Royal Infirmary
of Edinburgh
Renal Unit (Lothian)

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

Contents

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 **Royal Infirmary of Edinburgh Renal Unit** managed by **Lothian University Hospitals NHS Trust**. This review visit took place on **19 September 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.

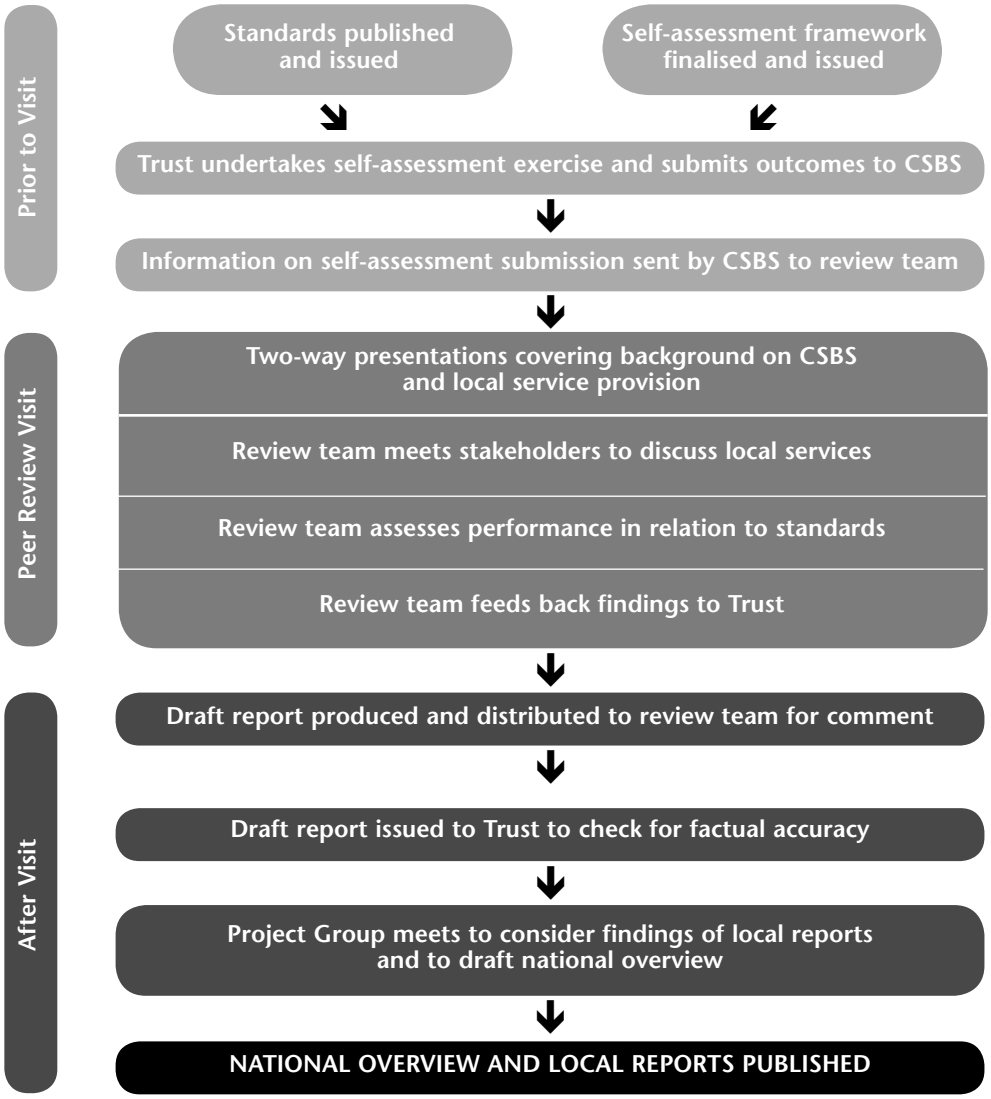
Assessment Categories

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

Lothian is situated in south-east Scotland and has a population of around 778,500. The majority of the population live in densely populated urban areas, of which Edinburgh followed by Livingston are the largest in the region. The proportion of older people in the population is lower than the national average, as are levels of illness and deprivation.

Local NHS System and Services

Lothian 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 Lothian.

Clinical services are provided through three Trusts, Lothian University Hospitals NHS Trust, Lothian Primary Care NHS Trust and West Lothian Healthcare 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 NHS Lothian: www.lothianhealth.scot.nhs.uk

The Royal Infirmary of Edinburgh Renal Unit, Edinburgh is one of ten renal units treating adults with renal failure across Scotland. It has satellite units at the Western General Hospital, Edinburgh, and Borders General Hospital, Melrose. The Royal Infirmary of Edinburgh is also a renal transplant centre.

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 Lothian University Hospitals NHS Trust:

- At the time of the visit there were 553 patients receiving renal replacement therapy. There were 62 new patients during the previous year: 49 patients started haemodialysis, 9 started peritoneal dialysis and 4 received a pre-emptive transplant. The number of patients on different forms of renal replacement therapy across the three renal unit sites are as follows:

	Royal Infirmary of Edinburgh	Western General Hospital, Edinburgh	Borders General Hospital, Melrose
- hospital haemodialysis	122	42	8
- home haemodialysis	5	_	_
- continuous ambulatory peritoneal dialysis (CAPD)	29	_	_
- automated peritoneal dialysis (APD)	24	_	_
- renal transplant	323	_	_

There were 51 renal transplants carried out in 2001, 40 of which were cadaver donor, 7 live related, and 4 live non-related. In addition 5 combined kidney and pancreas transplants were carried out.

Patients with suspected renal failure are initially referred to the Royal Infirmary of Edinburgh Renal Unit for renal investigation. Patients referred either attend the in-patient areas within the Royal Infirmary of Edinburgh or are sent an out-patient appointment to attend a renal clinic at the Royal Infirmary of Edinburgh, the Western General Hospital, Edinburgh or St John's Hospital, Livingston. Investigations and procedures are carried out, either as an out-patient or in-patient, at the Royal Infirmary of Edinburgh.

For patients requiring renal replacement therapy, haemodialysis is available at the Royal Infirmary of Edinburgh and the Western General Hospital, Edinburgh and Borders General Hospital, Melrose satellite units. Peritoneal dialysis and home dialysis are available from the Royal Infirmary of Edinburgh Renal Unit. Transplant patients are typically referred to the transplant unit at the Royal Infirmary of Edinburgh. Follow-up of transplant patients is undertaken at clinics in the Royal

Infirmary of Edinburgh, St John's Hospital, Livingston, Queen Margaret's Hospital, Dunfermline and Ninewells Hospital, Dundee.

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

- The Royal Infirmary of Edinburgh Renal Unit is situated in the north of the region, with satellite units to the north and south at the Western General Hospital, Edinburgh, and Borders General Hospital, Melrose, respectively. In order to increase the dialysis capacity within the region, NHS Lothian has agreed to open a further satellite unit at St John's Hospital, Livingston, in 2004-2005, to provide cover in the west of the region. A further option being given consideration is to increase the patient numbers dialysing at the Borders General Hospital Satellite Unit.

- The renal unit is due to move to the new Royal Infirmary of Edinburgh site at Little France, Edinburgh, in April 2003. At the time of the review visit the unit was situated in the old building of the Royal Infirmary in central Edinburgh.

- Dialysis facilities at the Royal Infirmary of Edinburgh Renal Unit and Western General Hospital Satellite Unit are currently at full capacity. In addition, three dialysis stations have been created in the high dependency unit (Ward 43) of the Royal Infirmary of Edinburgh to cope with the increasing number of haemodialysis out-patients. It was noted that an increase in dialysis stations has been secured at the new site. This will allow for an increase of 36 patients at the Little France site, and provision for a further 24 patients at St John's Hospital renal satellite, when it opens in 2004-2005. While this increase in service should cover the predicted 20-patient per annum growth over the next 3 years, it was noted that it is not large enough to cover the predicted growth over the next 5 years. It was noted that there are also four dialysis stations in Ward 21A for patients infected/colonised with methicillin resistant staphylococcus aureus (MRSA) or vancomycin resistant enterococci (VRE).

- It was noted that there is spare daytime capacity at Borders General Hospital Satellite Unit, Melrose, for haemodialysis. At the time of the review visit, 7 patients were waiting to begin haemodialysis at Borders General Hospital; however, issues around funding of this spare capacity result in these patients travelling to Edinburgh three times per week for haemodialysis. It is hoped

that discussions between Lothian University Hospitals NHS Trust and Borders General Hospital NHS Trust will resolve this issue.

- The renal unit has seen an increase in the number of patients with end stage renal failure. The projected growth is 20 patients per annum over the next 5 years. The largest increase has been seen in elderly patients, who require hospital-based haemodialysis. This increase has also made it challenging to provide appropriate treatment, particularly in the areas of renal replacement therapy and erythropoietin treatment for anaemia.

- There are issues around the staffing of the renal unit, especially in the provision of dialysis trained nursing staff, medical staff and secretarial support. In addition, there is limited access to physiotherapy and occupational therapy due to these services being over-stretched. Particular difficulties lie in the recruitment of staff, and cover for leave periods.

- The Royal Infirmary of Edinburgh Renal Unit has a community dialysis team, which supports the peritoneal dialysis programme and provides pre-dialysis information. This includes evening open meetings for patients and their families and carers.

- There are currently difficulties with adequate patient transportation, particularly for twilight and weekend dialysis shifts. There are on-going negotiations between the renal unit, Scottish Ambulance Service and NHS Lothian to secure funding for a dedicated renal patient transport system. It is hoped that this system will be in operation by spring 2003.

- In 1995 the transplant service moved from the Western General Hospital, Edinburgh to the Royal Infirmary of Edinburgh. The referral area for cadaveric transplants at the transplant unit covers Lothian, Borders, Fife and Tayside NHS Board areas. In addition there are live donor kidney transplant referrals from Highland and Grampian NHS Board areas.

- The Royal Infirmary of Edinburgh offers combined kidney and pancreas transplants for the whole of Scotland, although this arrangement has yet to be formalised with some referring renal units. There has been a significant increase in the trend of kidney and pancreas transplantation, from three transplants in 2000 to 11 transplants up to September 2002.

- The waiting list for kidney transplants has increased due to a reduction in the number of kidney donors. Transplant staff at the Royal Infirmary of Edinburgh are currently involved in the consideration of initiatives to counter the reduction in donors.

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 not met. Major contributing factors for this are time constraints due to inflexible dialysis shifts and patient transportation, which result in difficulties prescribing longer dialysis sessions when required. There is good monitoring of patients' haemodialysis adequacy results, with appropriate action being taken when the target adequacy is not met. The review team noted that although some changes to patients' treatment are nurse-led, this practice is not consistent throughout the unit.

While the quality of water for dialysis is monitored monthly for the water flowing into the water purifiers on individual machines, it is monitored 4-monthly for the water flowing from the water purifiers. Audit data demonstrated that the quality of water for dialysis does not meet Renal Association targets for microbial count. A contributing factor for this is the lack of a central water treatment plant at either the Royal Infirmary of Edinburgh Renal Unit or the Western General Hospital Satellite Unit. The Borders General Hospital Satellite Unit does have a central water treatment plant. It was noted that there would be provision of a central water treatment plant at the new Royal Infirmary of Edinburgh site. The renal unit is expected to move to the new site in April 2003.

Peritoneal Dialysis

The review team commended the quality of the peritoneal dialysis service provided by the Royal Infirmary of Edinburgh Renal Unit. Audit data provided by the unit demonstrated that the peritoneal dialysis adequacy target is met in a high percentage of patients who have been on peritoneal dialysis for more than 8 weeks. There is comprehensive documentation of reasons for patients not achieving the target, with appropriate action being taken.

Haemoglobin in Patients on Dialysis

Audit data provided by the unit demonstrated that the haemoglobin targets are outwith the essential limits outlined in the standard. A factor that has contributed to this was a restriction on the prescription of erythropoietin (EPO). However, the review team was encouraged to learn of a recent increase in allocated funding that has enabled EPO to be prescribed to pre-dialysis patients where necessary. In addition, the local target for haemoglobin concentration has been raised. It is hoped that these changes will facilitate the haemoglobin targets to be met in the future.

There is good documentation of reasons for patients not achieving the target haemoglobin, with appropriate action being taken by the anaemia co-ordinator and/or medical and nursing staff. It was noted that the anaemia co-ordinator is not involved in the management of haemodialysis patients due to time constraints.

Dialysis Access

Audit data provided by the unit indicated that the percentage of patients having permanent access available at their first dialysis is outwith the target set by the standard. The review team identified an insufficient number of in-patient beds and a lack of dedicated theatre time as being contributing factors for this.

The targets concerning the number of patients having arteriovenous fistulae or vein graft as their permanent haemodialysis access, and the number of permanent catheters used as haemodialysis access, are not met. The review team also noted an apparent reliance on permanent catheters as permanent dialysis access. The renal unit is currently reviewing vascular access provision in the haemodialysis population, in the hope of increasing the number of arteriovenous fistulae and vein grafts, thereby reducing the number of permanent catheters.

Nutritional Status

It was noted that it is not possible to routinely assess all patients at least 6-monthly to identify those at risk of malnutrition and concerns were raised that not all patients who may be at risk are identified. Insufficient dietetic support was identified as being a major contributing factor for this.

For those patients who are identified as being at risk, nutritional goals are set, documented and monitored in accordance with Renal Nutritional Group Standards. There is good documentation of reasons for patients not achieving nutritional goals, with appropriate action being taken. Baseline anthropometry is carried out and documented for all patients at the beginning of dietetic treatment. There are 2.4 whole time equivalent designated renal dieticians, who provide cover at all sites.

Drug Therapy

Drug therapy protocols are in place for all the required areas, which are regularly reviewed and updated as required. Staff showed a good awareness of these protocols.

All patients' prescriptions are regularly reviewed by either the pharmacist or medical staff. Relevant and comprehensive information and advice about the use of drugs in chronic renal failure or in dialysis patients is available to both patients and healthcare professions from the pharmacist. In addition, the Renal Unit Handbook, which includes the drug therapy protocols, is available to healthcare professionals to reference in the ward and via the unit's website.

Access to Multidisciplinary Team

It was reported that there is good access to most members of the multidisciplinary team. However, the review team noted that there is limited access to physiotherapy and occupational therapy services for out-patients. While there is a designated renal social worker, it was reported that the service is insufficient for the patient population.

There is a system in place for the regular multidisciplinary review of pre-dialysis and peritoneal dialysis patients. However, there is currently no formal multidisciplinary meeting for haemodialysis patients.

Assessment for Transplantation

A system is in place to ensure that all patients are assessed for transplantation within 3 months of starting dialysis. The review team commended the role of the transplant co-ordinator in facilitating prompt assessment of patients for transplantation. All patients on the transplant waiting list are reviewed annually after they have been on

the waiting list for 2 years. However, there appears to be no mechanism for routinely reviewing all patients on dialysis for their suitability for transplantation.

Patients suitable for transplantation are referred to the Royal Infirmary of Edinburgh Transplant Unit. The majority of these patients are seen by a nephrologist and a transplant surgeon from the transplant unit. All decisions regarding the patient's assessment at the transplant unit are communicated in writing to the patient's GP. However, decisions regarding the patient's assessment are only communicated in writing to the patient, and carer where appropriate, if the patient is added to the transplant waiting list. If patients are not added to the waiting list, they are informed verbally. There appeared to be no formal mechanism to inform all patients on the waiting list of their annual review.

Type 1 diabetic patients with renal failure are routinely considered for combined pancreas and kidney transplant.

Kidney Retrieval

The review team commended the quality of the kidney retrieval service provided by the Royal Infirmary of Edinburgh Transplant Unit. Cold storage is below 24 hours where possible. Where this is not possible, there is good documentation of the reasons for this. Clear documentation of any damage to retrieved kidneys is sent with all donor kidneys to the transplant unit.

The percentage of cadaver donor kidneys that function immediately exceeds 70%. The review team commended the low percentage of cadaver kidneys that never function.

Survival Rates

Audit data provided by the unit demonstrated that this standard is met. The review team commended the high percentage of both patient and survival rates. A challenge identified for the Trust is to maintain the quality of the service provided when the transplant unit moves to the new Royal Infirmary of Edinburgh site in April 2003.

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. In addition, there are delays in clinic letters being sent to GPs. A contributing factor for these delays is insufficient secretarial support for the renal unit. However, a system for prioritisation of referrals enables urgent cases to be seen quickly.

Provision of Patient Information

The review team commended the quality and comprehensive range of information, which is available for pre-dialysis patients, and noted that there is effective dissemination of this information for patients who are known to the renal service in the early stages of renal disease. In particular, the monthly pre-dialysis education meetings for patients and carers who have been seen at home visits were felt to be beneficial. However, for patients presenting late to the service, who were previously undiagnosed with chronic renal failure, and for patients dialysed in Ward 43 (high dependency unit), the dissemination of patient information appeared to be ad hoc.

All possible treatment options are discussed at dedicated pre-dialysis clinics and home visits, with patients, and carers where appropriate, being involved in decisions about treatment and changes to treatment. Once again, the review team noted that while this system works well for patients who are known to the service in the early stages of renal disease, it does not appear to do so for patients presenting late to the service.

The review team raised concerns over the unit's ability to meet patients' expectations to receive APD due to the high cost and limitations on availability of the treatment.

Transportation for Haemodialysis

Audit data provided by the unit demonstrated that while more than 50% of patients are both collected from home within half an hour of pick-up time, and from the unit within half an hour of the end of dialysis, not all patients are collected within an hour. The review team noted that the reasons for delays of more than 1 hour are documented in most cases.

Example of a local initiative

Negotiations are on-going between the renal unit, Scottish Ambulance Service and NHS Lothian, with a view to introducing a dedicated renal patient transport service, in spring 2003. It is hoped that this system will facilitate an improvement in the length of time patients wait for transport to and from the unit for dialysis.

The review team noted that, within the constraints of population density and geography, a unit is not available within half an hour's travelling time for all patients. The St John's Hospital Satellite Unit, Livingston, which is due to open in 2004-2005, will reduce the distance patients from the west of the region travel for dialysis.

While there is a satellite unit at Borders General Hospital for patients from this area, some of these patients still travel to the Royal Infirmary of Edinburgh for dialysis three times per week, despite there being spare capacity for haemodialysis at the Borders General Hospital Satellite Unit. It was noted that there are issues around the funding of this spare capacity. It is hoped that discussions between Lothian University Hospitals NHS Trust and Borders General Hospital NHS Trust will resolve these issues.

Audit: Information/Data Collection

Computerised systems are in place to ensure the continuous collection of the Scottish Renal Registry core data set. There are good computerised links with the Scottish Renal Registry, and the unit takes part in comparative audits of dialysis through the Scottish Renal Registry.

While there are regular audits of haemodialysis, peritoneal dialysis and transplant data, there is currently no audit of type and time of access surgery.

At the time of the visit the unit was involved in the collection of incidence, management and outcome data on acute renal failure as part of a national study. However, there are no plans to continue collection of these data following the end of the study.

3 Detailed Findings Against the Standards

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).

Edinburgh Royal Infirmary Renal Unit

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, while this criterion is met for haemodialysis patients at the two satellite units at the Western General Hospital, Edinburgh, and Borders General Hospital, Melrose, it is not met at the Royal Infirmary of Edinburgh unit or for home haemodialysis patients. A contributing factor for this criterion not being met at the Royal Infirmary of Edinburgh is time constraints. This occurs as a result of the tight scheduling of dialysis shifts, which does not allow for much flexibility in increasing a patient's dialysis session if required. In addition, it was reported that, if patient transportation is late, this results in less time on dialysis before the start of the next dialysis session. Some staff reported problems with permanent catheter dialysis access, although other staff indicated that the majority of these access lines maintain a good blood flow level, and the lines cause few infections.

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 the monitoring sheet, which is kept in patients' dialysis folders. Action taken is recorded in the dialysis folder and on the Proton computer system. It was noted that although some changes to patients' treatment are nurse-led, this is not consistent throughout the unit.

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

STATUS: **Met**	All haemodialysis 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 monthly for the water flowing into individual machines' water purifiers or reverse osmosis units (RO) and 4-monthly for the water flowing from the RO. Audit data provided by the unit demonstrated that the water for dialysis does not meet Renal Association targets for microbial count. A contributing factor for this is the lack of a central water treatment plant at either the Royal Infirmary of Edinburgh or the Western General Hospital Satellite Unit, Edinburgh. The Borders General Satellite Unit, Melrose, had a central water treatment plant. However, the review team noted that a central water treatment plant will be available at the new Royal Infirmary of Edinburgh site. The renal unit is expected to move to the new site in April 2003.

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: **Met**	The percentage of patients achieving the Renal Association standards for pre-dialysis potassium, phosphate and calcium is calculated monthly. Concerns were raised with regard to the lack of IT support for a monthly audit of this information. The review team also noted that, whilst individual patients' results are monitored and action taken where necessary, there appears to be no formal audit of the collective data.

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.

Edinburgh Royal Infirmary Renal Unit

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 peritoneal dialysis adequacy target.

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 in patients' case notes and in a letter to the GP. Action taken is recorded in case notes.

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: **Met**	The percentage of patients achieving the Renal Association Standards for potassium, phosphate and calcium is calculated 3-monthly.

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

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.

Edinburgh Royal Infirmary Renal Unit

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: **Not met**	Audit data provided by the unit indicated that this criterion is not met. A factor that has contributed to this is a limit that had been imposed on the prescription of erythropoietin (EPO). However, it was noted that a recent increase in allocated funding has enabled changes to be implemented: EPO is now able to be prescribed to pre-dialysis patients where necessary, and a higher target haemoglobin concentration of not less than 11g/dl has been agreed locally. It is hoped that these changes will allow this criterion to be met in the future.

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 case notes, letters to the GP and on the Proton computer system, with appropriate action taken by the anaemia co-ordinator and/or medical and nursing staff. It was noted that the anaemia co-ordinator is not involved in the management of haemodialysis patients due to time constraints.

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

STATUS: **Met**	The review team confirmed that iron status is monitored 3-monthly.

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

STATUS: **Met**	The number of patients receiving blood transfusions is monitored.

Standard 4 - Clinical Management/Treatment 4: Dialysis Access

All people requiring dialysis have timely surgery for access.

Edinburgh Royal Infirmary Renal Unit

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: **Not met**	Audit data provided by the unit demonstrated that this criterion is not met. In particular, the review team raised concerns about the low percentage of haemodialysis patients having permanent access available at their first dialysis. A contributing factor for this is an insufficient number of in-patient beds. This results in access procedures being cancelled even when theatre space is available. It was reported that late referral was another contributing factor for this criterion not being met. Staff interviews indicated that there is insufficient theatre time available for dialysis access surgery, and felt that the appointment of an access co-ordinator would also be beneficial to the unit.

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

STATUS: **Not met**	Reasons for patients not having permanent access available at their first dialysis are not documented.

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

STATUS: **Not met**	There are no dedicated theatre sessions for dialysis access surgery.

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 demonstrated that this criterion is not met.

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

STATUS: **Not met**	Audit data provided by the unit demonstrated that this criterion is not met. The review team raised concerns about the high level of use of permanent catheters as haemodialysis access, and noted that patients have historically been referred for permanent catheters as an alternative to arteriovenous fistulae.

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.

Edinburgh Royal Infirmary Renal Unit

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 not all patients are assessed 6-monthly to identify those at risk of malnutrition. A major contributing factor for this is insufficient dietetic staff. Concerns were also raised over a reported potential funding problem for the renal dietetic service, which would further stretch the service.

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

STATUS: **Met**	All patients who are identified as at risk have nutritional goals set, documented and monitored in accordance with Renal Nutritional Group Standards. The review team noted that nutritional goals are documented on the Proton computer system as well as in medical notes. It was recognised that this duplication is time consuming.

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 on both the Proton computer system and in medical and nursing notes, with appropriate action being taken.

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

STATUS: **Met**	There are 2.4 whole time equivalent renal dieticians who provide cover at the Royal Infirmary of Edinburgh Renal and Transplant Units, and the two satellite units at the Western General Hospital, Edinburgh and Borders General Hospital, Melrose.

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**	Baseline anthropometry is documented for all patients at the beginning of dietetic treatment. The technique is undertaken by the renal dieticians.

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.

Edinburgh Royal Infirmary Renal Unit

Essential Criteria

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

STATUS: **Met**	Protocols are available for the management of anaemia, treatment of peritonitis and immunisation for hepatitis B, and staff showed a good awareness of these. It was noted that the microbiologist and virologist were involved in the development of the protocol for the treatment of peritonitis. It was also noted that the protocol for immunisation for hepatitis B has recently been implemented and had not been audited at the time of the review visit.

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: **Met**	Protocols are available for immunosuppressive regimens, cytomegalovirus and pneumocystis infection prophylaxis, renal vein thrombosis prophylaxis and management of delayed graft function. Staff showed a good awareness of these protocols.

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

STATUS: **Met**	Staff interviews confirmed that the pharmacist reviews all in-patient prescriptions and out-patient dispensed prescriptions. All other patients' prescriptions are reviewed by medical staff.

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**	Information and advice about the use of drugs in chronic renal failure or in dialysis patients is available to healthcare professions through tutorials and from the pharmacist teaching on the Renal Rotation Course for medical students. The pharmacist attends consultant ward rounds. In addition, a drug handbook is available on the unit, and can also be accessed via the unit website from other wards. National Kidney Federation patient information leaflets and locally developed information leaflets are provided to patients. The renal pharmacist provides patients with relevant information, as required, on a one-to-one basis. The renal pharmacist also attends the monthly evening pre-dialysis information meetings, to which patients and their carers are invited.

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

STATUS: **Met**	There are two designated pharmacists with recognised postgraduate qualifications and renal experience. These members of staff work in the renal and transplant units on a rotation basis in order to maintain their skills in both areas.

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

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

Edinburgh Royal Infirmary Renal Unit

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**

Staff interviews confirmed that although patients are referred to most of the relevant services when required, there are difficulties with access to physiotherapy and occupational therapy for out-patients. Occupational therapy is available to renal in-patients only. Physiotherapy is available to renal in-patients, with limited access for out-patients. It was noted that, although there is a designated renal social worker, this service is insufficient for the patient population. The review team also noted that the dietetic service is also insufficient for the patient population.

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

STATUS: **Not met**

Pre-dialysis and peritoneal dialysis patients are regularly and confidentially reviewed by a multidisciplinary team including medical and nursing staff, dieticians, and pharmacists. However, the review team noted that there is currently no system for formal multidisciplinary review of haemodialysis patients.

Standard 8 - Transplantation 1: Assessment for Transplantation

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

Edinburgh Royal Infirmary Renal Unit

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**	Staff interviews confirmed that all patients are assessed for transplantation within 3 months of starting dialysis. 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 from the Lothian and Borders regions are seen by a nephrologist and surgeon from the Transplant Centre. However, patients who are referred from Fife and Tayside are seen by a surgeon from the Transplant Centre, and a nephrologist from the referring renal unit.

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 patients' assessment at the Royal Infirmary of Edinburgh Transplant Unit are only communicated in writing to the patient, and carer where appropriate, if the patient is placed on the transplant list; otherwise decisions are communicated verbally. All decisions are communicated in writing to the patients' GP.

4: All patients on dialysis are reviewed annually for their suitability for transplantation.

STATUS: **Not met**	Patients on the waiting list are reviewed annually after they have been on the list for 2 years. There appears to be no mechanism for reviewing all patients on dialysis 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: **Not met**	The review team concluded that there is no formal mechanism to inform all patients on the waiting list of the outcome of their annual review. Staff interviews suggested that patients are updated while on the ward. However, feedback from patients suggested that some patients are unclear as to their status on the waiting list.

6: The percentage of dialysis patients on the waiting list for transplantation is monitored and reviewed annually.

STATUS: **Met**	Staff interviews confirmed that the percentage of dialysis patients on the waiting list for transplantation is reported monthly at the transplant review meeting. The review team noted that this is a recent development.

7: The unit takes part in the Renal Donor Sharing Scheme operated by UK Transplant.

STATUS: **Met**	The 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 considered for combined pancreas and kidney transplant. The review team noted the desire of staff to publicise the potential benefits of this type of transplant more widely across the referral region for the Royal Infirmary of Edinburgh Transplant Unit.

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.

Edinburgh Royal Infirmary Renal Unit

Essential Criteria

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

STATUS: **Met** — The review team confirmed that kidneys are retrieved by transplant surgeons experienced in the procedure.

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

STATUS: **Met** — The review team confirmed that cold storage time is below 24 hours, where possible.

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

STATUS: **Met** — Reasons for cold storage exceeding 24 hours are documented in the UK Transplant Referral of Kidney, and the UK Transplant Recipient documents.

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

STATUS: **Met** — Documentation of damage to retrieved kidneys is sent with all donor kidneys to the transplant unit.

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

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

Standard 10 - Transplantation 3: Survival Rates

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

Edinburgh Royal Infirmary Renal Unit

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: **Met**

Audit data provided by the unit demonstrated that this criterion is met. The review team commended the high patient and transplant survival rates following live related donor kidney transplantation.

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: **Met**

Audit data provided by the unit demonstrated that this criterion is met. The review team commended the high patient and transplant survival rates following first cadaver kidney graft transplantation.

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

STATUS: **Met**

Transplant patients are reviewed regularly by both a nephrologist and transplant surgeon. In addition, a transplant co-ordinator sees patients at annual health promotion appointments.

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.

Edinburgh Royal Infirmary Renal Unit

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 indicated that this criterion is not met. However, referral letters are prioritised and urgent cases seen quickly. The review team noted that there is insufficient secretarial support for the renal unit, and no cover during periods of leave.

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

STATUS: **Not met**	Audit data provided by the unit demonstrated that this criterion is not met.

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 immediate out-patient letters. For transplant patients an additional patient-held booklet is provided.

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.

Edinburgh Royal Infirmary Renal Unit

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: **Not met**

The review team noted that the majority of patients diagnosed with chronic renal failure, and carers where appropriate, are provided with information materials about their illness. A comprehensive range of written, audio and video information is available in English as well as other languages. Information is also available on the renal unit website. For patients who are known to the service early in the early stages of renal disease, monthly pre-dialysis clinics are held at which information is disseminated. The review team commended the open pre-dialysis education evenings which are held monthly for patients who have been seen at home visits.

However, it was reported that a small group of patients, such as those presenting late to the service, who were previously undiagnosed with chronic renal failure, do not always receive comprehensive information about their illness.

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: **Not met**

For the majority of patients, and carers where appropriate, all possible treatment options are discussed at dedicated pre-dialysis clinics and home visits. However, for late-presenters and long-term patients the review team gained the impression that not all possible treatment options are fully discussed.

The review team noted that while automated peritoneal dialysis (APD) is presented as a treatment option, there are constraints on the number of patients who are able to receive this treatment due to its high cost.

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

STATUS: **Not met**

The majority of patients, and carers where appropriate, are involved in decisions about treatment and changes in treatment. However, the review team gained the impression that patients presenting late to the renal service, who were previously undiagnosed with chronic renal failure, are not always fully involved in decisions regarding their treatment.

Desirable Criteria

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

STATUS: **Met**

There are 3.6 whole-time equivalent designated pre-dialysis nurse specialists, who cover both pre-dialysis and peritoneal dialysis patients.

Standard 13 - Patient Focus 3: Transportation for Haemodialysis

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

Edinburgh Royal Infirmary Renal Unit

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 indicated that while more than 50% of all patients using hospital transportation are collected from home within half an hour of their allocated pick-up time, not all patients are collected within 1 hour. The review team noted that negotiations are on-going between the renal unit, Scottish Ambulance Service and NHS Lothian, with a view to introducing a dedicated renal patient transport service in spring 2003. It is hoped that this system will facilitate an improvement in the length of time patients wait for transport to and from the unit for dialysis.

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 indicated that while more than 50% of all patients begin dialysis within half an hour of appointment time, a small minority of patients do not begin dialysis 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 indicated that while more than 50% of all patients using hospital transportation are collected within half an hour of the end of dialysis, not all patients are collected within 1 hour.

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

STATUS: **Not met**	Reasons for delays of more than an hour are documented at the main renal unit and Ward 21A (infected area) of the Royal Infirmary of Edinburgh, and the Western General Hospital and Borders General Hospital Satellite Units. However, there is no documentation of reasons for delays of more than an hour for patients attending Ward 43 (high dependency unit) at the Royal Infirmary of Edinburgh.

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

STATUS: **Not met**	While there is a comfortable waiting room in place at the main renal unit in the Royal Infirmary of Edinburgh and at the Western General Hospital Satellite Unit, there is currently no waiting room available for patients attending Ward 21A (infected area) or Ward 43 (high dependency unit) for dialysis.

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:
Not met

The review team concluded that this criterion is not met. It was noted that the Royal Infirmary of Edinburgh Renal Unit is situated in the north of the referral region for renal patients. Despite there being satellite units at Borders General Hospital, Melrose, and the Western General Hospital, Edinburgh, a unit is not available within half an hour's travelling time for all patients. Consideration is currently being given to establishing a satellite dialysis unit at St John's Hospital, Livingston. It is hoped that this will be in place by 2005.

The review team was concerned to note that despite there being spare capacity at Borders General Hospital Satellite Unit for haemodialysis, some patients from this area travel to Edinburgh three times per week for dialysis, due to issues around the funding of this spare capacity. It is hoped that discussions between Lothian University Hospitals NHS Trust and Borders General Hospital NHS Trust will resolve this issue.

Standard 14 - Audit: Information/Data Collection

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

Edinburgh Royal Infirmary Renal Unit

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**	There are good computerised information systems in place for continuous collection of the Scottish Renal Registry core data set to facilitate regular audit.

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 and UK Transplant.

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: **Not met**	There is data collection of all these data to facilitate regular audit, with the exception of type and time of access surgery, which is not currently collected.

Desirable Criteria

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

STATUS: **Met**	The Royal Infirmary of Edinburgh Renal Unit is currently involved in the collection of incidence, management and outcome data on acute renal failure as part of a national study. It was, however, noted that there are no plans are in place to continue collection of these data following the end of the study.

Glossary of Abbreviations — Appendix 1

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

2 Appendix — Review Team Members

Details of Review Visit

The review visit to Royal Infirmary of Edinburgh Renal Unit, Lothian Univeristy Hospitals NHS Trust was conducted on 19 September 2002. The review team members for this visit were:

Dr Chris Isles (Team Leader)
Consultant Physician, Dumfries & Galloway Acute & Maternity Hospitals NHS Trust

Mrs Jane Bryce
Lay Representative, Highland

Ms Deborah Corner
Principal Clinical Pharmacist, Tayside University Hospitals NHS Trust

Mr Sandy Glass
Lay Representative, Highland

Dr Malcolm Hand
Consultant Nephrologist, Lanarkshire Acute Hospitals NHS Trust

Mr Alistair Lawrie
Renal Nurse, Fife Acute Hospitals NHS Trust

Mr Ewan Macaulay
Consultant Vascular Surgeon, Grampian University Hospitals NHS Trust

Dr Nick Pace
Consultant Anaesthetist, North Glasgow University Hospitals NHS Trust

Clinical Standards Board for Scotland Personnel

Mr Sean Doherty
Review Team Manager, Clinical Standards Board for Scotland

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

Adult Renal Services Project Group — Appendix 3

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.

Timetable of Visits — Appendix 4

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