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Interviewer (I): Thank you Ken for your time today. For the recording could you please state your full name and year of birth:

Subject (S): Kenneth Howard Archer and I was born in Sydney in 1946.

[0:00:50] (I): Can you tell us the position you were in employed at Dubbo Hospital and the year you commenced?

(S): I was Chief Hospital Scientist and I commenced at Dubbo Base Hospital Pathology Department in July 1977.

[0:01:07] (I): What was the pathway that lead you to this?

(S): Well as I said I was born in Sydney and I was raised in Woronora River, which is a suburb between Sutherland and Menai. Which was a pristine wilderness in those days, a small village, my father built his own home down there. There was poultry farms out towards Menai, there's Lucas Heights - the reactor was just being built... ..and so forth.¹

My friends and I, we virtually lived on the river of course - went to a small school, 2 room school infants in one room and primary was in the other. It was a great school and great camaraderie amongst the group - which we all had to roll together. One of the down sides was, I guess, we didn't have enough for cricket team or a football team so I missed out on those sorts of skills, but I probably went on to do an individual sports such as tennis, golf, squash and so forth.

¹ The Reactor at Lucas Heights was opened in 1958. It is Australia's only nuclear reactor.

But as a kid we lived on the river and I had access to a rowing boat so we'd go rowing up to The Needles and camp overnight and catch our own fish and yabbies and so forth.² My friend - a good friend of mine Allan Day, we collected snakes and sorts all of animals and we really loved the bush and we had this naive desire to have it - the Woronora Valley placed into the Royal National Park which of course was never going to happen. But when you're a kid you've got these dreams.

After high school, Jannali Boys High School - my first job that I had, or real job, was at Sydney University Department of Pathology which is in the fourth floor of the old - the Blackburn Building or the New Medical School which backs onto the Royal Prince Alfred Hospital. That was in the mid '60s. I was Professor Frank Magarey's research boy, he was Dean of Medicine back then and he had quite a lot of projects on. But one I do remember was that we were looking at the aortas of Sydneysiders especially younger youths, and comparing them for fatty streaks with New Guinea natives which he had a colleague up there who was sending those down. So we had the aortas fixed them in formalin and stained them in Oil Red O and looked at their other pathology. Some of them were older people of course actually had atherosclerotic plaques. But the striking difference I can still remember was that even at 18 and 19 Sydney youths had fatty streaks in the aorta which would progress to atherosclerosis in later life. Whereas the New Guinea natives were pretty well pristine right through till well into their 50s and 60s.

[0:05:07] Also I learned the pathology techniques, cutting slides and also museum techniques. The department had a mortuary down in the basement which I think, from memory, had 3 tables and it had a

² The Needles is a swimming hole located at Engadine, on the Woronora River. (Wild Swimming Australia, accessed 09-05-2018 at, <http://www.wildswimmingaustralia.com/locations/the-needles>)

small seating amphitheatre for the medical students and others interested to observe the techniques and the umm post mortems as they progressed. They were quite theatrical at times as you can imagine - they were quite eloquent teachers on the staff down there. After the autopsy if it was anything a little bit unusual or something that they wanted to take further - go through to microscopy and so forth, those specimens - the organs were taken upstairs. It's something you wouldn't do now without permission and ethics committees and so forth. But they were taken up, they were fixed, and they were regarded properly. They were fixed in formalin and so forth and then once a month they had a "Too Hard," session where they would lay out these trays of organs that they were interested in and pathologists from all over Sydney would come by and they would discuss these cases.

So it was real learning education which has sadly has been lost I think these days. There's virtually no teaching autopsies done like that anymore from real patients. These patients from Prince Alfred Hospital generally so it was very interesting to see why they died and what their problems were and what their background was. So that meant that if an organ was of a special interest it would be selected for bottling. Now the museum there - is still there in that building. It's a huge museum with very, very old specimens from a couple of centuries back - they've even got the throat membrane of a diphtheria person I remember. But a lot of the diseases that are now defunct, they've still got examples of them in bottles which they maintain. They have to drain them every so often, to maintain their colour and so forth.

I learned the techniques of putting tissue into bottles fixing it properly so it wouldn't deteriorate and making Perspex jars to put them in. That was something that I used even back here in Dubbo when I came to the hospital which we can talk about later. But we

did take interesting cases for the new medical school that was here so they could be used as local teaching material.³

[0:08:37] After that I - well I was going concurrently I was doing some work in the Prince Alfred Hospital in the biochemistry department in the evenings. I was gaining an interest in diagnostic pathology and to that end I applied for a position at Sutherland Hospital which was near home and Terry O'Neil was the chief then, who's still alive and I'm still in touch with him, gave me a job and then I could learn collection techniques and clinical chemistry, microbiology, anatomical pathology and haematology and so forth. Which was something that I really enjoyed, I liked the patient contact. There was a lot of patient contact then because without the sophisticated non-invasive tests we have now, there were lots of tests that required time with the patient giving them certain [solutions] to drink and then testing their blood and so forth. So that was all very interesting.

Sutherland Hospital I meet my wife and we married and I decided as I'd always wanted to do, to go to England. My forebears were from there, as were Jill's [Ken's wife] and I was fortunate [in 1971] to get a position at the Radcliffe Infirmary in Oxford under Alistair Hamish Robb-Smith who was a world renowned expert on lymph node pathology. Even after he retired to his cider orchard in Somerset he was still getting international specimens and slides sent to him for comment and diagnosis in those rare cases that do occur where they don't fit between the lines. So I did routine pathology there and it was very English - although the country seemed a lot poorer than Australia. They were at the forefront of all sorts of technology and equipment. So I learnt the new automated equipment, the large automated equipment such as Auto Analysers and so forth. The 60s, the time that we were there, was the swinging 60s with Carnaby

³ The University of Sydney School of Rural Health, Dubbo.

Street and we often - wasn't difficult to see bands like the *Rolling Stones* and *The Kinks* and *The Who*. Also Oxford tried out a lot of shows first so we got a lot of ballet - we went and saw Swan Lake with [Jill's] girlfriend there. Count Basie came through on one of his tours. So it was really a great hub. I did a lot of pointing and brass rubbing and so forth with little chapels that were around in the villages. You just pay some money to the poor box and pull up the carpet and rub the brasses of knights and ladies and then you could look up the history of them and it was very interesting. If they had a dog at their feet they died at home, if they had lion at their feet they died at battle. They also reused the brasses, some of them were cut and they'd turn them over and use them again. So it was a fascinating thing and I've still got them at home. I got a couple mounted - which spooks my wife a bit I must say (laughs).

[0:12:21] However soon we realised that we weren't – that with the very poor wages we were going backwards and obviously trying to travel and see Europe when we had our holidays and that sort of thing. We decided that we just had to come back home. We had a little boy Larry, and so rural Australia always appealed to me I'd hitchhiked around a lot as a young guy and worked out on the sheep station on the Darling at Pooncarie⁴ and so I thought Sydney just wasn't an option. Even then it was more expensive. So I got a job at Griffith Base Hospital which was near Jill's relative in Wagga. Once again set up the anatomical pathology department there when got a pathologist who could do that. Then moved to Dubbo as a job came up as the Chief Hospital Scientist in charge of the laboratory and that was closer to Sydney and closer to Brisbane where Jill comes from.

[0:13:31] (I): So how many were people at that Unit in 1977?

⁴ Pooncarie is a small village located on the Darling River, south of Menindee in western New South Wales.

(S): There was about 4 scientists, a trainee and secretary which was Marie Merriman, who's still alive today in Dubbo. So it was quite a small department. It was completely manual everything was done by pipettes and photometers and colorimeters and flame photometers and so forth. However under an initiative from NSW Health I guess, whatever they were called then, Department of Health and with the Royal College of Pathologists there was a move to make available a grant to put a chemistry analyser and a haematology analyser, semi-automated, in to all the regional labs so that they could decrease their turnaround times and so forth, because it was very tedious before that to do a set cardiac enzymes, which was 3 tests - enzymes tests. Colormetric [assays] took over 2 hours so you only did one batch a day. There was no such thing getting them done at night or whatever. Even to do a Urea [or glucose test] would take an hour of so when you came in at night you'd be sitting around waiting for things to incubate. So to take up semi automation was a brilliant move actually. So that Wagga, Griffith, ourselves, Tamworth etc. all got these units which improved our turnaround time very much.



The Samuels Ward at Dubbo Base Hospital, c.1970

[0:15:16] Soon after this, Jeff Sargent joined the staff here, he sort of followed me. I trained with him I guess at Sutherland Hospital and he had moved around and came out and we thought the same, we had

the same initiatives. There were laboratories in - one man laboratory in Bourke run by Pat Cameron who was Dr Ian Cameron's mother. He did medicine late and came to Dubbo and set up, was one those setting up the Rural Allied Health School. Tom Hamilton in Mudgee with Janine Rhodes had a small lab there. Chris Bowen in Walgett had a small one man lab. So Jeff and I would go up there often, it was part of our duty I think, to overlook - to get to know the region and we saw that they were - they had very old microscopes and equipment. There was very little that they could do properly, very primitive. Pat even had a spirit burner, which is a little burner with a wick which had Metho in it to flame the loops for your bacteriology plates. So we had a look around and we saw some equipment that had fallen into disuse. It was still much better than they had so we started sending stuff to them and forming a real bond with them professionally. They were feeling very isolated when they had a couple of guys, who sort of understood, had come from the big city and understood - had seen over the horizon that we could help them and they co-operated and loved that.

[0:17:22] (I): Where they self-employed or employed by the Government?

(S): They were employed by the Government. They were employed by the hospital as I was, as we all were at that stage until Orana Pathology came about. So Orana Pathology was...

[0:17:39] (I): So that leads up us into Orana Pathology [Service].

(S): Yes, so we could also see that moving around that the small hospitals, basically had no service and that up until we - now that we had these semi-automated instruments, Jeff and I could see that we could deliver a set of - a service to those hospitals because we could now do things very much quicker. We could do all our liver functions, enzymes and that. Do the whole lot within 2 hours so we had it all out before lunch.

So we had a series of meetings with the Board [of Dubbo Base Hospital] and [CEO] Brian Semmler [OAM]. The board of the hospital in those days - all hospitals had a board and I really think that one of backwards steps was to get rid of Boards. I guess the bureaucrats liked that but for example in Dubbo we had Allen McKinney who was a pharmacist at Narromine, Bob Scarff who was a journalist for the *[Daily] Liberal* in Dubbo, Brian....I've lost it. Brian Stewart who was a Baptist Minister and Chaplain for the hospital and Ron Rich who was an accountant for the hospital and there was others of course, there was an Aboriginal member - lady and they changed. But they were always in the hospital, they had committees and they moved about in the hospital, they come into the lab and talked to us and that sort of thing. They had the community at heart and so when we talked to them, and Brian about setting up this Orana Pathology Service as a separate entity within the hospital. As a standalone entity as opposed to the Department of Pathology which was like the Department of Radiology. They came on board for that and they were quite keen.

[0:20:00] So to do that we, first of all had to set up a series of couriers, all the locals emanated from Dubbo and they left Dubbo and they came back to Dubbo at the end of the day which wasn't really much use to us. So we looked at the XPT rail coaches which came down from Cobar, Bourke, Brewarrina, Walgett, on a daily basis and bought people down to meet the XPT at the Dubbo Railway station and in those days, communities were a community and there wasn't any of this Work Health and Safety nonsense that your carrying blood and infectious blood in your bus. But they brought it down and we went picked up it by lunchtime at the rail station and we could turn that around and have results the same day.

Also the laundry service became regional so instead of having all little people - little household washing machines- the linen was all coming

centrally to Dubbo. To offset the jobs that were lost, the couriers were sourced from those towns and so they would leave Cobar and Walgett, Bourke etc., come down through all little hospitals on the way. They'd leave at say 8 o'clock in the morning and down by lunchtime, and the nurses were always very practical and good in those areas so they had no problem collecting the blood for the samples. We would send them up tubes and just show them what needed to be done for - different blood [tests] went into different tubes of course. They had to be mixed and after a time we put in little centrifuges so they could centrifuge the blood for chemistry.⁵ Because if it stays on the cells for too long the red cells will chew up the sugar in the blood or glucose so you get a false [low] glucose when you do the test in Dubbo and the red cells can leach things such as one of the cardiac enzymes HBPH and also potassium into the serum so you get a falsely high potassium which is dangerous because even if it is 'normal' it could mean that the patient was actually very low. So we taught them to centrifuge, suck off the blood with pipettes. There's gels now that obviate that step but in those days we had a lot of to and fro with the nurses and there was no computer interface and so forth, so it was always on the phone talking and going around and visiting them. Jeff and I and Brian Semmler and Jack Thompson the Laundry Manager probably once a month went around all those towns just with regard to those sorts of things.

[0:23:16] (I): So how did the results get back to the hospitals?

(S): That was another issue that we had to address. It was one thing to have the results ready by about lunchtime but it became tedious

⁵ A centrifuge is a machine with a rapidly rotating container to apply centrifugal force to its contents. It is designed to separate fluids of different densities, such as cream from milk or solids from liquids such as blood cells from serum. (Information supplied by Ken Archer, 12-01-2019; See also See also Anderson, D (2002) Mosby's medical, Nursing and allied Health dictionary 6th ed., St Louis, United States, p.319)

to be ringing them through. You needed to make sure that the nurse recorded them in a place where the doctor on change of shift would come and get the results. So Jeff and I put our heads together and Jeff had been down in the city longer than I had and we looked at fax machines which were pretty primitive then. There was none in the region and it was a Xerox machine which we called the old flap-flap machine which once it – it had rotating drum and once the message had gone through the paper just flapped around until someone pulled it off in a roll. So those hospitals had the first faxes in those towns. I might be wrong but I think they were sometimes used for banks and other businesses sometimes, I'm not sure about that...

[0:24:31] (I): Actually the town I came from (which I won't say) yes the fax was used by everyone, it was quite unique it was the first fax. But the machine spat it out in long, long, long roll and you had to continually cut it up, and yes it was a quite an interesting thing.

(S): They're interesting times (laughs). But yes so we instituted that. So we had the first regional service. Dr Pringle's service was just servicing Dubbo and people would obviously come down from the bush and go to him as a private patient. So we'd once we'd established that service then we could see also that even that wasn't quite enough for some of the towns which were quite isolated. Brewarrina's one, it's quite away from Bourke and there's all sorts of floods and things that can intervene. There was a large Indigenous population to the north and they had a lot of - for example diabetes, which there was glucose meters back then and they were very early on, but there was issues such as if they were needing an insulin drip if they had acute acidosis,⁶ and they didn't like to come to Dubbo,

⁶ Acute acidosis is a condition when the blood becomes acidic due to a respiratory (retention of carbon dioxide) or metabolic (such as with the production of ketones in hyperglycaemia due to a diabetic patient's lack of insulin) cause. When giving insulin treatment, a patient's potassium (K+) level needs to be monitored. If the level drops to low a severe cardiac arrest can occur. To prevent a Radiometer KNApH1 was installed in several regional hospitals for use by clinicians. (Information supplied by Ken Archer, 12-01-2019;

they'd rather be treated in their own hospital. The doctors were pretty good back then too, but an insulin drip could lower their potassium dangerously so they could have a heart attack. So we put in sodium potassium pH analysers, Radiometer models in some of those remote hospitals so that the nurses and the doctors could do a pH to check that they're not acidotic or they are acidotic. Just improving monitoring their glucose and monitoring their sodium and potassium which is important.

[0:26:43] Another big deficit in pathology, I guess in regional NSW, as it is in metropolitan areas was we had a lot of - not a lot but we had - there was obviously car accidents, there's obviously industrial accidents and there's obstetric emergencies where blood loss was a concern and it's very difficult to assess blood loss by just as to how much there is on the floor, it always looks worse than it is. But we found a small Delphi Haemoglobinometer⁷ which was manufactured in New Zealand, which [was a] small battery operated one. You had to actually have a cuvette and ammonia, water - certain amount.⁸ You had to put a certain amount of blood into it - it had to be accurate. A drop less or a drop more would give an incorrect answer, but that machine could work in extremes of heat and even in Antarctica. So it was a very robust little machine. So we put them in a lot of hospitals and trained the nurses, a lot of people said, "Oh nurses could never do something fiddley and delicate like that," but

See also Anderson, D (2002) Mosby's medical, Nursing and allied Health dictionary 6th ed., St Louis, United States, p.19)

⁷ A haemoglobinometer is a device designed to measure the percentage of haemoglobin in a blood sample. (Anderson, D (2002) Mosby's medical, Nursing and allied Health dictionary 6th ed., St Louis, United States, p.799)

⁸ The Delphi (POC) Haemoglobinometer was a small portable analyser used to measure the haemoglobin (g/dl) in a patient's blood. To do this 10µl of blood had to be accurately delivered into 10ml of ammonia water in a quartz cuvette. The Delphi was a photometer that converted the intensity of the brown colour of haemoglobin into a value. A low value meant the patient was anaemic and if this was due to acute or chronic blood loss may require a blood transfusion while the cause was diagnosed. (Information supplied by Ken Archer, 12-01-2019)

they could, and we only had one case I think where a patient came down - they had a bubble in the pipettes which they got a low and they didn't repeat it I guess.⁹

[0:28:17] There was a [regular] changeover of nurses obviously in those places, I know Brewarrina had a lot of St Vincent's nurses. They were brilliant nurses but they would maybe stay a month or 2 or 3 and then they'd move on and after a while they were training each other. So we had to make sure we kept going up there and making [sure] any new staff were doing things correctly. But that worked very well. A little bit later Kodak brought in I think it was a D66 which you might remember did more assays and analytes and they were put - the Department of Health had an initiative - to make us all aware of how fast it is. They put them in supermarkets to have your cholesterol checked and your sugar checked all that sort of thing. I remember it vividly in Dubbo - so they could get people on right track. You know, "your sugars high go and see and doctor," and so forth. So they were actually a very useful machine because they did parts of the liver function assay and things like that. So we could put them into places like Coonabarabran and train - once again train the nurses so they could do a wider range of tests [on site].

They were very good, very well behaved they would even send the results of the patient to us, so we could put them on our - it was only a card system them - but we could put on a record so that we had that patients previous results. So if they came down to Dubbo we had it all.

[0:29:52] So we did all that sort of thing for the region and then in those days as is now technology was moving at a great rate and there

⁹ In the case mentioned a small air bubble in the pipette meant that less blood was delivered into the cuvette giving a false low haemoglobin result. The test should have been repeated prior to sending the patient from Walgett District Hospital unnecessarily to Dubbo Base Hospital. (Information supplied by Ken Archer, 12-01-2019)

was analysers coming out which allowed us to do very much more sophisticated tests than we could do in the past. So we had to send our tests away still to laboratories in Sydney and in those days we tended to send'em to a lab which was a centre of excellence so any fungal identification which we couldn't do here went to the reference laboratory at the Royal North Shore [Hospital] for example and the proteins went to the protein lab in [Royal] Prince Alfred so we knew our limitations.

But these new machines were coming out and one new technology was immunoassay.¹⁰ It allowed antibodies to antigens such as digoxin, could be raised, so that once that antibody saw digoxin antigen it would latch onto it as there taught to do because it's a foreign body and other drugs also viruses such as hepatitis A, B, C (not then) but EBV which is Epstein–Barr Virus or Glandular Fever, Q Fever which was in the abattoirs and they needed quick results for that, for screening workers, and CMV and so forth. They had a label which the first label they had was a radioisotope so you added that, which lit up when the antibody sandwich was created.¹¹ You put it in a scintillation counter like a Geiger counter and the intensity would tell how much digoxin, thyroxin, thyroid antibody or TSH or whatever you've got, B12, folate there's a whole range of tests we couldn't do [previously].

So we very quickly moved into that area we had a lot of support from the Board and Brian Semmler in those days. Because we were doing

¹⁰ Immunoassay was a revolutionary new type of testing methodology which used an antibody (raised in an animal) to specifically bind to an antigen of interest. (Information supplied by Ken Archer, 12-01-2019; See also Anderson, D (2002) Mosby's medical, Nursing and allied Health dictionary 6th ed., St Louis, United States, p.873)

¹¹ The Antibody/Antigen sandwich was measured by a signal. Initially it was a radioisotope, such as iodine 131 and measured in a Geiger counter. Today an enzyme signal is used and is known as an ELISA immunoassay. Prior to this routine pathology tests were limited to chemical reactions of analytes to produce a measurable chemical reaction. Immunoassay technology opened a whole new range of analytes which were too subtle to measure by chemical methods. (Information supplied by Ken Archer, 12-01-2019)

out-patients, we were getting money from the Commonwealth through bulk billing which is never been recognised, I don't think. So we moved into those sorts of areas where we could then do a lot more tests in-house and also a lot of them we were doing on a daily basis, some we'd batch twice a week but we getting them back to the periphery as well.

[0:32:54] The fact that we could all of a sudden identify Hepatitis B¹² as the causative agent of Australia Antigen, because I think it was first discovered in an Aboriginal, Australian Antigen.¹³ We moved to assay those and one of the doctors, Dr David Campbell who was in charge, or was head of the Department of Health in Dubbo which was a separate entity. He was very interested in the epidemiology of Hepatitis B. Because there were sort of allegations I guess that it leaked into, from the Indigenous community into the white community - Caucasian communities and there other such claims as well.

So we designed a model which was based on Brewarrina because it had about 50/50 Indigenous workers and white workers. We engaged an Aboriginal liaison officer who worked with the Land Council, Kath Bartley. Who sort of went to the community and explained to it what we wanted. Because the Aboriginals understandably were somewhat nervous about these sorts of things as often they get money and they'd come out to do this study and the next thing their studying some other thing which wasn't in their 'scope of works' as we say now. But they got them onside and so with

¹² Hepatitis B is a liver infection caused by the Hepatitis B virus, which replicates in the liver and can lead to number of different liver diseases. (The Department of Health, 2.3 Hepatitis B, accessed 09-05-2018 at: <http://www.health.gov.au/internet/publications/publishing.nsf/Content/cda-cdi37suppl.htm~02-vpds~2-3-hepB>)

¹³ It was known as the Australia Antigen, because the antigen was first isolated from the blood of Australian Aboriginal by US Nobel Prize winner Baruch Bloomberg. It was later found by Prince Alfred Hospital in 1968 to be the causative agent in the Hepatitis B Virus [HBV]. (Information supplied by Ken Archer, 12-01-2019)

a generous donation from Abbott Diagnostics, they denoted the kits. Jeff and I, Jeff did a lot of the leg work, collected all those people and did the tests.

Now the paper was written up in the Australian Journal of Medicine [The Medical Journal of Australia]. It showed that in fact the Caucasian (which they all were then) population maintained the same instances of the blood donor population in, say, Dubbo. The Aboriginals did have a carrier rate of 19% however the preschool kiddies and all that, there was no transmission at that level. Which was quite heartening I think from us, and that was reported in the *Daily Liberal*¹⁴ and *Sydney Morning Herald* I've got the articles at home somewhere. So it debunked that theory.¹⁵

[0:35:55] (I): Yes I can vividly remember the hysteria at the preschool with aboriginal children holding hands with non-aboriginal children and your paper absolutely vital in educating the general public.

(S): Yeah it was, we're quite proud of that. We went on also then to find out when - if there was a transmission and we collected - this huge, I think about 6000 mainly youths up to the age of 16, I think when they went to high school were you sort of tended to lose them. Across the whole region once again it was a big job, Jeff did a lot the leg work and I accompanied him out to places like Dodge City, Brewarrina and we brought them back to lab and it was a huge number of tests that we had to do. There was several - that was the second paper - and there was several things came from that and I can't remember all of them now but there was indications that some of the instances was to do with the number of people in houses and families because they lived with extended families and so forth. The incidents didn't really get into the white community until they

¹⁴ Daily Liberal, Researchers set to wrap up Hepatitis B survey, 10 May 1989 p.3

¹⁵ Campbell D.H, Sargent, J.W Plant, A.J The prevalence of markers of infection with hepatitis B virus in a mixed race Australian community, The Medical Journal of Australia, June 1989, vol. 150 No.9 pp.489-492

reached sexual maturity which is obviously - it is a sexually transmitted disease after all. But sort of showed [that] it's a blood to blood basically contamination. You don't get it from just kissing or drinking from water. It needs to be sharing needles and all of those sorts of things. So it did a lot for the epidemiology of Hepatitis B because before that it was an unknown antigen called the 'Australia Antigen'.¹⁶

The third paper we did was because of - there was another notion that vaccination (which was now available) you couldn't vaccinate [Indigenous] people to be immune from the disease - the Aboriginal neonates would not seroconvert. So we did a number of neonates I can't - something like 200 and we proved in fact that they did seroconvert.¹⁷ From that came the decision from the Boffins that know these things, that all Indigenous neonates should be vaccinated and that also any non-Indigenous at risk mothers or parents should have their neonate vaccinated as well.

So that's still the law if you like these days. It was fairly ground breaking work for a small little lab and it was all done in house, it wasn't sent away, we did the lot in-house. David Campbell was really great to work with and he had a statistician who was epidemiologist - I've just forgotten her name sadly - she died in New Guinea just recently - Aileen Plant she did all the statistics so it was very good work.¹⁸ After that I'm not sure where we... (pause)

¹⁶ Campbell D, Plant A, Sargent J, Mock P, Barrett E, Archer K, Hepatitis B infection of children in a mixed-race community in western New South Wales, The Medical Journal of Australia, 18 February 1991, vol. 154 pp.253-256

¹⁷ Seroconversion occurs when the body forms antibodies to a foreign body, virus or bacteria which then overcomes the virus and the patient becomes immune for life. This process also occurs with vaccinations. (Information supplied by Ken Archer, 12-01-2019) (See also Anderson, D (2002) Mosby's medical, Nursing and allied Health dictionary 6th ed., St Louis, United States, p.1567

¹⁸ Aileen Joy Plant, Professor of Internal Health at Curtin University, died in Jakarta on 27 March 2007. (The Medical Journal of Australia, 17 September 2007, Vol 187 No.6 p.341)

[0:39:51] (I): I'm amazed at the effort and the depth of your work in Dubbo. And you only had 4 people. But surely the services expanded by now?

(S): Yes it had. In the background to all this work that we were doing, we were increasing the staff of the laboratory. In those days it wasn't easy. We had to put a case to the board. We had a budget we had to stick to. So we gradually got extra people to take up - because we were doing a lot of extra testing and a lot of extra work and as I said some of it was - because we were a business unit we were making some the money out of the outpatient services that we did - which was Commonwealth money, which I reiterate once again. Which backed up the money from the state which was in the in form of sorta global grants as you'd be aware.

But sort of another - I guess watershed moment was when Professor Jack Hobbs¹⁹ joined the Laboratory in 1996 and he brought with him his wife [Dr] Margot McIvor²⁰ who was a - well she was quite an exceptional lady, she was a paediatric physician, she was physician and she was a nephrologist. She had set up - she worked in - as he had in America and she came back and she set up Renal units down in Melbourne and [Canberra] areas and worked at The Coast Hospital [formally the Prince Henry Hospital, Sydney] where they did the first renal transplant which survived and which was AB incompatible and survived for 30 odd years or more. So when she came to Dubbo with him it was two for the price of one and she very quickly setup the Renal and Dialysis Unit. Patients here - it was a death sentence basically unless you could afford home dialysis which there a few people around who - one of whom you both know quite well. But she

¹⁹ Professor Jack Hobbs was the Director of Orana Pathology Service. (Dubbo Liberal, 20 September 2009)

²⁰ Margot McIvor (b.1934-d.2012) was a paediatrician and fellow at the Royal Australian College of Physicians. She established Renal medical services in Canberra, and was instrumental in establishing Renal services at Dubbo Base Hospital when she and her husband Jack Hobbs moved to Dubbo in 1996. (Sydney Morning Herald, 23 November 2012, accessed at: <https://www.smh.com.au/national/tireless-physician-an-adventurer-20121122-29ssi.html>)

set up here, she also set up home dialysis in places as far away as Brewarrina and so forth.

[0:42:34] But Jack was a real visionary and together with Jeff [Sargent] and I he very quickly - had notions of expanding the service. Especially one of his first initiatives was to open up rooms down in Wingewarra Street to collect patients down in the town where it was very difficult at the hospital with parking problems. Anyone who's tried to be collected at the hospital, especially if you've been on chemotherapy and you've got to walk up from that railway line up to the laboratory and so forth. So we opened up and we started at 7'o'clock in the morning so that we could do tradesmen and people who were fasting for their glucose and lipids and so forth so they could come in and go home and have their breakfast. He opened it with great fanfare with oysters from Tasmania where he came from.

It went really well we had some spare rooms which he - [Dr] Ross Bradbury another infectious diseases physician who travels from, still to this day, travels from Sydney to attend the hospital every Thursday for the Infectious Control Committee meetings for the area and for the hospital. He still consults patients, he's an absolute international guru on infectious diseases and worked at Concord [Repatriation Hospital] where they had the burns unit and all that sort of thing so. Difficult cases here of wound infection and so forth, he'd go and see in the wards and he'd also see a lot of [out] patients down in our rooms. So that helped that as well. It was a very more conducive area - you'd get parking and so forth. Ross is still coming to this day and seeing patients - a lovely, lovely guy. We were then receiving a lot of patients coming to us for their blood tests. The doctors - the patient always had the decision to go where they wanted, the doctor can't say you've gotta go to - same as a pharmacists, they can't tell you which one to go to. So if they decided to come to us well that was all well and good. We had good turnaround times and good support

from the local Doctors and GPS but of course they did - they remained dedicated to Clive Pringles Practice which was then sold to Douglass Hanly Moir [Pathology] and it still is.

[0:45:42] So we never saw ourselves really in contest with them we were merely, I suppose, getting our slice of the pie and we've always worked with them, we realised as professionals you need to talk to each other. I'm sure all the vets and that do in town. So if our machine broke down they'd run our specimens through till we got the technicians up and we'd do that for them. If there's a test that they didn't do because they did less than us, but they had a very good courier system to the city and they had mainly well people and not as much urgent stuff as we have in a hospital setting. So we'd help them out and do those urgent tests, if someone's got a paracetamol overdose in their surgery we'd do that so it was always very good.

[0:46:32] But it did increase our revenue a lot as I said it was Commonwealth money so we could expand and we actually did - when Jack attracted another two pathologists Alex Firouz-Abadi who was a lovely Persian guy married to an Australian girl who has a property out in Barcaldine [QLD]. He also trained in America and he had retired from Prince Charles [Hospital] in Brisbane so he was doing locum work so he came and worked with us for - he's only just gone back so he was here for 20 years. When pathologists were falling over in places like Wagga and Orange and that, as they do - or they went on holidays they'd send it all up to us. We even did frozen sections in places like Tamworth²¹ - from Airlink I think it was - we'd charter a plane and go up and do a frozen section in places like that, while we were getting all the other stuff coming down that increased our revenue.ⁱ The odd one could actually - Orange could - the guy at

²¹ A 'frozen section' is a technique in anatomic pathology whereby a rapid tissue diagnosis can be given on tissue biopsied in theatre while the patient is under anaesthetic. See end notes (Information supplied by Ken Archer, 12-01-2019)

Orange at the time he'd look after us so if we had problems especially in the early days when Jack was on his own he was doing all autopsies as well. Remember we did autopsies for the whole region. Orange's morgue or autopsy rooms were closed down and condemned so we were doing them right up to Walgett, the whole north of the state with Colin Cook [Mortuary Technician] who was another lovely guy. We turned them around from Walgett they'd come down and the contractor would go and have a coffee and go and get his wife groceries and come back and take the body back on the same day.²²

[0:48:39](I): And sadly now I don't think that autopsies are done in Dubbo.

(S): No they're not. Another one of these initiatives that got a nice brand new morgue over in Newcastle, which I've actually seen. For a morgue it's quiet exceptional you know there's a big open window that looks out on the trees 'cause it's on a sloping block and so if the person's on the table they got a lovely view of trees which is exceptional. But that's probably a bit macabre (laughs) but that's what it does to you I guess. But they decided to send all of the [cases] north of Orange across to Newcastle and now it can take up to up to 6 weeks to get an autopsy in places like Walgett and that's terrible. When we had the expertise here, Alex when he joined he'd also had done autopsies in America, done forensic autopsies - that's a terrible loss. They could have trained up others under them because they were getting coronial money for those autopsies so you would attract another pathologist here - it was another thing to attract them, as not only do they have the work in the laboratory they had that. They used to all have to do autopsies once, all pathologist; but as you say, that's gone.

²² This allowed the funeral to be held the following day. (Information supplied by Ken Archer, 12-01-2019)

[0:50:02] (I): And that leads me into professional development. How did you manage your professional development? Did you need to do it? Where did you do it?

(S): Yes, after your first qualifications and that sort of thing - your diplomas and degrees and that sort of thing you do need to, as all professionals you need to continue on. I always actively - I knew the limitations out here, so if we were going to do a new test I would send people to that centre of excellence to learn that and bring it back. So we always did that. I sent all of the staff down to - all the relevant staff down to Royal Alexander Hospital for kids in Camperdown - to look at how to report blood films in children because they're different to adults. I know that places like Westmead are bit arrogant in saying that they're just little adults, but they're not. So I did sort of thing. There's also the nurses that would come in and do in services with us for their regional staff.

But there was the Australian Institute of Medical Scientists, that's our professional college, they run conferences and so forth. There's the Royal Australian Academy of Clinical Biochemists which Jeff was a member of - they do them and the Australian Society for Microbiology is another society which it also covers other microbiologies such as cosmetics and food as well as medical microbiology. But all of those have conferences and from that you can claim CME points and then we did in-house things. We would - just at morning tea time once a week, we'd have an interesting [blood] film, a film that we've had, 'cause obviously we're in different departments and the night staff are on doing the whole laboratory cause there's only one person on call in those days, it's still much the case. So if you got an unusual blood problem or unusual blood film then it would be kept and at morning tea time once a week we'd go through that with all the other staff. So we'd say this person came in and the person who had it on that night would say, "It came in and I

really wasn't sure what to do and I rang up so and so and then this is it.”

[Dr] Ross Bradbury came up and reviewed our internal quality assurance and our external quality assurance and he often gave talks on various bugs and things. We also had a haematologist who came up and he would also go through some bone marrow cases- he would do bone marrows and he would report them and go through those. So we were very active in keeping people up to date on the patients in the hospital that we came across but also the external things which you don't see. So that, I guess, is ongoing.

[0:53:43] (I): Is there anything else you'd like to tell us about Orana Pathology Service?

(S): Yeah, I guess there is, umm going on continuing education - it needs to be understood that the laboratories need to be NATA accredited, NATA that's National Association of Testing Authorities, Australia which looks after all industries and so forth. They have certain requirements and that is, that you have to partake in performing blind samples, which collects external quality control or [internal] control programs. In a laboratory you're always running blind samples anyway which is called internal QC so that you know that your haemoglobin, your white cell count, your serum... ... is correct and you are getting the right bug. You've got a bug that you don't know, you're getting that and the [antibiotic] sensitivity so - that's being done on a daily basis in a laboratory. But for the accreditation of the laboratories, and you've have to be accredited now, so that you can claim Medicare benefits from the CMBS [Commonwealth Medicare Benefit Scheme]. We do External Quality Assurance and one of the programs that we were in for chemistry, which was Jeff Sargent's main area, we were in the Welcome or Biorad Program which was a worldwide program where every fortnight they send you out a vial of lyophilised plasma and you have

to reconstitute it and run it through your testing regime for all of your tests liver functions, electrolytes, uric acids, cholesterol all that sort of stuff.

Back some years ago we actually were ranked 10th [and 15th] in the world for our assays and that's quite an achievement.²³ It's down to, not only Jeff, but the fact that it shows you that the stature of the lab was running at that level. Which gives you confidence that the rest of the laboratory is running at that level as well. That was reported in the *Daily Liberal* and it was very gratifying to have that acknowledged. That was by the company who runs the tests - it's an independent commercial company called Bio-rad, they published the results. That upset our opposition a bit.

[0:56:26] (I): I believe that your laboratories also [have] been recognised for many other awards?

(S): Umm, I guess that over the years we've had quite a lot of notification in the [*Daily Liberal*] and places like that for things that we've done like the Hepatitis [B]. I think it gets people involved, and we've done other studies and things that come that have come out. Just human interest stories often and now they're talking about [Professor] Jack Hobbs and things like that. His journey to Dubbo and things like that. We're pretty well known, I think, throughout the region and so forth. We're always part – although we were sort of a business unit, we still remain very much part of the hospital and the hospital culture.

[0:57:27] (I): Which leads me into the next thing. I believe that you were a leading light and very active in the [hospital] social club?

²³ In 2009 Orana Pathology Service was ranked 10th in the world for quality assurance testing. (*Daily Liberal*, 20 September 2009, accessed at: <https://www.dailyliberal.com.au/story/850874/local-pathology-lab-rated-10th-in-world/?cs=4086>)

Well it was more the social life of the hospital. There indeed was a social club but it's all lost today. Even back when I was at Sutherland Hospital, the hospital's had such camaraderie that of an evening, at 11 o'clock the staff would be in the cafeteria cooking up steaks and everything for the doctors and nurses who were coming on the evening shift and so forth. So you were meeting nurses and doctors all over and everybody just rolled in, morphed in together. We come home from a heavy session in Sydney's sleazy wine bars at 11 o'clock we'd roll up and have a steak and eggs and so forth before we went home to bed.

So, and that when I came to Dubbo was same thing, they were still doing that. I first lived in the nurses quarters because my wife had a young baby and we had to find digs in town so she stayed with her mother for 6 weeks [in Hervey Bay] while I found accommodation. I was in the nurse's [Residents] quarters and they were having parties and the place was a mess. You'd think a bomb had hit it really in the morning and... ..you'd have to clean it up. But the VMO's [Dr] Hammill... ..[Dr Logan] and all that would come around for a meal with the residents and that sort of stuff of a night. So when they're all lot younger - so it was very much like that and the hospital itself, there was a social club which back in those days Alex Saffy the painter ran, and apart from organising nights out - we had a committee, I was on the committee and so was Jeff and so forth. We had - it was mainly also about raising money for the hospital - so we'd have nights for example, I'm sure - mind you remember at the RAAF Base, in Thorby Avenue just near where Jack's house now is, the Officers Mess, the Airman's Mess and so forth and the social club would then hire that out - because it was Commonwealth land you were able to drink at Commonwealth prices, and you could actually gamble. You could play Crown and Anchor and they had Backgammon and all those things. So we'd have a gambling night with the proceeds going to the

hospital or we'd just go down to a local pub and have an evening meal and that sort of thing and everyone would pay and it would be heavily subsidised by the social club.

They also ran an offshoot of that which was the ball committee. So they had a [hospital] ball every year and that had a different theme and a Christmas party for the kids which Jeff and I organised. All the kids up until 10 or something got a present from Santa from the social club. We had a big pool party at the old pool which is now demolished, where the ED now is. So everybody was really - knew each other and got on, and knew all the kids and their families.

[1:01:25] Then when [Dr] Steve Jewell - he was here before I was actually - but he was heavily into music, he was into DATS [Dubbo Amateur Theatrical Society] and all sorts of things. But we had the idea of doing hospital revues and they were quite traditional like Graham Bond from *Aunty Jack*²⁴ started off in architecture revues at Sydney or NSW University for example, so they were quite common in the metropolitan hospitals and university campuses and so forth. It was fairly amateurish at the beginning, we started off with miming - the nurses all dressed up miming songs and Steve always had the [Dubbo] Jazz Band there and they were very good. We had good quality - there was some absolutely talented people - [Dr] John Gibson was a brilliant singer - the physician. [Dr] Sandra Gaffney beautiful voice - she's still here and then we did skits and we had the Sex Clinic with a lot of innuendo and so forth - Italian suppository (laughs). But that, you probably - it was bordering on lewd, you just wouldn't get away with it now, but it was all good clean fun really and the town - we'd get 600 people each night for Thursday, Friday,

²⁴ *Aunty Jack* was an ABC sketch comedy production that aired between 1972-1973 and starred Graham Bond. Graham Bond had worked on university revue shows while studying architecture at the University of Sydney. (Australian Screen an NFA website, at: <https://aso.gov.au/titles/series/aunty-jack-show/>)

Saturday nights. I know at one stage it was \$10 a head upstairs at the RSL and we had commentator, chairman for the night [Dr] David Schuster started off, Monte Jones followed up for several years as the - and they all had their pitter-patter and so forth to introduce the acts and - - (pause). So we had a lot of acts and they got a lot of people and they'd go to a lot of trouble - they'd have the kitchen guys doing *Grease* and things like that and they really went to a lot of trouble. The audiences really loved it, they came from all over. And the pathology always did a skit and we, being a bit sick, we'd have chooks and that we'd use things - magic acts and so forth. Jeff and I would dress up as females in drag and do all sorts of things and I think the last act we did was the *Full Monty* actually with the guys from the lab and umm - behind the scenes was absolutely tremendous when you see someone like [Dr] Schuster who's up there in his booming voice and he's quivering before he goes on almost chain smoking, it was really great to see them. Everyone was all down together...

[1:04:49] It sort of helped I think when you had - I remember times, tragic nights as well that we had when - there was a boy fell off the [Telecom] tower at [Warren] and speared his groin and we'd just been to Dirty Dicks in town and everyone had quite a few beers I had to cross match, this is at 11'o'clock at night - and the doctors were - Tim Nash back then, I think he fainted in the end, operating. Those sorts of things and then they'd ring me up and thank me for blood the next day and so forth. To hear back from Sydney that they'd done such a good job that this guy was ready for micro surgery. So that - when you have something like the Revue it brings those sorts of times together we're you've been together as a team in very extenuating circumstances, horrific at times which anyone in the health service is aware of. So it was really good and unfortunately, I'm not sure why - I think part of the demise of the social club was, and it raised a lot of money for the hospital and the hospital revues,

as I said earlier they had 600 people a night and at one stage it was \$10 a night and it got higher after that as things went on. That raised a hell of a lot of money and the props and all that were made by the guys in the workshop and so forth so there's very little expense actual or free, and it all went back to the hospital.

That happened every couple of years for many years so it was sad that, that all went, and I'm not sure why it went. I think partly to do with once they got rid of the [hospital] boards, you lost that support for the hospital and then gradually CEO's lost their power. They brought in from bureaucracy from the Department of Health and so they were no longer - they were just at the behest of those people - the Medical Superintendents lost their power. They were just in charge of a few doctors under them. So I think that the fabric of the hospitals has fallen down now so that you can't identify any, I don't see any sort of camaraderie within the hospital as it was then. I know there are instances of it still where various things happen but sadly that's all sort of gone and it's been gone for quite a lot of years. There's no social club, there's no Christmas party.²⁵

[1:07:45] (I): So Ken when did you decide to retire?

(S): I retired at the end of 2012 and I was there longer than I needed to but, I was really becoming a crisis manager, we'd been taken over by Westmead and been put onto their computers so we lost all autonomy. Everything had go through recruiting, and then the computer [system] was clunky and you had, sort of laboratory scientists who fancied themselves as programmers, who programmed it, so they couldn't download into doctors surgeries seamlessly and so we lost the doctors and gradually we lost the work. We had Cerner at Westmead, Prince Alfred had a Cerner, and North

²⁵ Hospital revues are no longer held at Dubbo Base Hospital, and Orana Pathology no longer functions. (Information supplied by Ken Archer, 18-02-2019)

shore had a Cerner and none of them talked to each other. So that sort of broke down a lot of the things, so I was crisis manager and I just thought, "I've got better things to do." So I retired and became a zoo volunteer.

[1:09:06] (I): A Zoo volunteer now I've been told, hopefully not misled, that in 1977 when you arrived in Dubbo the zoo opened and you were very involved with that, could tell us a little bit about that please?

(S): Yes the Zoo did open in February 1977 and one of the scientists in my laboratory, it was actually a nurse who had gone into technical work for family reasons, Marlene Hogno was married to Bob Hogno who had got the job of actually as the foreman or 'Clerk of Works' for building the Zoo, which was a huge project. So because the lab was small and intimate we often had dinner with Bob and Marlene and other people and they lived on grounds of the Zoo I think it might have been the house where the volunteers resource room is now. So Jill and I would go there, and then they moved over the road when the Zoo brought over the Obley Road, they moved over to that historic house which name excludes me at the moment.²⁶ And we meet the curator then, who was David Butcher, who was the first curator of the Zoo.²⁷ Just being on the zoo of a night and going around as we did, and hearing stories you realise that the zoo, although it looks a very peaceful, quiet place with animals grazing and sunning themselves and so forth there's actually a lot drama behind the scenes, with some animals fight, some have accidents, some just get sick and I sort of realised that we could probably do some tests for them because they didn't have - there's no such thing as - they had a veterinary hospital but there was no area [laboratory] to do any sort of testing. They could do crude x-rays and so forth.

²⁶ The Western Plains Zoo purchased the historic property 'Cootha' located 5km from Dubbo on the Macquarie River in 1984. (Daily Liberal, 3 December 1984 p.5)

²⁷ David Butcher was the Officer in Charge of the Western Plains Zoo from 1977 to 1984. (Daily Liberal, 15 March 1984 p.1)

There was a lab at Tooronga Park Zoo which they could send to that took time [to send couriers].

[1:11:39] So I made an offer through Brian Semmler, I spoke to him of course, and the Board once again. As the zoo was such an iconic status figure for Dubbo that we should be able to do the tests and I knew that the tests were no different to human tests. They might have different interpretations, some of the antibody techniques might not work because they've got a different antibody system sometimes. But generally we could provide a very rapid service to them and Brian and the Board and everybody were very supportive of that.

So we started doing that and the subject of pricing - charging, didn't really enter my head, because I thought that why (for the number that we have got) we weren't doing many, the vets are a lot better than doctors at treating animals and picking symptoms, they do a lot less bloods than a doctor would do. So we did them for free and my other justification was also that apart from being a service to the zoo that animals generally present with very 'florid' symptoms because they're not noticed until they're really, almost moribund in some circumstances. They just get on with life until they hit the wall and so when we were getting samples, if an animal had an infection the blood picture - the inflammatory picture would be very florid and you could see it under the microscope and so [could the] trainees that we were training - we had trainees from Charles Sturt Uni in those days for a year at a time, a gap year. We could give them things that we saw when we were young before they had chemotherapy and that, we would see Leukaemia's with 150 000 cells. The patient was dead in 3 weeks. But now days, or even then you didn't see it, because as soon as they were diagnosed they were on to chemotherapy and that brought all the numbers down. So it was good learning experience and you saw infections and fungi and that.

[1:14:05] Animals have a lot of infections and fungi because of the way that they live. So it was a really great learning curve for the staff. The cats have a disease called Bartonella²⁸ which has little umm bugs in their red cells. The vets [in private clinics] would have a sick cat and they would give it to us 'cause they came on board as well, the vets. Although we did charge them a nominal fee because they were businessmen and they quite happy to pay that. But we didn't take a lot of trouble interpreting the results like we did with humans so just really gave them a ticker tape with the numbers on it.

You know there's Chlamydia in the koalas eyes which you'd do a Chlamydia [test], same as Chlamydia [in humans] - that blinds them and kills them, or they die because they're blind. TB still occurs in animals, water buffalos and those up in the Northern Territory, they tried to wipe them out because of endemic TB. Then there was a case of the dogs, the painted dogs and the cheetahs were dying and it's tragic when you lose animals like that. Now they were part of the breeding program, they're very vulnerable. (Phone rings)

[1:15:35] That's not mine is it?

(S): So with the felines, the felines usually have their diseases, and the canines have their diseases so to have this cross over between the two was quite befuddling to them and there were some conspiracy theories at the time because I think there was a bit of argy-bargy with - between the curators but I'm not sure about that.

One of the things that came up was that being an old rifle range during the Army [Camp]²⁹ which is what the Zoo was they might have come across some ordinance and there was question of lead

²⁸ Bartonellosis is an infectious bacterial disease caused by the bacteria *Bartonella Heselae*, it is also commonly known as Cat Scratch Fever. (Pet MD, Cat Scratch Fever in Cats, at: https://www.petmd.com/cat/conditions/infectious-parasitic/c_ct_bartonellosis)

²⁹ In 1940, during the Second World War an army camp was established at Dubbo on the land that became part of the Taronga Western Plains Zoo. (Dubbo Liberal, 5 September 1940 p.6)

poisoning so they collected blood and sent it to us and we actually sent it off cause we didn't do lead, or heavy metals. And so that was down the track. But the thing about the laboratory in those instances when they're really wondering, when they've really got no idea what's happening we can do a full blood count, a simple full blood count, do it within half an hour of them getting it to us. And you can tell them [if it] is it infective or not, because animals have a lot of infections so if it's a high white sort of count you can say this animal's got an infection, or is hasn't got an infection, therefore you've gotta go down another track.

[1:16:58] So that was the big thing for the vets and at the zoo and round the town. That they could get instant results, that put them on the right track and then if they wanted to send more sophisticated vet type tests away they can to their third parties in Sydney in so forth. Like the race horse industries have got their own big vet set up.

Things like the rhinos, they'd lost a couple of rhinos early on and we did some preliminary tests with them. After they'd lost a couple, we did some preliminary tests on the - before they died and they weren't infected and that sort of stuff. When they looked further they found the rhino's who eat - browse when they come to Dubbo they don't have enough browsing, not enough branches and trees but they've got - they harvest them around the zoo take the tops out the trees. But their feed is basically a horse diet, so they got a shed there, you'll see the huge bales of hay and so forth. And that hasn't got enough tannin in their diet to alleviate this build-up of iron that they have. So we did some iron studies on them and we found that they actually had Hemochromatosis, so now they can add tannins and so forth to their diet. So they're aware of that, and they haven't lost any since.

[1:18:39] So we found it fascinating. After a few years Bob Hogno, he said, “you guys, you do this for nothing,” and I said, “Were happy to do it, its education and the staff love it.” But anyway he organised for us to have 3 passes. So we kept it for the staff and they could use them on the weekend. So that further brought the staff on [board]. ‘Cause sometimes they'd bring it in [a sample] on a Sunday afternoon and you'd think, “I just wanna get out of here” and Duncan [McGuiness] come in, “Oh sorry mate, sorry, sorry could you do this?” and yeah you'd do it and you'd phone him up, because the staff knew that yeah they can go to the zoo. So, yeah that was all good.

We learnt a lot, our pathologists Jack and Alex - sometimes we'd be called in to go to an autopsy with the vets. The zoo autopsied all animals even the ones brought in by road kill or road deaths and injuries and that sort of stuff. So sometimes they'd get Jack and Alex because they had seen things – it was interesting to hear them talk and say, ‘well in the humans you've got this happening and the aorta and so on... ...’ (Speech unclear) It was just such a great union between us all.

Once again that's still going, but after I left the Director of Westmead decided to stop all vet work in Dubbo including the zoo because the pathologist weren't veterinary pathologists and we shouldn't be doing animal work and he just lowered the boom like that, and I'd retired then and I heard about it and I was - I went out and saw [Ben Bryant] at the Zoo and he was absolutely mortified. He said, “We just can't - we just need that service.” So I said, “We'll talk to Jack and - you're going to have to - you're down a bit low because they're not, the vets now aren't curators they're under the directors and all that, just like everyone else is now. I said, “You need to raise this through

your hierarchy to the upper limits.” Jullian Skinner³⁰ was the Liberal Minister for Health at the time. Her electorate is in Mosman where Taronga Park Zoo is. So they raised it to her and she absolutely went ballistic and dropped on this guy and - he came out to Jack with his tail between his legs and said, “Oh Jack you've gotta do these animals, there very expensive animals,” and Jack said, “Well you wrote the letter,” (laughs).

[1:21:40] The point was that when you lose a rhino or a cheetah, you can't put a price on them, they're a part of a breeding program. They're all microchipped, their whole history unless they're wild caught was all documented. All the rhino's are documented from Zimbabwe all the stock, so that if they want to put two together out here they need to have it cleared so that they're widening the gene pool and all that sorta thing. So to lose one of those animals just through this - so they did it [restarted pathology services to the zoo] but then of course they put a price on it. Originally their silly computer sent out the work that they'd done at human cost, which they didn't have the budget for. So I had to intervene again to say, 'Well look, it's gotta be just a nominal thing if you gonna charge anything.' That stopped them doing wide spread screening. They used to bring in all the Eastern Grey Kangaroos with their tag numbers, and we just put them all through once a year, and the echidnas and koalas and that sort of thing. But that sorta handicapped that just because of money. It's of no benefit and it's very sad, so I guess that's part of the reason, I didn't leave for that reason, but it's gone on to those sorts of things that were happening. I just thought I can't make a difference any longer.

³⁰ The Hon. Jillian Skinner, was a Member of the NSW Legislative Assembly from 1994-2017, and Minister for Health from 2005-2011. (The Hon. Jillian Skinner, Parliament of New South Wales, accessed at: <https://www.parliament.nsw.gov.au/members/Pages/member-details.aspx?pk=8>)

[1:23:13] (I): Well on that note, unless you have something else to tell us, I think we'll end. I think that Dubbo's....

(S): Well, on a bright note, I can say I've had a very enjoyable career and a magnificent life, and with my family and so forth, and I really think that Dubbo's been a great part of that and the Laboratory's been a great part of that. The camaraderie and the people I still know around Dubbo has been part of it. So I don't have any regrets.

(I): No, thank you. Your story will form part of the Macquarie Regional Library's Oral History project. This interview was conducted by Barbara O'Brian. Thank you.

ⁱ The 'frozen section' technique involved freezing biopsies during an operation in liquid nitrogen or carbon dioxide so a microtome knife can cut a 5-10µl slice of the biopsy for examination under a microscope by a pathologist to gain a diagnosis. A biopsy could be called 'benign' or 'malignant.' The biopsy was undertaken during the operation to allow the surgeon to decide on the extent of tissue removal required.

The classic use of the 'frozen section' technique was for breast lumps. Depending on the result the surgeon could perform a benign lumpectomy or a radical mastectomy. So the patient would go under aesthetic not knowing what procedure they would have, which could be a very traumatic experience. The procedure was in common use until the early 2000s, today other methods such as ultrasound and CT scanning are used to gage a patient's disease status prior to surgery.

Today the frozen section technique is primarily used when a surgeon comes across an unexpected lesion during surgery and needs to check its origin and malignancy status. It is also used to by surgeons to check if they have removed enough malignant tissue around sensitive areas such as skin cancers near the eyes or nose. (Information supplied by Ken Archer, 12-01-2019; See also Anderson, D (2002) Mosby's medical, Nursing and allied Health dictionary 6th ed., St Louis, United States, p.710-711)