NORTH WEST REGION
RENAL AUDIT PROGRAMME

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Executive summary

Programme development

Regional database and programme of ongoing audit

Over the past year, the database for the programme of ongoing audit has been updated with a second round of audit data and three-year survival data. These data are currently being validated and analysed.

Patient involvement

To ensure that patients are involved in the audit process, patients have been asked to participate in specific audits and have been invited to the North West Region Renal Audit Review Evening to see the results of these and other audits.

In addition to this, a patient focus group is being established to incorporate the patient perspective into the audit programme. This group are to meet twice a year to advise the steering group on the direction and management of the audit programme. The group will also be asked to put forward suggestions to keep other patients informed on, and/or involved in, the regional renal audit programme.

Web site

To keep colleagues and patients informed on regional renal audit activity, a web site for the North West Region Renal Audit Programme is being developed. The web site will provide information on the audit programme and related issues, provide links to other useful web sites and will have a comments page to allow clinicians and patients to communicate their own views and ideas.
Local development of funded staff

The role of nurses who work locally as hub based renal audit facilitators has been developed to support the process of clinical governance. In their role as an audit facilitator, they convey audit results and recommendations / guidelines to colleagues and the clinical service management teams.

To implement the clinical governance process the facilitators promote to colleagues the importance of carrying out recommended change. In addition, they assist in the process of change by discussing local problems, in relation to the implementation of the recommendations / guidelines, with the clinical service management teams. They are also to liaise with the newly established clinical governance groups to advise them of the work done in the Regional Renal Audit Programme.

Audits

_During 2002/2003 three audits have been presented at the North West Region Renal Audit Review Evenings._

Peritoneal dialysis adequacy audit

The peritoneal dialysis (PD) adequacy audit has shown that regionally 4 out of 5 patients who undergo a PD adequacy test meet the total weekly Kt/V Renal Association (RA) recommendation. It has also shown that regionally the number of patients who undergo a PD adequacy test in a given year has increased in line with the RA recommendation for annual PD adequacy testing.

There were differences in the results from different units although it was difficult to interpret these results due to the different protocols for PD adequacy testing and variations in the way in which dialysis adequacy is calculated. Nevertheless, to get more patients achieving the RA standard it was recommended that consideration should be given to setting higher targets. It was also recommended that units should comply with the RA recommendation for annual testing.

For the same reasons described above, it was difficult to look at the characteristics of patients failing to achieve the RA standard for PD adequacy. To interpret the differences in the results from the different units, and to understand the characteristics of patients failing to achieve the RA standard for PD adequacy, it was recommended that the protocols for PD adequacy testing and calculation should be standardised.
Peritonitis audit

The peritonitis audit has shown that the RA standard for peritonitis rates is being met but rates have increased since 2000/2001. The change in Continuous Ambulatory Peritoneal Dialysis (CAPD) / Automated Peritoneal Dialysis (APD) contract at Furness General Hospital / Royal Preston Hospital / Hope Hospital in 2002 may have been an influence in the observed increase in peritonitis rates. It was recommended that in future, results from different manufacturers be compared to inform the tendering process.

The RA standard for negative peritoneal fluid culture rate is not being met but rates have improved from 2001/2002 when the results in all the main units were the worst in recent years. Units reported an increase in eosinophilic peritonitis that could be linked to the poor results and so it was recommended that additional data, relating to eosinophilic peritonitis be collected.

Survival audit

The survival audit showed that regionally the RA recommendation for 1 year survival in patients with standard primary renal disease was met. It was not possible to measure survival in diabetic patients due to poor co-morbidity recording. It was recommended that co-morbidity should be recorded routinely by all units.

The audit showed that variation in individual unit 1-year survival could be ascribed to casemix, in particular age and co-morbidity, and specifically diabetes. There was no evidence to suggest that the variation was due to differences in clinical practice. Age, diabetes, nutritional status and reported heart disease were factors associated with poor survival. To look further at the centre effect and to inform the role of other factors it was recommended that longer-term survival should be collected and reported.

During 2002/2003, one pilot study has been presented to the North West Region Renal Audit Steering Group.

Withdrawal and withholding of treatment audit (pilot study)

The withdrawal and withholding of treatment audit has shown that some patients in the region have their treatment withdrawn without guidelines for palliative care.

It was recommended that guidelines for the palliative care of patients for whom treatment has been withdrawn should be examined over the region and following this, good practice should be discussed and shared.
1 Introduction

The North West Region Renal Audit Programme is a standards based programme of continuous quality improvement for renal patients in the North West Region. Since it was established in 1992, it has been developed in keeping with national initiatives led by the government and the UK Renal Association. These initiatives, to improve the service delivered to patients, are namely to improve standards of clinical care\textsuperscript{1,2}, to eliminate inequalities\textsuperscript{3} and to create a patient focused service\textsuperscript{4,5}.

This report describes the regional renal audit programme and its recent development, and gives an account of the audit activity that has taken place between 1\textsuperscript{st} April 2002 and 31\textsuperscript{st} March 2003.

2 Principal aim

The principal aim of the North West Region Renal Audit Programme is to improve the quality and effectiveness of the renal services in the North West Region and so assist in the process of Clinical Governance.

The principal aim is achieved through a collaborative process of multidisciplinary evidence based clinical audit of the care provided by hospital and community based renal clinicians. These clinicians include anaemia co-ordinators, dietitians, doctors, nurses, pharmacists and social workers. This process is supported by the objectives listed in appendix one.

3 Programme management

The audit programme is directed by the chairmen of the multidisciplinary North West (NW) Region Renal Audit Steering Group:

Dr R Coward  Consultant Physician and Nephrologist - Royal Preston Hospital
Lancashire Chair of NW Region Renal Audit Steering Group

Dr M Venning Consultant Renal Physician – Manchester Royal Infirmary
Manchester Chair of NW Region Renal Audit Steering Group
and it is co-ordinated and managed by Dr Nicola Reid. Members of the steering group (listed in appendix two) who represent the views of clinicians in the North West Region advise and assist in the direction and management of the programme. The patient perspective is being incorporated into the audit programme through the establishment of a patient forum (see section 11.1).

4 Centres participating in the regional audit programme

Within the North West Region (which incorporates Greater Manchester, Lancashire and Merseyside), all renal units and their satellites participate in the Regional Renal Audit Programme (see appendix three).

5 Structure of the audit programme

The audit programme is based on two separate programmes of work:

- *Ongoing audit programme*: A programme of prospective ongoing audit that is carried out to improve clinical care in six core areas (see section 12). Using data collected within the programme of ongoing audit, and when applicable data published by the UK Renal Registry, clinical care can be benchmarked regionally and nationally.

- *Individual audit programme*: A programme of prospective and retrospective audit that is carried out to improve clinical care in areas not covered by the programme of ongoing audit. This programme is devised by looking at the feasibility of new audits and including those with a strong evidence base for achievable change (see section 13).

6 Audit planning

To maximise the effectiveness of the clinical audit process, audit planning follows a well-established protocol. For all audits, the audit facilitator works with a consultant lead, a specialist registrar and clinicians with an interest in the audit. Together they develop and implement an audit plan (see appendix four).
7 Standards

The Renal Association (RA), together with the Royal College of Physicians of London, first produced a consensus statement of recommended standards and good practice for the treatment of renal failure in 1995\(^7\). In collaboration with the British Transplantation Society, the Intensive Care Society and the British Association of Paediatric Nephrologists, this consensus statement has been revised and extended into a document that sets out standards and recommendations for good clinical practice over a range of areas in renal medicine\(^7,8\). In the presence of strong research evidence, standards are set and with lesser evidence, recommendations (see appendix five). Evidence levels are given in square brackets with the standards in the individual audit reports.

For best practice, clinical audit should be performed against recognised national standards. Thus when applicable, clinical practice is audited against the RA standards and recommendations. In the absence of RA standards, audits are performed against established guidelines, developed by, for example, the Dialysis Outcomes Quality Initiative (USA)\(^9\) or the Kidney Alliance (UK)\(^10\).

8 Evidence base

All audits should have an evidence base. Thus, when an audit is considered for inclusion in the audit programme, a review of the published literature is performed, as detailed in the individual audit reports. All audits performed against the RA standards are, in addition, based upon the evidence presented by the Renal Association\(^1,7,8\).

9 Implementation of change

Change is implemented through a process of benchmarking and open discussion at an audit review evening and through the development and promotion of regional recommendations / guidelines.

9.1 Audit review evenings

After analysing the data and discussing the results of an audit, the audit team determines the conclusions and proposes recommendations and / or guidelines. Audits, the conclusions and the proposed recommendations / guidelines are then presented at an audit review evening to which all renal clinicians, managers, public health specialists, and patients are invited. At the review evenings, units are named and individual unit performance is benchmarked regionally and when appropriate nationally, against data published by the UK Renal Registry (RR)\(^6\).
The review evenings provide a forum to openly discuss individual performance and local practice. Thus, when individual unit performance is poor and falls below the regional average, poorly performing units can identify problems and can share good practice with units whose performance is above or in line with the regional average.

9.2 Regional recommendations / guidelines

Following open discussion at an audit review evening, changes that could improve performance are identified by the audit team, recommendations are agreed and when appropriate guidelines developed. Use of regional recommendations and guidelines are then promoted by publishing a report and circulating the recommendations / guidelines to all those affected by the audit.

Regional renal hub audit facilitators help to implement the recommendations / guidelines locally (see section 10.1 below). Whenever appropriate, these process are backed up by further presentation of the audit and the regional recommendations / guidelines to renal clinicians at local hospital meetings and to professional groups based in the North West Region.

In addition, it has been agreed that the recommendations / guidelines will be forwarded to the recently established local Clinical Governance Groups.

10 Clinical governance

Continuous quality improvement is an important component of clinical governance, as is the process of maintaining high standards of care. The Regional Renal Audit Programme has directly assisted in the broader process of Clinical Governance by providing a programme of quality improvement and by benchmarking care to improve or maintain high standards. Clinical governance is further supported through hub based audit facilitators, audit review evenings and by involving specialist Registrars in the audit programme.

10.1 Hub based renal audit facilitators

Nurses who work locally as hub based renal audit facilitators, report audit results and the associated recommendations / guidelines to colleagues and the clinical service management teams. Their role has been developed to support the process of clinical governance.

To implement the process of clinical governance the hub based facilitators promote the importance of following recommended change to colleagues. They also assist the process of change because working locally, they are aware of local processes and can discuss with local management teams, how to best implement the recommendations / guidelines. It has been agreed that they will also liaise with the recently established local clinical governance groups to advise them of the work done in the Regional Renal Audit Programme.
10.2 Audit review evenings

Audit review evenings (see section 9.1) support the clinical governance process by helping units to improve their performance and maintain high standards. By comparing performance, units can identify those areas in which change is necessary and by providing a forum for open discussion, they enable an exchange of ideas that can improve poor performance. They also give renal professionals and patients based in the North West Region the opportunity of collaborating in the development of regional recommendations / guidelines to improve and maintain good performance.

10.3 Specialist registrars

Specialist registrars are invited to participate in the regional renal audit programme, thus the programme is also in line with the government requirement for all doctors to participate in clinical audit as part of clinical governance.

11 Programme development

11.1 Patients

By inviting patients to participate in patient focused audits, and to attend and participate in the audit review evenings, patients have been directly and indirectly involved in the audit process. In addition to this, a patient information leaflet has been developed and circulated. Patient consent forms are also given to all dialysis patients involved in the ongoing audit programme.

To further involve patients, and keep them informed of the Regional Renal Audit Programme, a patient focus group is currently being established. The purpose of the focus group is to establish a process by which patients can advise the Regional Renal Audit Steering Group on the direction and management of the programme. The focus group can also advise on keeping patients informed of the results and recommendations of completed audits, details of ongoing audits and on how patients and carers can get involved in the audit programme.

The group will meet twice a year and membership of the group will initially include two patients from each Kidney Patient Association/Support Group, two renal consultants, a nurse and an audit facilitator. To ensure good communication with the Regional Renal Audit Steering Group, one nominated patient member will also attend the steering group meetings that take place 3 or 4 times a year.
11.2 Web site

To keep colleagues and patients better informed, a web site for the North West Region Renal Audit Programme is being developed. The web site will provide information on

- The North West Region Renal Audit Programme
- Clinical governance and the purpose of clinical audit
- Data confidentiality and data collection
- Completed audits and reports
- Events
- The patient focus group
- Links to other useful web sites

In addition, the web site will have a comments page to allow people to communicate their own views and ideas.

One of the audit facilitators has undertaken training to develop the web site and web pages have already been designed on the topics listed above. It is hoped that the web site will be available by the end of the year.

12 Results from programme of ongoing audit

12.1 Audits

- Six audits are included in the programme of ongoing audit
  - Adequacy
  - Bone chemistry
  - Cardiovascular risk
  - Haemoglobin and Epo usage
  - Peritonitis
  - Survival

With the exception of the peritonitis audit, all audits are for haemodialysis (HD) and peritoneal dialysis (PD) patients.
12.2 Data sets

- Collated data sets

Data for all audits within the programme of ongoing audit except the PD adequacy and peritonitis audits, are collected every two years. Data are obtained from all those patients who are enrolled in a dialysis programme on a given day and the data is collated into a single data set. One ongoing audit data set, relating to 1st May 2000, has been collected and analysed. Results from three audits

- Bone chemistry
- Cardiovascular risk
- Haemoglobin and Epo usage

were described in the 2001/2002 Annual Report. Results from the Survival Audit are given below. There are no results for the HD adequacy audit because at the time of data collection, a HD adequacy audit had just been completed so this data was not collected.

A second ongoing audit data set exists, relating to 1st May 2002, and this is currently being validated and analysed (see section 14.1). This data set includes HD adequacy data.

- PD adequacy data sets

Data for the PD adequacy audit is collected annually. Data are obtained from all patients who have a PD adequacy test in a one-year period running from July to June. Three data sets have been collected and analysed, starting in 1999/2000 and ending 2001/2002. A further data set for 2002/2003 exists, and awaits analysis.

- Peritonitis data sets

Data for the peritonitis audit is collected annually. Data are obtained from all patients who have an episode of peritonitis in a one-year period running from April to March. Ten data sets have been collected and analysed, starting in 1993/1994 and ending 2002/2003.

12.3 Results

- Presented in sections 12.4, 12.5, and 12.6 below are the results from the audits of

  - Survival (2 year survival from 2000)

- Abbreviations used in the remainder of this report are given in appendix six.
12.4 Peritoneal dialysis adequacy audit


12.4.1 Aims & objectives

- To measure achievement of the Renal Association recommendations for PD adequacy.
- To examine the protocols for PD adequacy testing at every unit.
- To examine the characteristics of patients not achieving the Renal Association recommendation for dialysis adequacy.

12.4.2 Evidence base


12.4.3 Standards

Renal Association Recommendations 2002¹

- A total weekly creatinine clearance (dialysis + residual renal function) of greater than 50 l/week/1.73 m² and/or a weekly dialysis Kt/V urea of greater than 1.7, checked eight weeks after beginning dialysis, are minima. Higher targets are desirable especially for high average and high transporters and APD patients [Evidence level B].

- At present both Kt/V and creatinine clearance are acceptable measures of adequacy until evidence accumulates to show the superiority of one over the other. Achieving either target is acceptable; creatinine clearance is more difficult to achieve in anuric patients with below average peritoneal solute transport [Evidence level C].

- These studies should be repeated at least annually, and more frequently if clinically indicated, particularly if suspicion arises that residual renal function has declined more rapidly than usual [Evidence level C].

12.4.5 Patients

- Data for the 1999/2000, 2000/2001 and 2001/2002 audits were collected from all PD patients who were part of a dialysis programme at MRI, RLH, RPH and SRH, and who had a PD Adequacy test performed between 1st July 1999 and 30th June 2000, 1st July 2000 and 30th June 2001 and, 1st July 2001 and 30th June 2002. Data was not collected from SMH because PD adequacy tests were not performed at this hub unit.
12.4.6 Data

- Data included age, gender, ethnic group, weekly/residual/dialysate Kt/V, total/residual/dialysate Creatinine Clearance (CCr), urine output, the prescribed dialysate and ultrafiltration volumes, GFR, serum albumin and nPCR.

12.4.7 Methods

- Data was obtained retrospectively from Adequest, a database used by all units to monitor the results obtained from PD adequacy tests, and from medical notes.
- When patients had more than one test in a year, the most recent was used.
- Data was collated and analysed by the Manchester hub renal audit facilitator.

12.4.8 Health disciplines

- Nurses
- Physicians

12.4.9 Results

**Renal Association Recommendations**

**Recommendation one: A total weekly creatinine clearance > 50 l/week/1.73 m$^2$ and/or a weekly dialysis Kt/V urea > 1.7**

- Regionally, the percentage of patients achieving the Renal Association recommendation for a total weekly creatinine clearance > 50 l/week/1.73m$^2$ and/or a total Kt/V > 1.7 increased over the three year audit period (as shown in table 1 below).

- The percentage of patients achieving the Renal Association recommendation for a total weekly creatinine clearance > 50 l/week/1.73m$^2$ and/or a total Kt/V > 1.7 increased in all 4 units over the three year audit period. SRH started with and maintained a very high level of achievement. RPH also achieved a high standard that increased throughout the audit period. At MRI and RLH, achievement increased steadily.

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<tbody>
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<td>MRI</td>
<td>78</td>
<td>82</td>
<td>84</td>
</tr>
<tr>
<td>RLH</td>
<td>68</td>
<td>71</td>
<td>77</td>
</tr>
<tr>
<td>RPH</td>
<td>88</td>
<td>92</td>
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</tr>
<tr>
<td>SRH</td>
<td>94</td>
<td>98</td>
<td>95</td>
</tr>
<tr>
<td>Region</td>
<td>85</td>
<td>88</td>
<td>89</td>
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Table 1: Percentage of patients achieving a total weekly creatinine clearance > 50 l/week/1.73m$^2$ and/or a total Kt/V > 1.7
Recommendation two: \( Kt/V \) and creatinine clearance as acceptable measures of adequacy

- Results for \( Kt/V \) were similar to those obtained for creatinine clearance both regionally and at individual units.

Recommendation three: PD adequacy testing should be carried out annually

- Regionally, the use of PD adequacy testing increased steadily over the three-year audit period (as shown in table 2 below).

- Over the three years, SRH maintained a high level of achievement with PD adequacy testing. At MRI and RPH, testing increased, and at RLH testing increased then decreased.

<table>
<thead>
<tr>
<th>Region</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SRH</th>
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<tr>
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<td>31</td>
<td>54</td>
<td>95</td>
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<tr>
<td>2000/2001</td>
<td>49</td>
<td>45</td>
<td>68</td>
<td>98</td>
<td>65</td>
</tr>
<tr>
<td>2001/2002</td>
<td>76</td>
<td>36</td>
<td>88</td>
<td>96</td>
<td>74</td>
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</table>

Table 2: Percentage of patients having a PD adequacy test

Protocols for PD adequacy testing

- Throughout the region there were variations in the protocols for PD adequacy testing. SRH had routine yearly tests in 1999. MRI and RPH developed yearly tests throughout the three-year audit period. RLH, due to limited staff and resources, only performed PD adequacy tests when clinically indicated.

Characteristics of patients not achieving the Renal Association recommendations for dialysis adequacy.

- A more detailed analysis of the contributions of the additional data collected, i.e. prescribed dialysate and ultrafiltration volumes, nutritional variables etc, to the PD adequacy results was undertaken. However, it is not reported here due to complexities in the interpretation of the results, in part arising from the factors influencing the data during the audit period (see 12.4.10 below).

Other results of interest

- Regionally, there was a small increase in the median Total \( Kt/V \) over the reported audit period [2.00 to 2.08]. There were similar increases in all 4 units [HOH 2.18 to 2.23 / MRI 1.88 to 2.01 / RLH 1.83 to 1.95 / RPH 1.92 to 2.16].

- Regionally, there was little change in the median Dialysate \( Kt/V \) over the reported audit period [1.63 to 1.65]. An increase was seen in 2 units [HOH 1.72 to 1.78 / MRI 1.51 to 1.61] and a decrease in two [RLH 1.48 to 1.44 / RPH 1.68 to 1.65].
Regionally, there was a small increase in the median Residual \( K_t/V \) over the reported audit period, [0.24 to 0.30]. An increase was seen in 3 units [HOH 0.3 to 0.38 / RLH 0.13 to 0.17 / RPH 0.21 to 0.48] and a decrease in one [MRI 0.22 to 0.16].

Over the reported audit period, the percentage of patients with no residual renal function remains unchanged regionally [31%]. Between the units, there were variations in the percentage of patients with no residual renal function [SRH 27%, 24%, 26% / MRI 29%, 37%, 33% / RLH 23%, 34%, 26% / RPH 45%, 36%, 36% for 1999/2000, 2000/2001 and 2001/2002 respectively].

Over the reported audit period, regionally there was a small increase in the percentage of patients with no residual renal function and a total \( K_t/V > 1.7 \) [60% to 64%]. SRH achieved and maintained the best result in this group of patients [SRH 79% to 80%]. 2 units improved this result during the audit period [MRI 44% to 57% and RPH 55% to 64%] and 1 remained the same [RLH 55% to 54%].

12.4.10 Factors influencing the data during the audit period

Throughout the region there were variations in the way in which the ultrafiltration was calculated.

Throughout the region there were also variations in the protocols for PD adequacy testing (see 12.4.9 above).

Throughout the region there were variations in the target \( K_t/V \) and Total CCr. MRI and RPH adopted the RA standard of a \( K_t/V > 1.7 \) and a CCr > 50 l/week/1.73 m\(^2\). RLH and SRH adopted higher PD adequacy targets of \( K_t/V > 2.0 \) and a CCr > 65 l/week/1.73 m\(^2\) and, \( K_t/V > 1.8 \) and a CCr > 60 l/week/1.73 m\(^2\) respectively.

12.4.11 Conclusions

The Renal Association recommendation for PD dialysis adequacy is being met by more than 80% of the patients who received a PD adequacy test.

At RPH and SRH, a high proportion of patients meets the RA recommendation. Regionally, at MRI and RLH, results are improving.

Similar results were obtained for \( K_t/V \) and CCr in line with Renal Association recommendation.

Over 70% of the PD population receive a PD adequacy test annually.

At SRH, a high proportion of patients receives a PD adequacy test annually. Regionally, at MRI and RPH the number of tests being performed is increasing. The number of tests being performed at RLH did not increase during the audit period but during this time the RLH data was affected by limited staff and resources, resulting in patients having adequacy tests only when clinically indicated.
By the end of the reported audit period, the protocols for PD adequacy testing were in line with the Renal Association recommendation at three units [MRI, RPH and SRH]. Probably because of this, achievement of this target improved over the reported audit period. The RA recommendation for PD adequacy testing has now been adopted at RLH.

There are complexities in the interpretation of the results, arising from variations in the way in which PD adequacy was calculated, and specifically the ultrafiltration calculation, and from the different protocols for PD adequacy testing. Consequently there are difficulties in the interpretation of the benchmarked data and it is difficult draw conclusions on the characteristics of patients failing to achieve the Renal Association recommendation for PD dialysis adequacy.

The high level of achievement at SRH could reflect variations in the way in which ultrafiltration is calculated throughout the region as discussed above. This aside, high achievement could also result from the earlier introduction of a protocol to do PD adequacy tests annually and a higher target Kt/V and CCr.

Similarly, the lower levels of achievement of the RA recommendation for PD adequacy at MRI and RLH may be associated with the lower median residual renal function in patients tested. At MRI this may reflect the high proportion of patients on PD and at RLH the need to select patients on the basis of clinical need due to limitations in staff resources.

12.4.12 Recommendations

- Consideration should be given to the lead of RLH and SRH in setting higher adequacy targets to get more patients to meet the RA recommendation.
- The way in which dialysis adequacy is calculated, and specifically the ultrafiltration approximation should be standardised.
- Failure to achieve targets should trigger a clinical reassessment and adjustment of dialysis volume prescription.
- If adequate dialysis cannot be achieved with PD, under-dialysed patients should be able to transfer to HD if successful vascular access can be obtained.
- Units should comply with the RA recommendation for annual testing.
- Further analysis should be carried out and reported to understand the characteristics of patients not achieving the RA recommendations for dialysis adequacy.
- Patients with low residual renal function are at risk of failing to achieve targets and should be assessed more carefully, possibly every 6 months.
12.5 Peritonitis audit

- Data from two audits are presented here [2001/2002 and 2002/2003]

12.5.1 Aims & objectives

- To measure achievement of the Renal Association standard for peritonitis.
- To monitor the organisms causing peritonitis.

12.5.2 Evidence base


12.5.3 Standards

- Renal Association recommended minimum standard using the disconnect system 2002¹.
  - Peritonitis rates should be < 1 episode/18 patient-months [Evidence level A].
  - The negative peritoneal fluid culture rate in patients with clinical peritonitis should be less than 15% [Evidence level B].
  - The initial cure rate of peritonitis should be more than 80% (without the necessity to remove the catheter) [Evidence level B].

12.5.4 Patients

- Data for the 2001/2002 and 2002/2003 audits were obtained from all PD patients, enrolled on a dialysis programme in the North West Region, and who had an episode of peritonitis between 1st April 2001 and 31st March 2002 and, 1st April 2002 and 31st March 2003 respectively.

12.5.5 Data

- Data includes patient months per episode, negative peritoneal fluid culture rate, initial cure rate of peritonitis, organisms identified, hospitalisation, length of stay and in-patient episodes.
12.5.6 Methods

- Data was obtained via a PD nursing proforma.
- Data was collated and analysed by the regional audit co-ordinator

12.5.7 Health disciplines

- PD nurses
- Physicians

12.5.8 Results

*Renal Association standards*

**Standard one: Peritonitis rates should be < 1 episode/18 patient-months.**

**All systems**

- This standard was achieved for all systems regionally in 2001/2002 and 2002/2003 (as shown in table 3 below).
- This standard was achieved for all systems by all individual units except SMH in 2001/2002 and it was achieved for all systems by FGH, MRI and RLH in 2002/2003.
- Since 2000/2001 peritonitis rates for all systems have got worse for the region and for all units individually.

<table>
<thead>
<tr>
<th></th>
<th>FGH</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SMH</th>
<th>SRH</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>44</td>
<td>32</td>
<td>26</td>
<td>28</td>
<td>10</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>2000-2001</td>
<td>37</td>
<td>40</td>
<td>29</td>
<td>30</td>
<td>14</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>2001-2002</td>
<td>66</td>
<td>19</td>
<td>20</td>
<td>30</td>
<td>10</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>2002-2003</td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>15</td>
<td>-</td>
<td>16</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 3: Peritonitis rates for all systems (patient months /episode)

- In summary, regionally this standard for all systems is being achieved but over the past two years, overall rates have got worse.
Continuous ambulatory peritoneal dialysis (CAPD)

- This standard was achieved for CAPD regionally in 2001/2002 and 2002/2003 (as shown in table 4 below).
- This standard was achieved for CAPD by all units except SMH in 2001/2002 and it was achieved for CAPD by MRI and RLH in 2002/2003.
- Since 2000/2001, the rate for CAPD has increased from 1 episode of peritonitis/26 patient-months to 1 episode/19 patient months in 2001/2002 and 1 episode/18 patient months in 2002/2003.
- Since 2000/2001 peritonitis rates for CAPD have improved for RLH but have got worse for the Region, FGH, MRI, RPH, SMH and SRH.

<table>
<thead>
<tr>
<th></th>
<th>FGH</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SMH</th>
<th>SRH</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>63</td>
<td>27</td>
<td>29</td>
<td>31</td>
<td>11</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>2000-2001</td>
<td>48</td>
<td>36</td>
<td>26</td>
<td>26</td>
<td>16</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>2001-2002</td>
<td>78</td>
<td>19</td>
<td>20</td>
<td>26</td>
<td>10</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>2002-2003</td>
<td>16</td>
<td>20</td>
<td>27</td>
<td>15</td>
<td>-</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 4: Peritonitis rates for CAPD (patient months /episode)

- In summary, regionally this standard for CAPD is being achieved but over the past two years, CAPD rates have got worse.

Automated peritoneal dialysis (APD)

- This standard was achieved for APD regionally in 2001/2002 and 2002/2003 (as shown in table 5 below).
- This standard was achieved for APD by all units in 2001/2002 and 2002/2003.
- Since 2000/2001 the rate for APD has increased from 1 episode of peritonitis / 40 patient-months to 1 episode / 28 patient months in 2001/2002 and 1 episode / 24 patient months in 2002/2003.
- Since 2000/2001 peritonitis rates for APD have improved for FGH, SMH and SRH but have got worse for Region, MRI, RLH and RPH.

<table>
<thead>
<tr>
<th></th>
<th>FGH</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SMH</th>
<th>SRH</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>37</td>
</tr>
<tr>
<td>2000-2001</td>
<td>30</td>
<td>70</td>
<td>47</td>
<td>96</td>
<td>5</td>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td>2001-2002</td>
<td>72</td>
<td>20</td>
<td>23</td>
<td>92</td>
<td>36</td>
<td>48</td>
<td>28</td>
</tr>
<tr>
<td>2002-2003</td>
<td>84</td>
<td>26</td>
<td>19</td>
<td>24</td>
<td>-</td>
<td>52</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 5: Peritonitis rates for APD (patient months /episode)
• APD rates were better than CAPD rates for Region, MRI, RLH, RPH, SMH and SRH in 2001/2002 and for Region, FGH, MRI, RPH and SRH in 2002/2003.

• APD rates were worse than CAPD rates for FGH in 2001/2002 and for RLH in 2002/2003.

• In summary, regionally this standard for APD is being achieved but over the past two years APD rates have got worse. Despite this, regionally APD rates are still better than CAPD rates.

Standard two: The negative peritoneal fluid culture (no bacterial growth or NBG) rate in patients with clinical peritonitis should be less than 15%.

• The region failed to reach this standard in 2001/2002 and 2002/2003 (as shown in table 6 below).


• NBG rates in 2001/2002 were the worst recorded in the past 4 years.

<table>
<thead>
<tr>
<th></th>
<th>FGH</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SMH</th>
<th>SRH</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>17</td>
<td>21</td>
<td>17</td>
<td>17</td>
<td>9</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>2000-2001</td>
<td>67</td>
<td>34</td>
<td>11</td>
<td>18</td>
<td>12</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>2001-2002</td>
<td>67</td>
<td>45</td>
<td>32</td>
<td>22</td>
<td>19</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>2002-2003</td>
<td>25</td>
<td>24</td>
<td>20</td>
<td>20</td>
<td>-</td>
<td>8</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 6: NBG rates (%)

• In summary, regionally this standard is not being met. In 2001/2002, all units had the worst NBG rates in the past four years but they improved in 2002/2003.

Standard three: The initial cure rate of peritonitis should be more than 80% (without the necessity to remove the catheter).

• The region did not achieve this standard in 2001/2002 or 2002/2003 (as shown in table 7 on the next page).

• FGH and SMH achieved this standard in 2001/2002 and no unit achieved the standard in 2002/2003.

• Over the past few years, an obvious trend in the initial cure rate has not emerged regionally or at individual units.
In summary, regionally this standard is not being met and initial cure rates have not changed greatly over the past four years.

**Organisms causing peritonitis**

- Incidence of gram positive organisms decreased until 2001/2002 (as shown in table 8 below).
- Incidence of fungal organisms is unchanged.

### Table 7: Initial cure rate (%)

<table>
<thead>
<tr>
<th></th>
<th>FGH</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SMH</th>
<th>SRH</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>83</td>
<td>76</td>
<td>61</td>
<td>67</td>
<td>80</td>
<td>74</td>
<td>72</td>
</tr>
<tr>
<td>2000-2001</td>
<td>90</td>
<td>79</td>
<td>75</td>
<td>85</td>
<td>80</td>
<td>86</td>
<td>81</td>
</tr>
<tr>
<td>2001-2002</td>
<td>83</td>
<td>69</td>
<td>58</td>
<td>60</td>
<td>80</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>2002-2003</td>
<td>67</td>
<td>71</td>
<td>66</td>
<td>79</td>
<td>-</td>
<td>79</td>
<td>74</td>
</tr>
</tbody>
</table>

**Other results of interest**

- Regionally APD use increased between 2001/2002 and 2002/2001 [19% to 22%].
- The biggest increase in APD use between 2001/2002 and 2002/2001 was at RLH [37% to 44%].
- Regionally admissions following an episode of peritonitis have increased between 2001/2002 and 2002/2001 [42% to 45%].
- Compared to other units, RLH admit approximately 50% more patients following an episode of peritonitis in 2001/2002 and 2002/2003.
- In 2002/2003, the proportion of patients with a length of stay greater than 2 weeks is larger at MRI and SRH [57% and 41% respectively] than at RLH and RPH [12% and 5% respectively].
- At MRI, the proportion of patients with a length of stay greater than 2 weeks increased between 2001/2002 and 2002/2003 [20% to 57%].
• Regionally the percentage of patients with 2 or more episodes of peritonitis decreased [29% to 25%] but at RPH, this figure increased [20% to 32%].

• At RPH, it has been noted locally that sclerosing peritonitis has increased.

12.5.9 Factors influencing the data during the audit period

• Change of CAPD/APD contract from Baxter to Fresenius (systems and solutions) at FGH/RPH/SRH in 2002.

• Merger of MRI/SMH in August 2001.

• Before 1st April 2001, the start of the audit period, the ratio of HD to PD patients was 2:3 across the region and individually it was 1:2 at MRI, RPH and SRH and 1:1 at RLH. Availability of HD may influence the selection criteria for PD that could result in variations in the suitability of patients selected for PD and the incidence of peritonitis across the region.

• Units reported an increase in eosinophilic peritonitis, secondary to the use of icodextran solutions, resulting in negative peritoneal fluid culture that could be linked to the poor NBG results in 2001/2002.

12.5.10 Conclusions

• The RA standard for peritonitis rates is being met but over the past two years, rates have increased.

• The RA standard for NBG rates is not being met but over the past year, rates have improved.

• The RA standard for the initial cure rate is not being met and over the past four years, initial cure rates have not changed greatly.

• Regionally APD use has increased along with APD peritonitis rates.

• There is a regional variation in admissions policies and resultant length of stay.

12.5.11 Recommendations

• Compare results from different manufacturers to inform the tendering process.

• Collect additional data relating to eosinophilic peritonitis and sclerosing peritonitis.

• Review organisms in relation to systems used.
12.5 Survival audit

12.6.1 Aims & objectives

- To measure achievement of the Renal Association Recommendation (provisional targets).
- To benchmark survival within the North West Region and against data from the UK Renal Registry (2001) and from the Scottish Renal Association (1999).
- To identify factors associated with poor survival.

12.6.2 Evidence base


12.6.3 Standards

- Renal Association Recommendation 1997 (provisional targets)

For all patients with ‘standard’ primary disease aged 18-55 years

1 year > 90%
5 years > 80%
10 years > 70%

For all patients except those with diabetes mellitus aged 18-55 years

1 year > 90%
5 years > 75%
10 years > 65%
12.6.4 Patients

- All patients enrolled on a programme of renal replacement therapy on 1st May 2000 at MRI, RLH, RPH and SRH were included in the survival analysis. Patients from SMH were not included because the unit was closed before the end of the audit period (see section 12.6.5 below).

12.6.5 Data

- Data included date of death up to 1st August 2002, unit and modality.
- Risk factors such as age, ethnicity, nutritional status, history of smoking, family history of heart disease, and meeting the Renal Association standards for haemoglobin and blood pressure and co-morbidities such as diabetes, ischaemic heart disease and peripheral vascular disease were also collected.

12.6.6 Methods

- Date of death and modality were obtained from local databases.
- Risk factors were obtained via a nursing proforma and a patient proforma.
- Data was collated and analysed by the regional audit co-ordinator.

12.6.7 Health disciplines involved

- Nurses
- Physicians

12.6.8 Results

*Renal Association recommendations*

**Recommendation one:** For all patients with 'standard' primary disease aged 18-55 years, survival at 1 year should be > 90%.

- The 1 year Renal Association recommendation for patients with standard primary renal disease aged 18-55 was met regionally, individually by all the hub units and collectively by the RPH satellite unit (as shown in table 9 below).

<table>
<thead>
<tr>
<th>Region</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SRH</th>
<th>Hub units</th>
<th>Satellite units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>93</td>
<td>98</td>
<td>90</td>
<td>91</td>
<td>94</td>
<td>N/A</td>
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<tr>
<td></td>
<td>86</td>
<td>100</td>
<td>N/A</td>
<td>92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: 1 year survival for patients with standard primary renal disease
Recommendation two: For all patients with diabetes mellitus aged 18-55 years, survival at 1 year should be > 90%.

- Diabetes data was poorly recorded in this audit. So although survival in relation to diabetes was calculated, the data is not presented here as it was considered unreliable.

**Benchmarked data**

- Regional 1 year survival data was comparable to 1 year UK Renal Registry data: regional data was slightly better than the UK Renal Registry data in the 18-34, 55-64, 65-74 and 75+ age groups and slightly worse in the 35-44 and 45-54 age groups (as shown in table 10 below).

<table>
<thead>
<tr>
<th></th>
<th>18-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65-74</th>
<th>75+</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW region</td>
<td>97</td>
<td>93</td>
<td>88</td>
<td>85</td>
<td>74</td>
<td>68</td>
</tr>
<tr>
<td>UK Renal Registry</td>
<td>96</td>
<td>94</td>
<td>90</td>
<td>84</td>
<td>72</td>
<td>65</td>
</tr>
</tbody>
</table>

Table 10: 1 year survival: NW Region compared to UK Renal Registry

- Regional 1 year survival data compared favourably with 1 year Scottish Renal Association data: regional data was better than the Scottish Renal Association data in all age groups (as shown in table 11 below).

<table>
<thead>
<tr>
<th></th>
<th>&lt;50</th>
<th>50-64</th>
<th>65-75</th>
<th>&gt;75</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW region</td>
<td>94</td>
<td>86</td>
<td>74</td>
<td>66</td>
</tr>
<tr>
<td>Scottish Renal Registry</td>
<td>91</td>
<td>80</td>
<td>66</td>
<td>54</td>
</tr>
</tbody>
</table>

Table 11: 1 year survival: NW Region compared to Scottish Renal Registry

**Analysis of factors associated with poor survival**

- Data from 1266 patients was analysed.
- The median age was 58 years (min 18 years, max 90 years) regionally.
- 61% were male and 39% female.
- 50% were unit haemodialysis patients, 43% continuous ambulatory peritoneal dialysis patients, 5% automated peritoneal dialysis patients, 1% home haemodialysis patients and 1% intermittent peritoneal dialysis patients.
- 11% of the population was non-Caucasian.
• 18% of the population were recorded as diabetic (although diabetes data was poorly recorded in this audit and so this figure and results relating to this data must be viewed with caution).

• MRI had the highest overall survival at 1 and 2 years and, SRH and RLH had the lowest overall survival at 1 year and SRH the lowest overall survival at 2 years (as shown in table 12 below).

<table>
<thead>
<tr>
<th>Region</th>
<th>MRI</th>
<th>RLH</th>
<th>RPH</th>
<th>SRH</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year survival</td>
<td>88</td>
<td>82</td>
<td>85</td>
<td>82</td>
<td>84</td>
</tr>
<tr>
<td>2 year survival</td>
<td>77</td>
<td>70</td>
<td>75</td>
<td>68</td>
<td>72</td>
</tr>
</tbody>
</table>

Table 12: 1 and 2 year survival by individual unit

• HHD patients had the highest survival at 1 year and IPD patients had the lowest survival at 1 year (as shown in table 13 below).

<table>
<thead>
<tr>
<th>Region</th>
<th>HD</th>
<th>HHD</th>
<th>PD</th>
<th>APD</th>
<th>IPD</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year survival</td>
<td>83</td>
<td>94</td>
<td>86</td>
<td>91</td>
<td>62</td>
<td>84</td>
</tr>
</tbody>
</table>

Table 13: 1 year survival by mode of treatment.

• Statistical analysis (Kaplein-Meier survival) showed that there were significant differences between the survival functions of the data grouped by individual hub unit (p<0.05), regional satellite units grouped by hub (p<0.05), modality (p<0.05), age (p<0.000) and diabetes (p<0.05).

• Importantly, statistical analysis (Cox’s regression) showed that after accounting for age and diabetes, the unit and the mode of dialysis were not significant factors in reducing survival. Thus, the differences seen in the Kaplein-Meier survival functions grouped by unit and modality are probably due to differences in the age and co-morbidity of patients taken onto dialysis.

• However, statistical analysis (Cox’s regression) did indicate that after accounting for age and diabetes, albumin (i.e. the patient’s nutritional status) and a family history of heart disease were significant factors in reducing survival.

12.6.9 Factors influencing the data during the audit period

• Co-morbidity is poorly recorded on all units and so the data relating to patients with diabetes must be interpreted cautiously.

• There are variations of the entry point into the survival analysis that are difficult to account for and which may affect the interpretation of the results.
There is no standard definition of the start of dialysis across the region and this factor may be confounded by local problems on different units resulting in different approaches to the mode and timing of the initiation of dialysis.

12.6.10 Conclusions

- Regionally, the Renal Association recommendation for 1-year survival data in patients with standard primary renal disease has been met.
- It was not possible to measure survival in diabetic patients due to poor co-morbidity recording.
- One-year survival appears to be comparable to that recorded elsewhere in England and possibly better than that recorded in Scotland.
- Variation in the individual unit one year survival data may reflect differences in casemix, specifically age and co-morbidity, specifically diabetes, and not differences in clinical practice.
- Age, diabetes, nutritional status and reported heart disease are factors that are associated, as published elsewhere, with reduced survival.

12.6.11 Recommendations

- Co-morbidity should be recorded routinely by all units.
- Longer-term survival data should be collected to look at the remaining Renal Association standards, to look further at the centre-effect and to inform the role of other factors.
- A standard definition of the start of dialysis should be agreed.
- Units should collect standardised data to eliminate differences between the units.
13 Results from programme of individual audit

13.1 Audits

One audit was started in the period 1st April 2002 to 31st March 2003

- Withdrawal and withholding of treatment (Pilot study)

13.2 Withdrawal and withholding of treatment

13.2.1 Aims & objectives

- To establish the number and the characteristics of patients for whom dialysis is discontinued.
- To examine the reasons for initiating the decision to withdraw treatment and the person(s) initiating this decision.
- To examine guidelines for palliative care of patients for whom treatment has been withdrawn. 
- To examine the potential of this subject area for a regional audit.

13.2.2 Evidence base


13.2.3 Standards

It is difficult to set quantitative standards for access to and withdrawal from dialysis and so the renal association has set out a recommendation for good practice\(^1\).

Renal Association Recommendation 2002\(^1\)

- The decisions to institute active non-dialytic management of the patient with ESRD, including nutritional, medical and psychological support, or to discontinue dialysis already in training, should be made jointly by the patient and the responsible consultant nephrologist after consultation with relatives, the family practitioner and members of the caring team (abiding by the principles outlined in chapter 3 of the Renal Association
Standards Document). The decision and the reasons for it must be recorded in the patients’ notes. The number of patients not taken onto dialysis and the reasons for this decision should be subject to audit, as should the numbers and causes for those in whom dialysis is discontinued. Centres should develop guidelines for palliative care of such patients, including liaison with community services [Good practice].

13.2.4 Patients

- All patients who had joined the dialysis programme at RPH and who had subsequently stopped dialysis in the period January 2001 to December 2002.

13.2.5 Data

- Data included age, sex, ethnicity, co-morbidity, transplant status, mode of dialysis, date dialysis started, date dialysis withdrawn, date of death, the reasons for initiating withdrawal of treatment and the person(s) initiating these decisions.

13.2.6 Methods

- Data was obtained from computer systems and patient records.
- Data was collated and analysed by the regional audit facilitator (Lancashire zone).

13.2.7 Health disciplines

- Physicians
- Nursing

13.2.8 Results

*Patients for whom dialysis was discontinued*

- 29 patients (72% male / 28% female) stopped dialysis in the audit period.
- The age of these patients ranged from 30 to 90 years (mean 71 years).
- All patients were classified as Caucasian.
- 14% of the patients were diabetic and 86% had one or more co-morbid condition.
- None had received a kidney transplant.
• 21 were HD patients and 8 were PD patients.

• 29% of the patients had been on the dialysis programme for less than 3 months and 52% had had been on the programme for more than a year.

• Survival ranged between 1 and 36 days (mean 21 days).

• 43% survived less than one week and 10% survived more than 4 weeks.

Reasons and person(s) responsible for initiating the decision to withdraw treatment

• The reasons for initiating the decision to withdraw treatment were acceptable.

• 26% of the patients had treatment withdrawn at their own initiation, 5% at the initiation of relatives and 68% at the initiation of the treating physician.

Guidelines for palliative care

• There were no guidelines for palliative care in patients for whom dialysis was withdrawn.

13.2.9 Conclusions

• This pilot study shows that the reasons for initiating the decision to withdraw treatment at RPH were acceptable.

• Patients at RPH have their treatment withdrawn without guidelines for palliative care.

13.2.10 Recommendations

• Guidelines for the palliative care of patients for whom treatment has been withdrawn should be examined over the region and following this, good practice should be discussed and shared.

• This audit should be extended over the Region to examine the reasons for initiating the decision to withdraw treatment, to review clinical practice when this occurs and to develop regional guidelines as described above.
14 Plans for 2003 - 2004

14.1 Programme of ongoing audit

Data collected from all patients enrolled in a dialysis programme in the North West Region on 1st May 2002 is being validated and analysed and is to be presented during 2003/2004.

14.2 Programme of individual audit

Audits agreed for 2003/2004

- Evaluation of unmet need: renal impairment in patients not under renal review
- PD: Survival of mode of treatment
- Vascular access
- Withdrawal of treatment

Audits under consideration 2003/2004

- Haemodialysis related infection
- Depression in patients with renal disease

14.3 Pre-dialysis audits

Work on pre-dialysis audits is continuing with a view to incorporating pre-dialysis patients into the programme of ongoing audit.

Audits agreed for 2003/2004 include

- Management of bone chemistry

Audits under consideration for 2003/2004 include

- Management of blood pressure and cardiovascular risk
15 Further information

For further details on the North West Region Renal Audit Programme, please contact Dr N M K Reid, the Regional Renal Audit Co-ordinator or Mrs B Bellingham, Regional Renal Audit Facilitator at the Clinical Audit Department in Wythenshawe Hospital (telephone: 0161 291 5821).

[email: nicola.reid@smtr.nhs.uk and bernadette.bellingham@smtr.nhs.uk]

References


Appendix one

Objectives of the North West Region Renal Audit Programme

To achieve the principal aim the objectives of the programme are:

- To improve and maintain high standards of clinical care by auditing against standards set out by the UK Renal Association.

- To eliminate inequalities and effect change by benchmarking data collected in a programme of ongoing audit, against data from other regional renal units and data from renal units contributing to the UK Renal Registry.

- To evaluate outcome (including cardiovascular outcome) by monitoring risk factors and patient management on a regional renal audit database and relating these to data from the programme of ongoing audit.

- To improve clinical care in areas not covered by the programme of ongoing audit by looking at the feasibility of new audits and including those with strong evidence for resultant improvement in a separate programme of individual audit.

- To involve patients in the clinical audit process by establishing different channels of communication with individual patients and patient groups and by setting up a patient forum to initiate patient involvement in audit planning.
## Membership of the North West Region Renal Audit Steering Group

<table>
<thead>
<tr>
<th>Members of Steering Group</th>
<th>Title</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr R Ahmad</td>
<td>Consultant Renal Physician (Mersey Chair until August 2003)</td>
<td>Royal Liverpool University Hospital</td>
</tr>
<tr>
<td>Mrs B Bellingham</td>
<td>Regional Renal Audit Facilitator</td>
<td>Manchester Royal Infirmary</td>
</tr>
<tr>
<td>Mr P Campbell</td>
<td>Regional Clinical Audit Projects Co-ordinator</td>
<td>Bury PCT</td>
</tr>
<tr>
<td>Dr R Coward</td>
<td>Consultant Physician and Nephrologist (Lancashire Chair)</td>
<td>Royal Preston Hospital</td>
</tr>
<tr>
<td>Sr L Crosby</td>
<td>Senior Haemodialysis Sister</td>
<td>Hope Hospital</td>
</tr>
<tr>
<td>Dr J Harper</td>
<td>Consultant Renal Physician (Mersey Chair from September 2003)</td>
<td>Royal Liverpool University Hospital</td>
</tr>
<tr>
<td>Sr N Kerigan</td>
<td>Senior Haemodialysis Sister Renal Hub Audit Facilitator (Lancashire)</td>
<td>Royal Preston Hospital</td>
</tr>
<tr>
<td>S/N V Mitchell</td>
<td>Haemodialysis Staff Nurse Renal Hub Audit Facilitator (Mersey)</td>
<td>Royal Liverpool University Hospital</td>
</tr>
<tr>
<td>Sr L Palmer</td>
<td>Senior CAPD Sister Renal Hub Audit Facilitator (Manchester)</td>
<td>Manchester Royal Infirmary</td>
</tr>
<tr>
<td>Dr N Reid</td>
<td>Regional Renal Audit Co-ordinator</td>
<td>Manchester Royal Infirmary</td>
</tr>
<tr>
<td>Dr D Smithard</td>
<td>Consultant Physician</td>
<td>Birch Hill Hospital</td>
</tr>
<tr>
<td>Sr N Tannahill</td>
<td>Epo Co-ordinator</td>
<td>Royal Liverpool University Hospital</td>
</tr>
<tr>
<td>Sr L Uttley</td>
<td>Senior CAPD Sister</td>
<td>Manchester Royal Infirmary</td>
</tr>
<tr>
<td>Dr M Venning</td>
<td>Consultant Renal Physician (Manchester Chair)</td>
<td>Manchester Royal Infirmary</td>
</tr>
<tr>
<td>Sr R Worsman</td>
<td>Senior Haemodialysis Sister</td>
<td>Westmorland General Hospital</td>
</tr>
<tr>
<td>Position to be filled via patient forum</td>
<td>Patient representative</td>
<td></td>
</tr>
</tbody>
</table>
Appendix three

Renal units participating in the North West Region Renal Audit Programme

- Accrington & Victoria Hospital - Communicare NHS Trust
- Arrowe Park Hospital - Wirral Hospital NHS Trust
- Birch Hill Hospital - Rochdale Healthcare NHS Trust
- Broad Green Dialysis Centre - Royal Liverpool & Broadgreen University Hospitals NHS Trust
- Clatterbridge Hospital - Wirral Hospital NHS Trust
- Chester Dialysis Unit - Wirral Hospital NHS Trust
- Chorley District Hospital – Lancashire Teaching Hospitals NHS Trust
- Devonshire Road Hospital - Blackpool, Wyre & Fylde Community Health Services NHS Trust
- Furness General Hospital – Morecambe Bay NHS Trust
- Hope Hospital - Salford Royal Hospitals NHS Trust
- Macclesfield District General Hospital - East Cheshire NHS Trust
- Manchester Royal Infirmary - Central Manchester and Manchester Children’s University Hospitals NHS Trust
- North Manchester General Hospital - North Manchester Healthcare NHS Trust
- Prestwich Hospital - Mental Health Services of Salford NHS Trust
- Royal Bolton Hospital – Bolton Hospitals NHS Trust
- Royal Liverpool University Hospital - Royal Liverpool & Broadgreen University Hospitals NHS Trust
- Royal Preston Hospital – Lancashire Teaching Hospitals NHS Trust
- Warrington Hospital - Warrington Hospital NHS Trust
- Waterloo Day Hospital - Aintree Hospitals NHS Trust
- Westmorland General Hospital - Morecambe Bay NHS Trust
- Whiston Hospital - St Helens and Knowsley Hospitals NHS Trust
- Withington Hospital - South Manchester University Hospitals NHS Trust
- Wythenshawe Hospital - South Manchester University Hospitals NHS Trust
Appendix four

Audit planning

To improve the effectiveness of the clinical audit process a project plan is developed for every audit topic. For all audits the plan identifies

The reasons for topic selection:

- the purpose of the audit
- the patient health improvement
- the evidence base
- whether the audit addresses national or regional renal service priorities

The methodology:

- the standards available
- the methods
- the sample
- the time scale of project
- the disciplines involved

The implementation of change:

- how recommendations might be implemented
- the persons responsible for monitoring change (this process is developed as the audit is undertaken)
Appendix five

Strength of recommendations used in the Renal Association standards document

In the Renal Association standards document, in the presence of strong research evidence, standards are set and with lesser evidence, recommendations. Evidence levels quoted below are used where appropriate. Other recommendations are termed ‘good practice’.

A  Evidence from at least one properly performed randomised controlled trial (quality of evidence Ib) or meta-analysis of several controlled trials (quality of evidence Ia).

B  Well conducted clinical studies, but no randomised clinical trials; evidence may be extensive but essentially descriptive (evidence levels IIa, IIb, III).

C  Evidence (level IV) obtained from expert committee reports or opinions, and/or clinical experience of respected authorities. This grading indicates an absence of directly applicable studies of good quality.
Appendix six

Abbreviations used in this report

General abbreviations

- APD  Automated Peritoneal Dialysis
- CAPD Continuous Ambulatory Peritoneal Dialysis
- HD   Haemodialysis
- PD   Peritoneal Dialysis
- RA   Renal Association
- RR   Renal Registry

Hospital abbreviations

- APH  Arrowe Park Hospital
- AVH  Accrington & Victoria Hospital
- BGC  Broad Green Dialysis Centre
- BHH  Birch Hill Hospital
- CDH  Chorley District Hospital
- CLH  Clatterbridge Hospital
- CDU  Chester Dialysis Unit
- DRH  Devonshire Road Hospital
- FGH  Furness General Hospital
- MDH  Macclesfield District General Hospital
- MRI  Manchester Royal Infirmary
- NMH  North Manchester General Hospital
- PRH  Prestwich Hospital
- RBH  Royal Bolton Hospital
- RLH  Royal Liverpool University Hospital NHS Trust
- RPH  Royal Preston Hospital
- SMH  Withington Hospital
- SRH  Hope Hospital
- WAH  Warrington Hospital
- WDH  Waterloo Day Hospital
- WGH  Westmorland General Hospital
- WHH  Whiston Hospital
- WYH  Wythenshawe Hospital