Queen Margaret Hospital
Renal Unit (Fife)

Clinical Standards Board for Scotland
(now part of NHS Quality Improvement Scotland)

Local Report on service provision for

Adult Renal Services

Renal failure is becoming increasingly common in Scotland. The condition and its treatment impacts greatly on a patient's life and work. Although no cure exists for renal failure, there is much that can be done to improve outcomes and quality of life for patients.

The Clinical Standards Board for Scotland (CSBS) Adult Renal Services Project Group focused on care provided in renal units for adults throughout Scotland. It developed 14 standards relating to the main areas of care for adults with renal failure. There was a particular focus on chronic renal failure, as this represents the vast majority of the workload in renal units. This report presents the findings from the CSBS peer review of performance against the standards.

This report was undertaken by CSBS in late 2002, and has been prepared and published by NHS Quality Improvement Scotland (NHS QIS). CSBS work was incorporated into NHS QIS on 1 January 2003.

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Copies of the *Clinical Standards for Adult Renal Services* (published by CSBS) are also available from NHS Quality Improvement Scotland (NHS QIS).

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Copies of this report, and other documents produced by NHS QIS (and CSBS), are available in print format and on the NHS QIS website.

www.nhshealthquality.org

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The Clinical Standards Board for Scotland (CSBS) was established as a Special Health Board in April 1999, with the remit to develop and run a quality assurance process for clinical services provided by NHSScotland. The ultimate objective of the work of CSBS is to improve the quality of clinical care provided across Scotland.

About this Report

CSBS published *Clinical Standards for Adult Renal Services* in February 2002. These standards are being used to assess the quality of services provided by NHSScotland nationwide in hospital settings.

This report presents the findings from the CSBS peer review to **Queen Margaret Hospital Renal Unit** managed by **Fife Acute Hospitals NHS Trust**. This review visit took place on **21 August 2002** and details of the visit, including membership of the review team, can be found in Appendix 2.

1.1 How the Standards were Developed

In May 2001, CSBS established the Adult Renal Services Project Group under the chairmanship of Dr Brian Junor, Consultant Nephrologist, Western Infirmary, North Glasgow University Hospitals NHS Trust. Membership of the Adult Renal Services Project Group includes both healthcare professionals and members of the public (see Appendix 3).

The Adult Renal Services Project Group oversees the CSBS quality assurance process of:

- developing standards;
- reviewing performance against the standards throughout Scotland, using self-assessment and external peer review; and
- reporting the findings from the review.

When developing the adult renal services standards, CSBS consulted widely throughout Scotland. The views of health service staff, patients, carers and the public were sought, and all the relevant evidence available at the time was taken into account. Draft standards were also piloted at two renal units, at Dumfries & Galloway Royal Infirmary, Dumfries, and the Western Infirmary, Glasgow.

1.2 How the Review Process Works

The CSBS review process has two key parts: local self-assessment followed by external peer review. First, each relevant Trust[1] assesses its own performance against the standards. An external peer review team then further assesses performance, both by considering the self-assessment data and visiting the renal unit to validate this information and discuss related issues. The review process is described in more detail below (see also the flow chart on page 8).

Self-Assessment by the Trust

On receiving the standards, each Trust responsible for the management of a main renal unit assesses its own performance using a framework produced by CSBS. This framework includes guidance about the type of evidence (eg guidelines, audit reports) required to allow a proper assessment of performance against the standards to be made.

The Trust submits the data it has collected for this self-assessment exercise to CSBS before the on-site visit, and it is this information that constitutes the main source of written evidence considered by the external peer review team.

External Peer Review

An external peer review team then visits the renal unit and speaks with local stakeholders (eg staff, patients, carers) about the services provided. Review teams are multidisciplinary, and include both healthcare professionals and members of the public. Training is provided for all CSBS reviewers. Each review team is led by an experienced reviewer, who is responsible for guiding the team in their work and ensuring that team members are in agreement about the assessment reached.

[1] For simplicity, the term 'Trust' is used throughout this document to refer to all the NHS organisations included in this national review. Further details on the renal units in Scotland are provided in Section 2

The composition of each team varies, and members have no connection with the Trust they are reviewing. This promotes the sharing of good practice, and ensures that each review team assesses performance against the standards rather than make comparisons between one Trust and another.

At the start of the on-site visit, the review team meets key personnel responsible for the service under review. Reviewers then speak with local stakeholders about the services provided, including support group representatives and patients who had been selected randomly using the Scottish Renal Registry database. After these meetings, the team assesses performance against the standards, based on the information gathered during both the self-assessment exercise and the on-site visit.

The visit concludes with the team providing feedback on its findings to the Trust. This includes specific examples of local initiatives drawn to the attention of the review team (recognising that other such examples may exist), together with an indication of any particular challenges facing the Trust.

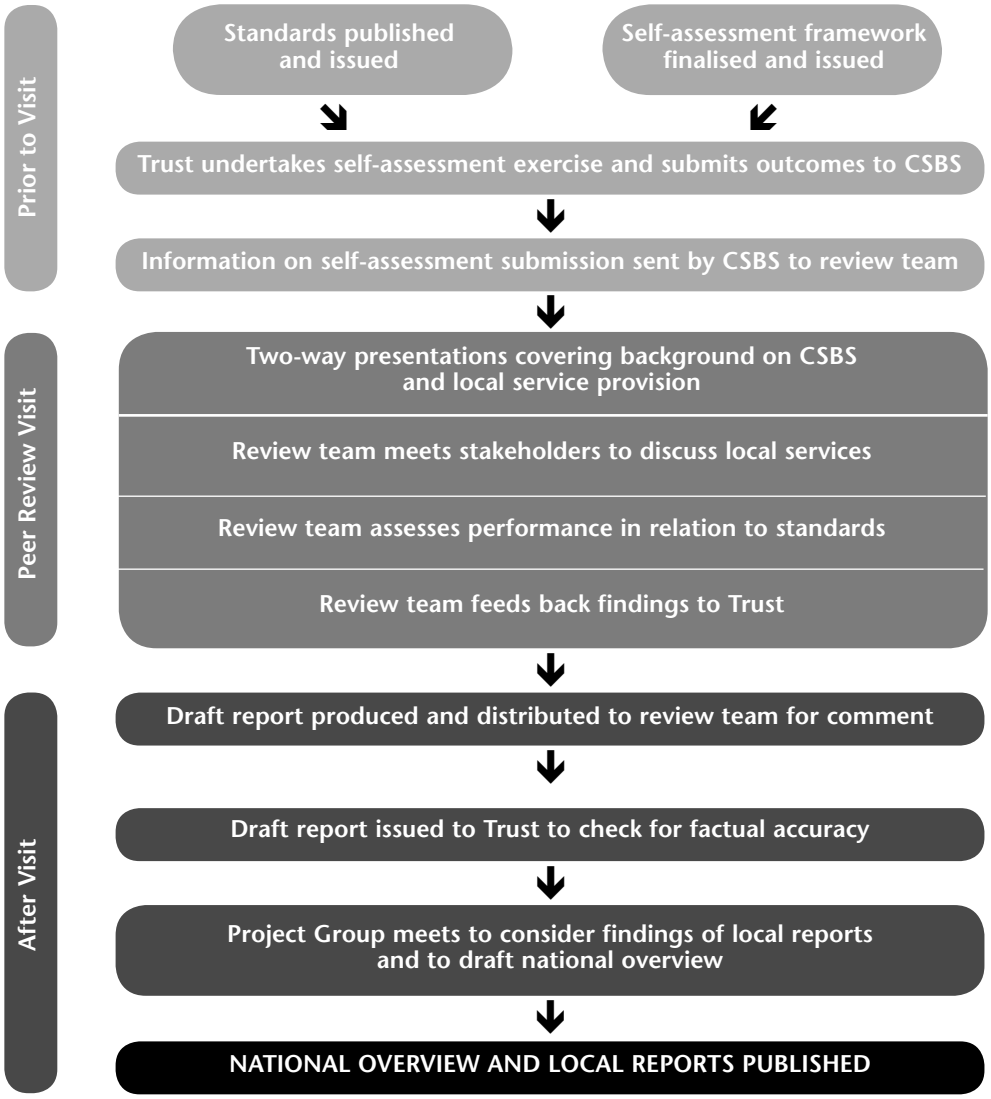
Assessment Categories

Each review team assesses performance using the categories 'met', 'not met' and 'not met (insufficient evidence)', as detailed below:

- **'Met'** applies where the evidence demonstrates the standard and/or criterion is being attained.
- **'Not met'** applies where the evidence demonstrates the standard and/or criterion is not being attained.
- **'Not met (insufficient evidence)'** applies where no evidence is available for the review team, or where the evidence available is insufficient to allow an assessment to be made.

A final category **'not applicable'** is used where a standard and/or criterion does not apply to the Trust under review.

The CSBS review process at a glance:



1.3 Reports

After the review visit, the project officer drafted a local report detailing the findings of the review team. This draft report was sent to the review team for comment, and then to the Trust to check for factual accuracy.

Following completion of the national review cycle, the Adult Renal Services Project Group reconvened to examine review findings and make recommendations to CSBS. The Adult Renal Services Project Group was then responsible for overseeing the production of a national overview of service provision across Scotland in relation to the standards. This document includes both a summary of the findings (highlighting examples of local initiatives and challenges for the service) and recommendations for improvement.

The aim of this review is to report whether the services provided by NHSScotland, both nationally and locally, met the agreed standards, and not to review the work of individual healthcare professionals. In achieving this aim, variations in practice (and potentially quality) within a service will be encountered. In such cases, variations will be reported.

Please note — all reports published by CSBS (now part of NHS QIS) are available on the NHS QIS website.

2 Summary of Findings

2.1 Overview of Local Service Provision

Fife is a relatively small region situated in east-central Scotland and has a population of around 350,400. The majority of the population live in urban areas, of which Dunfermline, Glenrothes and Kirkcaldy are the largest in the region. The age structure of the population is similar to the national average, whereas levels of illness and deprivation are generally below the national average.

Local NHS System and Services

Fife NHS Board is responsible for improving the health of the local population and for the delivery of the healthcare required. It provides strategic leadership and has overall responsibility for the efficient, effective and accountable performance of the NHS in Fife.

Clinical services are provided through two Trusts, Fife Acute Hospitals NHS Trust and Fife Primary Care NHS Trust. The Trusts are accountable for the clinical services they provide, through the framework of clinical governance.

Further information about the local NHS system can be accessed via the website of Fife NHS Board: www.show.scot.nhs.uk/fhb.

Queen Margaret Hospital Renal Unit, Dunfermline, is one of ten renal units treating adults with renal failure across Scotland.

A main renal unit is the centre of renal expertise for a particular geographical area and manages the provision of renal services within that area. Both out-patient and in-patient renal services are offered, as well as specialist services. In some areas the main renal unit is supported by one or more renal satellite unit. A renal satellite unit is a haemodialysis facility which is linked to a main unit, and is not autonomous for medical decisions. They are largely nurse-led and typically provide a more accessible haemodialysis service to chronic renal patients in general good health, and not requiring the services and care of a main renal unit.

The ten renal units, to which patients in Scotland may be referred on the basis of clinical need (and location), are based at:

- Aberdeen Royal Infirmary
  (including three satellite units at Chalmers Hospital, Banff, Dr Gray's Hospital, Elgin, and Peterhead Community Hospital)
- Dumfries & Galloway Royal Infirmary, Dumfries
- Crosshouse Hospital, Kilmarnock
- Glasgow Royal Infirmary
  (including two satellite units at Falkirk & District Royal Infirmary and Stobhill Hospital, Glasgow)
- Monklands Hospital, Airdrie
- Ninewells Hospital, Dundee
- Queen Margaret Hospital, Dunfermline
  (including one satellite unit at Victoria Hospital, Kirkcaldy)
- Raigmore Hospital, Inverness
- Royal Infirmary of Edinburgh
  (including two satellite units at the Western General Hospital, Edinburgh, and Borders General Hospital, Melrose)
- Western Infirmary, Glasgow
  (including an annex at Gartnavel General Hospital, Glasgow, and a satellite unit at Inverclyde Royal Hospital, Greenock)

There is also a small renal unit at Gilbert Bain Hospital, Lerwick, Shetland. This operates as an autonomous unit, but due to the small number of patients involved, has not been visited as a part of this review process. However, patients are referred to Aberdeen Royal Infirmary for renal transplant, and for complex acute renal failure.

There are three transplant centres in Scotland to which patients suitable for transplant may be referred. These are based at:

- Aberdeen Royal Infirmary
- Royal Infirmary of Edinburgh
- Western Infirmary, Glasgow

The following information was submitted by Fife Acute Hospitals NHS Trust:

- At the time of the visit there were 160 patients receiving renal replacement therapy. There were 37 new patients during the previous year. The number of patients on different forms of renal replacement therapy are as follows:
  - hospital haemodialysis 73
  - home haemodialysis 2
  - continuous ambulatory peritoneal dialysis (CAPD) 1
  - automated peritoneal dialysis (APD) 22
  - renal transplant 62

Patients with suspected renal failure are initially referred to Queen Margaret Hospital Renal Unit for renal investigation, and are seen at clinics at Queen Margaret Hospital, Dunfermline, and Victoria Hospital, Kirkcaldy. For patients requiring renal replacement therapy, haemodialysis is started at Queen Margaret Hospital or Victoria Hospital Satellite Unit. Peritoneal dialysis training is carried out in the community, with follow-up at the peritoneal dialysis clinic. Patients who may be suitable for renal transplantation are typically referred to the transplant unit at the Royal Infirmary of Edinburgh. Follow-up of renal transplant patients is undertaken at the transplant unit initially, and then transferred to Queen Margaret Hospital once patients are stable.

From the introductory sessions at the start of the visit, the following points regarding service provision were noted:

- The referral population covered by Queen Margaret Hospital Renal Unit is approximately 300,000 across Fife (excluding north-east Fife), and south Tayside, including Kinross. Patients from north-east Fife are referred to Ninewells Hospital Renal Unit, Dundee.

- In-patient and intensive therapy unit (ITU) services are based at Queen Margaret Hospital, Dunfermline. Out-patient clinics and haemodialysis services are based at both Queen Margaret Hospital, Dunfermline, and Victoria Hospital, Kirkcaldy. It was reported that there are insufficient out-patient facilities.

- A brief history of Queen Margaret Hospital Renal Unit is as follows:
  - A six-station satellite unit at Victoria Hospital, Kirkcaldy, was opened in 1990 and was managed as a satellite of the Royal Infirmary of Edinburgh. Prior to this, patients had to travel to either Edinburgh or Dundee for haemodialysis.
  - In 1995 Queen Margaret Hospital Renal Unit opened, and took over the management of Victoria Hospital Satellite Unit.
  - In 1998, a second dialysis area was opened at Queen Margaret Hospital to accommodate dialysis patients carrying methicillin resistant staphylococcus aureus (MRSA) infections.
  - The following year the Victoria Hospital Satellite Unit moved into a purpose-built unit, and the number of dialysis stations was increased from six to eight.
  - In 2000 transplant follow-up was transferred from the Royal Infirmary of Edinburgh Transplant Unit to Queen Margaret Hospital Renal Unit.

- Accommodation in the renal ward is currently overcrowded. The renal ward has now expanded into part of the paediatric ward. In addition there are between 40-50 patients with acute renal failure per year, including 20 ITU referrals. The Trust is aware of these issues and is working to address them.

- There has been a progressive increase in the number of patients on dialysis from 40 in 1995 to 98 in 2001. This rise is reflected across Scotland. However, it was noted that the rate of increase in the haemodialysis population is now slowing. There has also been a large increase in the older age range, with an attendant rise in mortality.

- There is insufficient senior nursing staff. The Trust is aware of this issue and is currently attempting to address it.

- It is felt that the increase in the renal patient population necessitates an increase in renal dietician hours to provide adequate cover for peritoneal dialysis patients and low clearance clinic patients.

- There are issues around access to physiotherapy and occupational therapy services for renal patients. Under present arrangements, the physiotherapist and occupational therapist only visit renal in-patients in urgent cases. Otherwise, patients must be moved to another medical ward to access these services. However, it was noted that once moved, patients may still experience difficulties with accessing physiotherapy and occupational therapy services.

- Developments since the Scottish Renal Registry Peer Review in 1999 are as follows:

  - The appointment of a renal social worker 18 months prior to the CSBS review visit. This post is funded by the British Kidney Patients' Association (BKPA) for 3 years and there are concerns as to future funding of the post.

  - The recent establishment of a regular theatre session for dialysis access.

  - A third consultant nephrologist position was being advertised at the time of the review visit, and a staff grade physician has recently come into post.

Scottish Renal Registry

There is clearly a commitment to, and an awareness of, the importance and value of data collection and audit for renal services in Scotland. The Scottish Renal Registry has played a significant role in the development of audit in renal services. It was established in 1991 by the Scottish Renal Association, as a computer-based registry for patients receiving renal replacement therapy for end stage renal disease in Scotland. Once a system of computerised data collection was operational, the Scottish Renal Registry moved into comparative audit between renal units.

The Registry is now able to audit many of the standards developed by the UK Renal Association. This has resulted in renal units across Scotland sending data to the Scottish Renal Registry for the purposes of national audit. In addition to the results of national audits being published in the Registry's Annual Report, all renal units are provided with the national results and their individual unit's results.

2.2 Summary of Findings Against the Standards

A summary of the findings from the review, including examples of local initiatives drawn to the attention of the review team, is presented in this section. A detailed description of performance against the standards/criteria is included in Section 3.

Haemodialysis

Audit data provided by the unit demonstrated that the haemodialysis adequacy target is narrowly missed. Difficulties relating to dialysis access contribute to this target being missed. Other contributing factors are the decision of some patients not to lengthen the time of their dialysis treatment, and the proportion of elderly and more unwell patients on haemodialysis. There is good documentation of reasons for patients not achieving the target haemodialysis adequacy.

The quality of water for dialysis is only monitored 4-6-weekly due to the time required to test each dialysis machine. It was felt that a central water treatment plant would facilitate more regular and easier monitoring of the quality of water for dialysis.

Peritoneal Dialysis

Audit data provided by the unit demonstrated that the peritoneal dialysis adequacy target is met for patients who have been on peritoneal dialysis for more than 8 weeks. The review team commended the high use of automated peritoneal dialysis treatment and the high local peritoneal dialysis adequacy target, which facilitate good peritoneal dialysis adequacy levels. There is effective monitoring of peritoneal dialysis adequacy at monthly peritoneal dialysis meetings.

The review team noted that issues around contaminated peritoneal dialysis exchange bags, subsequently recalled by the manufacturers, contributed to a high level of peritonitis in the period between January – June 2002. However, it was noted that prior to this incident, peritonitis rates remained around the level required by the standard.

Haemoglobin in Patients on Dialysis

Audit data provided by the unit demonstrated that the haemoglobin targets are achieved in a minimum of 85% of patients. There is an effective system of review in place for patients failing to meet haemoglobin targets. It was noted that the anaemia nurse attends monthly multidisciplinary meetings.

The number of patients receiving blood transfusions is monitored. The review team noted that the number of patients being transfused in the period audited appeared high.

Dialysis Access

Audit data provided by the unit indicated that the percentage of patients having permanent dialysis access available at their first dialysis session is within the essential limit set by the standard. However, the review team raised concerns over the high percentage of permanent catheters being used as permanent dialysis access. The review team gained the impression that those patients given permanent catheters as permanent dialysis access were now reluctant to have fistulae created to replace permanent catheters. Concerns were also raised about the low percentage of patients having arteriovenous fistulae or vein graft as their permanent haemodialysis access.

The review team was encouraged to learn of the introduction of a dedicated theatre session for dialysis access surgery in May 2002, and hoped that this would be able to continue despite staffing problems in the vascular service. Also noted were the appointments of a third vascular surgeon and a dialysis co-ordinator. It is hoped that these developments will have a positive impact on the dialysis access service in the near future.

Nutritional Status

The review team commended the high quality dietetic protocols that are in place, but noted that time constraints prevent these from being implemented in some instances. Whilst all haemodialysis patients are assessed at least 6-monthly to identify those at risk of malnutrition, not all patients are assessed regularly due to time constraints. Although there is designated dietetic support to the renal service, this comprises 0.7 whole time equivalent cover.

Nutritional goals are set, documented and monitored in accordance with Renal Nutritional Group Standards for those identified as at risk. The review team commended the written information that is provided to patients as appropriate. Baseline anthropometry is carried out and documented for all patients at the beginning of dietetic treatment.

Example of a local initiative

Each dialysis patient is provided with an individualised dietetic logbook, which details the patient's dialysis and blood results, which are taken monthly. The logbook informs the patient of the importance of attaining target results in the areas of protein intake, dialysis efficiency, phosphate and potassium, and how they can affect the patient's health. The renal dieticians complete the logbook, and provide written individualised dietary advice or comments against the results for the benefit of the patient.

Drug Therapy

The review team commended the high-quality contribution from the pharmaceutical service into the renal unit. Protocols are in place for the management of anaemia and treatment of peritonitis, and are reviewed and updated as required. While there is currently no protocol for immunisation for hepatitis B, the review team was encouraged to learn that a protocol for this is currently under development.

Example of a local initiative

The review team commended the regular and comprehensive review of patients' prescriptions at weekly multidisciplinary meetings. Each patient's medication is reviewed on a monthly basis. The renal pharmacist attends the weekly meetings and brings patients' prescriptions to the meetings for review. The renal pharmacist informs patients of any changes to their prescriptions.

The review team commended the high quality of information about the use of drugs in chronic renal failure and dialysis patients that is provided to both patients and healthcare professionals by the renal pharmacist.

Example of a local initiative

Each patient is provided with an individualised drug chart which details the name and a description of each drug they have been prescribed. The chart also explains dosage, when the drug must be taken and the purpose of each drug.

Access to Multidisciplinary Team

The review team commended the good multidisciplinary team working. There are weekly multidisciplinary meetings, which are attended by medical and nursing staff, renal dieticians and renal pharmacist.

It was reported that there is easy access to most members of the multidisciplinary team. While the social work service was commended, concerns were raised over the uncertainty surrounding future funding of this post. Concerns were also raised about access to physiotherapy and occupational therapy services.

The review team commended the provision of a bereavement service, which is provided to carers by renal nurses trained in bereavement counselling. Bereaved families are contacted and visited at home as appropriate. In addition, families are provided with a contact telephone number for the bereavement service.

Assessment for Transplantation

A clear system is in place to ensure that all patients are assessed for transplantation within 3 months of starting dialysis. All patients are reviewed monthly thereafter at multidisciplinary meetings for their suitability for transplantation.

Patients referred to the Royal Infirmary of Edinburgh Transplant Unit are seen by a transplant surgeon, but not a nephrologist at the transplant unit. Decisions regarding the patient's assessment are communicated in writing to all relevant parties only if the patient is placed on the transplant waiting list. Patients not listed for transplantation are informed about this verbally, and a letter is sent to the GP and referring physician.

The review team noted that the percentage of patients on the waiting list for transplantation is monitored on an informal, but regular basis.

Type 1 diabetic patients with renal failure are considered for combined pancreas and kidney transplant when referred to the Royal Infirmary of Edinburgh Transplant Unit.

Out-patients

Audit data provided by the unit indicated that the essential limits for time between referral and appointment, as detailed in the standard, are not met for new patients being seen following referral. However, all referrals are prioritised, with urgent cases being seen quickly.

The review team noted that clinic letters are typically sent to the GP within 1 week of being seen by a nephrologist.

Changes in medication are communicated to the GP via the patient using a written note. This is followed up with a letter to the GP.

Provision of Patient Information

The review team commended the large and comprehensive range of information which is provided to pre-dialysis patients in an individualised manner. There is good community-based education through a home visit programme and Renal Support Group. Good verbal communication occurs between staff and patients, with patients, and carers where appropriate, being involved in decisions about treatment and changes to treatment.

The review team commended the provision of a designated pre-dialysis nurse specialist.

Transportation for Haemodialysis

Although the review team commended the results of the audit data provided by the unit in relation to this standard, it was noted that these results did not correspond with staff or patient perception of transportation for haemodialysis.

A challenge for the Trust is the provision of a comfortable area for patients to wait for hospital transportation at Queen Margaret Hospital Renal Unit.

Audit: Information/Data Collection

It was noted that good computerised links exist between the unit and the Scottish Renal Registry. Computerised systems are in place to ensure the continuous collection of the Scottish Renal Registry core data set. In addition, the review team commended the provision of a dedicated member of staff to run this computer system. The unit also takes part in comparative audits of dialysis through the Scottish Renal Registry. The review team noted that collection of data relating to the type and time of access surgery has recently been initiated.

The review team was encouraged to learn of plans to resume the collection of incidence, management and outcome data on acute renal failure.

Standard 1 - Clinical Management/Treatment 1: Haemodialysis

All people on haemodialysis achieve the Renal Association targets set for adequacy. There is regular audit of haemodialysis adequacy (see Standard 14).

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: The target for haemodialysis adequacy is a Urea Reduction Ratio not less than 65% or stable Kt/V not less than 1.2 (dialysis and residual renal function) for thrice-weekly dialysis. This is achieved in a minimum of 85% of patients. Where Kt/V is measured, the method used to calculate is documented.

STATUS: **Not met**	Audit data provided by the unit demonstrated that this criterion is being narrowly missed. It was felt that a major contributing factor for this is difficulty with dialysis access, which can prevent some patients from achieving the target haemodialysis adequacy. Other contributing factors that were identified are the decision of some patients not to lengthen the time of their dialysis treatment, and the number of elderly and more unwell patients on haemodialysis. The method used to calculate Kt/V is documented on the Fresnius Pinnacle computer package.

2: Reasons for patients not achieving the target haemodialysis adequacy are documented and appropriate action taken.

STATUS: **Met**	Reasons for patients not achieving the target haemodialysis adequacy are documented in patient notes as well as the minutes of weekly multidisciplinary renal unit meetings. Appropriate action is taken following these meetings. In addition the dialysis adequacy nurse informs all patients of their adequacy results on a monthly basis.

3: Haemodialysis is offered thrice-weekly unless there are specific circumstances.

STATUS: **Met**	All patients are offered and receive thrice-weekly dialysis.

4: Quality of water for dialysis and/or dialysis fluid is monitored monthly and meets Renal Association targets for microbial count.

STATUS: **Not met**	The quality of water for dialysis is monitored 4-6-weekly. Due to the lack of a central water treatment plant, the quality of water for dialysis must be individually measured on each dialysis machine. It is recognised that this is a time-consuming process.

5: The percentage of patients achieving the Renal Association Standards for pre-dialysis potassium, phosphate, and calcium is calculated at a minimum of 3-monthly intervals.

STATUS: **Not met**	While the percentage of patients achieving the Renal Association standards for pre-dialysis phosphate and calcium is calculated monthly, the percentage of patients achieving the Renal Association standards for pre-dialysis potassium is not currently calculated. However the review team noted that patients' potassium results are monitored on an individual basis.

Standard 2 - Clinical Management/Treatment 2: Peritoneal Dialysis

All people on peritoneal dialysis achieve the Renal Association targets set for adequacy. There is regular audit of peritoneal dialysis adequacy (see Standard 14). There is safe and effective management in place for prevention of peritonitis.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: The target for peritoneal dialysis adequacy is a total weekly creatinine clearance (dialysis and residual renal function) not less than 50 l/week/1.73m2 and/or weekly urea Kt/V exceeds 1.7 by 8 weeks after beginning peritoneal dialysis. This is maintained in a minimum of 85% of patients.

STATUS: **Met**	Audit data provided by the unit demonstrated that this criterion is met. The review team commended the high percentage of patients achieving the target peritoneal dialysis adequacy, and noted that this is due to the majority of peritoneal dialysis patients using automated peritoneal dialysis. In addition, the unit has a local target for peritoneal dialysis adequacy that is higher than the standard (ie a total weekly creatinine clearance not less than 60 l/week).

2: Reasons for patients not achieving the target peritoneal dialysis adequacy are documented, and appropriate action taken.

STATUS: **Met**	Reasons for patients not achieving the target peritoneal dialysis adequacy are documented within the patient case notes, with appropriate action being taken. It was noted that the peritoneal dialysis nurse also keeps a record of reasons for patients not achieving the target. In addition, this information is discussed at the monthly peritoneal dialysis meetings.

3: The percentage of patients achieving the Renal Association Standards for potassium, phosphate and calcium is calculated at a minimum of 3-monthly intervals.

STATUS: **Not met**	While the percentage of patients achieving the Renal Association standards for phosphate and calcium is calculated 3-monthly, the percentage of patients achieving the Renal Association standards for potassium is not calculated. However, the review team noted that patients' potassium results are routinely monitored on an individual basis.

4: The use of disconnect systems is standard unless contra-indicated.

STATUS: **Met**	The use of disconnect systems is standard for all patients.

5: Peritonitis rates are not more than one episode/18 patient-months.

STATUS: **Not met**	Audit data provided by the unit indicated that this criterion is not met. A contributing factor for the criterion not being met in the period January - June 2002 was an international problem with contaminated peritoneal dialysis exchange bags, which were subsequently recalled by the manufacturers. Prior to this period, audit data provided by the unit indicated that whilst peritonitis rates fluctuated slightly, they typically remained around the level required by the criterion.

Standard 3 - Clinical Management/Treatment 3: Haemoglobin in Patients on Dialysis

All people on haemodialysis or peritoneal dialysis achieve targets set for haemoglobin levels after 3 months of dialysis. Transfusion is avoided wherever possible.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: The target is a haemoglobin concentration not less than 10g/dl (haematocrit is not less than 30%) after 3 months of dialysis. This is achieved in a minimum of 85% of patients.

STATUS: **Met**	Audit data provided by the unit demonstrated that this criterion is met.

2: Reasons for patients not achieving the target haemoglobin are documented, and appropriate action taken.

STATUS: **Met**	Reasons for patients not achieving the target haemoglobin are documented in patients' notes, with appropriate action being taken by nursing staff. Action taken is also documented in patients' notes.

3: Iron status is monitored at a minimum of 6-month intervals.

STATUS: **Met**	Iron status is monitored 2-3-monthly for haemodialysis patients and a minimum of 6-monthly for peritoneal dialysis patients.

4: The number of patients receiving blood transfusions is monitored.

STATUS: **Met**	The review team confirmed that the number of patients receiving blood transfusions is monitored for patients transfused in the haemodialysis unit, and documented in a record book which is kept at the haemodialysis station.

Standard 4 - Clinical Management/Treatment 4: Dialysis Access

All people requiring dialysis have timely surgery for access.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: Permanent access is available at the first dialysis in a minimum of 60% of patients who present at the renal service more than 3 months before requiring dialysis.

STATUS: **Met**	Audit data provided by the unit demonstrated that this criterion is met. However, the review team raised concerns regarding the high percentage of permanent catheters being used as permanent dialysis access.

2: Reasons for patients not having permanent access available at their first dialysis are documented.

STATUS: **Met**	Reasons for patients not having permanent access available at their first dialysis are currently documented in patients' case notes. Staff interviews confirmed that plans to create a database in order to record this information are being discussed.

3: There are adequate dedicated theatre sessions (Reference Guideline: one weekly theatre session per 120 patients (approximately) on dialysis – National Service Standard 3).

STATUS: **Met**	From May 2002, one dedicated theatre session has been made available for dialysis access surgery. The review team hoped that provision of this dedicated session would continue despite reported staffing issues in the vascular access service. Also noted were recent appointments of a third vascular surgeon and a dialysis access co-ordinator. It is hoped that these developments will have a positive impact on the service for dialysis access in the near future.

Desirable Criteria

4: A minimum of 70% of patients have arteriovenous fistulae or vein graft as their permanent haemodialysis access.

STATUS: **Not met**	Audit data provided by the unit indicated that this criterion is not met. The review team expressed concerns about the low percentage of patients having arteriovenous fistulae or vein graft as their permanent haemodialysis access.

5: Permanent catheters are used as haemodialysis access in a maximum of 20% of patients.

STATUS: **Not met**	Audit data provided by the unit indicated that this criterion is not met. Concerns about the high usage of permanent catheters as haemodialysis access. The review team gained the impression that many patients had accepted the use of permanent catheters as permanent haemodialysis access as normal practice, and do not wish to have a fistula created to replace their permanent catheter.

Standard 5 - Clinical Management/Treatment 5: Nutritional Status

All patients receiving dialysis or with low creatinine clearance have nutritional status regularly assessed, evaluated and documented.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: All patients are assessed at least 6-monthly to identify those at risk of malnutrition.

STATUS: **Not met**	The review team confirmed that all haemodialysis patients are assessed at least 6-monthly to identify those at risk of malnutrition. However, not all peritoneal dialysis or pre-dialysis patients are assessed 6-monthly due to time constraints.

2: Patients identified as at risk have nutritional goals set, documented and monitored in accordance with Renal Nutritional Group Standards.

STATUS: **Met**	Patients who are identified as at risk have nutritional goals set, documented and monitored in accordance with Renal Nutritional Group Standards.

3: Reasons why patients identified as at risk do not achieve nutritional goals are documented, and appropriate action taken.

STATUS: **Met**	Reasons why patients identified as at risk do not achieve nutritional goals are documented within the patient's record card and medical and nursing notes. Patients are discussed at the weekly multidisciplinary meetings, with appropriate action being taken. Patients are advised of their progress on a monthly basis, but are also able to contact the dieticians at other times for advice. Written information is provided to patients as appropriate.

4: There is a designated dietician with a recognised postgraduate qualification and/or renal experience.

STATUS: **Met**	Designated renal dietetic staffing comprises 0.7 whole time equivalent dietician, fulfilled by two dieticians.

Desirable Criteria

5: Baseline anthropometry is documented for all patients at the beginning of dietetic treatment by an individual trained in the technique.

STATUS: **Met**	All patients have baseline anthropometry undertaken at the beginning of their dietetic treatment. Baseline anthropometry is carried out by individuals trained in the technique. Results are documented in the patient record card.

Standard 6 - Clinical Management/Treatment 6: Drug Therapy

All people with chronic renal failure or on renal replacement therapy receive appropriate drug therapy and advice on their medicines.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1.1: There are protocols for: Management of anaemia; Treatment of peritonitis; Immunisation for Hepatitis B.

STATUS: **Not met**	Well-developed protocols are in place for the management of anaemia and treatment of peritonitis. While there is no protocol for immunisation of hepatitis B, the review team noted that the unit is planning to produce a protocol in the near future.

1.2: In addition, for transplant units there are protocols for: Immunosuppressive regimens; Cytomegalovirus and pneumocystis infection prophylaxis; Renal vein thrombosis prophylaxis; Management of delayed graft function.

STATUS: **Not applicable**	Although Queen Margaret Hospital is not a transplant unit, the review team noted that the renal pharmacist has copies of the required protocols from the Royal Infirmary of Edinburgh Transplant Unit and demonstrated good awareness of these protocols.

2: All patients' prescriptions are reviewed to ensure their drug therapy is appropriate for their circumstances.

STATUS: **Met**	In-patients' prescriptions are reviewed daily during ward rounds. Pre-dialysis patients' prescriptions are reviewed by medical staff at clinics, with problems being referred to the renal pharmacist. All other patients' prescriptions are reviewed in rotation at the weekly multidisciplinary meetings, with each patient being reviewed on a monthly basis. The renal pharmacist attends the weekly meetings and brings patients' prescriptions to the meetings for review. The renal pharmacist informs patients of any changes to their prescriptions. The review team noted that prescriptions are not reviewed if the renal pharmacist is on annual leave or sick leave. It was reported that the unit is aware of this and is looking at how this gap may be covered.

3: Information and advice about the use of drugs in chronic renal failure or in dialysis patients is available to healthcare professionals and renal patients.

STATUS: **Met**	The review team commended the quality of information available to patients about the use of drugs in chronic renal failure or dialysis patients. Patients are provided with a detailed, individualised drug chart, which includes a description of each drug, when they must be taken and the purpose of each drug. An education pack containing written information about the drugs used in chronic renal failure or dialysis is provided to both patients and healthcare professionals. In addition the renal pharmacist gives tutorials for small groups of staff and patients and is also available for advice within the ward.

4: There is a designated pharmacist with a recognised postgraduate qualification and/or renal experience.

STATUS: **Met**	There is a designated renal pharmacist with a recognised postgraduate qualification and renal experience.

Standard 7 - Clinical Management/Treatment 7: Access to Multidisciplinary Team

All people with end stage renal failure have access to a multidisciplinary team.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: In addition to the regular medical and nursing staff, patients are referred to the following services when required: physiotherapy; pharmacy; dietetics; occupational therapy; designated social worker with a recognised postgraduate qualification and/or renal experience; primary healthcare team; community hospitals (where applicable); transplant co-ordinator/ liaison nurse; counselling service; clinical psychology; liaison psychiatry.

STATUS: **Not met**

It was reported that patients are referred to most of these services when required. It was noted that there are particular issues around access to physiotherapy and occupational therapy. Referrals are typically made only in high-priority cases. In these cases the physiotherapist or occupational therapist will come to the renal ward to see the patient. Otherwise patients must be moved to the medical ward to get access to these services, although concerns were raised that there were still difficulties in patients gaining access to physiotherapy and occupational therapy. While there is no dedicated counselling service available within the Trust, the review team noted that some of the renal nurses have received relevant training in counselling and are able to provide this service to renal patients. In addition the review team commended the renal bereavement service which is provided by renal nurses trained in bereavement counselling.

2: Dialysis patients are regularly and confidentially reviewed by a multidisciplinary team including medical and nursing staff, dieticians and pharmacists.

STATUS: **Met**

The review team commended the weekly multidisciplinary meetings at which all dialysis patients are regularly and confidentially reviewed. The meetings are attended by all members of the multidisciplinary team.

Standard 8 - Transplantation 1: Assessment for Transplantation

All dialysis patients are assessed for suitability of transplantation within three months of starting dialysis.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: All patients are assessed for transplantation within 3 months of starting dialysis and those suitable are referred to a Transplant Centre.	
STATUS: **Met**	A clear system is in place to ensure that all patients are assessed for transplantation within 3 months of starting dialysis. The results of the assessment are recorded in patients' case notes. Those suitable are referred to the Royal Infirmary of Edinburgh Transplant Unit.
2: Patients referred are seen by a nephrologist and surgeon from the Transplant Centre.	
STATUS: **Not met**	Patients referred are only seen by a transplant surgeon at the Transplant Centre.
3: Decisions regarding the patient's assessment at the Transplant Centre are communicated in writing, to the patient, the GP and, where appropriate, the carer.	
STATUS: **Not met**	Decisions regarding the patient's assessment at the Transplant Centre are communicated to the GP in writing by the Transplant Centre. Patients and, where appropriate, carers, are informed of decisions regarding the patient's assessment in writing only if the patient is added to the waiting list; otherwise decisions are communicated verbally.
4: All patients on dialysis are reviewed annually for their suitability for transplantation.	
STATUS: **Met**	All patients on dialysis are reviewed monthly for their suitability for transplantation.
5: All patients on the waiting list are informed of the outcome of their annual review either orally or in writing.	
STATUS: **Met**	All patients on the waiting list are informed orally of the outcome of their annual review.
6: The percentage of dialysis patients on the waiting list for transplantation is monitored and reviewed annually.	
STATUS: **Met**	The percentage of patients on the waiting list for transplantation is monitored on an informal, but regular basis. The consultant nephrologist submits this information at monthly meetings with the transplant unit.
7: The unit takes part in the Renal Donor Sharing Scheme operated by UK Transplant.	
STATUS: **Met**	Queen Margaret Hospital Renal Unit takes part in the Renal Donor Sharing Scheme operated by UK Transplant.
8: Type 1 diabetic patients with renal failure are considered for combined pancreas and kidney transplant.	
STATUS: **Met**	Type 1 diabetic patients with renal failure are referred to the Royal Infirmary of Edinburgh Transplant Unit for assessment for combined pancreas and kidney transplant.

Standard 9 - Transplantation 2: Kidney Retrieval

The removal and use of cadaver kidneys for transplantation is carried out to optimise the quality of future renal function.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: Kidneys are retrieved by a transplant surgeon experienced in the procedure.

STATUS: Queen Margaret Hospital is not a transplant unit.
Not applicable

2: Cold storage time is below 24 hours, where possible.

STATUS: Queen Margaret Hospital is not a transplant unit.
Not applicable

3: Reasons for cold storage exceeding 24 hours are documented.

STATUS: Queen Margaret Hospital is not a transplant unit.
Not applicable

4: Documentation of damage to retrieved kidneys is sent with the donor kidney to the transplant unit.

STATUS: Queen Margaret Hospital is not a transplant unit.
Not applicable

5: A minimum of 70% of donor kidneys from people on artificial ventilation, who are confirmed to be dead by brain stem testing, function immediately.

STATUS: Queen Margaret Hospital is not a transplant unit.
Not applicable

6: The percentage of kidneys that never function is no more than 5% for people on artificial ventilation, who are confirmed to be dead by brain stem testing.

STATUS: Queen Margaret Hospital is not a transplant unit.
Not applicable

Standard 10 - Transplantation 3: Survival Rates

Patient and transplant survival rates following kidney transplantation are within acceptable limits.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: Following live related donor kidney transplantation: Patient survival rate is a minimum of 95% at 1 year; Transplant survival rate is a minimum of 93% at 1 year.

STATUS: **Not applicable**

Queen Margaret Hospital is not a transplant unit.

2: Following first cadaver kidney graft transplantation: Patient survival rate is a minimum of 95% at 1 year and a minimum of 80% at 5 years; Transplant survival rate is a minimum of 85% at 1 year and a minimum of 66% at 5 years.

STATUS: **Not applicable**

Queen Margaret Hospital is not a transplant unit.

3: Transplant patients are reviewed regularly by a nephrologist or transplant surgeon.

STATUS: **Met**

Transplant patients are reviewed regularly by a consultant nephrologist at transplant clinics.

Standard 11 - Patient Focus 1: Out-patients

Waiting times for new patient appointments are within acceptable limits and clinic letters are sent out with minimum delay.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: New patients are offered an appointment to be seen within 1 month of referral.

STATUS: **Not met**	Audit data provided by the unit demonstrated that this criterion is not met. However, the review team noted that all referrals are prioristed and urgent cases seen quickly. For patients requiring more frequent follow-up, there is a nurse-led drop-in clinic which is held on the renal ward.

2: Clinic letters are sent to the GP within 2 weeks of being seen by a nephrologist.

STATUS: **Met**	Audit data provided by the unit demonstrated that this criterion is met. It was noted that clinic letters are typically sent to the GP within 1 week of the patient being seen by a nephrologist.

3: Changes in medication are communicated to the GP via the patient using a written note or by updating a drug booklet.

STATUS: **Met**	Changes in medication are communicated to the GP via the patient using a written note. This is followed up with a letter to the GP.

Standard 12 - Patient Focus 2: Provision of Patient Information

All people with chronic renal failure or on renal replacement therapy, and carers where appropriate, are given information to help them make informed choices.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: All people diagnosed with chronic renal failure, and carers where appropriate, are provided with appropriate information materials which are evidence-based, identify treatment options, possible outcomes, risks, possible side-effects, and sources of further information.

STATUS: **Met**

The review team commended the high quality of information provided to people diagnosed with chronic renal failure. A large and comprehensive range of written, audio-visual and internet information is available. All pre-dialysis patients are visited at home by a community renal nurse. Further information is available at low clearance clinics. Patients are also given the opportunity to visit the Queen Margaret Hospital Renal Unit, Dunfermline, and Victoria Hospital Satellite Unit, Kirkcaldy. Carers are encouraged to speak with the community nurse at home visits, with information being given when required. However, it was noted that there is no specific written information available for carers.

The Renal Support Group representative carries out home visits and offers counselling to patients and carers.

2: Medical and nursing staff discuss possible treatment options which may include home and hospital dialysis, CAPD and APD, cadaver and live donor transplantation, with patients, and carers where appropriate, at a dedicated appointment or home visit.

STATUS: **Met**

Possible treatment options are discussed with patients during home visits and in clinics. Carers and other relatives are actively encouraged to attend.

3: Patients, and carers where appropriate, are involved in decisions about treatment and changes in treatment.

STATUS: **Met**

Staff interviews confirmed that patients, and carers where appropriate, are involved in decisions about treatment and changes in treatment. Feedback from patients indicated that they felt involved in all aspects of their treatment. The review team noted that there is good documentation of decisions made.

Desirable Criteria

4: There is a designated pre-dialysis nurse specialist.

STATUS: **Met**

There is a designated pre-dialysis nurse specialist.

Standard 13 - Patient Focus 3: Transportation for Haemodialysis

Delays for patients attending for dialysis are minimised through reasonable measures taken by the Trust.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: 50% of all patients using hospital transportation are collected from home within half an hour of their allotted pick-up time, and all are collected within one hour.

STATUS: **Not met**

Audit data provided by the unit demonstrated that over 50% of patients using hospital transportation are collected within half an hour of their allocated pick-up time, and almost all patients are collected within 1 hour. However, the review team noted that the results of the survey carried out did not correspond with staff or patient perception.

2: 50% of all patients begin dialysis within half an hour of appointment time, and all begin within one hour.

STATUS: **Not met**

Audit data provided by the unit demonstrated that over 50% of patients begin dialysis within half an hour of appointment time, and almost all begin within 1 hour.

3: 50% of all patients using hospital transportation are collected within half an hour of the end of dialysis, and all are collected within one hour, provided they are clinically fit.

STATUS: **Not met**

Audit data provided by the unit demonstrated that over 50% of patients using hospital transportation are collected within half an hour of the end of dialysis, and the vast majority are collected within 1 hour. It was noted that patients whose clinical condition requires them to be transported by two-man ambulance can wait for over an hour to be collected due to limited availability of these ambulances.

4: Reasons for delays of more than an hour are documented.

STATUS: **Met**

Reasons for delays of more than 1 hour are documented on the haemodialysis form or transport audit tool.

5: Patients who wait for hospital transport do so in comfortable surroundings.

STATUS: **Not met**

The review team noted that the in-patients' day room is available for use as a waiting area for haemodialysis patients at Queen Margaret Hospital Renal Unit. It was the opinion of the review team that this room is inappropriate for out-patients. However, it was reported that this room is not used by haemodialysis patients as they cannot be seen by the ambulance drivers. Patients therefore choose to wait in the corridor or entrance to the hospital.

There is a comfortable, dedicated waiting area at Victoria Hospital Satellite Unit.

Desirable Criteria

6: Within the constraints of population density and geography, a unit is available within half an hour's travelling time for patients.

STATUS:
Met

The review team concluded that, within the constraints of population density and geography, this criterion is met. However, it was noted that for some patients, travelling time to Queen Margaret Hospital, Dunfermline, can take up to 1 hour. This particularly affects patients from East Fife and patients with methicilliln resistent staphylococcus aureus (MRSA) who must dialyse at Queen Margaret Hospital.

Standard 14 - Audit: Information/Data Collection

There is continuous data collection to facilitate regular national audit through the Scottish Renal Registry.

Queen Margaret Hospital Renal Unit, Fife

Essential Criteria

1: There are information systems in place for continuous collection of the Scottish Renal Registry core data set to facilitate audit.

STATUS: **Met**

The review team confirmed that there is a computerised information system in place for continuous collection of the Scottish Renal Registry core data set. There is a direct link to the Scottish Renal Registry database via the Proton computer system. The review team commended the commitment of staff to collect data for the purposes of audit. It was noted that there is a dedicated staff member to run the computer system.

2: The unit takes part in comparative audits of dialysis and transplantation through the Scottish Renal Registry and, where appropriate, UK Transplant.

STATUS: **Met**

The unit takes part in comparative audits of dialysis and transplantation through the Scottish Renal Registry.

3: There is data collection of the following, where appropriate, to facilitate regular audit: Haemodialysis adequacy (monthly for hospital dialysis and every 3 months for home dialysis); Peritoneal dialysis adequacy (6-monthly); Haemoglobin levels (monthly for hospital dialysis and every 3 months for peritoneal and home dialysis); Peritonitis (occurrence, investigation, treatment and cause); Type and time of access surgery; Immediate function of cadaver kidneys; Patient and transplant survival rates.

STATUS: **Met**

The review team confirmed that all the relevant data are collected routinely to facilitate regular audit. It was noted that data on the type and time of access surgery have recently started to be collected, with plans in place to audit these data.

Desirable Criteria

4: There is collection of incidence, management and outcome data on acute renal failure.

STATUS: **Not met**

Staff interviews confirmed that there is no collection of incidence, management and outcome data on acute renal failure. The review team noted that these data were collected until 1999 when the programme was stopped due to computer problems. However, it was reported that it is planned to resume the collection of these data shortly.

1 Appendix — Glossary of Abbreviations

Abbreviation	
APD	Automated Peritoneal Dialysis
CAPD	Continuous Ambulatory Peritoneal Dialysis
EPO	Erythropoietin
GP	General Practitioner
HDU	High Dependency Unit
ITU	Intensive Therapy Unit
MRSA	Methicillin Resistant *Staphylococcus aureus*
SRR	Scottish Renal Registry
URR	Urea Reduction Ratio

Review Team Members — Appendix 2

Details of Review Visit

The review visit to Queen Margaret Hospital Renal Unit, Fife Acute Hospitals NHS Trust was conducted on 21 August 2002. The review team members for this visit were:

Mr Murat Akyol (Team Leader)
Consultant Surgeon, Lothian University Hospitals NHS Trust

Dr Mark Andrews
Consultant Nephrologist, Tayside University Hospitals NHS Trust

Dr Conal Daly
Consultant Nephrologist, Grampian University Hospitals NHS Trust

Miss Alison Glover
Renal Nurse, Lothian University Hospitals NHS Trust

Mrs Monica MacDonald
Lay Representative, Highland

Mrs Jan McQuat
Renal Dietician, Tayside University Hospitals NHS Trust

Mrs Audrey Warden
Clinical Team Manager, Tayside University Hospitals NHS Trust

Mrs Patricia Weir
Lay Representative, Argyll & Clyde

Clinical Standards Board for Scotland Personnel

Ms Rona Smith
Senior Project Officer, Clinical Standards Board for Scotland

Mrs Fiona Russell (nee Dymitrenko)
Project Officer, Clinical Standards Board for Scotland

3 Appendix — Adult Renal Services Project Group

Dr Brian Junor (Chairman)
Consultant Nephrologist, Western Infirmary, North Glasgow University Hospitals NHS Trust

Mr Murat Akyol
Consultant Surgeon, Lothian University Hospitals NHS Trust

Mrs Caroline Arnott
Ward Manager, Fife Acute Hospitals NHS Trust

Dr Gordon Baird
General Practitioner, Dumfries & Galloway

Mrs Megan Casserly
Lay Representative, Greater Glasgow

Mrs Rhona Duncan
Renal Dietician, Ayrshire & Arran Acute Hospitals NHS Trust

Mr James Dunleavy
Renal Pharmacist, Lanarkshire Acute Hospitals NHS Trust

Mr Sandy Glass
Lay Representative, Highland

Dr Chris Isles
Consultant Physician, Dumfries & Galloway Acute & Maternity Hospitals NHS Trust

Professor Alison MacLeod
Honorary Consultant Physician/Nephrologist, Grampian University Hospitals NHS Trust

Ms Lesley Logan
Project Manager, National Services Division

Mrs Maureen Perry
Specialist Nephrology Nurse, Tayside University Hospitals NHS Trust

Dr Keith Simpson
Consultant Physician, North Glasgow University Hospitals NHS Trust

The Board member specifically working with the Adult Renal Services Project Group was **Professor John Cromarty**, Trust Chief Pharmacist, Highland Acute Hospitals NHS Trust.

Dr David Steel (Chief Executive), **Mr Sean Doherty** (Review Team Manager), **Ms Rona Smith** (Senior Project Officer), **Mrs Fiona Russell** (nee Dymitrenko; Project Officer) and **Miss Josephine O'Sullivan** (Project Administrator) from the CSBS provided support.

4 Appendix — Timetable of Visits

Organisation Reviewed	Dates
NHS Ayrshire & Arran	
Crosshouse Hospital, Kilmarnock	2 October 2002
NHS Dumfries & Galloway	
Dumfries & Galloway Royal Infirmary, Dumfries	23 July 2002
NHS Fife	
Queen Margaret Hospital, Dunfermline	21 August 2002
NHS Glasgow (North)	
Glasgow Royal Infirmary	26 June 2002
Including: Falkirk & District Royal Infirmary (satellite unit)	
Stobhill Hospital, Glasgow (satellite unit)	
Western Infirmary	12 June 2002
Including: Gartnavel General Hospital, Glasgow (annex)	
Inverclyde Royal Hospital, Greenock (satellite unit)	
NHS Grampian	
Aberdeen Royal Infirmary	23 October 2002
Including: Dr Gray's Hospital, Elgin (satellite unit)	
Peterhead Community Hospital (satellite unit)	
Chalmers Hospital, Banff (satellite unit)	
NHS Highland	
Raigmore Hospital, Inverness	29 May 2002
NHS Lanarkshire	
Monklands Hospital, Airdrie	10 July 2002
NHS Lothian	
Royal Infirmary of Edinburgh	19 September 2002
Including: Borders General Hospital, Melrose (satellite unit)	
Western General Hospital, Edinburgh (satellite unit)	
NHS Tayside	
Ninewells Hospital, Dundee	5 September 2002