

## Royal Free Hospital Renal Unit

**The unit was the first in the United Kingdom to be set up specifically for the treatment of end-stage renal failure by haemodialysis and transplantation.**

**John Hopewell has given a detailed account of its origin in his “Early History” - (see [www.renhist.co.uk](http://www.renhist.co.uk) ).**



**John Hopewell**

**In summary, on his appointment to the hospital in 1957, he had already gained the view that a modern department of urology should work alongside a renal unit equipped with facilities for the treatment of end-stage renal failure by repeated haemodialysis and transplantation as treatments working in tandem. The scheme was approved and a cubicle built for it in Ward 10 of the Lawn Road, Hampstead branch of the hospital.**

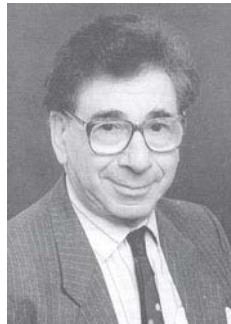


**Lawn Road (old N.W. Fever Hospital)**



**Renal Unit Cubicle (Ward 10)**

**At first cases of acute renal failure arising in the hospital had been treated giving sufficient experience for holding an international symposium on acute dialysis, organised by Professor Sherlock in 1963 - at which the idea of a European Dialysis and Transplantation Society was first conceived by David Kerr, William Drukker and Stanley Shaldon.**

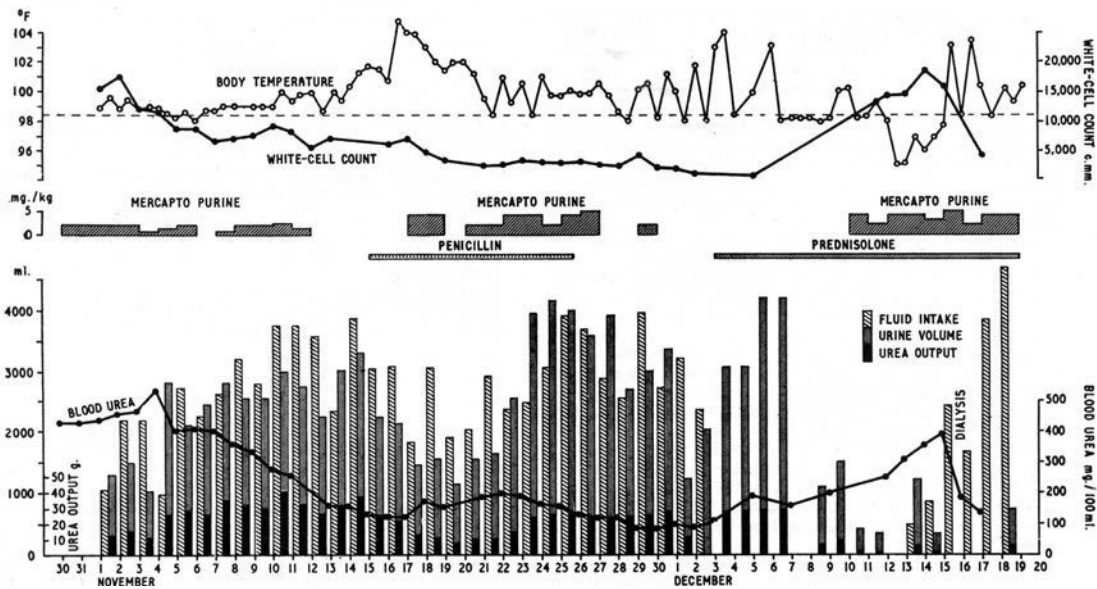


**Roy Calne**

**The aspiration to treat chronic disease was realised earlier than expected by the fortuitous appointment of Roy Calne as surgical registrar in 1958 and the arrival of Stanley Shaldon with Professor Sherlock's academic department of medicine in 1959, first as registrar and later as lecturer. Roy Calne conducted his experimental work which culminated in his demonstration that 6-mercaptopurine was effective in controlling rejection, which was thought sufficiently convincing to justify a clinical trial.**

**Three transplants were performed between 1959 and 1960, the first two being cadaver grafts which proved to be failures: the last was a transplant from father to son. The recipient survived 41 days, dying with miliary tuberculosis. This was the first clinical organ transplant from a live related non-sibling donor in the world using chemotherapy (6-mercaptopurine and prednisolone) to combat rejection, and following previous experimental study had shown 6 MP to be an effective immuno-suppressant. It was performed by John Hopewell and Lionel Gracey, by coincidence on November 1<sup>st</sup> 1960, the day after Michael**

**Woodruff's identical twin transplant in Edinburgh. The chart shows his survival for seven weeks during which he seemed to be recovering from a rejection reaction. At post mortem he was found to be suffering from military tuberculosis, doubtless carried by his father's kidney.**

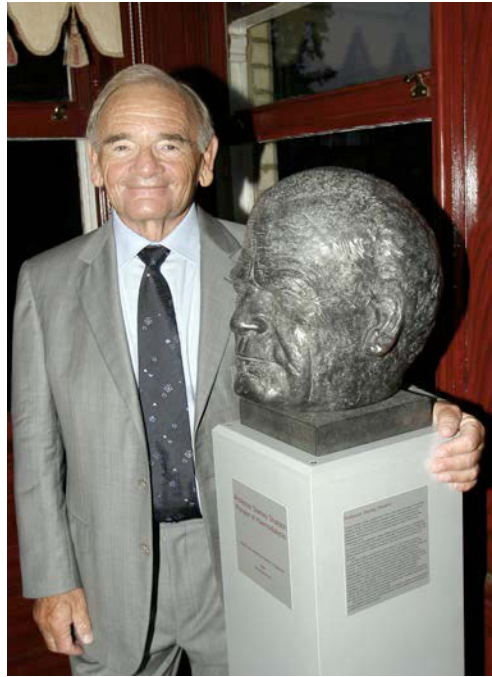


**World first Live Donor Tx with Chemotherapy**

**Just before this case Roy Calne had gone on to Boston to work with Dr. Murray at the Peter Bent Brigham hospital. In further experimental work there he demonstrated azathioprine to be a more effective and less toxic immunosuppressant. Murray used it successfully with prednisolone in clinical trials. With endorsement from such an authority chemotherapy was gradually accepted worldwide for the management of rejection, and so the whole organ transplantation programme ensued. Azathioprine (Imuran) remained a mainstay of immunosuppression for many years.**

**Stanley Shaldon was 'seconded' as physician to the unit, which had been started and remained an N.H.S. enterprise. His position as lecturer in Prof. Sherlock's Academic Department of Medicine brought financial support, research fellows and academic expertise. From the spring**

**of 1961 he began intermittent dialysis for the treatment of chronic renal failure, and was the first in the UK to do so.**



**Stanley Shaldon**

**His use of twin catheter access to the femoral vein gave a flying start to repeated dialysis and afforded so great an advantage in survival rate as to question the justification for clinical transplantation, which was deferred at the Royal Free until 1968. The same judgement was made at the Charing Cross Hospital which enjoyed the availability of intermittent dialysis from 1964, introducing transplantation in 1969, by which time experience and new anti-rejection agents tipped the balance.**

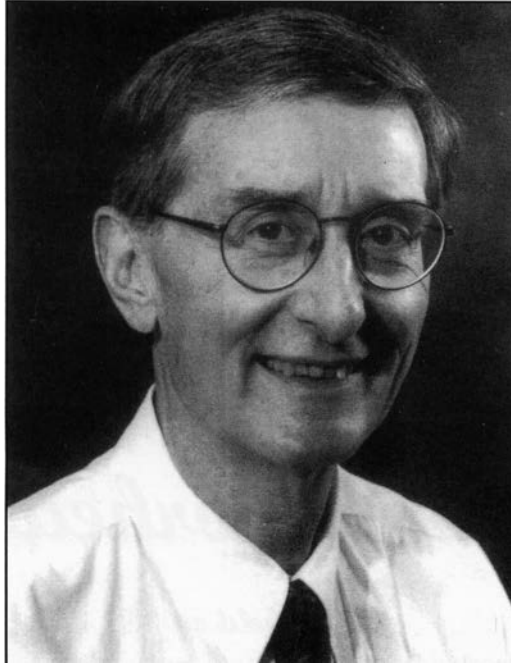
**Until 1966 Stanley Shaldon continued to build up the number of patients on maintenance dialysis and also introduced home dialysis in 1964, once again being the first in the United Kingdom, if not globally, to do so. The unit was also the first to train and use nurse technicians to oversee dialyses. After October 1966 he was occupied in setting up his National Kidney Centre for training and maintenance of patients on home dialysis (For further**

history see National Kidney Centre in the Directory of [www.renhist.co.uk](http://www.renhist.co.uk) ).

**So the unit, planned from 1957, was a pioneer one. It gave Roy Calne the opportunity to perform his work on chemotherapy to combat rejection, which he took to Boston and from there it emerged to lay the foundation of the whole of organ transplantation. We performed the first cadaver and live donor transplants using effective chemotherapy in the world.**

**Stanley Shaldon was the first to establish haemodialysis and home dialysis in UK. We initiated the London Transplant Group which led to the National Kidney Register. The inaugural meeting of the British Transplantation Society was held here. I think these achievements have never been generally known or recognised.**

**The unit continued to expand. John Moorhead had been appointed as lecturer in the Academic Department of Medicine in early October 1966 and as consultant nephrologist to the unit in January 1967. He had had a thorough training in renal medicine in Liverpool with John Goldsmith and later at Georgetown University, Washington DC where he worked under Professor George Schreiner and at the Veterans Hospital studying cellular immunology with Prof William McFarland.**



**John Moorhead**

**For some few weeks at the time of his taking over dialysis remained in the hands of Rosemarie Bailod and Raymond Crockett, both of whom had been S.H.O.s in the unit under Stanley Shaldon. This gave them experience in maintenance dialysis the equal of anyone in the United Kingdom at the time. Rosemarie Bailod stayed on in the unit to win international recognition in dialysis.**



**John Moorhead, who regarded her as his head of dialysis, set about developing a new nephrological service. He was determined to resume transplantation, which had been undertaken somewhat sporadically elsewhere in the UK from 1959 and the early 1960's, notably at St. Mary's Hospital London, the Edinburgh Royal Infirmary, the Hammersmith Hospital and the Westminster Hospital, London, by Roy Calne (see "Early History" in the Directory – [www.renhist.co.uk](http://www.renhist.co.uk) ). It was beginning to benefit from growing experience, new anti-rejection drugs and reliable pre- and post- transplant dialysis support. Its improved results made it a more predictable and acceptable treatment, without the burden to the patient of maintenance dialysis. Some of our patients began to ask for transplantation, which the team was now well equipped to provide. Amongst its members was Dr Zac Varghese, a key member who had originally been appointed in 1964 as a clinical scientist. He had honours degrees in chemical and pharmaceutical sciences as well as early experience of dialysis in Vellore India, briefly at Leeds and Glasgow where he worked for the pioneer Prof. A Kennedy (*renhist website. Glasgow*). In the last of these appointments he gained experience of the dialysis disequilibrium syndrome. Together with John Moorhead Zac Varghese set up a biochemical and tissue typing service and later introduced many new methodologies including rapid measurement of blood Cyclosporine A levels.**



**Zac Varghese**

**The new demands on the service led to the appointment of a full-time transplant surgeon, and Ossie Fernando was appointed in 1969. He was to give outstanding service to transplantation, and his contribution to paediatric transplantation is described below. It may be mentioned here that he was followed by his son who proved to be of equal energy and surgical stature.**



**Ossie Fernando**

**John Hopewell and Ossie Fernando undertook transplantation jointly from 1969 and eventually around 60 transplants a year were performed.**

**The unit combined with other London hospitals with an interest in transplantation and hosted the first meetings of the London Transplant Group. The London Hospital immunologist Hilliard Festenstein, a pioneer of tissue typing soon became a prominent member. This Group**



**began an exchange of tissue typed mainly cadaver kidneys in London, eventually going nationwide and was finally based in the Bristol blood transfusion service in the form of the National Kidney Register.**

**The RFH unit continued to develop, and in 1968 a new renal dialysis department was opened on the Lawn Road site while the new Royal Free was being built. It opened in 1974. Here the new transplant unit comprised six dedicated beds and included the new Wolfson Research Laboratories and a unique NHS transplant research laboratory. Ward beds and outpatient facilities enabled clinical nephrology to grow exponentially.**

**John Moorhead combined wide interests and experience in renal medicine with an aptitude for research and administration and as Director of Nephrology and Transplantation from 1975 his department embraced all aspects of clinical nephrology. It was now possible to expand all aspects of renal disease through clinical and investigative services for inpatients and outpatients. The new laboratories combined service with research, enabling new basic and clinical research projects and more extensive international collaborations.**

**In 1978 a CAPD service headed by Dr Rosemarie Bailod and later Dr. Andrew Davenport reported the lowest national peritoneal infection rates. Satellite dialysis units were set up in Barnet Hospital (1988), the North Middlesex Hospitals (1990) and later in the '90s at the Hospital of St. John and St. Elizabeth.**

**Meanwhile the introduction of cyclosporine A for immunosuppression began to make a huge impact on cadaver transplantation. The Royal Free and Cambridge units were the first to use this new compound after John Moorhead obtained it from Sandoz (later Novartis) in Basel in 1979 and used it for the first time in February 1979. Zac Varghese was the first in the world to introduce a**

**reliable and sensitive HPLC CyA assay to monitor blood CyA levels, reporting them the same day to aid the modulation of treatment.**

**Our policy of limiting blood transfusions to avoid cytotoxic antibody formation was not followed everywhere so that most of the patients transferred from UCLH (St Peters) after 2000 were non- transplantatable because of broad spectrum HLA antibodies. The RFH dialysis program limited blood loss by washing back blood at the end of dialysis and adjusted nutrition by iron supplementation (before erythropoietin). Better nutritional management had the added advantage of preventing increased protein catabolism as well as urea and creatinine loading. We were innovative on many areas of dialysis, blood pressure control, phosphate control, PTH suppression, active vitamin D supplementation and lipid studies.**

**Research projects included bone metabolism and the role of the kidney in Vitamin D metabolism, angiotensin in hypertensive disease and lipid metabolism and the kidney. All this work continued to attract funds from charitable bodies, the MRC, and the Wellcome Trust. Patients also made generous contributions. Around 500 papers were published and many of our trainees received postgraduate degrees including 20 MDs and 10 PhDs.**

**Our junior doctor training program attracted many more applicants than we could accept. Among those successful was Paul Sweny who was appointed to our staff *in* 1979. Paul proved to be a dedicated teacher and researcher whose interest in clinical transplantation led to the new subspecialty of medical transplantation, which set an example for many other units. The department trained many foreign doctors most of whom returned to their own countries to develop renal services in their home lands.**

## **Paediatric Dialysis and Transplantation**

**We have mentioned elsewhere (*History of Renal Units in Manchester – Editorial note*) the tensions that have arisen as a result of moving renal unit services between local hospitals. Most often these moves were made by reason of available space, but sometimes arose from other causes including a desire not to be left behind. Arguments are advanced and pressure applied to secure such moves while and those who designed the service and worked hard to make it succeed are may be disappointed by the outcome. Something of the sort occurred in the development of the paediatric dialysis service.**

**Rosemarie Baillod had a major role in starting paediatric dialysis. In 1965 teenage patients were accepted for treatment, and from 1969 children under ten – the youngest being aged three years. One of her great contribution was to establish these paediatric patients on home dialysis, so that lives and development would be less disturbed than they would have been under hospital treatment. Then on 5<sup>th</sup> May, 1970 Ossie Fernando performed our first paediatric transplant. This graft lasted for five months and the child had a second transplanted on 20<sup>th</sup> August 1971.**

**Later Ossie Fernando was approached by the Hospital for Sick Children, Great Ormond Street (GOS) to set up a transplantation service there. Paediatric dialysis began at GOS in 1985. From 1987 children aged less than 12 yrs who required transplantation were moved from the Royal Free to GOS. Some clinical staff from our unit went with them. Nevertheless Zac Varghese continued to provide the tissue typing, cross match and CYA monitoring for this service from the RFH.**

**Eventually in 1995 all paediatric transplantation was moved to Great Ormond Street although Zac Varghese's laboratory service provided all the lab support from the Royal Free tissue typing up to 2003. By a wry turn of events, these paediatric services had later been transferred to Guy's hospital.**

**John Moorhead had set up a research trust in 1971 to support renal research at the Royal Free. Funds from this were used to set up a new academic chair in Renal Medicine and Steven Powis became the first Moorhead Professor of Renal Medicine in 1997. The trust donated substantial funds to assist in the building of the John Moorhead Renal Research Laboratory in the new Royal Free UCL Department of Medicine Research complex, which was formally opened by The Princess Royal in 2011.**

**Amongst several DoH attempts made to reorganise London Medicine were The Tomlinson Plan of 1992 to merge some London teaching hospitals and ‘rationalise’ speciality services, including combining some renal transplant units. Virginia Bottomley, Secretary of State for Health, set up the London Implementation Group (LIG) to make the changes. The RFH strongly opposed the LIG recommendation to move the RFH transplant unit to UCH and campaigned to reverse the decision. The Royal Free Hospital Kidney Patients Association (RFHKPA) took an active role in the campaign and the decision was eventually reversed at the Dispatch Box.**

**“Parliament: Hansard, Col 718, 15<sup>th</sup> December 1993**

***Col 718: Mrs Virginia Bottomley “...we are not persuaded that renal transplantation work should move from the Royal Free hospital”.***

**Instead, the UCLH unit moved to the newly established UCL Royal Free campus in Hampstead from the Institute of Urology (3 P’s see website directory).**

**In 1995 an important Royal Free renal research initiative was the development of strong research collaborations between Dr Xiong Ruan in the Royal Free UCL John Moorhead Research Laboratory, and Chongqing University, where its President Dr Lei has made a major investment in facilities and staff to support a joint renal lipid research program directed by Dr Ruan. This pioneer development, in the making for nearly 15 years has recently extended**

**collaboration to Renal Physiology and other Royal Free UCL medical science departments. Dr Xiong Ruan, Reader in Medicine coordinates this work from the Royal Free UCL renal labs.**

**Over more than forty years to 2000 the new Centre for Nephrology and Transplantation has grown from small beginnings to one of the largest in the UK and a significant player in renal medicine, teaching and research worldwide.**

## **Milestones**

<b>1958</b>	<b>First UK unit dedicated to Dialysis/Transplantation</b>
<b>1959/60</b>	<b>First transplants using chemotherapy</b>
<b>1961/63</b>	<b>Regular haemodialysis established for CRF</b>
<b>1963</b>	<b>Dedicated renal laboratory</b>
<b>1964</b>	<b>First Home Dialysis in Europe</b>
<b>1966</b>	<b>J Moorhead appointed 1st NHS Cons Nephrologist</b>
<b>1966</b>	<b>First UK dialysis nurses training course</b>
<b>1967</b>	<b>Tissue typing for resumed renal transplant programme</b>
<b>1969</b>	<b>Isolation dialysis facilities for HBV</b>
<b>1969</b>	<b>First children's programme in UK</b>
<b>1971</b>	<b>Moorhead Renal Research Trust established</b>
<b>1972</b>	<b>Start of home IPD programme (children &amp; the elderly)</b>
<b>1972</b>	<b>Bone bx used extensively in renal bone disease</b>
<b>1974</b>	<b>Hypophosphataemic osteomalacia in renal transplants</b>
<b>1974</b>	<b>New RFH renal transplant unit</b>
<b>1974</b>	<b>New Wolfson renal research laboratories</b>
<b>1977</b>	<b>Introduction of plasma exchange</b>
<b>1977</b>	<b>Second unit to use cyclosporine A</b>
<b>1978</b>	<b>Start of CAPD programme</b>
<b>1979</b>	<b>P Sweny appointed Sen. Lect. /Consultant Nephrologist</b>
<b>1982</b>	<b>Lipid hypothesis (Moorhead)</b>
<b>1983</b>	<b>Zac Varghese appointed consultant biochemist</b>
<b>1993</b>	<b>Post Tomlinson: Hansard, 15<sup>th</sup> December 1993</b>
	<b>– Col 718: Mrs Virginia Bottomley “...we are not persuaded that renal transplantation work should move from the Royal Free hospital”.</b>
<b>1983</b>	<b>HPLC method for cyclosporine</b>

**1982** Introduction of CAVH on ITU  
**1984** Introduction of CAVHD in ITU  
**1991** First use of chimaeric aCD7 monoclonal antibody  
**1992** Molecular biology techniques in tissue typing  
**1992** First use of chimaeric aCD25 monoclonal antibody  
**1992** John Moorhead Professor of Renal Medicine RFH UCL  
**1993** Aine Burns NHS 3<sup>rd</sup> Consultant Nephrologist  
**1995** Relocation and rebuilding of combined nephrology  
dialysis, transplant unit and renal research laboratory  
**1995** Andre Davenport 4<sup>rd</sup> Consultant Nephrologist  
**1995** Barnet Hospital satellite centre  
**1995** Flow cytometry crossmatch  
**1997** 2<sup>nd</sup> Renal Transplant Surgeon  
**1997** Sister centres in Karachi and Mexico City  
**1997** Steven Powis 1<sup>st</sup> Moorhead Professor of Renal Medicine

*Royal Free Renal patients were a diverse and influential cross section of society and we are grateful to their loyal and imaginative support. It is a pleasure to recognise here the numerous donors who made generous contributions to renal research from 1970 to 1995, which the RFHKPA also supported in various ways. We benefitted from gifts from patients and their contacts and substantial legacies including an individual's whole estate. New patients should know that they are the beneficiaries of advances made as a result of their predecessors' generosity since much current renal research relies entirely on historical donations.*