that for a while and then an opportunity came up to go to a properly established metabolic unit in Holland.

TT: You went to Leiden?

EW: Yes, a predecessor had gone there to do work on Paget's disease. Again, a sclerotic condition of bone but one that had clinical problems that were treatable and that needed treating. And it was run by a rather charismatic man, Olav Bijvoet, who had set up what in Dutch was called the Balans Paviljoen and they had a small clinical unit in the grounds of the (old) academic hospital, and they were organised to do metabolic balance studies, so highly detailed balance studies, of people with Paget's and other metabolic diseases. And this had come out of the Dutch tradition of very careful measurement and plotting, originally came out I think of Amsterdam. But one had large charts on the wall and people's balances of minerals and so on were plotted. And one of the things about it certainly was this proof of the connection between cause and effect, which I thought it was really fascinating to see, that you might kick or disturb somebody's system one way or the other. I can't remember exactly how we did that, deprive them of calcium or alkali, and then see the image of how this was reflected in the measurements. And also to see the consistency of measurement. So if you're careful, and you're not doing anything else, the (urinary) creatinine excretion is absolutely constant. And to see this kind of pattern placed on the biology was very, very impressive.

TT: Can you just say something about the setup you had because that kind of work is very labour-intensive, just setting up of metabolic wards. Where did you fit into that? Did you have technicians to do the assays?

EW: Yes. They had a laboratory internally. The nurses stayed there so there was a consistent trained background, which we'll come back to later about dialysis. But anyway they had a sort of fixed staff, who knew what they were doing, patients went in, were booked in, and had these fixed studies. The lab was on site, the whole thing was a system of plotting and so on. And I was ostensibly clinically active so I learned a certain amount of Dutch in the language lab, sitting next to a Dutch woman learning Korean, I remember, which is really rather curious. But anyway, even in clinical work you don't need to be utterly fluent, you have phrases that trigger people's responses and so on. And I would do that and do letters in Dutch as far as I could, and so on and so forth. And then the other part of it was that they had established laboratories in the same block, along the same corridor basically, for studying radioactive incorporation into crystals, in particular calcium oxalate, because this was the main renal stone component and they got going on being able to do that. And I really went there expecting that this lab work was already established and that I would do various experiments and that I would get a research degree from it. That was the idea. So I supervised a lab technician and we went ahead with that effectively, so that was the other strand of it.

TT: Did you have leave of absence from Nottingham? And how were you funded?

EW: That was by the Dutch research equivalent of the MRC, I think (FUNGO). And that worked pretty well. I did lots of experiments and I have a filing cabinet full of the papers of the experiments. And I could show, what one's looking for in those things is always elements of consistency and reproducibility, which we could achieve. But if you try to grow crystals and measure the incorporation of isotopes to follow their growth, what we always found was that the amount of material incorporated fell short of what you might expect from the saturation of the solution. It was like a Howitzer that didn't actually ever quite achieve its full trajectory. And I could work out in various ways some linearities about this, plotting it with logarithms and so on, but it was always the case, and so I struggled to explain that and I never really did explain it. I could establish that it was a consistent phenomenon, but I couldn't actually fully explain it, and that undermined the thesis element of it. What I had, effectively, were a series of interesting graphs and so on. And we could show that polyanions like heparin, even when taken by oneself, you could show that the potential in the urine for crystallisation could be reduced, so you could treat stone disease, notionally, oxalate stone disease with polyanionic materials and that sort of thing. But it never really quite added up to enough.

TT: How frustrating.

EW: Well, it was and it was sorted out, more or less after I left, by a physical chemist basically. I clearly wasn't a physical chemist, didn't have those insights, nor did I really have the mathematical intuition that Bijvoet had. He was very tuned to kinetic equations and so on and so forth, and he could innovate with them in a way that I really found not possible. And so, but regardless of all of that, the answer to the problem seemed to be that the crystals come together enough that they reduce the surface that's available to grow. So while growth of the material is at growth sites, or dislocations on the surface, actually enough of those sites are covered up that the super-saturation is never fully expressed. And so that was one explanation of that then, as it were, which was entirely plausible. But the background to this work was that the Americans had, as they are prone to, declared, and I can't remember the sum, I think it was \$4 million, that they would have a programme to solve kidney stone disease because after all this was just a problem of physical chemistry. But it turned out that physical chemists never actually investigate any solution that's more than hugely dilute, in order to reduce the interaction between the molecules. So if you investigate the physical chemistry of urine, you are inevitably in a soup of ions that is completely different. But what we did seem to demonstrate, and it was never fully I think published, was that even in complex solutions, supersaturation expressed itself more or less as you would expect. So the activity of the ions was not as reduced as it might have been by this complexity, so you could work in those complex solutions. But I think that conclusion was never fully expressed, but it was an interesting sort of by-product of, well you can actually do that. And of course they didn't solve stone disease as they might have hoped at the time.

TT: So you got a number of papers, but not the thesis that you'd hoped to get.

EW: Yes. Of course in those days you wrote your MD out (longhand) as there wasn't a computer and I wrote, I must have written several drafts and it just somehow never quite came together, which was highly frustrating. But, as you say, the papers, I think, were really interesting and nicely done and I felt partially satisfied by them. I should say that I tried to reproduce the whole work in Nottingham because I wanted to keep trying to find an answer to this and I couldn't reproduce it, for whatever reason, that is an example of systems that in one set of hands can work perfectly well, and entirely consistently. And then in another, not at all.

TT: A big issue now, there's a big problem there.

EW: Absolutely. Yes, well it's true even in all other clinical services, and I think what everybody underestimates is the uniqueness of context, that people work at what they can work at and if you have a bias to publish positive results, then you actually constantly inflate this uniqueness. But people don't appreciate how that operates, really. But that's a partial answer but that's part of it. So in Nottingham then I had to decide what to do after that and I was for a time thinking about the metabolic calcium and phosphate and bone disease side of it, but those positions in the UK certainly, and even abroad, have generally been opportunistic, in

the sense that somebody's come along who is interested or who achieves some kind of expertise or experience, and then there isn't any other person there to do it. And they then manage to develop the discipline. There was a person in Nottingham and we did have some sort of exchanges but it seemed fairly clear that this wasn't really going to work, which was fair, in retrospect, fair enough. So I had to decide, did I have enough of a background to be able to go somewhere else to set up a mineral set up or would I do something else? And I must say I didn't feel that I had enough novel ideas or insight about that whole area that I could somehow run it on my own. And particularly I had no molecular biology background and that was the thing that was burgeoning at that time, and so I didn't think I'd do that. So I thought that I'd apply it in renal medicine and so I went to the other hospital in Nottingham and did a senior registrar job in renal medicine there.

TT: Before we get you to that, can I just discuss when you were a lecturer, what were your clinical responsibilities? In general medicine?

EW: They were registrar type responsibilities, yes, absolutely. Yes, and they were very busy. I remember having, I don't know, 40 medical admissions one night and I remember many of them were people who had a hemiparesis, ostensibly strokes, but I remember a night when half a dozen of those people were fitting. And of course we had no scans available and the clinical challenge in retrospect was really extraordinary. And I remember, , trying to discriminate the extra-dural abscess from the vascular episode, and of course it must have been with several of the 40, but the sort of clinical challenge that represented is difficult to reproduce these days; it isn't the case. And of course it must have other intellectual consequences for one's way of approaching all sorts of things. But it could be really very challenging. And then the other part of that was that Tony Mitchell was very spare as a clinician. He wasn't exactly Occam's razor but he was very early into evidence and wanting to be absolutely logical about how things were played. He would not treat unless there was evidence, this kind of thing. He would make a strong case for restraint and proper assessment of the patient, sometimes well beyond what he (actually) did. Because sometimes we have to do things regardless of the logic. But that was my first introduction to this, what I would think of as a kind of spare approach to clinical work and that was insightful.

And of course that was in the mid-1970s, when a lot of the other later (evidence-based) movements had not developed at all. So it was an early sort of version of that, I think.

TT: So your decision to change fields, to go into nephrology, how did that affect your situation in Nottingham? Were you, you just left to your lectureship and became a senior registrar in the nephrology lab?

EW: Yes, it was quite straightforward at that point. Yes. Of course, what it did, I had no pedigree in renal medicine and I don't know how important that was latterly, but it was a very, from that (training) point of view it was unconventional and it wasn't based on main unit (experience or) development. Of course Nottingham was one of the centres developed in the early to mid-1970s as regional centres, and that whole story of course is fascinating. And it really depended on the personality of the clinicians that were appointed to develop the units.

TT: So how did that come about? That was NHS money?

EW: Yes, it was. It's not a particularly long story, but as maintenance dialysis became seen as a possibility and people who had gone to America had seen this could be achieved. Then the Department of Health was faced with 'What do we actually do with this, because there is actually some of this around?' and they set up a committee. I understand, I remember, I think it was under Hugh de Wardener and said, 'What are we going to do about this?' Hugh de Wardener's memoirs suggest that they didn't really like the (subsequent) advice and this committee was abolished, but what they did at the end, and as I said about the hepatitis, there was some hope at the time in terms of expenditure, never mind healthcare, that hepatitis would somehow seriously impede the application, the large-scale application of maintenance dialysis. And transplantation was developing but not really fast enough to deal with the numbers. So in the end, as I

understand it, they put the problem out to a regional level and said to the regional people, 'Here are funds, you set up what you think are needed.' And so a number of academic hospitals were then set up under specific clinicians to develop this. But of course this was in the days when there wasn't the level of health service management and access and so the clinicians themselves actually were responsible for it. And they were the people who set up the units, they were the people who recruited the money and the staff; they were the people who, they often set up charities to buy a machine. They were the people who got involved with the public, and publicised the whole thing. There was a cohort of people doing this kind of very complicated, multiple, public health service tasks.

TT: Across the country?

EW: Across the county. And it worked, effectively. And the person in Nottingham, this was outside the main London centres, which is maybe relevant. And so that happened all over the country and in Nottingham it was Martin Knapp who had done that. He had come from Bristol, he had been in the States, in St Louis, and people went at it with a good deal of energy and enthusiasm. So that was the unit that was already established there and he had already got one consultant colleague in addition so there was a proper programme there.

TT: So that was the unit you joined?

EW: That was the unit I joined for training, yes. And they had the transplant, such transplantation as they had under Roger Blamey. They had the transplantation up there as well. But that was later. I now remember they were reliant on, I think they were reliant on Sheffield for transplantation and they felt that this was not operating to the best advantage of their patients, and so because tissue typing was less established, they pushed the margin of matching and started I think to find their own donors. So this was a time of tremendous ferment.

TT: But in lots of different places.

EW: Well, each place was slightly different of course, yes. And the big, some of the big centres, influenced the, obviously the smaller ones. But it was a pretty general phenomenon as people acquired patients. And at that time transplantation itself was regarded as highly risky, and it was. So there was a lot of ambivalence about that. I see now that the informaticians in the health service talk about, and I don't know exactly where this comes from, but they talk about a "war" scenario and a "peace" scenario and they talk about there are times when you have to go to war with things to get things done, and then there are times when you have to establish what's already been done. It's another way of expressing that sort of thing. I think we all know (that) the people who you need to start things off are not the people that you need to keep them going. But it does represent that it didn't have quite that sort of feeling but they were very, very energetic and they felt that this was a very developmental scene that they could do. So from that point of view that was quite exciting.

TT: So moving into that world, did you feel stimulated and feel, 'Ah, I've come home. I've found what I want to do.' Or were you still rather undecided?

EW: No, I think I was undifferentiated. I suppose we all take advantage of our intuitions and I think, unselfconsciously, I think one of the things is I would believe that most people have certain, very persistent preoccupations of various kinds so that they, if you look back, they are constantly rehearsing the same sort of thing. When I look back at my publications it always seems to be the same sort of preoccupation with pattern and numbers and that sort of thing. But the renal thing did satisfy some of those, that's fair to say, preoccupations. And then when the informatics side of it, what we call now informatics, but when computing came in that gave just a lot of scope for those sorts of intuitions of mine.

TT: Can we just examine this word "satisfy"? Was it intellectual satisfaction? Was it clinical satisfaction? Satisfaction could be found in a lot of different ways.

EW: Well, I think it's grossly, grossly underrated. We all do what we do only because, certainly in terms of putting extra energy and scrupulousness, we only do it because we get certain kinds of satisfaction from it. And clinicians won't consult well, operate well, unless they're satisfied with what they're doing. And I think this is one of the major breaks in modern culture is that we haven't managed to express these elements adequately. Everything is rather reduced to measurement and economy and it's a completely impoverished view of why people do things at all. And it's coming home to roost in some places because people are just not willing to do, to operate as sort of pre-robots, because these satisfactions are very important. No, I think it's inchoate, I think it's unconscious, isn't it? I think, like water, all our energies go into things that are usually the next easiest thing to do, which I don't think is a criticism. It is sort of rather obvious that that's how...

TT: The kind of things you're talking about, and you are much more logical, thoughtful, and reflective, than a lot of people, reminds me of the intellectual satisfaction you sometimes get with surgeons who aren't particularly bothered about the patient, they want to do a technically perfect operation. Were you aware, or retrospectively, what kind of satisfaction you were getting.

EW: Well, I think that's right. I think I learned that the potential for patterning, and I think it was partly that, that was sort of tending to come through, to respect the fact that there were messages in time series and other things. And I think that is, that does bring those intellectual satisfactions. But it may depend on the sort of person you are. If I do the Simon Baron-Cohen sort of matrix of one's predilections (*The Essential Difference*, Penguin 2004), I come out very equally on both logical and emotional things. So for me it was a combination and I've always actually, as it happened through intuition, I've always developed a lot of the psychological / psychosocial patient management, holistic sorts of things, in parallel with the IT and so on. And so I think it depends on that balance in one's personality but I felt they were both really critically important. At a time when many senior doctors felt that their role was to make the diagnosis, there was definitely a cohort, it seemed to me, of people who felt that once they'd done the intellectual work of making the diagnosis, that was what they were there for? And the relationships or how that was managed by the patient and all the rest of it, was down to other people. And I must also have got satisfaction from that side of practice.

TT: Developing your career in nephrology, this is where you're going to stay? How does your career develop then?

EW: Well then it was a matter I suppose of scope. I was, again, one's always on these escalators of development.

TT: Hopefully one that's going up, not down!

EW: Well, exactly so yes. Sometimes I felt that it was going up and down at the same time! But no, there are these natural progressions and then one, I suppose, it's looking for scope in some way or the other. But I must say, I don't think until I was 40, I didn't really know what my head was good for. In the sense that you find certain traits and capacities and preoccupations which then come forward and that takes some time to find out, whether people in the modern world will take longer and less time? Of course, if you can find those levels, the sort of satisfaction you were talking about is rather easier to achieve. The frustrations and the submissions we make to life in various ways, become much more tolerable.

TT: You then moved to Leeds?

EW: Yes, that was 1980.

TT: This was to a consultant's post? You're now starting on your own?

EW: Well, not on my own, no, because I was joining an incumbent.

TT: There was quite a big group, wasn't there, at St James's?

EW: Not initially of nephrology, no. There's a whole story about the Leeds set up, rather like Nottingham in the sense that it had to be set up and promoted and developed. And that was in the early 1970s. In the same kind of standard way with research funds, charitable funds, holiday dialysis, holiday houses for dialysis, this kind of thing. So there was a sort of infrastructure and there was a regional, if not central, decision to put transplantation in St James's, so that there was actually a transplant and dialysis set up there.

TT: And the two were together?

EW: Yes, yes, more or less, and increasingly so. So yes, that was a fully-fledged situation and as things unfolded, we did achieve money from region for rebuilding and we built what I think must have been one of the best-designed, integrated, services in the country, if not outside the country, which worked very, very well for a time with the numbers that we were dealing with and so on.

People present with renal disease in various different ways. Some of the acute diseases become chronic and so acute wards and open clinics are part of the support to a kidney replacement programme. And nephrologists dealt with all of those elements. And the patients could expect to move more or less into the same place of contact, from clinic ultimately to dialysis of one kind or the other. And then the ward that they would have been prepared in would have been next to the ward where they'd be transplanted. So that was, from the patient point of view, was the coherence. From the medical point of view, there was continuity of care but that was partly because there were so few consultants who then had kept their relation to individual patients and made an effort to know them. There was a lot more delegation to skilled, middle-grade staff but nevertheless there was a certain kind of continuity which has been potentially sacrificed by a consultant-delivered service because (of) the proliferation of senior people. And then again the integration came from the development of the informatics because the (patient) registration, what I call the calibration, that is to say the numerical features, the laboratory features of the patient, and their characteristics, tissue types and so on and so forth, was all within one database. And both surgeons and nephrologists could access that very readily and the whole activity was made coherent by that, even operating from home ultimately.

And I think, I struggled, it's an interesting question, I struggled over the years to convey, particularly the informatics elements, what this was about, because it's not easy to describe exactly. But looking at something recently I realised I had actually said it, which was that you had a culture which felt at least planned and coherent, even if there were (occasional) surprises in it. It was a kind of 'no-surprises' culture. And the example I use of this in contrast is actually renal transplantation. Before the development of cyclosporine, when we were using azathioprine and steroids, there was a kind of tense anxiety on transplant units because rejection could occur unexpectedly, unpredictably, at any time, and major complications were not uncommon, like GI bleeds and that sort of thing. So there was an anticipatory air about the whole clinical practice. When cyclosporine came in, and the steroids could be changed and so on, the whole atmosphere of the transplant unit changed and it became quieter, everything slowed down, there was much less anticipation of unpredictable events, because they now could be seen unfolding. So there was a complete change of what you might call the 'clinical atmosphere'.

I saw the same thing when we moved from a sort of make-shift dialysis unit to a planned dialysis unit, and with my experience of architecture, making a comprehensive difference to the way that people operated. The whole thing was just spread out, there was no more rushing around, there was no more barging into people, and so on and so forth. And the whole thing just settled. So there's a way, there's a need to express this settlement of clinical atmosphere, and it's not trivial even now. Because although informatics and computerisation is making headway in secondary care in Trusts and so on, many of the consultants in the departments haven't actually had yet experience of this change of atmosphere and it seems to me to be one of the things that can be conveyed confidently to people, that this is the way that the things happen. You don't suddenly get unexpected results which mean that you have to rush around doing something. The downside of it was, or is, that it's not really exciting for the student or those who actually like the excitement of medicine. And one needs to respect that there are people that actually get their kicks and their satisfaction out of the unpredictable. So it suits what we might call the 'peace' scenario very well, but it actually is at

odds with the people whose temperament leads them to enjoy the uncertainties.

TT: You're describing something that people in other disciplines have described, particularly the architecture of the ward and the layout of the ward, how important it is and the development of multi-disciplinary teams When did that happen, this move to the planned...?

EW: With the introduction of the IT systems and particularly the CCL Proton system

TT: Is that the one that came from Charing Cross?

EW: That's right, yes. And initially it was an interesting time because it was like a meadow where there were so many different things that you could do. And, of course, a lot of us reproduced the systems that we already had. Again, there wasn't really a word for this and I think that Trish Greenhaugh has talked about 'routines'. The idea that within any group there are a series of protocol steps that people come to know. You can get the dietician on Tuesday morning, such and such, this kind of thing. And I think there are a whole series of embedded ways in which people operate and I think it's an interesting thing to give a name to, if I've got this right. And what I think a lot of us did in the renal unit, where we had patterns of activity, shifts of treatment, complex but predictable treatments, was that we digitised those routines and this is recognised by modern analysis, that people tend to copy what they're doing already on paper. But then we were able to develop that into new ways of managing, and, in particular, I worked out ways of managing the satellite units because we only had a few renal centres and we had to develop, for convenience and management of numbers, so-called satellite haemodialysis units in the periphery. And Leeds is a little unusual in that it has a ring of cities of between quarter and half a million people. If you look around Leeds there's this ring of cities and of course each one then could have its satellite unit containing perhaps 40 patients, something like that. That's how it fell out.

And I did a lot of work then. The original idea came from the Continent and from my colleague, who was very keen on it, but I was the person I think largely, he was providing the backup of the money and so forth and I did a lot of the practical work. But the point was these were nurse-run units, nurses acting, if you like, in an extended role. There was no medical presence necessary because they were largely stable patients. And I worked out how to use the computing to do this safely, effectively. So the nurses would come in once a month with their various clinical observations, they'd come into the unit, and then we'd sit in a multi-disciplinary team with a large screen and I would have already been through the data relating to that satellite, which we could pick out of the computer, and look for exceptional results in each category, whether it be the serum calcium, the blood urea, the haemoglobin, and then we would troubleshoot where we thought it was necessary. So we tried to focus our attention and not spread it around. And this was I think very effective in producing safe and consistent practice, but it was not something you could do without the computing. It had other problems in the sense that you didn't have quite the medical input that you might have done but my judgement at the time was, it was the best we could do. And this was a period of what I now think of as austerity in senior staffing because there were just the two of us, there were hundreds of patients. So one could safely do this but that may have slowed or reduced the pressure to increase the (staff) numbers. Everything has a consequence.

TT: You went to Leeds in 1980 and you were there for quite a long time. When did all this happen?

EW: Okay, so when consultants joined a new unit then, and this was in the day of Cogwheel and so on, there was some feeling that they deserved an initial boost and so, as I recall and I forget the details, but I think that certain monies were set aside to indulge the sub-specialty interest for incoming staff. And I think it was partly that and partly other monies that were put to buying computers and computing terminals. And the other thing was, in renal medicine, which wasn't available to other disciplines, that the cost of a dialysis machine was something like the cost of a computing setup. So one could viro those amounts quite sort of readily as blocks and so I think a lot of the units set up their computing systems from that when, for example, standard cardiology or respiratory units couldn't do that. They didn't actually have such capital elements available for doing that. And I remember the diabetologist, to whom computing was also very useful in

terms of blood sugars and ultimately HbA1c and so on and so forth, always balked at the sheer cost of the thing because they didn't actually have a pocket into which they could either vire from or move money.

So actually we moved into computing very, very quickly in 1981 and 1982 and then I obviously was spending a lot of time, outside clinical time, developing this. And the advantage was that one was doing one's own systems analysis, so the system was actually quite flexible and I learnt not to programme but to be able to manipulate it. So that clinicians then could be their own systems analysts. There wasn't this dichotomy between programmers and analysts and clinicians; we were doing it internally as a way of moving ahead. So by the early 1980s this was established.

TT: You were one of two joint consultants, ready to be converted, or already thinking of computing? Did you have any local assistance?

EW: No, no. And no, it was facilitated and it obviously served everybody's purpose because it helped make the unit more controllable and manageable overall.

TT: But how did you sustain this? Because it's one thing to arriving as a new consultant with the golden hello money and being able to vire funds, but you can't vire all your dialysis equipment into computing.

EW: No, that's right. I think the regional health authorities were aware of it and let it happen. But the number of patients was going up by six to eight per cent per annum, but the number of staff not at all. So there must have been some acknowledgement that this was needed. And then the fit of the informatics to the topic has always been really excellent in the sense that you had a few complicated treatment arrangements but they were largely numerical and they could be processed or represented in steps. You had semi-standard patients with continuity of care so there weren't large numbers of people coming and going with rather shallow databases. These were deep databases on relatively small numbers of people and so on and so forth. So it suited digitisation very, very well and also there were the time-series elements of people being around and watching trends and being able to manipulate them. So I think the fit to renal medicine and renal replacement was so good it was a sort of no-brainer really that you would do that.

TT: What was happening in other units? Were you all developing similar things separately or were you connected?

EW: Well, that was certainly what started happening. It was a time of 'war', ferment, in health computing generally. You had the development of the *British Journal of Healthcare Computing* in 1984, I think, and they made some effort to project some of those things. And other disciplines were coming into it, intensive care, for example, and obstetrics I think in particular. Obstetrics because delivery was a sort of standard, relatively complicated, process, and intensive care because of time series, numerical characterisation and that kind of thing. So there was a ferment about mini-computing in particular at that time, in the whole country. But it suited the renal units particularly well and particularly in the regions. The units were, just at that moment, there was a certain kind of opportunity for them to capitalise on that. They all had too many patients and too few staff, and this was one way of doing it. And there were only a few centres who attempted it on a very large scale basis, Glasgow and Bristol and so on, but it was largely a regional set of developments.

And the discipline of nephrology or renal medicine had been reflected since the mid-1960s in Europe in the EDTA organisation, the European Dialysis and Transport Association, and they had a registry which was actually data on paper. And the discipline had been plotted and observed to be expanding and developing in this way; it was a sort of observation of specialists of themselves in that way. And it also overlapped into procedures and various other numerical measures. So there was a sort of specialty consciousness, if you like. And also in nephrology / renal medicine, people had always had an academic strand. I think to be a nephrologist was felt that you had some responsibilities to develop the topic and to be interested and to develop in one way or the other. So it was a very active environment for people to be in and I think the IT gave a lot of scope for that, albeit in technology. But the technology was what was required at that point.

And it wasn't reflected much in EDTA except there was one set of proceedings which showed that the UK had by far the greatest number of in-house clinical systems in Europe, partly because the health service, I suppose, was so coherent but also because the thing had caught light there. But that advantage tended to be lost because it wasn't really systematically developed from the Department of Health, I think, and it was a very, very difficult time, I think, for commercial people.

So there were various reasons why that reached a certain kind of peak and then hung there with most of the renal units have a decent clinical IT system.

TT: Could these IT systems talk to each other?

EW: Well, they could, so patients could be transferred and we'd use modems to send data to the EDTA registry. And one of the perceptions of the time, and it came through the healthcare journal, was that this was all a bit haphazard. And the idea was that if you could, that there were ways that this could be improved by interaction. And so in the early 1980s, several people got together and said, 'Well, let's have a British Renal Computing Group that will have meetings and where people would interact.' And for my sins I was asked to set that up and we ran it for about six years with annual meetings. But it was not formerly established in that it linked to neither government or even to the Renal Association properly and so it was a bit of a standalone system and people, in what I think of as the Establishment, didn't necessarily get behind it. And I think it did provide a forum for a number of developments, particularly coming from, for example, the (United) States, the measurement of dialysis dose because nobody knew how much dialysis to give a patient to keep them in the best condition, for example. There were other attempts at planning this six to eight per cent increment and what it meant for numbers and for money and so on. And then each unit had a lot of the clinicians with a particular preoccupation about one thing or the other, sometimes recruiting academics from university, local university departments, or even paying people, research assistants and so on, to do things. And this was brought together in this group.

TT: Could you say a little bit more about that group? Who was in it, how often did you meet? Mainly nephrologists?

EW: Well, people from all over the country. Yes, it was nephrologists and there were one or two academics, who were interested in things like the planning, came into it. It wasn't dominated by any one force except in the end the clinical, the clinical approaches, largely because there was available commercial, highly effective, mini-computer based systems in the units and so they were the persistent element. I was personally overloaded by this and I think I have to say, in retrospect, it could have been better managed. I was under a lot of stress and I think part of the reason it tended to break down in 1988, was that I just didn't make the right moves, wasn't well supported particularly. From the establishment side, it wasn't seen as mainstream, and there just weren't the people there to take it on in quite the same way. Whether it would have been any different, a little difficult to say. Most of the local initiatives, in retrospect, probably didn't have a lot of development potential really. The main development was through this commercial database and that certainly was highly successful and was the basis of ultimately the (UK) Renal Registry. So I think that probably the main force came through, as it were, but it was a little messy at the time. And I know there was a certain amount of disappointment that it couldn't be taken much further.

I don't think the other computing groups did all that much better.

TT: When you say other computing group?

EW: Well, there was an Intensive Care Group, as I think I said, and enthusiasts got together to do things, but they weren't underpinned in formal, department or grant-based continuity. And so as they either moved on, retired, became preoccupied with something else, (being) owned by professionals tends not to have that kind of persistence.

TT: And you mentioned the commercial aspect. Where does that come in?

EW: Well, the Charing Cross system was developed for commercial purposes but it was seen to be very expensive and, in a way, there is a conundrum about how you develop these things. They were pressed to increasingly make the system more flexible and manipulable, and searchable. So clinicians, I and others, could sit down and come out with categories of patients in the different satellites, or how many years into dialysis and all this sort of, highly flexible, semi-relational database and make an enquiry about last month's serum potassium levels and whatever it was. And this has a tremendous cachet except that of course, while I was doing that, I wasn't doing anything else. And it wasn't acknowledged as part of a clinical career. This was more additional to my workload. But anyway people were very keen on that because the potential was very great and the commercial people responded to that beautifully and produced an extraordinary, flexible, system. But in the process I understand from them they feel that they gave the potential to change the elements of the system to make it into something that, because almost unique in each institution, because each of the institutions had different routines based on the habits and prejudices of their senior staff, and where those were converted into an IT format, they were not then transferable and so though the commercial people then couldn't guarantee them, they couldn't stand behind them, they couldn't say, 'We'll support this or that.' And voices were raised at the time saying, 'This is becoming a bit of a Tower of Babel,' but I think actually that was for a different reason. I think that people did understand that there had to be data dictionaries where there were standard fields for standard descriptions and so forth, and I think they understood there had to be standard coding, so that the incoherence wasn't really at that level. It was at the level of development. For example we had a very flexible and beautifully functioning outpatient diary system but the company wouldn't or couldn't support it in all conscience because they hadn't actually written it. And I think they found that increasingly difficult. And then the cost of trying to support those things became something that they couldn't stand. And then the health market in computing was very, very uncertain. I wasn't part of those strategic elements, and I've no doubt they were extremely difficult, but there was inconsistent funding, there was hesitation, and so actually the predominance, that opportunity, in clinical computing in UK really wasn't converted into a more general system until later with the UK Registry, and by then there were a number of other commercial people involved who inevitably complicated the thing because they had different standards.

TT: Again, to just put some dates in - we're talking about when?

EW: This is all the 1980s really. And then the early 1990s, various things hit in the early and mid-1990s, so the clinical epidemiology of David Sackett, the evidence-based medicine movement, the audit movement, those things started to come in and they penetrated what I think of as more and more establishment environments, and people came to realise much more generally the value of these approaches at clinical level. And then the EDTA Registry, as it was established, rather collapsed. We had already in the UK found it very difficult to keep up with it because the patient numbers were so large that the paper returns, which could only really be filled out by people who knew what the situation was, became impossible. And in the early 80s it was already (that) the UK was falling very much behind. And we did try, and we did actually make reports from two dozen renal units based on the computing group in the mid-1980s to the EDTA Registry but I think those difficulties as to the sheer numbers increased, that must have created a difficulty. And then the other thing, I think the attraction, there are others who can comment more, I think the attraction of watching the discipline expand, became less interesting because clearly healthcare systems in Europe were very different. So the extent to which the data could be interpreted or used actually was different. So I think the attraction of the standalone (European) registry for various reasons then dissipated. But the same time, in the UK in the mid-1990s, there grew an increasing interest in data management and recording, in the notion of a renal registry in the UK, and people moved towards doing that.

TT: When had the European organisation started?

EW: Well, it started in 1965 from joint meetings about dialysis and transplantation.

TT: And this was for patient match, was it?

EW: No, it wasn't a practical thing in that sense. It was an exercise in data exchange and registration and development and sharing development. And it was necessary, because there were technical developments, strong technical developments, that were made over those decades that people, one of the people was I think involved from Leeds but he was always much more interested in dialysis for acute purposes. That was Frank Parsons. So the maintenance dialysis was seen to be a different kettle of fish.

TT: As the UK's Renal Registry is developing, how did that affect you doing your daily job? Were you trying to keep in touch with two or three different systems?

EW: Well, it was important that one or just a few people were involved in the data collection and registration, so you had to have some kind of uniformity of definition, , what did it mean to be under such treatment and so on. And so control of those sources and trouble-shooting those sources was very important. Originally I, like many other people, used to get my *Current Contents*, and spend hours looking through the damn things to see what was going on in the world. And of course that gradually changed but there was this kind of shepherding the database. I felt, and I still feel, the databases simply can't be left to themselves. You can't order (up) the registration of data because the completeness and the accuracy need to be properly known. And of course at that time although there were a lot of patients there weren't so many that one individual couldn't more or less keep tabs on what was happening. So I spent a lot of time making sure, day by day, that the registrations were correct and because they'd had such a good reporting system, I could periodically pick up subsets and could see if someone was missing, or I could see if they were misallocated. So it was quite, you're quite right, quite a lot of work went into making sure it was complete and uniform. The sort of work that probably I did (that) some others found much less congenial and probably didn't do it. I suppose, coming back to your story of satisfaction, I found it satisfying to be able to say that I had an accurate, complete record of what our activities were and that it could be relied upon.

TT: And was this seen to be any proper part of your duties or responsibilities?

EW: No, never. No, the health service had never looked at (consultant) sessions, as it were, for IT support or anything like that. It was all done as an extra, and still is. I found it difficult to get my head around that for all sorts of reasons and over a period of time. And when I think of it, the renal unit in St James's was like a huge general practice, or even a separate hospital. It was entirely coherent. But what it didn't have, like a general practice, was a proper practice manager and it didn't have a clerical infrastructure. And we did recruit computer clerks and managers but they were never properly established and the hospital IT systems were largely concerned with communications on the one hand, the fibres and hardware and that sort of thing; but then whole-hospital concerns were with registration of patients, PAS kinds of things. They didn't really know about software and they didn't really know about the clinical infrastructure. And that was part of the reason that the units have had such difficulty. Not only were they funded from sources that were not actually properly defined, from charities and from virements, but also the staff were not properly established. So those systems actually, as we moved into the end of the 20th century, became less and less sustainable because they didn't actually have roots in the health service very well and the Agenda for Change, in particular, and the idea of generic (IT) activities, really did scupper a lot of activity, certainly in Leeds.

TT: This is a story I've heard in other contexts. You're saying that when you could buy computing stuff or people to input data or to check or anything like that, it was via a grant from the Kidney Foundation or something like that?

EW: Well, they could be put on an NHS payroll but they had to be given a certain status and they had to belong to a subset of admin or whatever, and there were all sorts of currents actually. I think there was a lot of envy because other specialist units also would like to have had such things. And one of the interesting examples was Oncology, I can't remember the name of what the national plan was, at a certain point it was decided that Oncology must be supported by multi-disciplinary meetings for decision-making about treatment. And the people who used to convene those meetings and make sure the records were up to date and so on, were actually funded from region. So there was a need for this kind of administrative clinical infrastructure but it was really very different as to where the sources were and how established it was in different specialties.

And Oncology actually had an advantage from that because suddenly of course they could convert, and I'm not suggesting it was easy in any way, but the point was they had the staff there to convert into computer support staff.

So what was the difference between an MDT (multi-disciplinary team) manager convening on paper or actually convening from a database? And the same was partly true about transplantation. They developed a body of people, usually nurses, who were so-called transplant coordinators. And they too operated with the UK Transplant databases and so on. But they were a tremendous resource, which could have been used for the sort of purposes that I've been talking about, but actually were always seen to be quite separate.

I developed some programmes out of theory and practice for the work up of a patient for (renal) transplantation, which is inevitably a little complicated, but nevertheless has defined steps. And this was all something one could examine, one could bring back reminders to do things, and look for missing data and so on and so forth, and I thought this was really good in getting the patients quickly into the transplant environment, and I think it was. But I discovered years later that the nurses had always printed out the screens for their purposes! So this sort of cultural step that I thought we were making into this digitised system turned out still to be vulnerable to people's habits and preoccupations.

TT: And what about within the discipline, was there professional recognition of these kinds of activities? Had most nephrologists embraced this new way of working?

EW: Well, a lot of them did. Some of the London units tried to develop their own systems but generally, there were one or two successes, but this is a difficult job; it's a difficult job. But ultimately people came to respect the value of some of these things. Each unit has got a different kind of family culture, depending on the prejudices leading it and their interests and preoccupations, as you can imagine. And so each unit tends to contribute different kinds of things at different times. But the registry notion became compelling, particularly with the development of audit, where people were looking at numerical data and looking for messages in it. And so that ultimately became a project of the Renal Association. It should be said that that was also at a time when people were pressing for greater investment and better establishment of renal units, and the Registry will have been seen as one of the interesting features of 'How do you express the activity of a unit?' 'How do you do that?' It's quite difficult to convey how many people are doing this, that and the other. And very often it turned out the money is in the transition between one form of dialysis to another. So rather like staff turnover rate, it's trying to tell you something. So it's helpful to be able to express that.

And this is, we tried a little diagram, which I called a "nutshell" at the time, of the way the patients move (between treatments). But Harry Hall from Exeter quickly pointed out, quite rightly, that this was a mathematical matrix of kind of a Table and that's how it would be best expressed.

And there were other influences too in the auditing. In the beginning of the 1990s, Ed Lowrie in the (United) States, published a paper showing a strong correlation, a linear correlation, between serum albumin (blood level) of the dialysis patients and relative risk of death. And this was very, very impressive and I think in retrospect a lot of us, certainly I was up to a point, unconsciously, were very, very impressed by that and spent time looking for other variables that could be linked to this. The Americans were very often preoccupied with trying to express relative risk through other (laboratory) variables and I think a lot of the early activity of the Registry was really in a way searching for those kinds of connections, particularly because the laboratory data was almost given. So once the laboratories were connected electronically to the systems in the unit, you had a vast amount of very easily accessible data.

And I, in retrospect, I wonder if we weren't all seduced by this combination of a potential principle, availability of material and we were mesmerised for a little while about how to do this. And it was criticised quite widely that this wasn't actually a solid outcome in terms of death and destruction, which is a fair point. And so people had become critical about, as they have in many areas, about 'oh, you're just documenting process rather than outcome.' But I think it was more than that in the sense that the things that explained the results were much more difficult to access. So it turned out that pharmacy records are much more

difficult to obtain comprehensively in many situations, and the extent to which patients take medication over time, and this kind of thing. So it was always much easier to represent the *status quo* or *status quo ante*, but not to have explanation. You couldn't know why people were where they were very easily.

So the Registry reported in one area epidemiologically, as had EDTA, who's on what treatment, when and for how long, and how is the specialty developing epidemiologically, and that interested a lot of people.

And then there was this audit/observational culture of results, with a sort of hidden promise of exposing relative risk. But then actually not containing fields of data that explained why people were in these situations. And because we do the easiest thing first, obviously, it was just much more difficult, and also I think much more time consuming, so in the same way that one shepherded the database for the numbers and the treatment variables, the shepherding of the database for treatments is a very substantial task and particularly with a lot more consultants coming in and doing different things, you can see a certain kind of incoherence is inevitable.

TT: You mentioned the Renal Association. Now, is the Renal Association responsible for the Registry? The Renal Association is an independent body, isn't it?

EW: Yes, it is and it goes back quite a long way of course. Always traditionally more interested in basic research and disease related issues. Latterly, after a good deal of debate and discussion, coming into as we might think of as the political issues, at a time when we have to say that the notion of health services research was not well-established. And I think over the whole of my career that's been relevant. It hasn't been particularly respectable. , it's not been always very explicit but there's been a Science versus Technology component to it and the greatest reputation was always seen to be within the basic science element, which is fair enough up to a point, which we might come back to. So the Renal Association gradually in the end, and somewhat reluctantly, got involved in this problem of austerity of staff and what to do about it, and ultimately the idea of the registry came out. Although, as we say, it had been modelled to some extent previously. And then that couldn't be sustained except by significant resources that had to come from the Department of Health. So you had to have some kind of formal body that would take responsibility for that. And initially that was UK Transplant, but the Renal Association then took it on and was regarded as a proper body and the Department of Health put in a capitation fee, so there was a fee per patient paid towards supporting the Registry.

Of course it became a little bit of a financial tail wagging the dog in the sense that the Registry income become really quite substantial and then the Renal Association has had to reorganise the arrangements for supervision and management over time. But it all has worked, touch wood, very successfully.

TT: And who can access, and input into, the Registry?

EW: Well, it was based on an office or an office entity in Bristol and because of the widespread clinical databases then they could send data or data downloads to Bristol where they would be looked at, validated for completeness and accuracy, and incorporated, and then the whole thing ultimately became expressed as a report. After 1995, and this was essentially, I suppose if there was any title of that at the time, it was collaborative audit. If you were to say what was going on, it was a kind of collaborative audit. And I suppose because the connection between what was done and what happened, it was so tenuous, and because of the culture, then the initial anonymity gave way to identifying the units, and again partly perhaps because it wasn't known how things occurred, the causation of things wasn't quite clear, that can't be utterly pinned down, and that's continued. And it's been I think really quite successful and the statistics have been sorted out, how can you compare one (renal unit) with the other legitimately? The laboratory standardisations needed sorting out, different methods for this and that, and ranges and that kind of thing. So there was a lot of work to do to standardise those things, but I think it had been largely...

TT: And the Renal Association took on that work?

EW: Well, they “supervised” the Registry. The Registry had separate nominated staff, and there was a subcommittee, which initially was (where) regional representatives did a lot of work. I was secretary to that for some time and tried to make a decent record of it. But then again there’s a sense in which that was a ‘war-time’ situation for a few years until the thing got settled. And then when there was some inevitable turnover of supervision and so on, it moved into a phase of consolidation, and so they changed the various mechanisms to deal with that. Also it became perhaps clearer to people what they needed it for or what they wanted it for. There was less, there was a more settled pattern of how it would be done, which interestingly I think is how I would describe what I might call the arc of my career, in the sense that, when we started, clinicians were doing everything including, , down to designing the door handles on the new renal unit . It was a kind of renaissance task. But as the notion of what you needed in a legitimate and functioning unit became entirely clear, then those roles have actually been much more standardised, and I think this has probably happened in medicine within the health service generally. So that people now have the feeling that they know what is necessary in general, and there’s less change in the facilities and so on and so forth. And that’s the background to the way that the things run, the way that people are appointed, the jobs they expect to do and so on. But it was a very, very rich environment early on and people were very lucky to be able to indulge the skills and the interest that they had.

TT: So things are much more constrained now, do you think?

EW: I think so just because everybody believes, and particularly it’s in the interest of the, as ever, the Department of Health and Government to work with something that seems to be fixed and established. But it actually is then full circle, is how you actually then get professionals to do good quality work when they actually may be left feeling rather more cogs in a machine, and that is something I feel may not have been quite sorted out yet in all sorts of ways.

TT: From this interest particularly in the Renal Registry, you’ve developed a much broader interest in medical informatics in general, really, haven’t you? You were part of the Royal College of Physicians committee?

EW: Well, the Renal Association didn’t necessarily have so many people early on who would take an interest in this and a lot of it was thought to be scarcely relevant, and people couldn’t quite see the future in it. I think when you go back to coding projects and you go back to various other related issues, this tended then to be more in the 1990s, because the national IT element had increasingly developed, increasingly largely on the basis of hospital PAS and counting models, but they inevitably discovered that they needed to pin down (clinical) conditions and so on and so forth. But I ended up doing a good deal of that work because I think colleagues didn’t bring much interest or potential capacity to it and I felt in retrospect I was probably mooning around in the foothills of information technology! The current efforts to get a paperless NHS are employing all those preparatory means but the conditions were not right for them to be all drawn together at that point.

And then I think the other thing, just to follow through, is that I don’t know how colleagues reflected on the Registry but it seemed to me now and back then it was worth exploring what it really meant underneath and so I tried to extend that. And it comes back to what we were saying about technology and science because I did promote the idea that the audit culture was science of a kind, that you posit a change, you investigate it and then you recursively change again. And it is technology rather than laboratory work but I never thought that it deserved any less interest. And I think there wasn’t this category of health services research to tie it to, so it was sort of a bit, I think that was probably regarded as entirely airy fairy and ignored. But it was something that attracted me, to try to integrate it, what is it that this is about? , why are we doing, in the end, why are we doing that?

TT: What about the attitude of the RCP (Royal College of Physicians)?

EW: They’ve had a group for a long time involved with medical informatics, particularly John Williams had kept chairmanship of that and involved people like Jeremy Wyatt and written a lot about it. It seemed to be pretty

low key for a long time but latterly has been involved in developing definitions and rubrics for clinical activity, standard definitions and this kind of thing, which is really very important. But it didn't take a particular interest in the sorts of things that we were doing to be honest. The academic informaticians used our experience for teaching purposes as did the hospital. Whenever the hospital had visitors or wanted to put on something about informatics, I came out and gave a talk, a PowerPoint or something. But the rest of the time it seemed to be ignored. And whether they didn't know where to place it, whether I couldn't explain it well enough to them, I don't know. But I think there's still something of a gap in what this can mean for clinical practice. I don't know that it's still all that well expressed. And in the States they've gone a good deal further in investment but it's actually turning an awful lot of physicians off, I gather, because the insistence that everything is reported through the computer is very, very time consuming. I gather that they've returned to using lay staff to make the data entries in many instances. But the effort to be complete, it sounds as though it's become rather obsessive, and a lot of clinicians are really very impatient with this. It's been folded into safety and other issues, all of which is fine but it obviously puts a different kind of load on the physician.

When we had the systems they were very much matters of calling up data when we needed it. There wasn't any insistence. You couldn't block a move from screen to screen until you'd filled in a field and that sort of thing. But that sort of straightjacket suits some people but not necessarily all. And when we had experience with the expert systems, the anaemia system that we developed, it seemed to generate a lot of reaction in some colleagues, as if they felt that their individuality, their clinical idiosyncrasies were being threatened. And I've a feeling that this is a background to clinical practice. I think there was a defence of their judgement, even if it was delegated judgement to nurses or others, but there was a defence of their prerogatives to make such changes as they want. And the fact that we could argue it (the anaemia system) was simply advisory didn't cut through that. So the current pogrom against variability of practice, which is seen to be indefensible in the light of various guidelines and so on, and it's all very well, but I think one must expect resistance from clinicians. I think that consultation has got elements of it which don't suit digitisation. And rather than think that the computer is an inevitable accompaniment to consultation, personally I might start from the position of saying that it's absolutely not the case that one should start to have to build the case for it rather than implement and find out where it isn't suitable. But it is causing, as I understand it, causing a lot of trouble in the States and the introduction in the UK of standard definitions and so on may or may not produce similar kinds of dissatisfaction along the lines we were talking about earlier.

TT: In general, have physicians led on this in terms of medical informatics?

EW: Yes, in the nephrological sphere. But of course professionals are always a little too kind to one another. It's quite an interesting sort of problem, that we give ourselves a certain amount of space, and that's true in the managerial groups as well as the professional groups. People who know the difficulties of what they're attempting arguably are often a little too kind to their colleagues, and so there are weaknesses in professionals running those things. And I think the Renal Registry in recent times has benefitted from having more outside non-clinical influence on that sort of thing. I think they have got into a more modern managerial kind of approach and there were no doubt things which have been improved and could be improved about it. So the period, as you were hinting, the period of growth then has probably settled into certain applications, even though there's a lot of scope obviously still for all manner of other things.

TT: During your career as consultant in Leeds, there was the Registry, there was all the informatics, you're still doing a day job. You're still a practicing clinician, you're teaching in the university?

EW: Yes.

TT: Are you running research labs?

EW: Yes.

TT: Could you say something more about these other activities?

EW: Well, paradoxically the IT was not helpful in teaching in many instances. I was saying earlier that the young people like the war scenarios and they like change, they like, they don't really like the peacetime settlement and so it wasn't really conveyed that much into that situation. Where we did solve problems of diagnosis, for example, by looking at time series and looking for intercepts of changes in laboratory variables and intervention, there were many occasions in which we could solve what seemed to be a very puzzling thing. But colleagues who were not graphically minded didn't pick them up as a habit. So that actually some people obviously did think it was the best thing that they had ever seen and others, but most of them didn't really pick out and say, 'I must do that again.' They tended not to do that. But you don't always know what people do, that's (a) sort of hidden behaviour. As for research, I used it in developing this expert system and I was pleased that we could, in the end, we could do randomised control studies and I could develop an approach to patient management, which I again think was generally accepted although it did influence the vocabulary a little bit. But the general idea was that the units actually are productive in a certain sort of way so that the results that they display in the Registry are the consequence of (local) policy and application. So the unit can actually design those outcomes in advance, if they want to. They are actually doing it willy-nilly if they don't think about a policy but if they have a policy then the Haemoglobin profile, for example, normally distributed, will actually reflect what they were doing. At what point were they giving the marrow stimulant and at what point were they discontinuing it? And so on and so forth.

Now that could be chaotic through outpatient management, where each clinician did their own thing. But in fact their results were very, very consistent. So if you looked at the results year on year, you found that actually they all tended to produce the same result. So the units could be seen as, inadvertently, being units of the production of these results. And if you could define what was the best outcome then you could actually work to produce it. Why wouldn't you actually try to do that actively? So I worked on this, I was puzzled about it for a long time, and found it very difficult to express initially and people were impatient with that, which I understand, but I think now I would say that anything that is really worth doing academically is often puzzling and confusing to start with until you've formulated exactly what it is that you're talking about and how you actually do it. And it's not a time of comfort for a PhD-student, is it? But anyway it was that kind of thing basically. And I worked out that actually it all came down to questions of intention. If you said that a haemoglobin of let's say 11 g/dl (grams per decilitre) was the intention for your patient, how was that achieved? And for most people simply declaring the intention seemed to be half of what they thought would be successful. And they thought essentially, I think we all do this, if we think that something is intended, then it carries a certain kind of implicit certainty. Of course it's nonsense.

But it's even worse than that because (the outcome of) intentions and aspirations in human affairs, generally speaking, are not randomly distributed. So, for example, if you intend to make the haemoglobin of 11 you might say, 'Well, my attempts to do this will overshoot as often as they will undershoot, and therefore I will end up with this value.' It turns out it's not true in human affairs, and particularly where any organisational effort is involved, the overshoots are in this case where you are stimulated a value, were very few compared with the undershoots. So the declaration of an intention or an aspiration to a particular value became a systematic reason for underachievement. And this is recognised in salesmen, for example, but they always are given a quota of sales that exceeds what anybody really thinks that they will get. So there is actually a systematic underachievement and you have to build that in. And this was confirmed in a series of studies of dialysis dose where they were trying to compare two groups of patients with lower and higher values and what happened was that they always tended to overlap. What they found was that there was always underachievement, because when you are dialysing somebody there are very few factors, if any, that actually give you (more) bang for your buck, more dose than you think you're delivering. Everything conspires to reduce the dose. So if you come off early, if the blood flow isn't very good, if you have to stop treatment because the patient's poorly. More or less everything conspires to reduce the dose. So if you don't built that in, then you can't actually achieve the value that you want to.

So if you aspire to a dose value of 1, you really have to aspire to 1.2 and you have to set it up to 1.2. And bear in mind that this (haemodialysis machine) is a piece of equipment where you can actually dial up the (desired outcome) value. This is not the random process of giving a drug and hoping that it might or might

not affect the bone marrow. So even in circumstances where you're dialling up the dose, you need to build in an element of overachievement because there's no randomness in the outcome. And I developed this into the notion: well, in that case you have to work out at what point do you actually give more of a given medicine, or withhold it? Because in fact most of the time when you're treating somebody, you're not in a phase of constant approach to a value, you're actually around that value and it's actually moving around and the decisions in clinic are whether to stop or to increment (treatment). So I came up with this threshold hypothesis and we developed that then into a sort of algorithmic expert system, and used that in randomised control studies, and could show that if you change the threshold values, you could change the outcome distribution of the population. And you could work out what thresholds of dose increment and decrement were necessary in order to achieve a curve that you really believed could be the (ultimate) case. And while ideally you would narrow these (distribution) curves, you would narrow a distribution as far as you could, in practice because of the range of patients and the variability of it, it's very difficult to produce curves that are particularly narrow.

And for a time I was rather terrified by this because, I felt, (and) I haven't seen this written about in terms of discovery, but I was really, I had a kind of existential anxiety that I had had this perception that I had no doubt was true, and I was really rather desperate to get rid of it. I really wanted to, not to be the only person in the world who had had this insight. Now, of course I wasn't and that was a rather ludicrous vanity, but I remember feeling sort of existentially anxious about it until I'd actually written it out. And colleagues found this really quite difficult. It may be that it was my fault for expressing it (badly), but they actually tied me down until somebody at one point on the paper said, 'His reads like a geometrical proof?', because they'd actually forced me into these principles to that extent. So that was the basis of that. And then I think we could establish that. And we nearly got that pretty widespread, it did reveal some of this business about the idiosyncrasy (of practice) because some colleagues took the system and then never actually came back to me or reported anything about it. Some people seemed to hate it and didn't want systems involved with what they were doing. And I think one perception was that when you produce a system like this it gives the potential for manipulation from outside agents. And for example in the United States, the remuneration, the reimbursement of the drugs that were being used, started to be micro-managed once they actually could influence dosing that way. And I think colleagues somewhere, either explicitly or implicitly, thought, 'Well, this is going to be used to control what I do.' But that was never fully expressed and it does suggest that, as I say, these attempts to get uniform practice might fail on the basis that people actually want some individual scope.

TT: You retired in 2007 and you've been very busy in retirement. Would you like to say something about the kinds of things you've been involved in?

EW: Well, initially, and I expect a lot of people have this feeling, that I felt considerable release from the responsibilities of practice in the sense that I had no particular inclination to want to look after anybody anymore. And that came as a bit of a surprise. And I think, it's difficult, obviously, a complicated thing, but one of the things about it was, it seemed to me partly the effort of doing it is underestimated. So the effort to submit to the disciplines of looking after people is underestimated and therefore there's some relief. And the other thing is there are some things it seems that one has done to the extent that you can regard them as under the belt. And it's not something I'd anticipated but there's the sort of feeling, 'Well, I've done that for 30 years, and become one hopes competent in it, but at least satisfied with the performance.' And that actually there's not a lot more to explore in that or to do in that. And it won't be that one doesn't from time to time get satisfaction from helping the odd person with advice and this kind of thing, that's not really the point, but it isn't necessary to rehearse that skill indefinitely. I'm sure that's, I imagine that can be a common feeling. Once you get a certain amount of expertise and interest, you can regard something as done.

And I find that helpful as one moves into retirement, to feel that one can, that actually be something that one doesn't inevitably have to strive in that way.

TT: What about other interests?

EW: Yes, well I've always been interested in languages, in retrospect following in my father's interest in it, so I have got particularly interested in Italy and enjoy trying to learn Italian. In retrospect I've learnt lots of bits of language and have forgotten everything else. I did learn Dutch in Holland and enjoyed that, but, of course, not using it you lose it.

TT: A number of academics I know who've taught in Holland teach in English.

EW: Yes. In Maastricht they give degrees in English, don't they? And a lot of the Dutch speak it but we were dealing with people from areas that didn't speak English. But I think I enjoyed it. It was just, and I got to the point where I enjoyed Dutch poetry for its own sake, which I think was sort of nice.

TT: What an esoteric interest.

EW: Well, it was, yes exactly. But I didn't follow through. But we've taken a lot of pleasure in that. And then latterly it seemed to me that some of the informatics stuff that I was involved with had some interest for the current generation historically, particularly where clinicians who were not otherwise interested in the upheavals of digitisation might learn something from it. So I'm still thinking of trying to pull that together, as examples, and I think the health service is gearing up for more digitisation. I just don't know how it will go with the average clinician. Everybody is much more IT literate now. And I can't help but feel the fact that people deal with their own phones and iPads and so on, it hasn't been (thus far) a cultural slide, for example, like in the States where the clinicians are expected to make all this data entry. There's a kind of personal data entry element which seems actually a little anomalous, so there are all sorts of currents like that which may come through but it will be interesting to see how everybody adapts to it.

TT: You mentioned your wife earlier. Have you been married a long time?

EW: Yes, well we met at Guy's and she was (also) in Holland. We had our first child when we just got back from Holland and I was very interested in Holland at the time, and might well have stayed. But my wife had trained in psychiatry and psychotherapy and felt that Holland wasn't the best place to be able to practice them. I'm sure that's right. But she developed her own career and was a consultant, now if I can get the title right, she was a medical psychotherapist. She's been a tremendous influence to me and deepened my awareness, not just of all the interpersonal things, and as I say I'd always taken an interest in many of the social things that went on in dialysis. But yes, that's been, that supported that and helped make sense of that along with all sorts of other things. Our children haven't followed us into medicine.

TT: One other thing you have mentioned privately is your interest in end of life care

EW: Yes, the dialysis environment leads one into that because it is a very, it's a hazardous area, even if people are treated adequately. When I was in the renal unit, for good or for ill, probably for ill, I ran a group for nurses in particular to discuss what I thought of as psychosocial issues. There was a movement called "Psychonephrology" in the 1980s, based on American principles, and I was interested in that up to a point. But anyway I ran this group. Half the people didn't come and it turned out that about half of the staff were what you might call psychologising and the other half not. And I sort of pondered this for some time. It's probably important that not everybody is psychologising and that actually the system demanded certain technical expertise and avoidance of those issues. We did run a study where we randomised patients to be engaged by nurses psychologically or not. They all had named nurses but we ran a study where some of them were particularly engaged about their (life) issues, to see if it made any difference. And what happened was that the group that were engaged ended up being disappointed, because although the nurses were the only people there in any numbers and who could have done this, they were always moving so much around, either on holiday or moving in post or whatever, that having awakened people's consciousness to their predicament, one couldn't actually follow through. So there was actually, there was hazard in trying to do this kind of thing.

But anyway, as far as the end of life is concerned, I felt this wasn't all that well managed very often, and I've

gone on thinking that. And I've engaged with colleagues particularly in palliative care and hospice care and remained very interested in how to manage that. And I'm interested in the way the Liverpool Care Pathway, for example, failed in acute settings, I think for good reasons. And also issues of risk, which we haven't touched on, but there are areas of the whole issue of how you look at risk in these sorts of settings and how to make sense of the way people react to adverse conditions.

I became interested in the Baby P model, the child abuse model, and how society had handled that. And I've been interested to apply the James Reason model, the Swiss Cheese description of risk, and it seems to me that one sees a (time) series of probabilities, but the probability of a hazard occurring, or in this case, the probability of somebody being detected doing something wrong, is almost the other side of the coin from the things that we make films and books about, which is the survival for example of *The Pianist* in Warsaw in the Second World War, or the Jewish survivors in Berlin throughout the Second World War. We find those sorts of sequences remarkable and we find, which is in the event a positive, the positive reflection of a series of probabilities, in that case of survival, is the opposite of the probabilities of error and abuse. And some of the charge in the political and the public response to that is the mirror image. We either wonder at it or we demonise, and it's a lot more than has been properly explored, although people are making every effort to do that. So things of that kind, of course, are also buried in clinical practice where they have a serial risk. And are even coming to light now (in) the business about informed consent and what doctors must tell patients, a very messy area still, and the realities are still confusing.

TT: I think on that we might as well finish, thank you so much for your time and insights Es.

[END OF TRANSCRIPT]

Further related resources:

1. Crowther S M, Reynolds L A, Tansey E M (eds) (2009) *History of Dialysis, c.1950-1980*. Wellcome Witnesses to Twentieth Century Medicine, vol. 37. London: Wellcome Trust Centre for the History of Medicine at UCL.
2. Overy C, Tansey E M (eds) (2013) *Palliative Medicine in the UK c.1970-2010*. Wellcome Witnesses to Twentieth Century Medicine, vol. 45. London: Queen Mary, University of London.
3. Reynolds L A, Tansey E M (eds) (2011) *History of British intensive care, c.1950-c.2000*. Wellcome Witnesses to Twentieth Century Medicine, vol. 42. London: Queen Mary, University of London.
4. Tansey E M (intvr); Tansey E M (ed) (2017) *Will, Eric: transcript of a video interview (04-Nov-2016)*. History of Modern Biomedicine Interviews (Digital Collection), item e2017252. London: Queen Mary University of London.