Scottish Executive Health Department Chief Scientist Office

# FOCUS ON RESEARCH

# THE EPIDEMIOLOGY OF ACUTE RENAL FAILURE (ARF) IN SCOTLAND

# Researchers

Dr. Izhar Khan<sup>1</sup> (Principal Applicant) Professor A M Macleod<sup>1</sup>, Professor Cairns Smith<sup>2</sup>, Dr W Metcalfe<sup>1</sup> Dr. Keith Simpson<sup>3</sup>, Dr J Baharani<sup>1</sup> (Research Fellow), Mrs H Martin<sup>1</sup> (Research Nurse) Mrs L Lawson<sup>1</sup> (Research Nurse) Mr G Prescott<sup>2</sup> (Statistician), Miss C Ritchie<sup>1</sup> (Research Assistant)

1. Dept of Medicine and Therapeutics University of Aberdeen. 2. Dept of Public Health, University of Aberdeen. 3. Scottish Renal Registry, Glasgow.

#### Aim

To establish the incidence and outcome of Acute Renal Failure (ARF) treated by dialysis in Scotland.

# **Project Outline/Methodology**

ARF is a life threatening condition, which results from sudden loss of renal (kidney) function. Patients with this condition often require expensive treatment with dialysis or other forms of renal replacement therapy (RRT). The number of patients with ARF treated with kidney replacement therapy is not known. Our study, called ARF in Scotland (ARFS) was a prospective observational study based in Scotland. Over a 36week period all patients commencing renal replacement therapy for ARF in Scotland were identified and prospectively registered. All patients were followed up to a period of 90 days after their first dialysis. Both patient survival and outcome of kidney function were identified at 90 days. Patients were divided into low, medium and high, risk group based on a previously used method, called Khan Score.

# **Key Results**

Over the study period 841 patients started RRT. Sixty-one percent were male. A third of all patients had acute on chronic renal failure. The overall incidence of acute renal failure treated with RRT was 297 per million of the population per year. The major cause for ARF was sepsis and the commonest reason for initiation of RRT was acidosis (excess acid in the blood). Half of all the RRT for ARF occurred in ICU (intensive care). 90-day outcome was dependent on age, presence of sepsis and comorbidity. Of those patients that survived, 75% were discharged home without further RRT by 90 days and 25% continued to require RRT at 90 days. No association was seen with deprivation category but we found wide variation in incidence of ARF across Health Boards.

#### Conclusions

We have for the first time established the incidence of ARF in Scotland and shown that mortality in this condition is very high. We have also shown that a simple scoring method (Khan Score) can be applied to study outcome in ARF. Different types of RRT are used in Scotland to treat this condition. These principal aims of the study have been achieved. We aim to further analyse our data to study the influence of factors affecting survival in ARF.

#### What does this study add to the field?

We have established the incidence of ARF requiring RRT, variation in NHS Boards and factors influencing outcome in this condition.

# **Implications for Practice or Policy**

By defining the incidence of this life threatening condition, establishing where in hospital treatment is given and showing factors which affect outcome we have provided valuable information for the planning of resources in Scotland for the management of ARF.

#### Where to next?

Our results have been presented in a number of scientific meetings and will be presented in the World Congress of Nephrology in June 2003.

The data from our study will provide the basis for much needed intervention studies in this condition.

# Further details from:

Dr. Izhar Khan Consultant Nephrologist Aberdeen Royal Infirmary, Foresterhill Aberdeen AB25 2ZN ☎ 01224 681818 ᠍ izhar.khan@arh.grampian.scot.nhs.uk



Chief Scientist Office, St Andrews House, Regent Road, Edinburgh, EH1 3DG Tel:0131 244 2248 www.show.scot.nhs.uk/cso/index.htm