NHS Tayside

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To Whom It May Concern

Q1.

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Q2. Current Role:

I am a general paediatrician working within NHS Tayside. My current remit includes being the local lead for Paediatric Nephrology and Rheumatology, servicing clinics for children with underlying renal and rheumatological diagnoses. I have been asked to review this case given my expertise in managing children with renal conditions consistent with those experienced by GRO-B I have never me GRO-B and I have not been involved in his care.

Q3. Role of NHS Tayside

The NHS Tayside Health Board is responsible for the provision of services at Ninewells Hospital, which is the hospital and institution criticized by the witness.

Q4. In respect to the witness W0150 statements

I have been asked to comment on paragraphs 7, 25 and 76 of witness W0150 statement. It was reported that the family had been advised that Mr. GRO-B would be able to live the rest of his life with his remaining kidney function, determined to be 60% function of the remaining left kidney. There is no documented evidence of a conversation about any discussions relating to prognostication within the letters and notes I have had at my disposal.

Assuming this was the discussion, the figure of 60% of a single kidney is educated estimation. We know that the left kidney showed evidence of scarring. Unfortunately a formal Glomerular Filtration Rate (GFR) was not undertaken at the time of Mr. GRO-B last 99mTc DTPA study under paediatrics so we are reliant upon creatinine measures.

On the basis of current and historic practice, the removal of the right kidney would be standard practice. In January 1988, the last reported GFR during GRO-B follow-up in paediatrics was 79ml/min/1.73m^2 (for the purposes of this report and consistency with previous reports estimated GFR will be calculated using the Schwartz formula[1]). The GFR numeric equates roughly to the % renal function. Normal GFR is considered to be $\geq$90ml/min/1.73m^2. When considering the introduction of renal replacement therapy such as dialysis, it would have been delayed until 10-15ml/min/1.73m^2. My opinion based on experience and from reading the literature on the rate of decline in renal failure tends toward an exponential rather than a linear degradation. Other factors come into play when making the determination about starting renal replacement therapy such as age, underlying disease, urine output, nutritional state, as well as the rate of decline. It is important to remember that these are imperfect estimates and there is yet to be developed an accurate predictor to ESRD due in part to the complexities of individual patients.

In terms of the care of GRO-B from the initial IVU in 1980 it was established that both kidneys were affected and not normal, albeit the right was more affected than the left. There is enough information with evidence of likely scarring/dysplasia within the remaining kidney to suggest that he was at significant risk of developing further renal issues over time. In addition to this there is the delayed excretion of isotope from the remaining left kidney during the DTPA scan in 1986. Also it should be remembered that the uptake of radioisotope in the scan does not equate directly to function which explains why formal GFRs were commonly done at the same time as the isotope scans. In 1986 GRO-B had significant growth still to go through with puberty. As such common practice would be to follow these patients through puberty to ensure that their renal function was adequate into adulthood[2]. Once growth is complete the adult picture becomes more stable and monitoring would be required less frequently.

Routine screening would have included as a minimum annual height, weight, blood pressure and urinalysis for protein. The rationale for this is that the development of renal failure is occult, there are no obvious symptoms or signs of hypertension (one of the key features of chronic kidney disease (CKD) and that identified within GRO-B until disease is advanced. There would also have been intervention to optimise nutrition to support growth during these childhood years[3].

Given that HCV was not identified until 1989 and reliable testing not available until 1991, any association between HCV and CKD would not have been established. HCV is currently recognised as being an independent risk factor for CKD carrying with it a 2.2 fold increased risk of mortality[4]. In Mr. GRO-B case there was a clear cause for his renal failure (reflux and dysplasia) and therefore there would have been no indication for testing for HCV. The earliest indication for testing would have been at the time of work-up for renal replacement therapy/transplant. There was no suggestion of liver derangement in his bloods during his paediatric follow-up. In the absence of liver derangement on bloods, and the absence of clinical findings of hepatitis, then it is reasonable not to undertake hepatitis serology.

In summary the discussion about prognosis was never documented. GRO-B should have been followed up in paediatrics beyond the point of discharge by the urology team. A creatinine of 59umol/l taken just prior to discharge in 1988 equates to an eGFR of 79ml/min/1.73m2 which is classification G2 in KDIGO guidelines which is considered only mildly decreased[5]. Given his potential growth then monitoring should have been undertaken.

There is no definitive way of knowing if he was going to have adequate renal function for his adult self until he had grown.

Q5.

I have been asked to comment on paragraphs 76 and 77 of witness W0150 statement. During normal follow-up for a child with GRO-B diagnosis I would not routinely check viral serology. I would expect early signs of worsening CKD such as rising blood pressure, proteinuria and rising creatinine. With ongoing follow-up, the hypertension is likely to have been identified earlier. This would have allowed for a more gradual preparation to end stage renal disease, but he would have still reached end stage disease in his early adulthood.

There would have been no indication to check his HCV status prior to work-up for Dialysis/Transplant as there were no symptoms to drive this investigation; no deranged biomarkers or clinical signs.

In summary GRO-B had a good reason for his underlying renal failure and therefore we would have had no reason to check his Hepatitis C status until he was requiring renal replacement therapy either in the form of dialysis or transplant.

Q6.

I have been asked to comment on paragraph77 of witness W0150 statement. I am unable to comment on the amount that would be a reasonable settlement in the case of GRO-B I am able to comment on the period of dialysis free years. Modelling to predict End Stage Renal Disease (ESRD) and the need for renal replacement therapy has been challenging and is the subject of ongoing research[6,7]. Given the results I have available to me I have plotted against time to ascertain when I estimate GRO-B would have reached end stage renal disease (Charts 1&2).

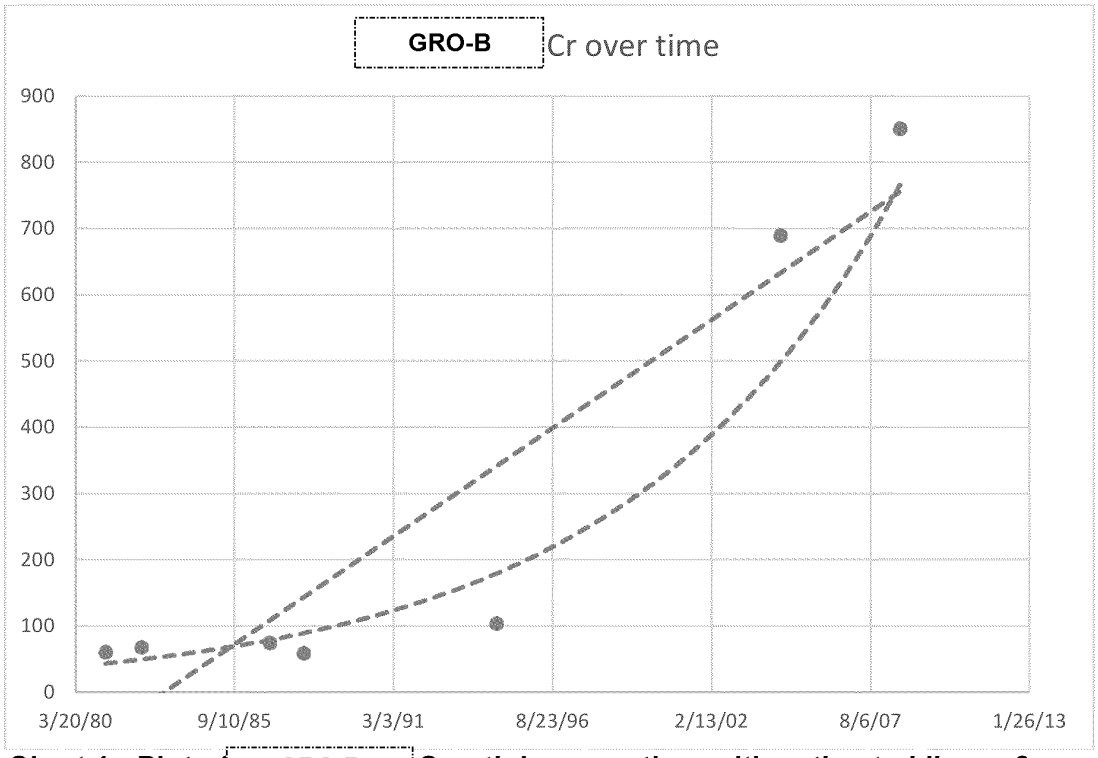

Chart 1: Plot of GRO-B Creatinine over time with estimated linear & exponential plot.

The rate of decline in renal failure is due to both modifiable and non-modifiable factors. In GRO-B case his underlying dysplasia and reflux nephropathy were managed appropriately up to the point of discharge. Subsequent to this the predictable modifiable risk factors would have been his hypertension and proteinuria. There was no evidence of proteinuria prior to discharge on 03/08/1988. When CKD was identified at the GP in June 2004 there was no evidence of proteinuria. Hypertension would have been managed with either a calcium channel blocker, beta-blocker, or ACE inhibitor.

I have looked at both linear and exponential rates of decline in renal function for GRO-B I feel linear decline is generous in terms of providing the longest possible time to end stage disease (see Charts 1&2). These plots are skewed due to the lower early values of creatinine/higher rates of eGFR. The exponential plot is much more realistic. As previously stated, as chronic kidney disease progresses it tends to follow a more exponential trajectory rather than linear, therefore accelerating to renal replacement therapy. Chart 2 gives a guide to possible time to renal replacement therapy.

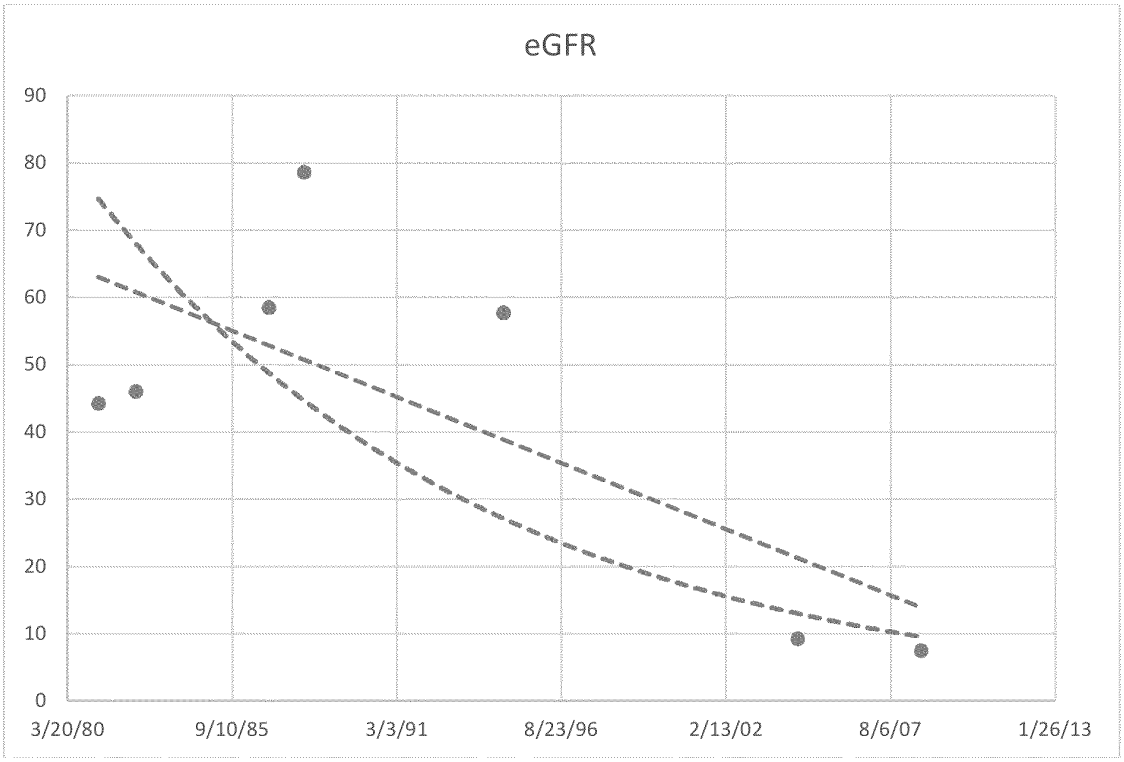

Chart 2: Plot of eGFR against time (End stage renal failure eGFR 10-15ml/min/1.73m^2. This places estimated time to renal replacement at the outside to be 2008-2009 for exponential decline and 2010-2011 for linear decline)

In summary I feel that at the most generous prediction, using linear projections GRO-B would have required RRT by 2010-2011. More realistically I feel he would have require RRT closer to 2009.

Conclusion:

I have no doubt tha GRO-B should have been followed up through his childhood. Had he been followed up I do not believe there would have been any indication to undertake investigation for hepatitis until screening prior to commencement of renal replacement therapy. In light of the evidence of likely ongoing reflux in the left kidney, his blood and urine results and my best estimates of disease progression I would have predicted he would have

required renal replacement therapy in 2008-2009. At the most generous prediction utilising linear plots including all the data points, I would still estimate GRO-B would have required renal replacement therapy in 2010-2011. All that said predictions to ESRD are challenging due to the complex multivariate nature of the condition.

GRO-C

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References

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