# MEDICAL PRACTICE

## *Process and Outcome*

# Deaths from chronic renal failure under the age of 50

**Medical Services Study Group of the Royal College of Physicians**


### Abstract

**From a survey of the West Midlands and Mersey Regions and the Grampian Health Board, we found that in 1978 and 1979 some 122 patients with chronic renal failure died in hospital under the age of 50. Of these, 69 had been given dialysis or transplantation, or both, while for many reasons the remainder had been considered unsuitable. While the criteria varied, the reasons given for non-acceptance of cases seemed sound, and in no instance during this particular period was a patient denied dialysis because of a shortage of machines. We think that the public should be aware of these findings and not led to think that if only enough dialysis machines were available death from renal failure would be a rarity.**


### Introduction

During the two years 1978-9 physicians in the West Midlands and Mersey Regions and the Grampian Health Board collaborated with the Medical Services Study Group of the Royal College of Physicians in a survey of medical deaths in hospital of those aged under 50.[1] The populations concerned were roughly five million, two and a half million, and half a million respectively. Altogether 1290 such deaths were assessed by study of the case notes and necropsy reports and with the help of the consultants concerned, but the overall ascertainment rate was only about half. When death was attributable to chronic renal failure (initially 52 patients), however, we managed by a special effort directed to the nephrologists and transplant surgeons to increase this to 122, and we think that we have now obtained the notes of almost all those who died from this cause in hospital, but those who died at home, some of whom would not have been assessed by a nephrologist, were outside the scope of the investigation. Moreover, a few of the deaths in hospital of people aged under 50 that were not reported to us may have been due to renal failure but in cases under the care of a general physician and not referred to a nephrologist. Such patients would have been missed in this survey, but we do not think that the numbers would have been large enough to have affected our conclusions.

The primary object of the survey was to analyse the deaths from the point of view of selection of cases for dialysis/trans-

TABLE I—*Causes of chronic renal failure*

| | No |
|---|---|
| Chronic glomerulonephritis | 34 |
| Diabetic nephropathy | 19 |
| Hypertension | 13 |
| Obstructive uropathy | 12 |
| Chronic pyelonephritis | 8 |
| Polycystic disease | 3 |
| Amyloidosis | 3 |
| Renal hypoplasia | 2 |
| Hyperparathyroidism and idiopathic hypercalcaemia | 2 |
| Myelomatosis | 1 |
| Analgesic nephropathy | 1 |
| Wegener's granuloma | 1 |
| Systemic lupus erythematosus | 1 |
| Gout | 1 |
| Renal tuberculosis | 1 |
| Renal vein thrombosis | 1 |
| Alport's syndrome | 1 |
| Polyarteritis nodosa | 1 |
| Congenital familial nephrotic syndrome | 1 |
| Uncertain | 16 |
| Total | 122 |

**Royal College of Physicians' Medical Services Study Group, King's Fund Centre, London NW1 7NF**

The report was compiled by Sir Cyril Clarke, director of the study group, and Dr George Whitfield, assistant director, with the help and co-operation of: G M Aber, A D Barnes, G R D Catto, D C Dukes, N Edward, H J Goldsmith, J B Hawkins, D D Hilton, M MacLeod, and B H B Robinson and physicians in the Mersey and West Midlands regions and Grampian Health Board

plantation. The project also provided an opportunity to assess the adequacy of dialysis facilities in the three regions and to obtain some information about patients accepted and successfully treated by dialysis/transplantation during the period of the survey.

## Patients studied and results

Table I shows the underlying cause of chronic renal failure in the 122 patients; a little over one-quarter were due to chronic glomerulonephritis and about one-sixth to diabetic nephropathy. Table II gives details of the 69 patients who died during the period of the study and who had been treated by peritoneal dialysis or haemodialysis or transplantation or by a combination of such measures. In some of these treated patients survival was short, often because their unsuitability for dialysis became apparent only after it had been started. Others, who received a transplant, had (once the danger of early rejection had passed) several years of life before them.

Table III shows the remaining patients, who received neither dialysis nor transplantation, and the cause of their chronic renal failure and the reasons why it was considered inappropriate to use such measures. In no case was this due to a shortage of machines.

TABLE II—*Treated patients*

| Case No | Cause of chronic renal failure | Age | Treatment given | Period under treatment | Cause of death, or where relevant, reasons for cessation of treatment |
|---|---|---|---|---|---|
| 52 | Amyloidosis | 32 | H | 4 weeks | Underlying disease and shunt difficulties |
| 220 | Malignant hypertension | 45 | P H T | 1 year | Bacterial endocarditis. Graft rejection |
| 260 | Polycystic kidneys. Retroperitoneal lymphoma | 34 | P | < 1 week | Retroperitoneal lymphoma |
| 336 | Chronic glomerulonephritis | 45 | H T | 34 months | Acute pancreatitis. Graft rejection |
| 337 | Chronic pyelonephritis | 48 | H | 33 months | Gastrointestinal bleeding of unascertained cause |
| 338 | Obstructive uropathy | 40 | H | 18 months | Bacterial endocarditis |
| 349 | Obstructive uropathy | 20 | P | < 1 week | Chronic renal failure. Considered for transplant but deemed unsuitable. Personality disorder. Suicidal attempt |
| 400 | Uncertain | 48 | P H T | 6½ years | Chickenpox |
| 491 | Chronic glomerulonephritis | 47 | P | 1 week | Staphylococcal septicaemia |
| 549 | Chronic glomerulonephritis | 48 | P | < 1 week | Myocardial infarction |
| 653 | Obstructive uropathy | 47 | P | < 1 week | Chronic renal failure. Died 3 days after starting dialysis. Traumatic brain damage. Unable to walk. Low IQ |
| 835 | Chronic glomerulonephritis | 24 | P | < 1 week | Chronic renal failure. Deaf. Eye removed for pseudoglioma. Very little vision in other eye |
| 841 | Chronic glomerulonephritis | 46 | P H | 2 months | Cerebral haemorrhage |
| R13 | Hypertension | 46 | P | 1 week | Pneumonia, Cardiac failure. Had had stroke |
| 1091 | Chronic glomerulonephritis | 46 | H | < 1 week | Chronic renal failure. Haemodialysis started 2 days before death |
| 1131 | Chronic glomerulonephritis | 44 | P H T | 3½ years | Graft rejection. Cardiac failure |
| 1149 | Systemic lupus erythrematosus | 43 | P H | 13 months | Underlying disease and shunt difficulties |
| 1150 | Chronic glomerulonephritis | 40 | H | 19 months | Cerebral haemorrhage while awaiting a transplant |
| 1152 | Uncertain | 48 | P H | 4 weeks | Crohn's disease, final cause of death gastrointestinal bleeding |
| 1153 | Malignant hypertension | 39 | P | 5½ months | Cardiac arrest |
| 1155 | Wegener's granuloma | 46 | P H | 10 months | Underlying disease |
| 1156 | Chronic pyelonephritis | 46 | P H | 14 months | Cardiac failure |
| 1157 | Polycystic disease | 48 | P H | 8 years | Final cause of death uncertain |
| 1165 | Chronic glomerulonephritis | 35 | H T | 6⅓ years | Two transplants rejected. Died from effects of infection and haemorrhage around second graft |
| 1166 | Chronic glomerulonephritis | 42 | H | 6 months | Cardiac arrest |
| 1167 | Analgesic nephropathy | 28 | H | 7 months | Complications of repeated surgery for chronic duodenal ulcer. Psoriatic arthritis |
| 1168 | Chronic glomerulonephritis | 43 | P H | 3 months | Cerebral haemorrhage. On transplant waiting list at time of death |
| 1169 | Carcinoma of ovary. Bilateral ureteric obstruction | 45 | H | 2½ weeks | Carcinomatosis. Dialysed pending diagnosis and attempted surgical extirpation. Thereafter bilateral pyelostomy |
| 1195 | Alport's syndrome | 30 | H T | 10¼ years | Dialysis encephalitis |
| 1198 | Chronic glomerulonephritis | 39 | H T | 3½ years | Cerebral haemorrhage. Graft rejection |
| 1200 | Chronic glomerulonephritis | 30 | P H | 20 months | Acute pulmonary oedema |
| 1202 | Chronic glomerulonephritis | 49 | P | 1 day | Chronic renal failure. Respiratory infection treated with tetracycline. Dubiously suitable for dialysis on account of anxiety and coronary artery disease |
| 1203 | Uncertain | 11 | P | 4 weeks | Peritonitis and pneumonia. Mentally subnormal but awaiting transplant |
| 1204 | Diabetic nephropathy | 44 | P H | 4 weeks | Cardiac arrest. Diabetes 18 years. Severe retinopathy and arterial disease |
| 1205 | Chronic glomerulonephritis | 20 | P H | 8 months | Cerebral haemorrhage. Psychiatric instability. No support from parents who were separated. Awaiting transplant |
| 1206 | Uncertain | 49 | H | 7 years | Staphylococcal septicaemia. Haemorrhage from fistula. Refused transfusion. Jehovah's Witness. Depressive |
| 1207 | Chronic glomerulonephritis | 24 | P H T | 6 years | Cardiac arrest. Graft rejection |
| 1208 | Renal hypoplasia | 19 | H T | 3 years | Septicaemia. Graft rejection |
| 1215 | Congenital familial nephrotic syndrome | 7 | H | 5 days | Acute pulmonary oedema. On transplant waiting list |
| 1220 | Chronic glomerulonephritis | 14 | H T | 2⅝ years | Chronic renal failure. Graft rejection |
| 1222 | Secondary amyloidosis | 46 | P | 4 months | Chronic renal failure. Had chronic osteomyelitis of femur. In cardiac failure and had had stroke |
| 1224 | Chronic glomerulonephritis | 32 | H | 1 month | Pulmonary oedema and cardiac arrest |
| 1225 | Chronic glomerulonephritis | 38 | H T | 7¼ years | Septicaemia. Myocardial infarction |
| 1226 | Malignant hypertension | 45 | P H | 6 months | Uncertain. Epileptic, low intelligence. Had had myocardial infarction |
| 1227 | Uncertain | 30 | P H T | 1⅝ years | Cardiac arrest |
| 1228 | Chronic glomerulonephritis | 47 | H T | 2½ years | Pneumonia. Shunt difficulties. Two transplants. Psychologically feeble and dependent |
| 1229 | Uncertain | 34 | H T | 8 years | Pneumonia. Two failed transplants |
| 1230 | Renal hypoplasia | 39 | P H T | 1¾ years | Carcinomatosis |
| 1231 | Uncertain | 35 | H T | 3 months | Thromboembolism |
| 1232 | Uncertain | 33 | P H | 3½ months | Shunt difficulties |
| 1233 | Bilateral hydronephrosis | 44 | H T | 3 years | Graft and shunt failure |
| 1234 | Uncertain | 35 | P H T | 5 months | Septicaemia. Graft failure |
| 1235 | Malignant hypertension | 30 | H T | 7 months | Septicaemia. Pulmonary tuberculosis. Peripheral vascular disease |
| 1236 | Chronic pyelonephritis | 36 | H T | 1 year | Graft rejection |
| 1237 | Uncertain | 27 | P H T | 4 years | Three grafts rejected. Peripheral vascular disease. Secondary haemorrhage from transplant wound |
| 1238 | Chronic pyelonephritis | 9 | P T | 5 weeks | Hypertensive encephalopathy |
| 1239 | Hypertension | 46 | P H | 4½ years | Bronchopneumonia |
| 1240 | Diabetic nephropathy | 22 | P T | 7 weeks | Pneumonia. Graft rejection. Advanced retinopathy |
| 1241 | Malignant hypertension | 26 | P H T | 4¼ years | Septicaemia. Three unsuccessful transplants |
| 1242 | Chronic glomerulonephritis | 40 | P H T | 1⅝ years | Chronic renal failure. Graft and shunt failure |
| 1243 | Uncertain | 45 | H T | 6 months | Septicaemia |
| 1244 | Uncertain | 42 | H T | 5 years | Septicaemia |
| 1245 | Chronic glomerulonephritis | 43 | P H T | 1 year | Chronic renal failure. Two failed transplants |
| 1246 | Polycystic disease | 12 | P H T | 1 year | Chronic renal failure. Two failed transplants |
| 1248 | Chronic glomerulonephritis | 15 | H | 2 months | Pneumonia. Also had cirrhosis of liver and repeated haematemesis for which she underwent gastric transection and splenectomy |
| 1249 | Renal calculi | 49 | P | 4 days | Cardiac arrest |
| 1253 | Chronic glomerulonephritis | 43 | H T | 1½ years | Septicaemia |
| 1254 | Carcinoma of cervix | 33 | P | 3 days | Carcinoma of cervix. Peritoneal dialysis only carried out until diagnosis established |
| 1263 | Uncertain | 38 | H | 1½ years | Cardiac arrest. Had severe coronary artery disease |

P = Peritoneal dialysis. H = Haemodialysis. T = Transplantation.

TABLE III—*Untreated patients*

| Case No | Cause of chronic renal failure | Age | Survival after onset of end-stage renal failure | Reasons for not offering dialysis or transplantation |
|---|---|---|---|---|
| 40 | Diabetic nephropathy | 23 | 3 weeks | Uncooperative patient. Dialysis requested by physician but deemed inappropriate by nephrologist |
| 48 | Chronic glomerulonephritis | 46 | 2 weeks | Severely arteriopathic. Duodenal ulcer. Dialysis requested by physician but patient thought unsuitable by nephrologists |
| 59 | Diabetic nephropathy | 39 | 5½ weeks | Blind. Peripheral neuropathy. Perforating ulcer of foot. Physician requested dialysis but nephrologist declined |
| 82 | Myelomatosis | 35 | 1 month | Myelomatosis |
| 116 | Idiopathic hypercalcaemia | 13 | 6½ months | Severe mental subnormality. Congenital heart disease. Multiple other congenital abnormalities |
| 158 | Obstructive uropathy | 43 | < 1 week | Severe chronic psychotic illness. Had been in a mental hospital for many years |
| 182 | Diabetic nephropathy | 43 | 10½ months | Blind. Insulin dependent diabetes 21 years. Other diabetic complications |
| 272 | Diabetic nephropathy | 48 | 3½ months | Insulin dependent diabetes 28 years. Question of dialysis/transplantation not raised |
| 282 | Nephrotic syndrome. Focal glomerulosclerosis | 4 | 2½ months | Age. Parental irresponsibility |
| 313 | Diabetic nephropathy | 32 | 5½ months | Severe retinopathy and neuropathy. Question of dialysis/transplantation not raised |
| 317 | Chronic glomerulonephritis | 49 | 2 weeks | Question of dialysis/transplantation not raised |
| 324 | Malignant hypertension | 39 | 5 months | Question of dialysis/transplantation not raised |
| 327 | Diabetic nephropathy | 48 | 3 months | Retinopathy. Peripheral vascular disease. Had had stroke |
| 346 | Uncertain | 7 | 4½ weeks | Malignant brain tumour. Ventriculocaval shunt |
| 381 | Malignant hypertension | 47 | 4½ weeks | No mention of dialysis/transplantation. Was under the care of a nephrologist |
| 387 | Diabetic nephropathy | 48 | 3½ months | Considered for haemodialysis but deemed unsuitable as he had had a myocardial infarct, had severe retinopathy, and had no home |
| 446 | Diabetic nephropathy | 23 | 2 weeks | Orphan. Neuropathy. Severe retinopathy and poor vision |
| 503 | Chronic glomerulonephritis | 48 | 3 months | Alcoholism. Anxiety, depression, and hysteria. Referred to a nephrologist who considered her unsuitable |
| 526 | Chronic glomerulonephritis | 18 | < 1 week | Died due to an anaphylactoid reaction to urografin |
| 548 | Diabetic nephropathy | 42 | 5½ months | Blind due to retinopathy. Obese |
| 558 | Uncertain | 47 | 2 weeks | Severe rheumatoid arthritis. Had had bilateral hip replacement and knee synovectomy. Dialysis/transplantation not raised |
| 606 | Malignant hypertension | 43 | 3 months | Very unintelligent. Dialysis/transplantation not mentioned |
| 639 | Diabetic nephropathy | 30 | 1 year | Severe retinopathy and very poor vision. Coronary artery disease. Oedema. Dialysis/transplantation not raised |
| 640 | Diabetic nephropathy | 45 | 9 months | Blind. Severe neuropathy. Myocardial infarction. Obese. Separated from wife and family |
| 678 | Chronic pyelonephritis with calculi | 49 | 2 months | Multiple sclerosis. Confined to wheelchair and with an indwelling catheter |
| 759 | Chronic pyelonephritis with calculi | 33 | 6 weeks | Blind and mentally subnormal |
| 779 | Diabetic nephropathy | 32 | 2½ months | Severe retinopathy and oedema. Not considered suitable for long-term dialysis by nephrologist |
| 791 | Diabetic nephropathy | 43 | < 1 week | Was hypertensive and died from cerebral haemorrhage before dialysis/transplantation considered |
| 799 | Obstructive uropathy | 49 | 3 weeks | Also had fibrosing alveolitis from which she died with a blood urea of 36 mmol/l |
| 873 | Diabetic nephropathy | 47 | 4 months | Severe neuropathy and retinopathy. Very poor vision. Coronary artery disease. Duodenal ulcer |
| 888 | Hypertension | 47 | 10 months | Coronary artery disease and cardiac failure. Cerebrovascular disease. Transitional cell carcinoma of bladder. Anxiety and depression. Obese. Not worked for 10 years |
| R7 | Malignant hypertension | 45 | < 1 week | Coronary artery disease and cardiac failure. Died within 24 hours of second admission from acute pancreatitis |
| R27 | Chronic glomerulonephritis | 38 | 3 months | Very uncooperative patient and husband. One nephrologist thought her unsuitable for dialysis/transplantation another accepted her but she discharged herself |
| 983 | Chronic pyelonephritis | 47 | < 1 week | Undiagnosed neuropsychiatric illness necessitating an indwelling catheter. She died from *Escherichia coli* septicaemia |
| 1051 | Diabetic nephropathy | 41 | 4 months | Severe retinopathy. Question of dialysis/transplantation did not arise |
| 1096 | Chronic glomerulonephritis | 29 | < 1 week | Cardiac arrest shortly after arrival at hospital. Only seen general practitioner 3 days previously |
| 1151 | Diabetic nephropathy | 42 | 2 weeks | Had neuropathy, oedema, hypertension, and coronary artery disease. Accepted for dialysis or transplantation but suffered a fatal myocardial infarct before this could be started |
| 1154 | Hypertension | 39 | 2 years | Fistula established and transplant planned but degree of chronic renal failure never justified dialysis or transplant. Final cause of death uncertain |
| 1196 | Diabetic nephropathy | 49 | 7 years | Mentally subnormal. Peripheral vascular disease. Had had leg amputated |
| 1209 | Chronic glomerulonephritis | 34 | 1 month | Spoke no English. Fistula inserted but unsatisfactory because of severe arterial disease |
| 1210 | Chronic glomerulonephritis | 49 | 5 months | Coronary artery disease. Deemed unsuitable for dialysis/transplantation by nephrologist |
| 1211 | Renal vein thrombosis | 46 | 3 months | Severe nephrotic syndrome. Dialysis/transplantation not considered |
| 1214 | Uncertain | 41 | 6 months | Spoke no English. Pulmonary tuberculosis. Psychological instability |
| 1216 | Bladder neck obstruction | 12 | 2 years | Spina bifida. Hydrocephalus. Spitz-Holter valve. Very little leg movement |
| 1217 | Secondary amyloidosis | 33 | 15 months | Widespread tuberculosis. Spoke no English |
| 1219 | Bladder neck obstruction | 9 months | 1 month | Spina bifida. Very little leg movement |
| 1221 | Nephropathy due to gout | 42 | 1 year | Mentally subnormal. Only relative very elderly mother |
| 1223 | Polyarteritis nodosa | 41 | 2 months | Cerebral involvement. Died myocardial infarction |
| 1247 | Hyperparathyroidism | 46 | 6 months | Osteoclastoma of mandible |
| 1250 | Chronic pyelonephritis | 39 | 3 months | Multiple sclerosis. Wife cardiac invalid |
| 1251 | Renal tuberculosis | 46 | 1 week | Renal tuberculosis. Ileal conduit. Stroke |
| 1252 | Chronic glomerulonephritis | 40 | 1 week | Severe chronic psychotic depression and personality disorder |
| 1264 | Renal calculi | 22 | 2 months | Renal dwarf. Long history of repeated operations for stone with secondary abscess and fistula formation |

## Discussion

That there is a substantial group of patients with chronic renal failure who are unsuitable for long-term dialysis or transplantation or in whom the procedures are contraindicated from the outset is clear from tables II and III and is well known to most doctors. On the other hand, we think that the general public is under the impression that patients with renal failure die only because of a shortage of dialysis machines and of kidneys for transplantation. They do not appreciate that the basic illness is by no means always primarily renal, and that the nature of the underlying disease may mean that the patient has not long to live whatever is done; nor do they realise that even successful treatment commonly includes episodes of infection, graft rejection, and difficulty with vascular access sites. Diabetes mellitus in particular exemplifies these problems (see table II, cases 1204 and 1240), and the policy on diabetics varies in different parts of Britain.

The Mersey and West Midlands regions have low rates of dialysis per million of population,[2] possibly because in these regions more general practitioners may think that facilities are inadequate and therefore a higher proportion of patients than elsewhere are never assessed by a nephrologist; this may in part explain why we found no shortage of dialysis facilities during the period of analysis. Nevertheless, the picture may well have changed, as an increasing number of older patients are now being accepted for treatment, though the use of continuous ambulatory peritoneal dialysis[3] (when its role has been fully assessed) may meet this increased need. The extent to which facilities for dialysis and transplantation should be extended to later age groups is a policy—or ethical—decision,[4] and this and other matters relating to this paper were discussed in a recent leader in the *Lancet*.[4] The *Lancet* thought that economic pressures led clinicians to reject patients for treatment without realising that it was the pressures that were influencing their decision. We find this difficult to believe, particularly

because in the King's study[5] there were considerable differences in the rejection rate within the relatively well off metropolitan regions. The whole difficult area of the management of chronic renal failure is also discussed in two publications from the Office of Health Economics.[2 6] All we report here is what happened in the three localities surveyed. In our discussions with the nephrologists economic pressures were specifically not blamed and the patients seem to have been assessed purely on clinical grounds. But doctors differ in their assessment of the management of many chronic conditions, and different schools of thought tend to arise in different areas (the King's study[5] particularly highlights this).

This paper is only about death, and the brighter side of the story is that during the two years 108 new patients under 50 in the Mersey Region and 18 in the Grampian Area were accepted for dialysis or transplantation, while in the much larger West Midlands Region 186 transplants were carried out and 170 patients were accepted for dialysis and many of these did well.

Our overall impression is that during the period of analysis there was no shortage of equipment and the selection of patients was competent. Our criticisms relate chiefly to the poor harvesting of kidneys, which is discussed in the accompanying paper.

We are greatly indebted to the nephrologists and transplant surgeons in the three regions for permitting us to study their case notes and for helping us to compile this paper. We also thank the many other physicians whose patients have been included in this survey and Sir Douglas Black, PRCP, who gave such valuable criticisms.

Requests for reprints should be addressed to: Sir Cyril Clarke, Medical Services Study Group, Kings Fund Centre, 126 Albert Street, London NW1 7NF.

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# Donation of kidneys

## Medical Services Study Group of the Royal College of Physicians

### Abstract

**A survey of deaths from medical causes among hospital inpatients aged under 50 years in three health regions provided details of 1168 such deaths not caused by renal failure. Kidneys for transplantation were obtained from only 20 of these patients. In another 18 cases permission was refused or donation was impracticable. Ninety-eight of the deaths were due to subarachnoid haemorrhage and 38 to primary cerebral tumour, yet kidneys were obtained from only 11 and one of these patients respectively. Patients dying from subarachnoid haemorrhage are particularly suitable for donating their kidneys, but there is still a shortage of kidneys for transplantation because they are not harvested efficiently.**

**Doctors seem to be reluctant to ask relatives' permission to remove kidneys, and the arrangement of a donation is time consuming. Because transplant surgery is recognised as a specialist sphere, surgeons in other specialties may be reluctant to remove kidneys and come to rely on one transplant team covering a wide area. In an area such as Grampian, where a small population is served by one hospital containing all the major units, including accident and emergency and renal departments, it may be easier to arrange prompt donation and transplantation.**

**Royal College of Physicians' Medical Services Study Group, King's Fund Centre, London NW1 7NF**

The report was compiled by Sir Cyril Clarke, director of the study group, and Dr George Whitfield, assistant director, with the help and co-operation of G M Aber, A D Barnes, G R D Catto, D C Dukes, N Edward, H J Goldsmith, J B Hawkins, D D Hilton, M MacLeod, and B H B Robinson and physicians in the Mersey and West Midlands regions and the Grampian Health Board

### Introduction

Previous papers[1 2] have described the investigation of medical deaths in hospital in patients aged under 50 that was carried out during 1978 and 1979 by the Medical Services Study Group of the Royal College of Physicians in collaboration with the physicians in the Mersey and West Midlands regions and the Grampian Health Board (see also accompanying paper, p 283). One of the interests arising from the survey was to consider the number of potentially transplantable kidneys in relation to those actually transplanted.

### Patients studied and results

There were 1168 deaths in our survey which were not due to renal failure. Although this number represented an ascertainment rate of only about 50% we think it is likely to be a random sample as regards kidney donation.

Kidneys were obtained from transplantation from only 20 of the 1168 patients. The relatives of another eight gave consent, but hypotension, infection, or other factors made donation impracticable. In 10 cases permission was refused. Only about a third of the participating hospitals made successful or unsuccessful attempts to obtain kidneys, and among this third one intensive care unit provided five of the successful donations and four of the refusals. Among the 1168 deaths were 98 due to subarachnoid haemorrhage. Only 11 of these cases provided kidneys, and the mean age of the donors was 36·9 years (range 9-49) compared with a mean age of 30·4 years (range 22-44) in the other nine donors. There were also 38 patients who died from primary cerebral tumour, but the kidneys of only one of these were obtained for transplantation.

### Discussion

The Minister of Health stated in February 1980 that over 1000 patients in England were awaiting renal transplants[3] and by November 1980 this had risen to 1900, and the *Panorama*