RENAL DEPARTMENT

QUALITY INDICATORS

ANNUAL REPORT

2004

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Thanks to Gambro for sponsoring the printing of this annual report.

AIM

The aims of these quality assurance activities are:

1. To compare our unit's performance for the management of dialysis patients against the national recommended guidelines (CARI) for the following parameters: Ca, PO4, Corrected Ca, Ca PO4 product, Albumin, Mg, Hb, Fe studies, Bicarbonate, Lipids and dialysis adequacy.

2. Compare our unit's water quality to AAMI standards.

3. Monitor and report central venous catheter (Vascath) infection and complication rate.

4. Monitor and report peritonitis and Peritoneal Dialysis exit site infection rates and compare these with national data.

5. Collect data on the characteristics of patients accepted onto dialysis and compare our population with national data from the 27TH ANZDATA Registry Report 2004.

6. Collect data on the renal biopsies performed at St George Hospital. Data collected includes: patient characteristics, biopsy adequacy, complications and nights in hospital.

7. Survey dialysis patients with the Short Form 36 to measure quality of life and compare survey results to previous surveys conducted at St George Hospital.

Executive Summary

The peritoneal dialysis unit has had a decrease in numbers over 2004 with a total of 74 patients being treated. The trend in peritoneal dialysis continues to show an increase in numbers of patients on Automated Peritoneal Dialysis (APD), (an increase of 8%), which corresponds to the national trend reported by ANZDATA.

Lipids are measured using the national heart foundation guidelines. These guidelines are probably too tight for the group of patients with no co morbid conditions and need to be widened. Lipid lowering therapy rates have improved over the year between audits.

46% of PD patients are High Average transporters.

The Iron protocol for PD is under review by the Quality Assurance Research Nurse, nursing working party and medical team, and will be ready to implement in July/August 2005.

Peritonitis organisms have been compared to ANZDATA for the first time (Oct 03 – Mar 04) showing similar percentages for Fungi, Coag Negative Staph, Staph aureaus non MRSA and Gram negative organisms.
The figures for patients' peritonitis free at 3 years has fallen dramatically due to the loss of some long term PD patients, but the percentage of patients peritonitis free since commencement has improved due to the larger numbers of patients who have been on peritoneal dialysis <3 years.

The majority of patients accepted onto peritoneal dialysis between October 2003 and December 2004 were between the ages of 65 – 84 years. The mean age was 71 years. Compared to ANZDATA our patients have a higher percentage of co morbid conditions at entry to dialysis.

The 4 West haemodialysis unit showed a slight decrease in growth activity for 2004 (19%) compared to 2003 (21%). As of 31st December 2004, there were 124 chronic patients receiving haemodialysis.

A maintenance iron program commenced in September 2004. The program's aim is for all haemodialysis patient's to have replete iron stores, thereby ensuring effective use of erythropoietin therapy and maximization of target haemoglobin levels.

In April 2004, nurse initiated strategies commenced to reduce the incidence of Central Vascather sepsis and exit site infection. As a result of these strategies, sepsis and exit site infection rates decreased during the year.

The patients accepted onto dialysis during October 2003 until December 2004 were examined. Compared to the previous audit, these patients are younger, had a lower incidence of chronic lung, cardiovascular, peripheral vascular and cerebrovascular disease but had a higher incidence of diabetes. There is an improvement in the number of patients with a functioning vascular access compared to the previous audit.

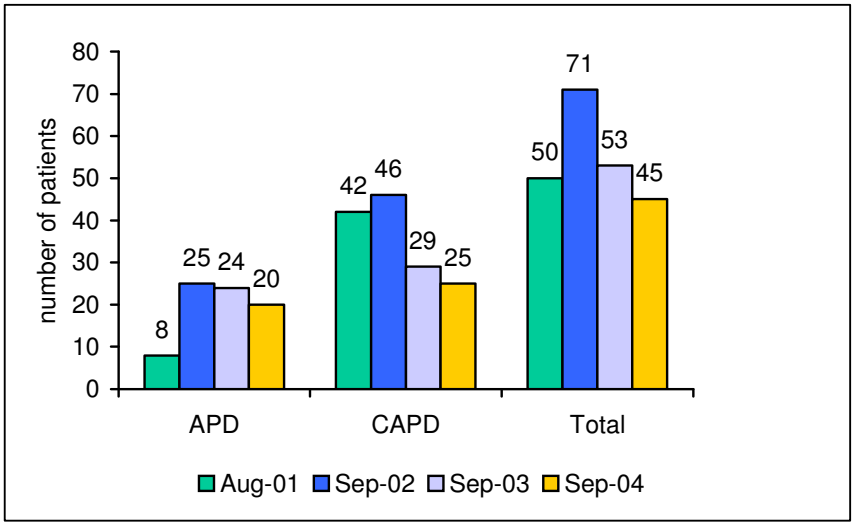
The dialysis patients were surveyed for quality of life using the Short Form 36 questionnaire. As a result of the survey, a team has commenced worked upon a research project aimed at improving the quality of life of dialysis patients by palliative care consultation.

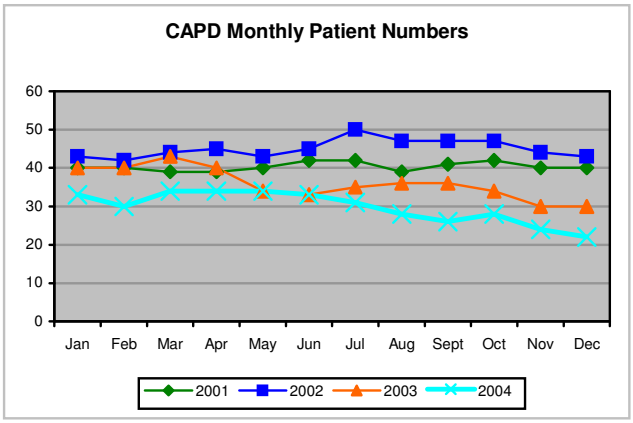
Renal biopsies were audited during 2004 for patient characteristics, adequacy and complications.

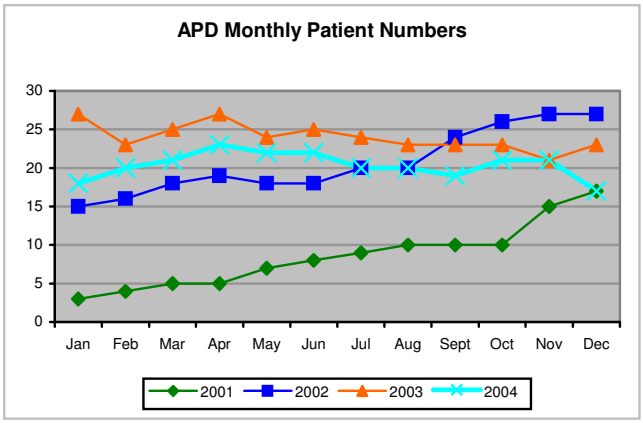
The Pre dialysis clinic has been renamed the Chronic Kidney Disease (CKD) clinic. The clinic has moved to 4 West and now operates one on one with the patients and their families moving away from the former group sessions. This clinic allows for better counseling and support for all CKD patients who will require either dialysis or conservative treatment.

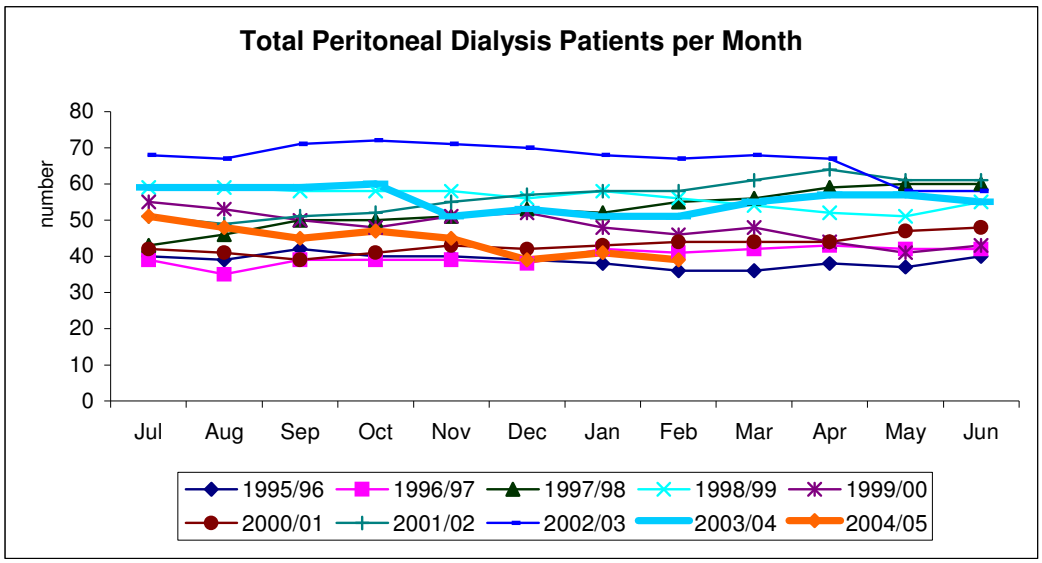
PERITONEAL DIALYSIS

The peritoneal dialysis unit has seen a significant decrease in total patient numbers in the past year with a total of 74 patients being treated in 2004 compared to 92 in 2003. In September the percent of patients receiving *automated peritoneal dialysis (APD)* is 44% and the number receiving *continuous ambulatory peritoneal dialysis (CAPD)* is 56%.









Comparison with:

The ANZDATA 27th Annual Report 2004

- ANZDATA results show an increase in the percentage of people using Automated Peritoneal Dialysis (APD); this is up by 5% from the 2003 ANZDATA annual report. The percentage of people using APD at St George is up by 8%.
- Continuous Ambulatory Peritoneal Dialysis (CAPD) continues to be on the decline across Australia and within the St George Peritoneal Dialysis population (down by 8% since 2003).

	ANZDATA	***St George***
APD	*39%*	*44%*
CAPD	*61%*	*56%*

Patient Flow – Peritoneal Dialysis

Peritoneal dialysis patients as at 31.12.2003 (n=53)

In	New Patients	16	
	Returns from HD	9	
	Transfers from other units	2	
	Subtotal		27
Out	Transplants	3	
	Transfer to Haemodialysis then transplanted	2	
	Transfer to other units	1	
	Transfer to Home Haemodialysis	1	
	Temporary Transfers to Haemodialysis	15	
	Permanent Transfers to Haemodialysis	6	
	Withdrawal from dialysis	3	
	Deaths on Haemodialysis	5	
	Deaths on CAPD	4	
	Death after Transplant	1	
	Alive on hospital APD	0	
	Subtotal		41
	Net Loss	**(14)**	
	PD patients at end of 2004 =		**39**

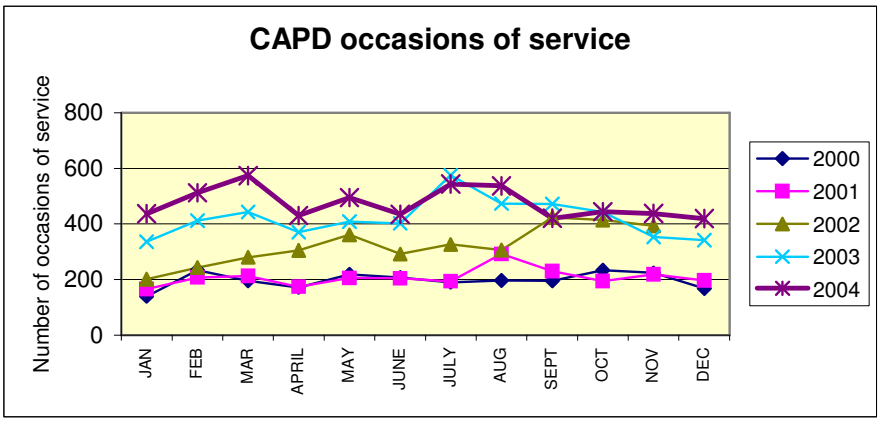
This indicates the following activity rates

	St George 2004 (%)	ANZDATA 2004 (%)
Transplants	*7*	*6*
Change to HD	*38*	*25*
Deaths on Dialysis	*5*	*13*
Death due to withdrawal	*4*	*3*

The reasons for the change to Haemodialysis are varied and include: Persistent peritonitis, fungal peritonitis, sclerosing peritonitis, patient choice, abdominal surgery, flow problems, peritoneal dialysate leak, peritoneal dialysis catheter fell out, technique failure and perforated bowel. The unit had a high rate of transfers to Haemodialysis but a lower rate of deaths on CAPD compared to the ANZDATA survey. Amongst the temporary transfers to Haemodialysis there were a number of hernia repairs (5) both male and female, and 3 men with peritoneal dialysate leaks. ANZDATA 2004 reports that permanent transfers (>12 months) to Haemodialysis was much more common than temporary (19% permanent and 4% temporary). The figures for St George are the opposite of ANZDATA; temporary, 20% of patients and permanent, 8% of patients.

Workload

In 2004 the PD unit provided 153 training days for PD patients and 5687 occasions of service which includes nurses outpatients, doctors outpatients, home visits, patient/staff education and phone contact. This is outlined in the following chart:



In 2004 the CAPD clinic began providing increased clinic use to other clinics. These include the transplant and pre dialysis clinics. The occasions of service remain high when actual Peritoneal Dialysis patients are on the decline.

PD Dialysis Adequacy, Biochemical and Haematology targets

Aim
To compare dialysis adequacy using haematological biochemical markers and Kt/V with previous audits conducted in March 03 (63 pt) and September 03 (61 pt), March 04 (55 pt) and September 04 (47 pt). These are performed at 6 month intervals as per the CARI recommended guidelines.

To ensure all patients have had a PET test performed to establish a baseline membrane transporter status.

To provide members of the renal team with individual patient's dialysis adequacy and biochemical and haematological marker results.

Background
An audit of biochemical and haematological markers and dialysis adequacy (Kt/V) was conducted in Sept 2004 of the current dialyzing 47 PD patients.

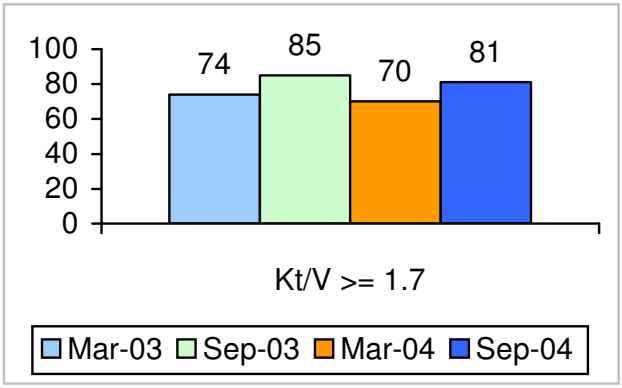
The CARI guidelines acceptable targets for biochemical and haematological markers and Kt/V adequacy of PD patients were used as a benchmark.

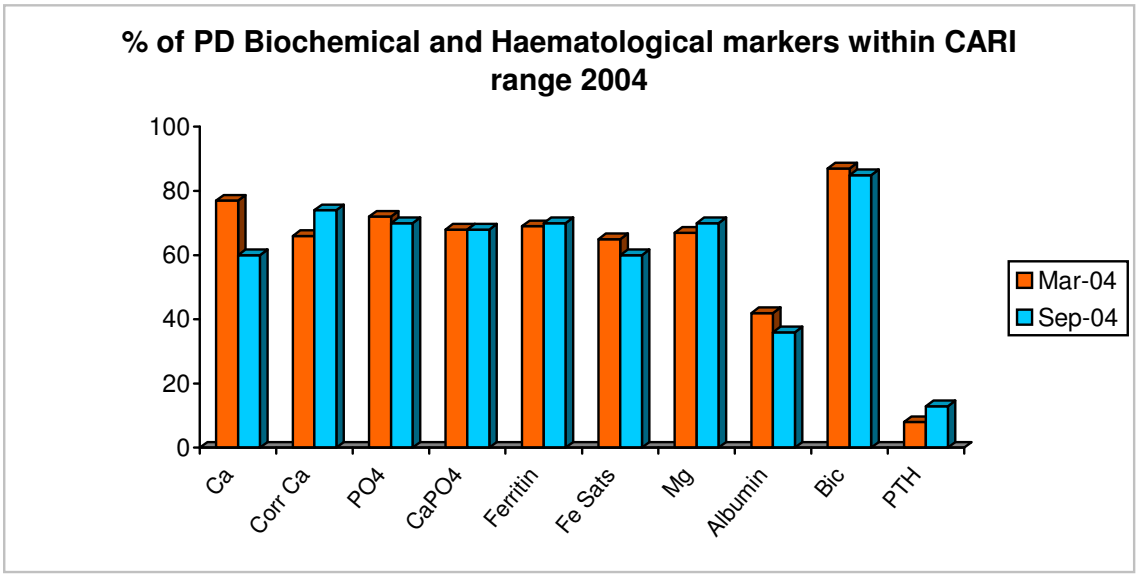
Method
The CAPD clinic nurses collect LFT, UEC, FBC, Iron studies, PTH, Mg, Ca, PO4 and Lipids as per routine 6 monthly bloods for PD patients.

Kt/V testing was coordinated by the CAPD nurses as per protocol as was the PET testing.

The quality assurance officer collates these results into spreadsheets using Microsoft Excel and Systat 10 for statistical analysis. These results are compared to the previous year and measured against the benchmark set by the CARI guidelines. If any action is required, a meeting is organised with the peritoneal dialysis unit and plans of action are researched. A unit member will then be nominated to take responsibility for the action while the quality assurance officer will follow up and report the results in 6 monthly intervals.

Percentage of patients who achieved a Kt/V ≥ 1.7





Results: % of patients falling within the target range

Parameter	Target	Mar-03	Sep-03	Mar 04	Sept 04
Ca	2.25-2.75 mmol/L	52	67	77	60
Corr Ca	2.2-2.6 mol/L	56	61	66	74
PO4	≤ 1.8 mmol/L	73	67	72	70
CaPO4	≤ 4.2 mmol/L	63	63	68	68
Ferritin	100-800 ug/L	66	56	69	70
Fe Sats	20-50%	64	46	65	68
Mg	0.74-1.03 mmol/L	55	65	67	70
Albumin	33-48 g/L	24	25	42	36
Bic	20-30 mmol/L	79	89	87	85
PTH	10-15 nmol/L	12	9	8	13
KT/V	≥ 1.7	78	85	72	81
CCL	> 50L	78	81	65	81

Comments

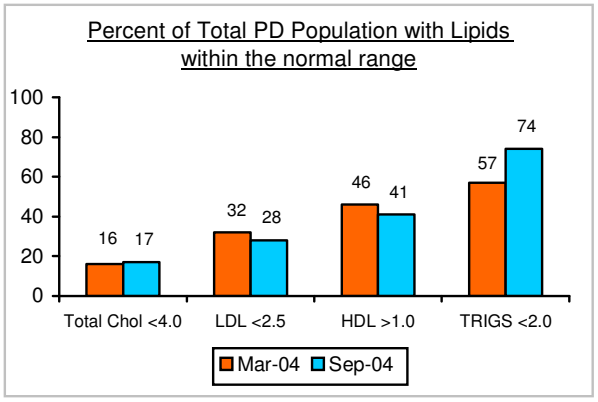
22% of peritoneal dialysis patients had low PTH and are therefore at risk of Adynamic bone disease. These patients require careful monitoring of calcium levels and balancing of phosphate binders and vitamin D administration to avoid potential aggravation of this condition.

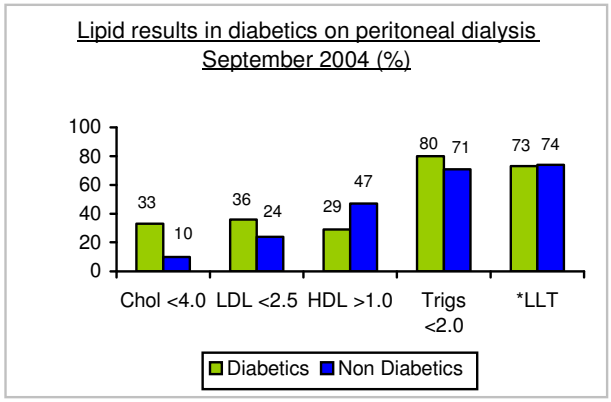
65% of the patients have a PTH greater than 15 nmol/L and are at risk of renal bone disease. High PTH results in high turnover bone disease and therefore poor quality bone at greater risk of fractures.[1]

In Sept 04 32% of patients had a Calcium Phosphate product greater than or equal to 4.2 mmol/L. This was an improvement on previous years.

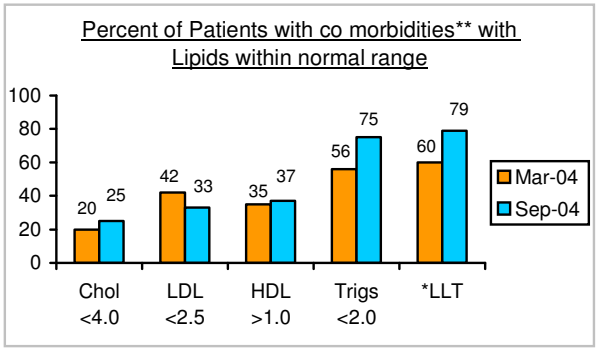
[1] Goodman, W. Seminars in Dialysis - Vol 17, No 3 (May-June) 2004 pp.209-216

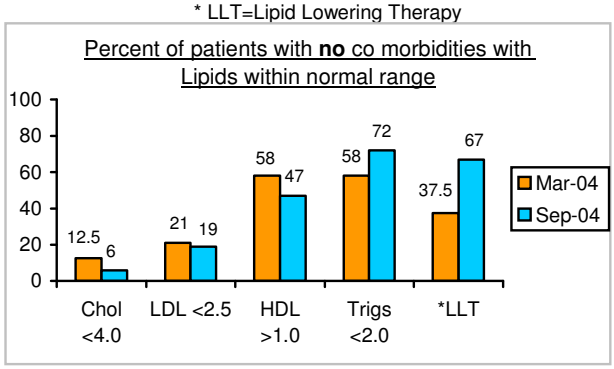
Lipids





* LLT=Lipid Lowering Therapy





** Lipid Lowering Therapy*
*** Coronary Artery Disease, Peripheral Vascular Disease, Cerebrovascular Disease, Diabetes. Excludes Chronic Lung.*

Comments

The National Heart Foundation recommends the use of lipid modifying therapy in people with renal impairment, as they are at increased risk of coronary heart disease. Absolute risk of coronary heart disease includes known coronary artery disease, peripheral vascular disease, cardiovascular disease, diabetes, renal failure or transplantation, Aboriginal or Torres Strait Islander, familial hypercholesterolaemia, LDL >4 mmol/L or Cholesterol >6 (with any two of these other risk factors: Hypertension, obesity, smoking, glucose intolerance, renal impairment, >45 years of age, family history)[2]

High PTH and calcium metabolism alterations can affect lipid metabolism. Little information is available on the benefits of LLT in patients with chronic kidney disease.[3]

Results

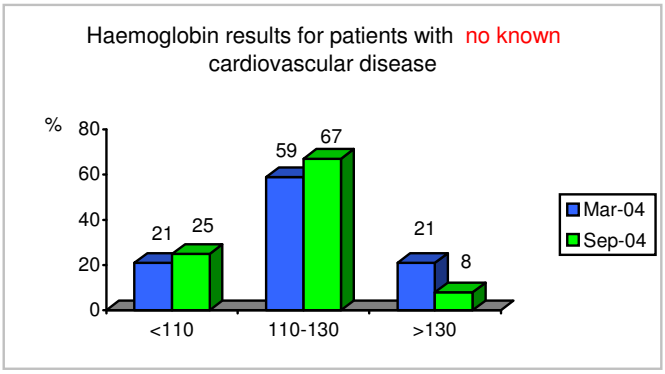
The diabetic patients' results show better Cholesterol, Low Density Lipids and Triglyceride control compared to the non-diabetics. Diabetics have a greater risk of heart disease, especially in conjunction with renal disease. Lipid lowering therapy is recommended and on review of available medication information it has been shown that 67-79% of all patient groups are on this therapy (74% of diabetics). The Lipid limits set by the National Heart Foundation are probably too tight for our patients with no co morbid conditions and may need to be widened. This will be discussed by the medical team and implemented for the next annual report. Further, patients in our Unit for whom no immediate indication for lipid lowering therapy exists, are being entered into the SHARP study which is a multi-centre international trial that seeks to determine the benefits and risks of lipid lowering drugs in chronic renal failure.

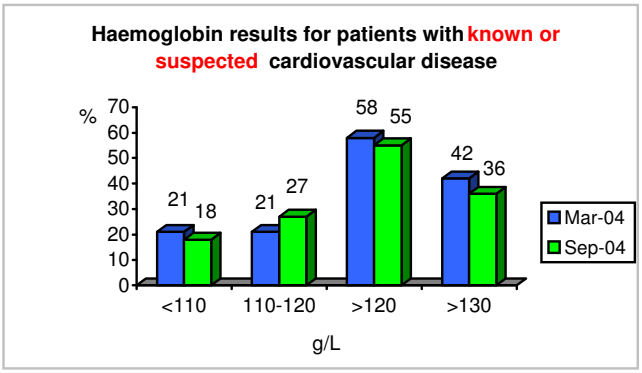
[2] Barter P, Best J, Boyden A, Cooper C (2001) Lipid Management Guidelines-2001. The Medical Journal of Australia. 175, Supplement 1-S90.
[3] Goodman,W. Seminars in Dialysis Vol 17, No 3 (May-June) 2004 pp. 209-216

Haemoglobin

Comments

Haemoglobin (Hb) has been examined from the perspective of cardiovascular disease. The recommendations from the CARI guidelines suggest that patients with kidney disease *and cardiovascular impairment* maintain an Hb 110-120 g/L (Level 1 evidence). Risks associated with the higher Hb (>130 g/L) include increased risk of hypertension and increased mortality. CARI suggests an Hb concentration between 120-140 g/L for patients *without proven or likely cardiovascular disease.* In the St George dialysis unit we have measured the patients Hb using the limits of *110-130 g/L* for those with *no* cardiovascular disease and *110-120 g/L* for those *with* cardiovascular disease.





Iron

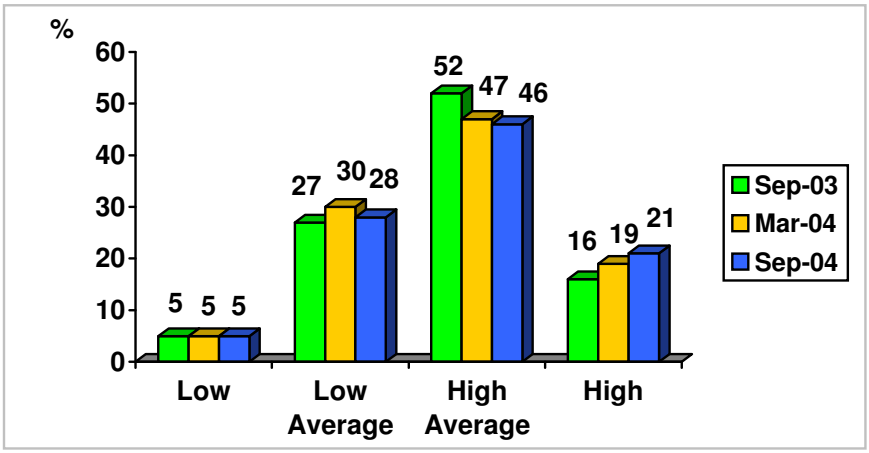
The CARI guidelines recommend the administration of supplementary Iron to prevent iron deficiency and to maintain an Hb concentration >120 g/L, with or without epoetin therapy.

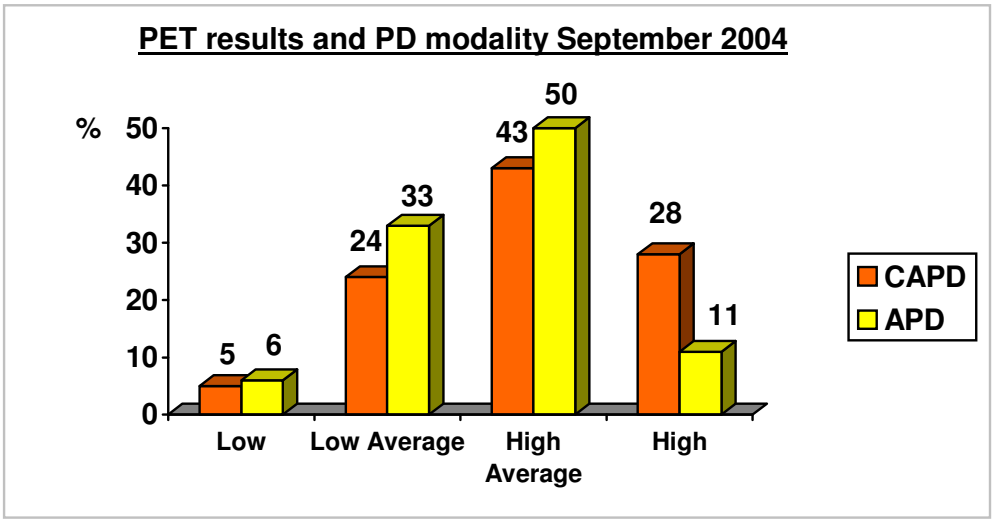
CAPD patients can be given oral iron with optimal absorption occurring if taken as a single dose at night without concomitant food or other medicines. Many patients cannot tolerate the side effects of taking Iron orally.

Bolus administration of IV iron (Ferrosig 500mg) is easy to administer and is the treatment of choice in the St George renal unit (Ferrum H was used until recently, this has now changed to Ferrosig). The Ambulatory Care unit administers this by appointment after the patients have been prescribed the drug by the renal registrar or consultant.

An Iron Replacement protocol and staff education package has been developed to start improving the iron stores of renal patients and produce an anticipated flow on effect of reducing the Aranesp/Darbepoetin dosage amongst the PD population which has cost saving benefits for the hospital and health benefits for the patients. The Quality Assurance Research Officer is in charge of reviewing the Iron Protocol and liaising with the Doctors and CNC regarding a staff education package. It is anticipated that the protocol will allow for individualized Iron management with the PD patients receiving no more than one Ferrosig infusion every 6 months depending on their individual requirements.

PET[4] results for Peritoneal dialysis patients 2004





Patient Result Comments

Of the 6 high transporters who are using CAPD, only one of the patients had a Kt/V below the recommended level of 1.7, i.e. Dialysis appears adequate to achieve solute removal. This patient is medically complicated in many aspects of dialysis. The recommended dialysis for high transporters is APD, but as the results show, the results here are excellent using CAPD. One of the high transporters (at commencement of PD) has since gone to Haemodialysis due to sclerosing peritonitis.

PET	System	Kt/V	CCL[5]
High	CAPD	1.57	55.96
High	CAPD	1.94	60.96
High	CAPD	2.16	62.84
High	CAPD	3.34	125.42
High	CAPD	3.52	186.41
High	CAPD	2.06	68.13

The single Low Transporter on APD has excellent clearances. (CAPD is the treatment of choice for Low Transporters)

PET	System	Kt/V	CCL
Low	APD	2.68	69.08

[4] PET: Peritoneal Equilibrium Test. Should be performed approximately 1 month after initiating peritoneal dialysis but no earlier than 2 weeks.
[5] Creatinine Clearance

INFECTIONS IN PERITONEAL DIALYSIS

Aim

1. Identify peritonitis rates and exit site infection rates in the peritoneal dialysis population, expressed as incidence per patient month, peritonitis free dialysis time and number of episodes per patient years.
2. Identify number of episodes per patient.
3. Identify causative organisms.

Background

Data on peritoneal infections were collected using the Poet 2.1 database and a review of the PD record books. These statistics are collected retrospectively on a yearly basis and compared to the previous year.

Method

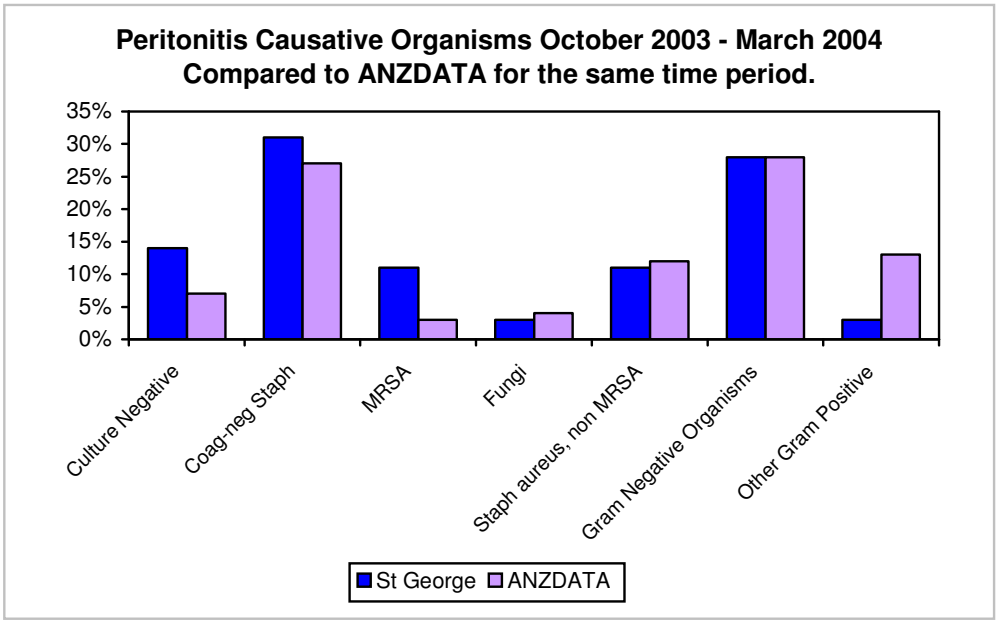
Review PD record books for episodes of peritonitis and exit site infections.
Review the Poet 2.1 database for episodes.
For the first time in 2004 the Peritonitis Episode Form (ANZDATA) was used to accurately enter data into an excel spreadsheet which was then analyzed using the statistical program Systat 10. The Peritonitis Episode Form lists the organism(s), Drug Treatments, Outcomes and Recurrence of every episode of peritonitis for every peritoneal dialysis patient while on PD. The forms are sent to ANZDATA where we have received our first feedback with 6 months of national data to compare to.

Outcomes

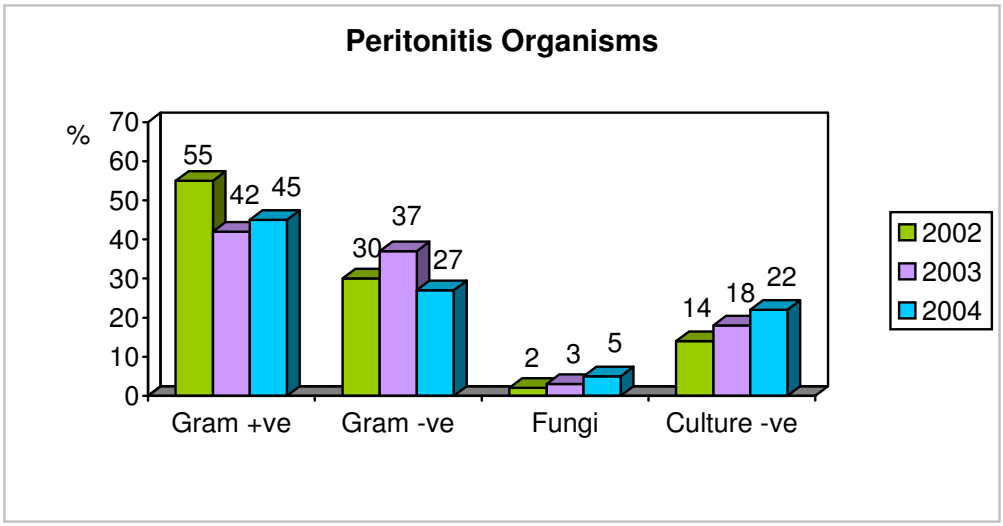
The table below outlines the data on peritoneal dialysis infection rates collected from 1998 to 2004.

	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Total patients	72	71	62	79	97	92	74
Peritonitis episodes	118	81	69	45	51	62	42
Patients with at least 1 episode of peritonitis	N=47 65%	N=42 59%	N=26 42%	N=26 33%	N=37 38%	N=38 41%	N=32 43%
Patients with at least 1 episode of Exit site infection	N=39 54%	N=43 60%	N=33 53%	N=21 27%	N=32 33%	N=38 41%	N=14 19%

Peritonitis Causative Organisms



The data above was sourced from ANZDATA. St George includes 36 episodes from 25 patients involving 14 different organisms.

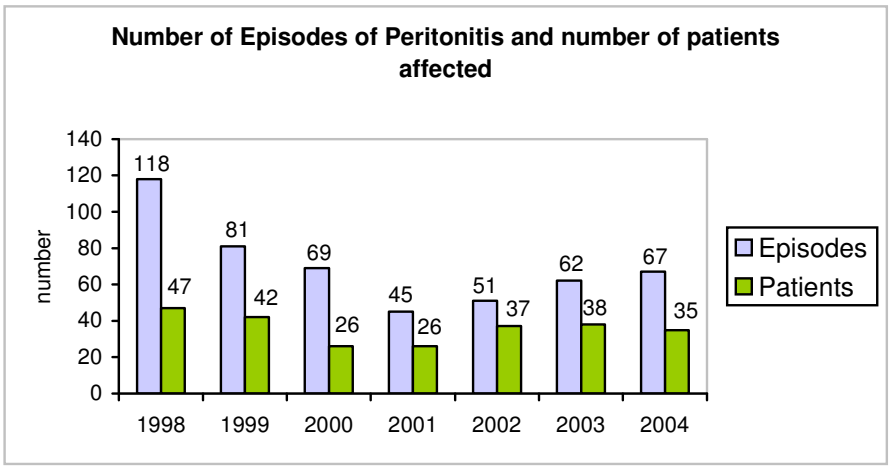


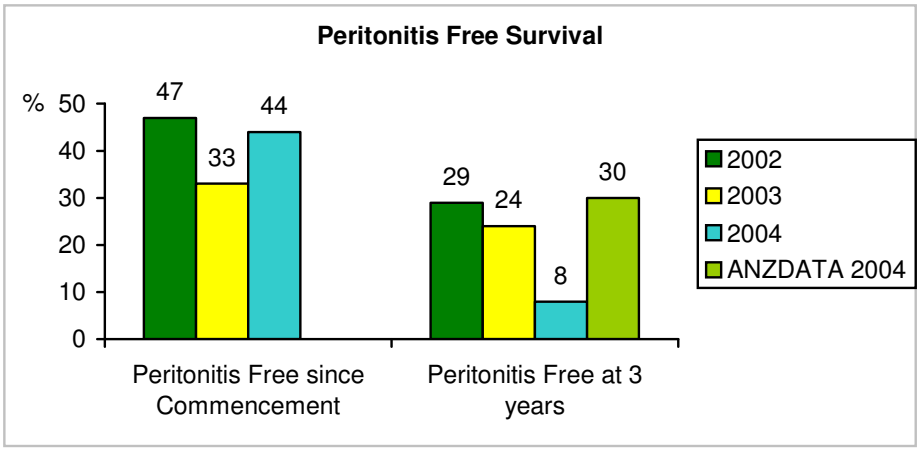
The results for 2004 have been obtained with data collected from the peritonitis episode forms (ANZDATA). Recurrent infections and infections that occurred while not on peritoneal dialysis are not included. Recurrent Peritonitis is defined as 'within four weeks of the last antibiotic dose (or within five weeks if intermittent Vancomycin used) for the same organism'[6]

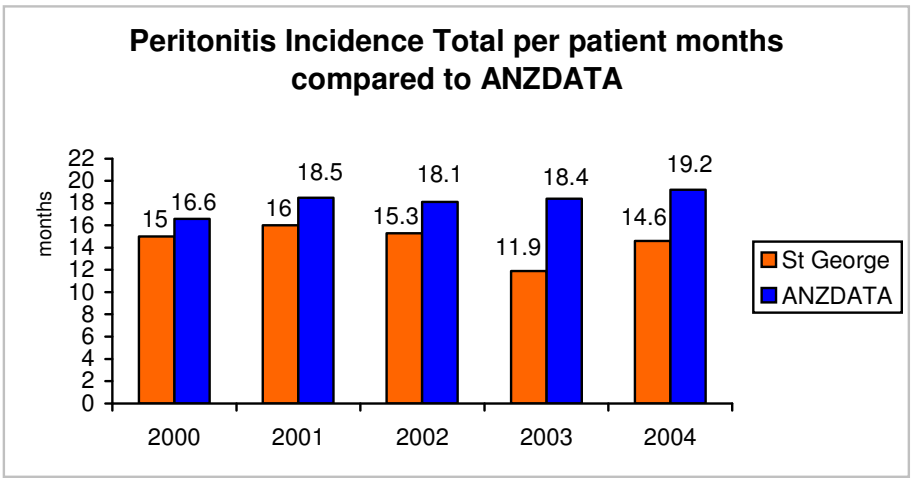
Vancomycin-containing regimes were used in 55% of cases compared to ANZDATA (33%). Aminoglycoside-containing regimes were used in 86% of cases compared to the ANZDATA (75%). Antibiotic usage varied greatly between the states in the ANZDATA results. These results are available on the internet at www.anzdata.org.au

[6] ANZDATA Peritonitis Episode Form

Peritonitis episodes for patients in 2004







% Peritonitis Free At 3 Years	St George	ANZDATA
2004	*8*	*30*
2003	*24*	*30*
2002	*29*	*30*

Comments

ANZDATA results are the benchmark used for comparison with St George results; ANZDATA covers all age ranges, whereas the St George population is mainly elderly.

The peritonitis incidence per patient months has improved in 2004 from 1/11.9 to 1/14.6 but this audit has identified an area where we hope further improvements can be made. We have now been using the ANZDATA Peritonitis form for one full calendar year and have received the first report with results from the time period of October 2003 to March 2004.

At present patients are averaging their first peritonitis episode at 14.6 months. The percentage of patients peritonitis free at 3 years has fallen dramatically this year due to long term patients developing sclerosing or recurrent peritonitis and moving onto Haemodialysis. There have been two cases of sclerosing peritonitis amongst the long-term Peritoneal Dialysis patients this year.

Recommendations

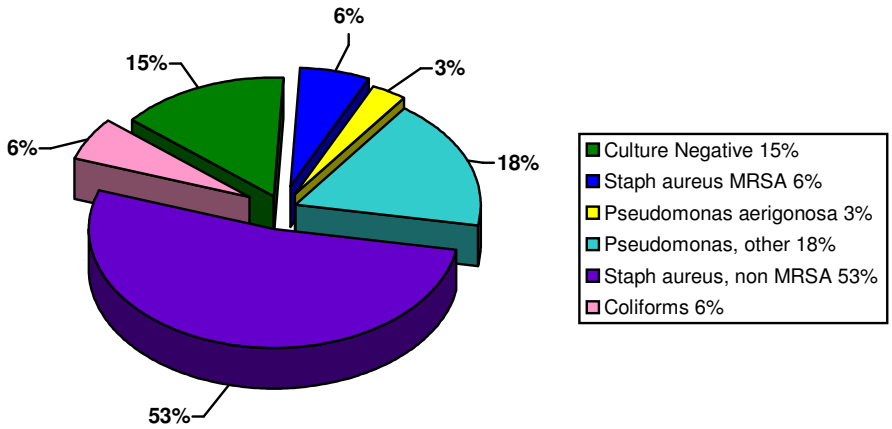
Identify: Try to identify the source of the peritonitis; touch contamination, abdominal pathology, and catheter problems. Follow up any identified problems with the appropriate action i.e. education or medical/surgical intervention.

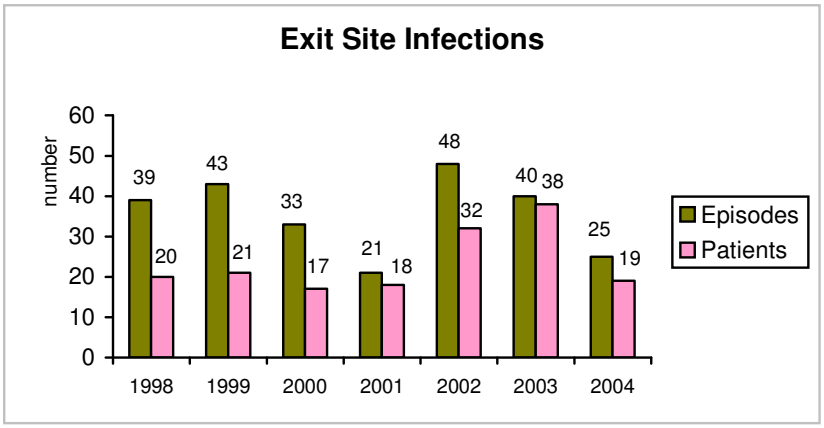
Evaluation: Evaluate recurrent peritonitis patients for medication compliance, dialysis technique, hygiene of the exit site, nasal carriage (staphylococcus), biofilm and appropriateness of the previous antibiotics.

Prevention: Follow up within the first year after training for the patient to perform one exchange with staff that will evaluate the technique and recommend further retraining if identified to be at risk of developing peritonitis or exit site infection through poor technique.

Exit Site Infections

ESI Causative Organisms by Infection Type





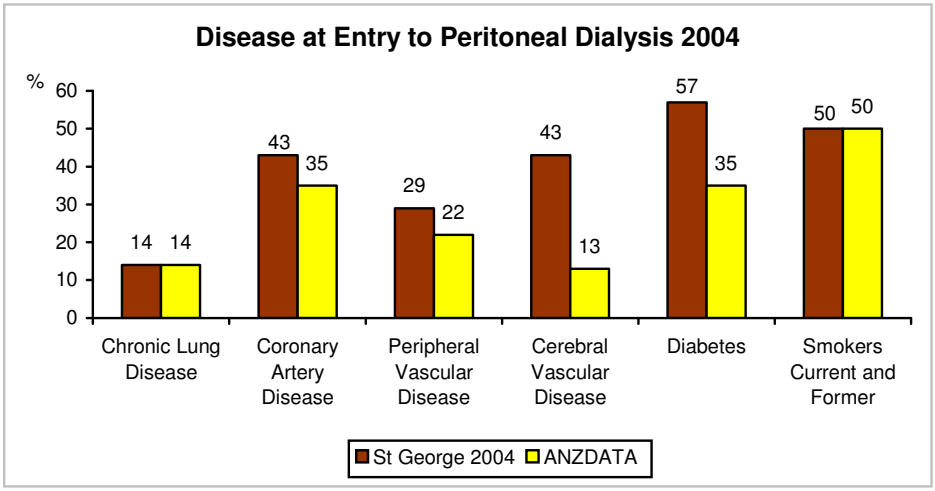
- ESI episode of 1/24.5 patient months.
- Staphylococcus aureus (non MRSA) was the causative organism in 53% of ESI patients.

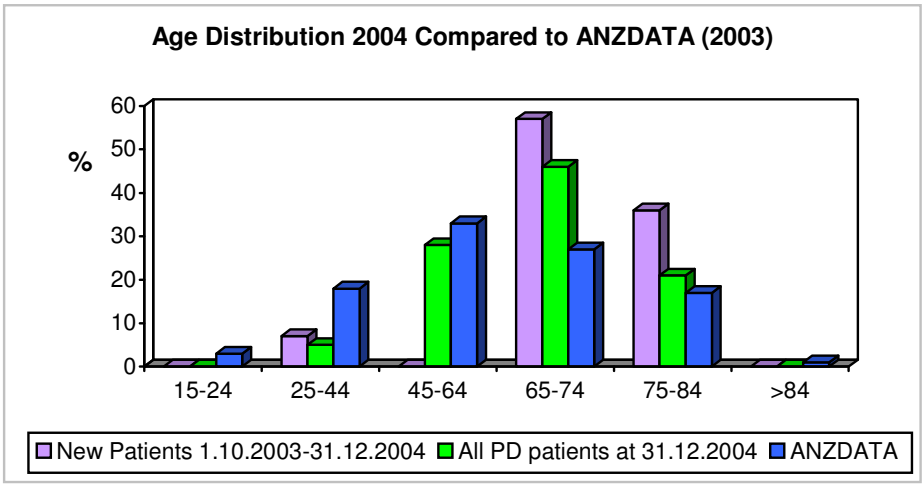
Benchmark: ANZDATA
ANZDATA does not collect data on Exit Site Infections; therefore there is no Australian benchmark data with which to compare.

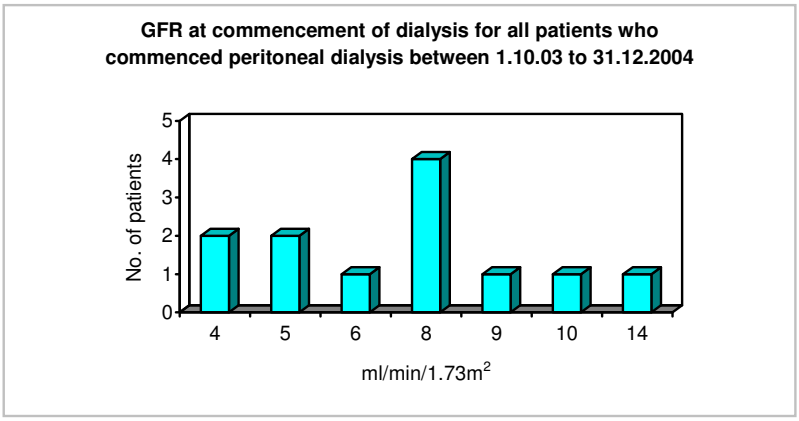
POET
The St George Peritoneal Dialysis Unit uses the Baxter POET computer software to record all swabs taken for analysis from each and every PD patient. The results of all of these swabs can then be graphed using this software. The drawback of this system is the inability to filter this data for actual exit site infections and routine swabs (including post operative). The filtering of the data happens manually using excel spreadsheets and Systat for analysis.

Acceptance onto Peritoneal Dialysis

- 2004 had no late referrals to peritoneal dialysis.
- Mean age at commencement of PD was 71 years.

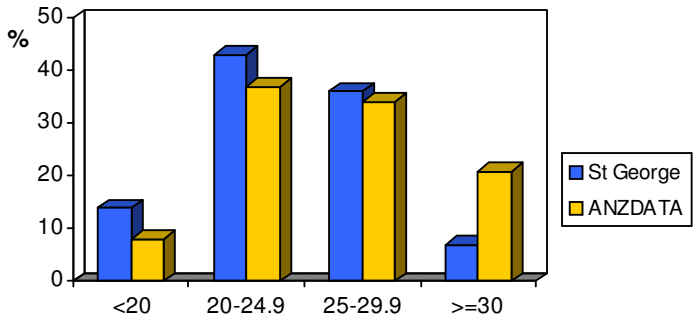






Disease at entry includes only patients who commenced peritoneal dialysis from 1/10/2003 to 31/12/2004. The previous annual report included all patients on peritoneal dialysis.

Body Mass Index (BMI) for Peritoneal Dialysis Patients at commencement of Dialysis in 2004



Higher BMI is associated with higher rates of technique failure and death in Australia and New Zealand. (ANZDATA Registry 2004 Report: Pg 60)

BMI <20 indicates underweight, 26-30 overweight and >30 is obese.

Breakdown of Peritoneal Dialysis patients who commenced Peritoneal Dialysis between 1 October 2003 and 31 December 2004

Male	Female
71%	29%

Country of Birth		
	%	Number
Australia	43	6
China	21	3
Malta	7	1
Spain	7	1
South African	7	1
Vietnam	7	1
Lebanon	7	1

The 39 patients who were on peritoneal dialysis at 31.12.2004

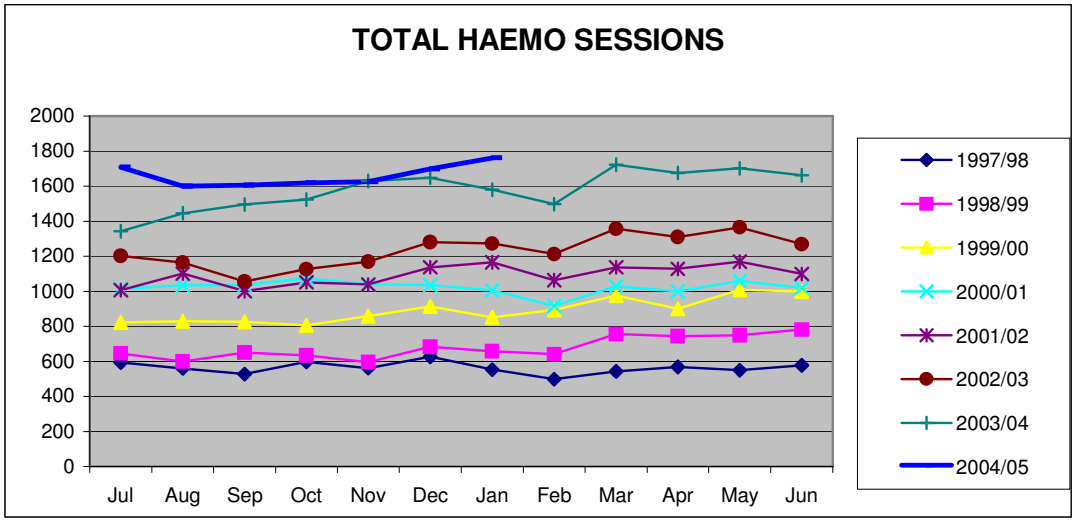
- 33% of the patients were from a non English Speaking Background.
- 49% are female
- 51% are male

The distribution of all Peritoneal Dialysis patients amongst the nephrologists at the end of 2004 can be seen in the table below.

Doctors	
Trew	36%
Chan	31%
Kelly	3%
Brown	18%
Mangos	13%

HAEMODIALYSIS

The total Haemodialysis activity level for 4 West increased from 16,470 in 2003 (Dec-Nov) to 19,645 in 2004 (Dec-Nov), i.e., a 19% increase in activity. This result shows a slight decrease in growth activity compared to the same period last year (21%).



Patient Flow:

Existing 4 West HD patients January 1st 2004 = 103 (excludes home HD patients)

In	New patients	29
	Transfers from other units	3
	Temporary transfers from PD	12
	Permanent transfers from PD	17
	Transfers from overseas	1
	Failed Transplant	4
	Return from Home haemodialysis	1
Subtotal		67
Out	Transplants	4
	Transfers to other unit	3
	Transfers to Home haemodialysis	7
	Transfers overseas	1
	Transfers to PD	7
	Deaths (medical cause)	11
	Deaths (withdrawal from dialysis)	12
	Regain renal function	1
	Subtotal	46

Net gain = 21

Chronic haemodialysis patients at end of 2004 = <u>124</u>

Comments

This indicates the following major activity rates when compared to ANZDATA:

	St George	ANZDATA (HD)
Transplant	2%	6%
Death (on dialysis)	6%	11%
Death (withdrawal)	7%	4%

Biochemical and haematological targets and dialysis adequacy audit.

Backgound and Activity Level

- Routine monthly bloods are attended on haemodialysis patients.
- Blood results were audited in February and August 2004
- Total audit of 112 chronic haemodialysis patients

Outcomes being measured

- Our aim is to compare our unit's performance against the National recommended guidelines (CARI) for the following parameters: Ca, PO4, Corrected Ca, Ca PO4 product, Albumin, Mg, Hb, Fe studies, Bicarbonate and dialysis adequacy (KT/V).
- Audit results are also compared to previous audit results
- Lipid target range is set by the National Heart Foundation for high risk patients

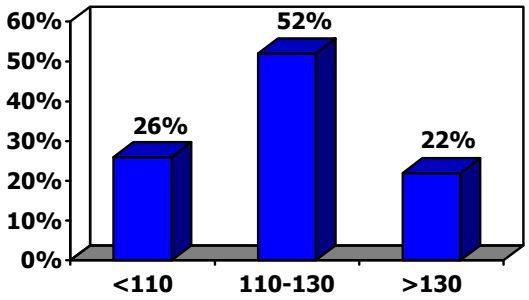
How did we Record, Store and Analyse the Data?

- Blood results were entered into an Excel Database
- Basic statistics performed using Systat 10 to obtain mean, median, standard deviation, number, minimum and maximum
- Analysis of data to previous audits attended using Systat 10. ANOVA used for parametric data and Kruskal-Wallis for non-parametric data

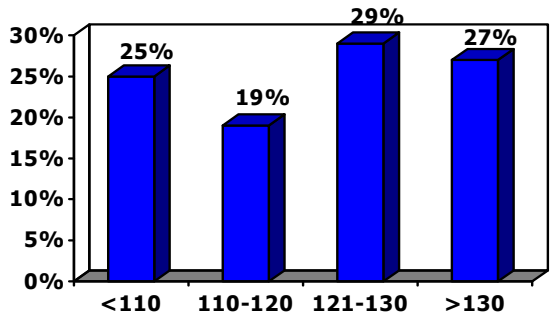
Outcomes: Percentage falling within CARI target ranges

Parameter	Target	FEB 2003	AUG 2003	FEB 2004	AUG 2004
Ca	2.25- 2.75mmol/L	64	65	75	72
Corr Ca	2.2-2.6 mmol/L	76	73	79	78
PO4	≤1.8 mmol/L	60	63	61	56
CaPO4	≤4.2 mmol/L	55	63	55	56
Ferritin	100-800 ug/L	69	51	60	63
Fe Sats	20-50%	55	46	61	51
Mg	0.74-1.03 mmol/L	59	61	65	54
Albumin	33-48 g/L	58	65	66	61
Bic	20-30 mmol/L	99	98	97	96
PTH	10-15 nmol/L	4	11	8	9
KT/V	≥1.2	89	96	95	89

Haemoglobin in Patients without Cardiovascular Disease

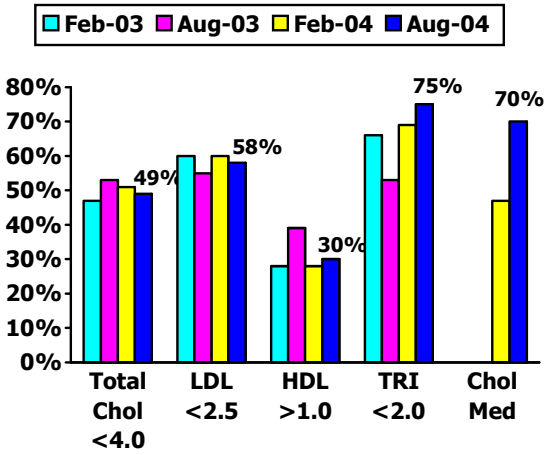


Haemoglobin in Patients with Cardiovascular Disease (or suspected)

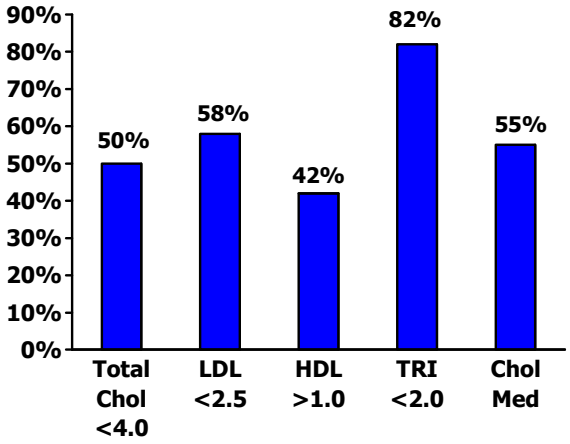


- The CARI guidelines recommend the haemoglobin level in patients with significant cardiovascular disease should not exceed 120 g/L unless clinical circumstances dictate otherwise. For the haemoglobin audit, haemodialysis patients were divided according to the presence of cardiovascular disease.

Lipids - All HD Patients



Lipids-Patients with Co-morbidities (Excluding Chronic Lung)



- The lipid target range used is by the National Heart Foundation for high risk patients. This may result in target levels being too low for patients not at risk. Therefore, the audit results were divided into two groups, all haemodialysis patients and those patients with co-morbidities (excluding lung).

Comparison with Previous Audits and CARI Guidelines

Minimal changes were seen amongst Biochemical and Haematological markers.

1. There was a 56-79% achievement for CARI recommended range for Ca, Corr Ca, Mg, PO4, CaPO4, and Albumin levels.
2. Ferritin and Iron Saturation levels remain unchanged with 63% achievement of the recommended ferritin range and 51% achievement of recommended Iron Saturation range.
3. Dialysis delivery is excellent with 95% of patients in February and 89% of patients achieving recommended Kt/V.

4. Achievement for CARI recommended range for CaPO4 was 55% in February and 56% in August.
5. Achievement of the recommended range with PTH remains a challenge with 8-9% of haemodialysis patients within the recommended range.
6. Achievement of the recommended range for Hb level in patient's with cardiovascular disease for August was 19%. 56% of patients with cardiovascular disease have a Hb level greater than 120 g/L.
7. 52% of patients without cardiovascular disease have an Hb level of between 110 – 120 g/L.

Actions

Changes were made to the iron protocol in September 2004 to improve ferritin and iron saturation levels. The changes consisted of:

- **Implementation** of a faster rate of iron repletion of 100 mg IV iron with each dialysis for 10 doses for those patients with absolute and functional iron deficiency
- **Maintenance** program for haemodialysis patients who are iron replete (ferritin between 100-800ng/ml and Tsat between 20-50%)
- **Increase** the target haemoglobin range to 110-130g/l, excepting patients with cardiovascular disease (target haemoglobin range 110-120 g/l)
- **Development** of a nurse initiated IV iron protocol

A series of Inservice education was given to the 4 West haemodialysis staff. The aim of the education was to increase the understanding of anaemia and iron deficiency in relation to the haemodialysis patient receiving erythropoietin replacement therapy. Education was also undertaken in the nurse initiated IV iron protocol. A learning package was developed for self-directed learning with an open-book test for successful completion of the education.

All current staff of 4 West have completed the education. New staff will be educated during their orientation to the 4 West haemodialysis unit.

The nurse initiated IV iron protocol was submitted to the Drug Committee on December 2nd 2004 and was successful with the submission.

The impact of these actions will be measured in the February 2005 audit.

Recommendations

- Greater attention continues to be required in the monitoring and treatment of hyperparathyroidism.
- Greater attention continues to be required in the monitoring and treatment of calcium and phosphate management.
- Tighter control of Hb levels in patient's with cardiovascular disease is required.
- Development of a nurse initiated protocol to improve calcium and phosphate management.

Haemodialysis Water Quality

Background and Activity Levels

- The water quality is audited in the 4 West dialysis unit 2nd monthly for microorganisms, aluminum, chloramines and total chlorine.
- Full element analysis is conducted 6th monthly.
- The audits are required to prevent infection amongst haemodialysis patients and maintain patient safety.
- Daily chloramine testing of central RO water is performed by staff using a chlorine test kit.

Outcome being Measured

- The audit ensures results comply with AAMI standards.

Date	H2O (<200 CFU/mL)	Dialysate (<2000 CFU/mL)
Jan 2004	Normal range	Normal range
March 2004	Normal range	Normal range
May 2004	4 samples with CFU > 200 CFU/ml Retest normal	Normal range
July 2004	Normal range	Normal range
Sept 2004	Normal range	Normal range
Nov 2004	Normal range	Normal range

Date	Elements Al 0.01mg/L, Chloramines 0.1mg/L, Total Cl 0.5mg/L
May 2004	Normal range
July 2004	2 samples obtained from water plant prior to RO had fluoride levels greater than recommended AAMI range. Fluoride levels in unit within recommended range

Outcomes

- Four samples with CFU> 200 CFU/ml were retested. Retest results were within recommended AAMI range.
- No action was taken with the increased fluoride level as samples were obtained prior to RO and fluoride levels within unit within the normal range.
- All other specimens were within the recommended AAMI range.
- Change of provider of testing services occurred in July from SEALS to Sonic. SEALS were not accredited for environmental samples according to AAMI specifications.

Central Venous Catheters

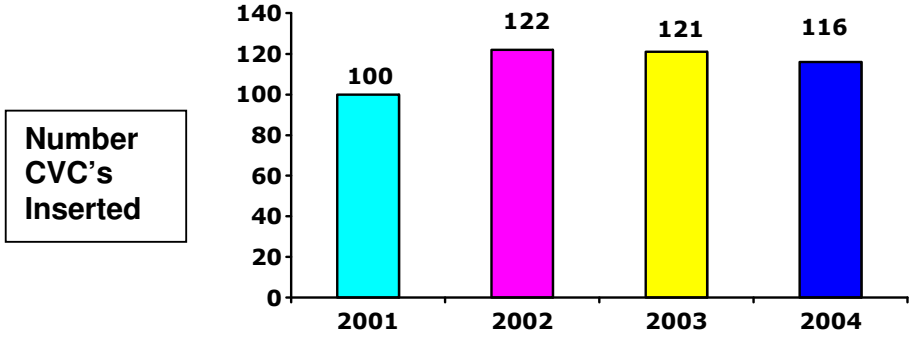
Background

- Central venous catheters (CVC's) are required to provide temporary access for haemodialysis.
- Infection and complication rates of central venous catheters are monitored and reported.

How did we Record, Store and Analyse the Data?

- Data are collected and entered into the vascular access database, which includes reason for insertion and removal, insertion site, type of catheter, number of catheters per patient and complications.
- Data are collected on catheters that are decontaminated according to protocol.

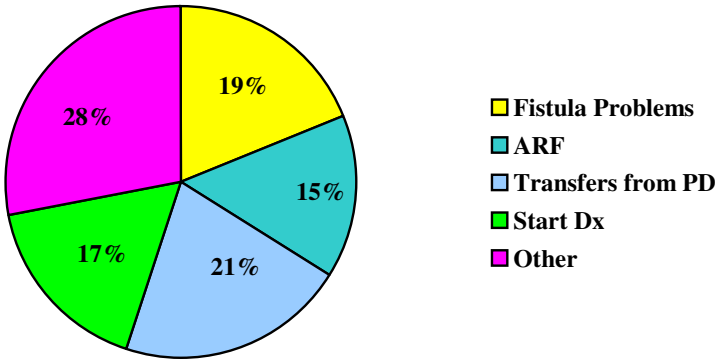
Activity Level



Total CVC Usage 2004

CVC's Remaining From Insertion 2002	1
CVC's Remaining From Insertion 2003	25
CVC's inserted 2004	116
Total	142

Reason for insertion of catheters in 2004

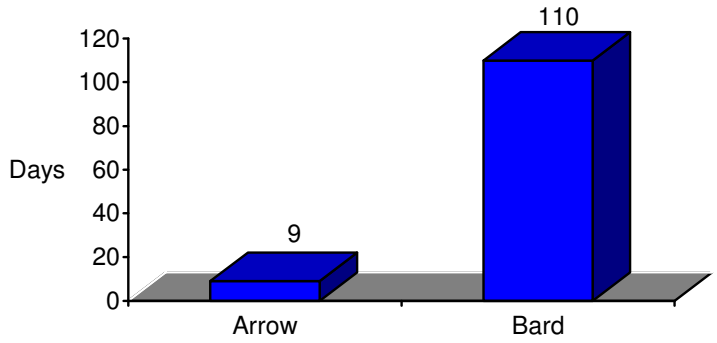


Type of catheters inserted

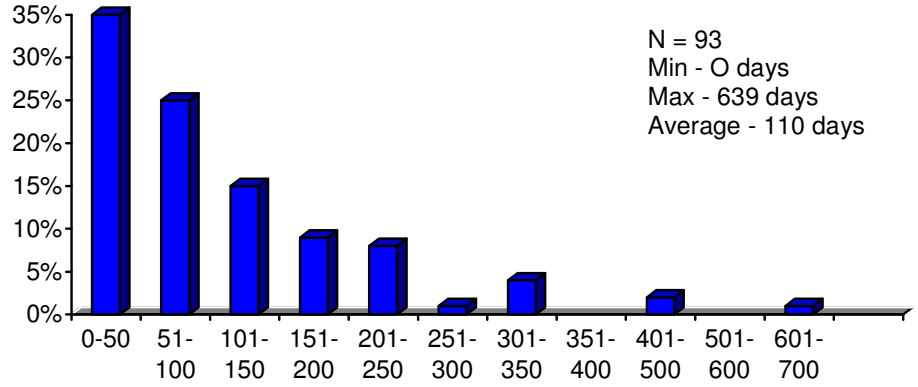
Tunneled - Bard 84% (n=98)

Non –Tunneled - Arrow 16% (n=18)

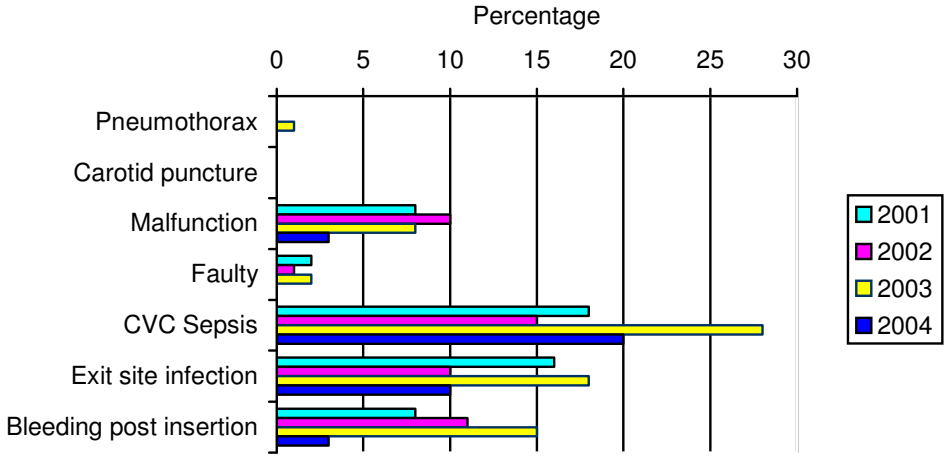
Average days insitu



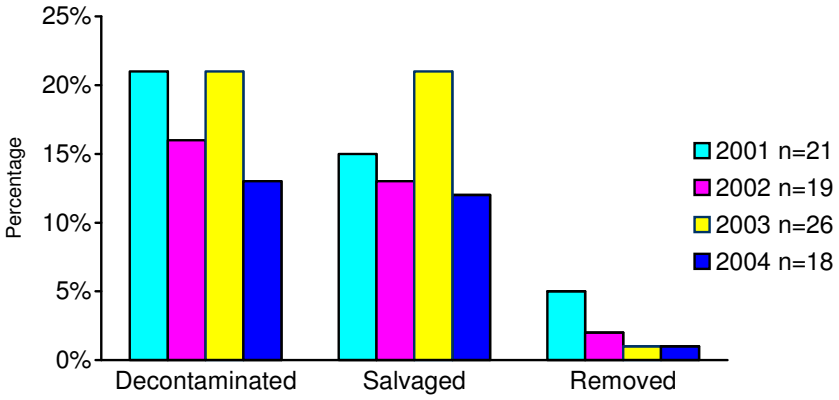
Tunneled CVC's Removed During 2004 Length of Time in Use



Complications



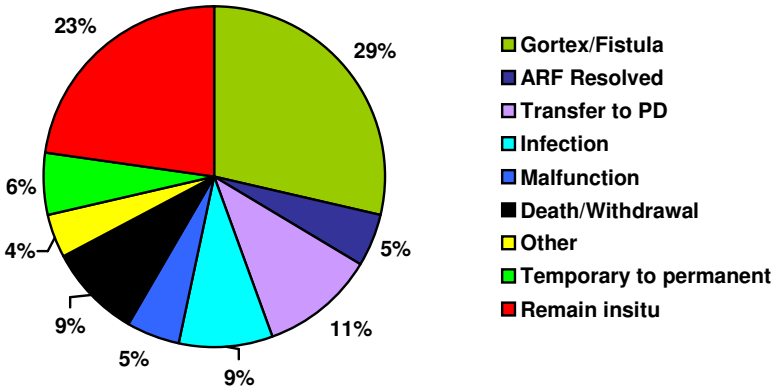
Decontamination for suspected CVC sepsis



Outcome of Decontamination Protocol

- Decontamination for CVC sepsis continued during 2004.
- 19 CVC's were decontaminated in 2004. One CVC was removed two days post decontamination.
- One CVC was decontaminated twice.
- 94% of CVC's decontaminated were salvaged.

Reason for removal



- 32 CVC s remain insitu 31/12/04.

Actions

In April 2004, the following strategies were employed by nursing staff to decrease CVC sepsis:

- The lines on the haemodialysis machine are recirculated following priming with normal saline. To decrease the handling of lines and reduce the incidence of contamination during connection with a CVC, recirculation of the lines was ceased.

- Setting up of the sterile tray for connection now took place as near as possible to the connection time.
- Betadine soaked gauze was applied to the end of the CVC (where connection to the machine lines occurs) before the nurse scrubbed for connection. This action resulted in the required time (3 minutes) being obtained for betadine to be effective.
- Collection of blood samples involved the sterile nurse handling non-sterile blood tubes with a piece of gauze in order to prevent contamination. This practice was ceased and blood sampling now involves another nurse handling the blood tubes and thus, reducing the chance of possible contamination.

Outcomes

- There was a slightly lower number of central venous catheters inserted during 2004 than 2003. The main reason for insertion of central venous catheters is fistula complications.
- The main reason for removal of central venous catheters is fistula maturation.
- The CVC infection rate decreased from 28% (2003) to 20% (2004). Strategies commenced in April 2004 to reduce the incidence of CVC sepsis.
- The exit site infection rate decreased from 18% (2003) to 10% (2004).

Acceptance onto Haemodialysis

Background

- Two audits have previously reported the characteristics of patients commencing haemodialysis in our unit.
- The data for this audit consisted of patients who commenced haemodialysis (home and incentre) from October 2003 until December 2004.

How did we Record, Store and Analyse the Data?

- Data was collected from ANZDATA, dialysis patient files, Doctors letters and medical records
- Data was entered into an Excel database by the Quality Assurance and Research nurse
- Data was collected on:
  - GFR using Cockcroft-Gault formula corrected for BSA
  - Co-morbidities
  - Sex
  - Age
  - Ethnicity
  - Smoking habit
  - BMI
  - Late referrals (< 3 months pre dialysis)
  - Who had a functioning fistula at entry

- Data was entered into Systat 10 and basic statistics performed

Data Benchmark

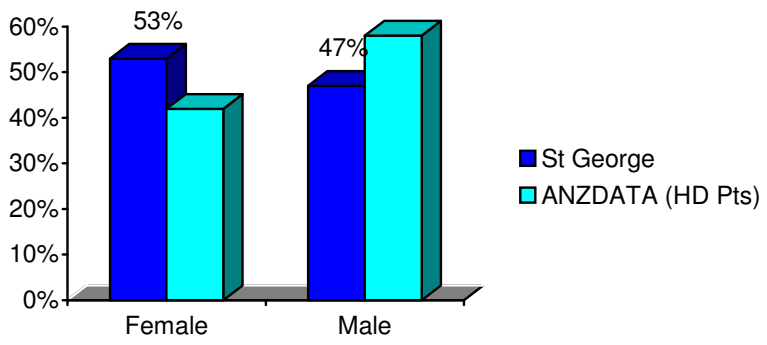
- Audit results are compared to the previous audit (April 2002 – September 2003) and ANZDATA (January 1st to 31st December 2003)

Activity

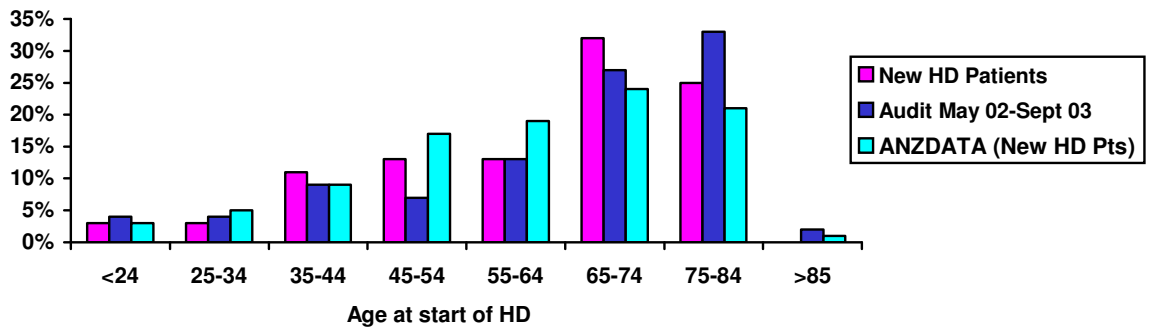
- 38 patients commenced chronic haemodialysis with no previous dialysis between October 2003 and December 2004.

Outcomes

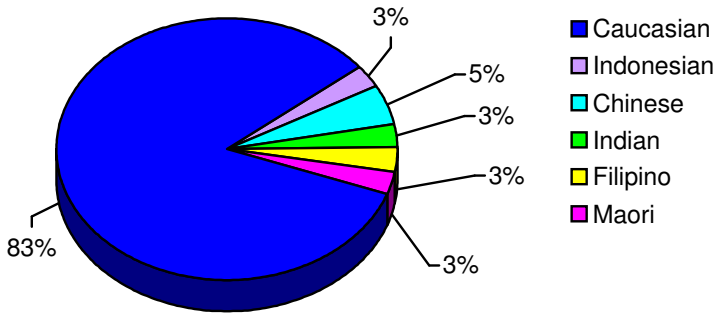
Gender



Age at Commencement of Haemodialysis



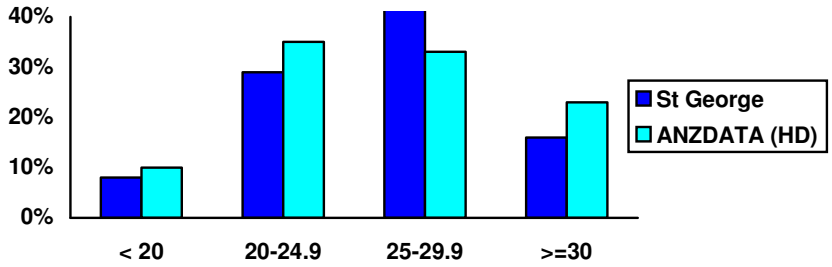
Ethnicity



Co-morbidities present at commencement of haemodialysis

Co-morbidity	St George (May 2002-Sept 2003)	St George (Oct 2003-Dec 2004)	ANZDATA (HD pts)
Chronic Lung			
▪ Yes	24%	13%	12%
▪ Suspected	2%	3%	3%
▪ No	74%	84%	85%
Coronary Artery Disease			
▪ Yes	59%	45%	34%
▪ Suspected	12%	3%	8%
▪ No	29%	52%	58%
Peripheral Vascular Disease			
▪ Yes	37%	26%	21%
▪ Suspected	5%	0%	7%
▪ No	58%	74%	72%
Cerebro Vascular Disease			
▪ Yes	24%	18%	11%
▪ Suspected	10%	3%	4%
▪ No	66%	79%	85%
Diabetes			
▪ Yes	29%	39%	38%
▪ No	71%	61%	62%
Smoking			
▪ Never	48%	63%	45%
▪ Former	48%	24%	42%
▪ Current	4%	13%	13%
Late Referral	26%	26%	26%

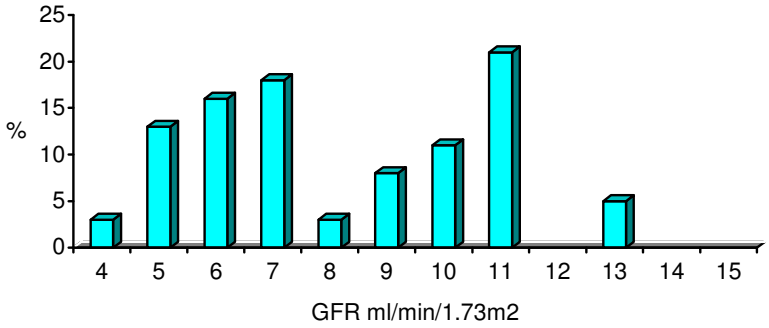
BMI



BMI <20 indicates underweight, 25-29.9 overweight and >=30 obese.

GFR

Minimum GFR was 4.2 ml/min/1.73m2.
Maximum GFR was 12.7 ml/min/1.73m2.
Average GFR was 8.36 ml/min/1.73m2.



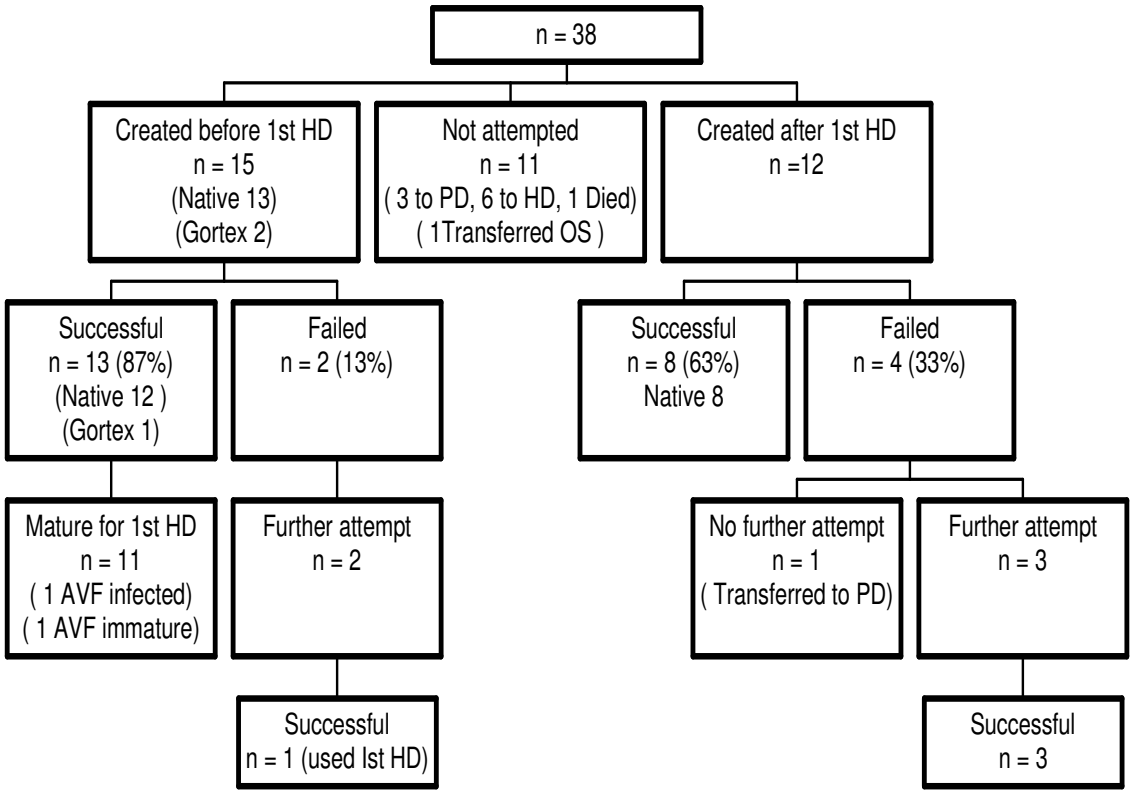
- Recruitment for the Ideal Study continues. During the audit period, two patients recruited to the study commenced dialysis. One patient was randomized to an early start (GFR 10-14 ml/min/1.73m2) and commenced haemodialysis with a GFR of 11.2 ml/min/1.73m2. The other patient was randomized to a late start (GFR 5-7 ml/min/1.73m2) and commenced haemodialysis with a GFR of 4.2 ml/min/1.73m2. This patient developed pneumonia and became septic prior to commencement of dialysis.

Vascular Access

Data collection for access used for first haemodialysis commenced from 1st October 2003 for ANZDATA. The table below compares the new patients accepted to the St George renal unit to ANZDATA.

First Access Haemodialysis		
First Access	**ANZDATA (1/10/03-31/3/04)**	**St George**
Native	38%	26%
Synthetic	3%	5%
Tunnel CV	36%	58%
Non Tunnel CV	24%	11%

Fistulas in patients starting haemodialysis October 2003- December 2004



Comments

1. Ten patients (26%) starting haemodialysis were late referrals. This is the same rate for late referrals as ANZDATA.
2. The 65 – 74 yr age group contains the largest percentage of patients commencing haemodialysis. 27% of St George patients fall into this group. The female gender is the largest group with 53%.
3. New St George patients in this audit have a decreased incidence of chronic lung, coronary artery, peripheral vascular and cerebrovascular disease when compared to the previous audit. ANZDATA shows similar results to the current audit. The incidence of diabetic patients commencing haemodialysis in this audit is 39%, which is higher than the previous audit (29%). ANZDATA has a similar rate to St George (38%).
4. 39% of patients commencing haemodialysis had a vascular access attempted before their first dialysis session. 32% of new patients had a mature functioning fistula for their first session. This is an improvement compared to the previous audit (22%). ANZDATA report the use of vascular access (native and graft) for first dialysis at 41%.
5. ANZDATA have a higher incidence of non-tunneled CVC's used for first dialysis (24%) compared to St George (11%). However the incidence of tunneled CVC use is higher at St George (58%) compared to ANZDATA (36%).

Actions to be taken

- Continued emphasis on timing for creation of vascular access prior to first dialysis session.

Quality of Life

Background

Research has shown that the quality of life (QOL) experienced by the dialysis population to be well below the QOL experienced by the general population[7]. Two audits conducted by our unit in 2001 and 2003 also showed similar results.

In 2004, all dialysis patients associated with our dialysis unit were given a Short Form 36 (SF 36) questionnaire to complete. The aim was to assess QOL in our dialysis patients.

SF 36 Questionnaire
The SF-36 is a 36-item questionnaire that measures the following eight dimensions of health.

PF Limitations in physical activities because of health problems
RP Limitations in usual role activities because of physical health problems
BP Bodily pain
GH General health perception
VT Vitality (energy level and fatigue)
SF Limitations in social activities due to physical or emotional problems
RE Limitations in usual role activities because of emotional problems
MH Mental health (psychological distress and well being)

• The SF-36 is a universal tool for the measurement of health status. Data exist for population groups (including normal Australians) allowing for age and gender matched comparisons.
•Questionnaires were scored using the COES software (clinical outcomes evaluation system), yielding scores in each dimension between 0-100 with higher scores indicating better health status. In addition a composite physical and a composite mental score were generated.

Activity

Home HD and Peritoneal Dialysis patients were sent a SF 36 questionnaire via the mail with a reply paid envelope attached. Incentre HD patients were handed their questionnaires. A total of 179 questionnaires were distributed.

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[7] Carmichael, P., Popoola, J., John, I. , Stevens, P.E. & Carmichael, A.R. (2000). Assessment of quality of life in a single centre dialysis population using the KDQOL-SF questionnaire. *Quality of Life Research, 9*(2),195-205.
Fukuhare, S., Lopes, A.A., Bragg-Gresham, J.L., Kurokawa, K., Mapes, D.L., Akizawa, T., Bommer, J., Canaud, B.J., Port, F.K. & Held, P.J. (2003). Health-related quality of life among dialysis patients on three continents: The dialysis outcomes and practice patterns study. ***Kidney International, 64***, 1903-1910.
Weisbord, S.D., Carmody, S.S., Bruns, F.J., Rotondi, A.J., Cohen, L.M., Zeidel, M.L. & Arnold, R.M. (2003). Symptom burden, quality of life. Advance care planning and the potential value of palliative care in severely ill haemodialysis patients. *Nephrology, Dialysis & Transplantation, 18*, 1345-1352.

Patients excluded from the survey were non-English speaking (n=15), suffering from dementia (n=1) or a psychological condition (n=1).
The return rate was 60%. Seven patients verbally refused to complete a questionnaire.

How did we record, store & analyse the data

All returned surveys were entered into the COES program for statistical analysis. Data was also collected on patient's age, sex, diabetic status, Hb, albumin and Kt/V from routine audits and entered into an Excel database.

SF 36 scores were compared with gender, dialysis mode and diabetic status using a Two sample t Test (parametric) and Mann-Whitney U test (non-parametric).
Linear regression determined an association between SF 36 scores and Hb, albumin, Kt/V and age.

Benchmark Data

Data was compared to the results of the previous two surveys.
Data was also compared to the Australian normative data (Bureau of Statistics).

Outcome
Patient characteristics:

Age	62.74 ± 13.90
Male	61%
Diabetes	32%
Haemoglobin	120.6 ± 16.02
Albumin	32.36 ± 5.26
Kt/V CAPD	2.03 ± 0.54
Kt/V HD	1.75 ± 0.43

The following table shows the comparison of our findings compared to the Australian normative data.

Parameter	**Reported**	**Aust**
Physical Functioning	**52.65** ± 30.65	**83**
Role/Physical	**39.12** ± 42.17	**80**
Bodily Pain	**63.63** ± 28.79	**77**
General Health	**45.25** ± 24.48	**72**
Vitality	**53.33** ± 2.89	**64**
Social Functioning	**45.67** ± 18.88	**85**
Role/Emotional	**44.33** ± 50.95	**83**
Mental Health	**76.00** ± 24.00	**76**

The dialysis patients in the St George renal unit in 2004 continue to have a poorer self assessed QOL than the average Australian in seven of the eight measured parameters. The mental health QOL parameter is equal to the Australian mean. Significance (p=0.002) was found between modality with the Role-Physical parameter with Home HD patients scoring higher than Incentre HD and PD patients. There was no association between SF 36 score and Hb or Kt/V. Association was found between SF 36 scores and albumin and age

Actions

Recommendations to improve QOL in dialysis patients include early referral, anaemia management, adequate dialysis, nutritional support and exercise. The St George renal unit currently employs these recommendations. However, the use of palliative care in dialysis patients has not been researched.

A working party has commenced upon a future study with a palliative care intervention with the aim of improving the QOL in dialysis patients.

Renal Biopsy Audit

Background

Renal biopsy enables histological examination of renal tissue from which a diagnosis may be made and a prognosis given of renal disease. Renal biopsy is also used routinely post-renal transplant. The audit covers the period 30th May 2002 until 30th May 2004.

Outcomes Measured

Measured outcomes included:

- Patient characteristics
- Renal biopsy adequacy
- Complications
- Nights in hospital

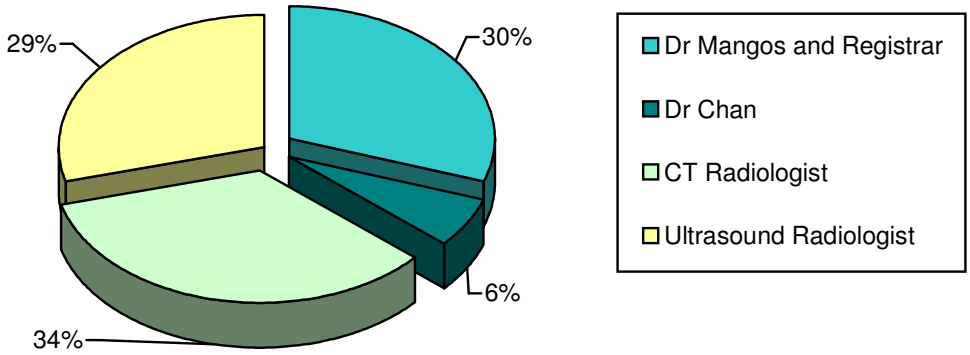
How did we record, store and analyse data?

Dr Mangos and the Registrars prospectively collected a renal biopsy database.
A full list of all renal biopsies was obtained from histopathology and biopsies performed under ultrasound or CT scan entered into an Excel database.
Data on the biopsies was collected from medical records and diagnostics.

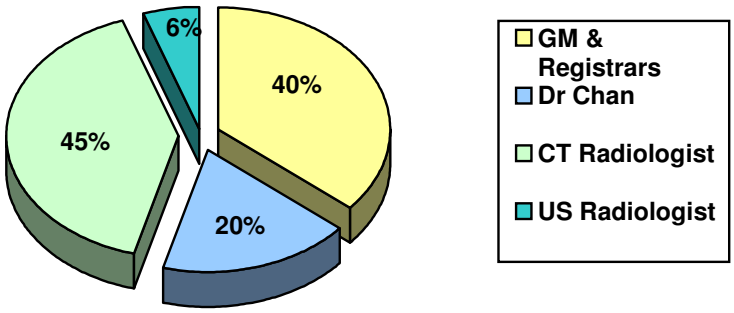
Activity

A total of 181 biopsies were performed between May 2002 and May 2004, 155 (88%) were performed at St George, 19 (10%) at Sutherland and 7 (4%) at Campbelltown.

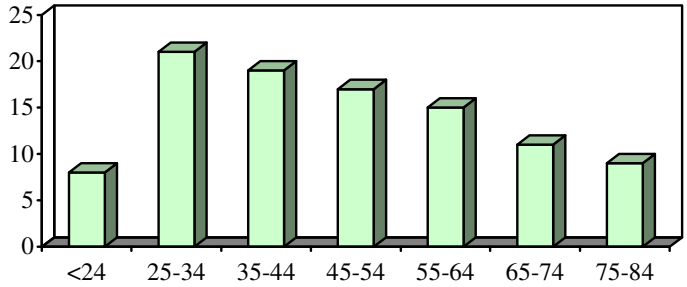
St George Breakdown - Native and Transplant (155) biopsies



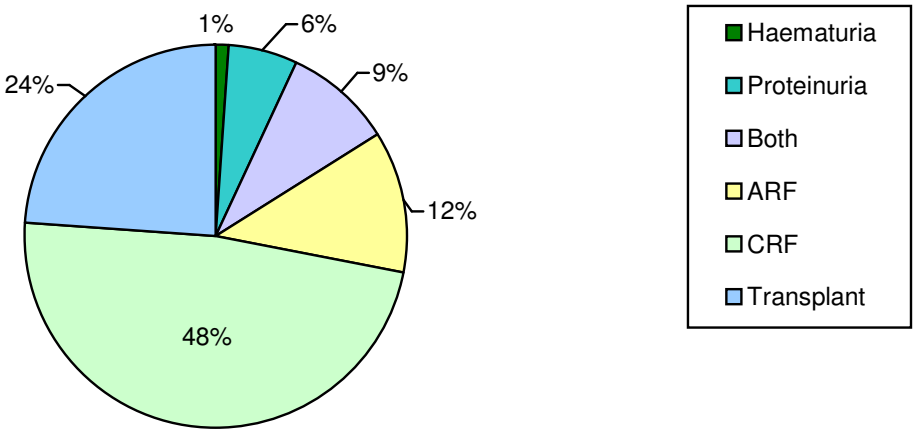
St George Breakdown – Native (117 Biopsies)



Age at Biopsy



Indications for Biopsy



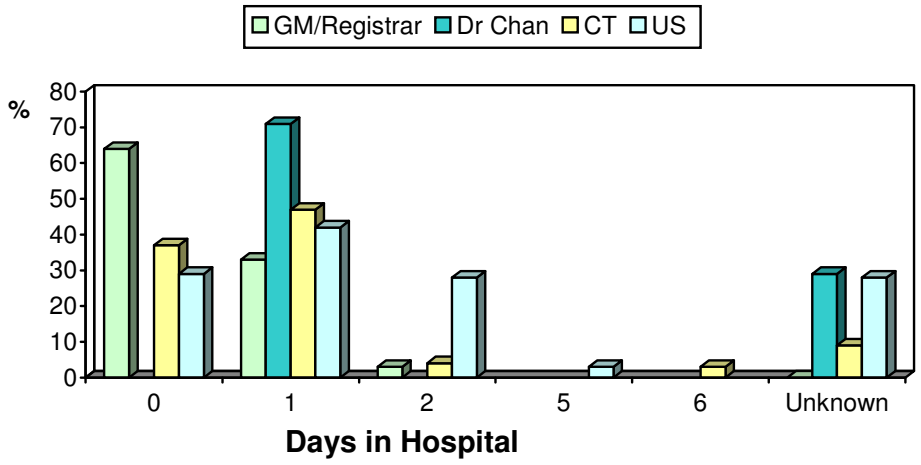
Adequacy

Test	Operator	Adequate	Inadequate	Not Attended
Electron Microscopy	Dr Mangos/Registrar	94%	6%	
	Dr Chan	100%	0	
	CT scan	92%	8%	
	Ultrasound	78%	7%	15%
Immuno-Fluorescence	Dr Mangos/Registrar	96%	4%	
	Dr Chan	100%	0	
	CT scan	94%	6%	
	Ultrasound	80%	7%	13%
Light Microscopy	Dr Mangos/Registrar	98%	2%	
	Dr Chan	100%		
	CT scan	98%	2%	
	Ultrasound	98%	2%	

Complications

Operator	Complication			
	Macroscopic' Haematuria	Perinephric Haematoma	Haematuria With clots	Perinephric Bleed
Dr Mangos/Registrar	3%	-	-	1%
Dr Chan	-	-	-	-
CT scan	1%	1%		1%
Ultrasound	1%	-	1%	-

Days in Hospital for Outpatients



Outcomes

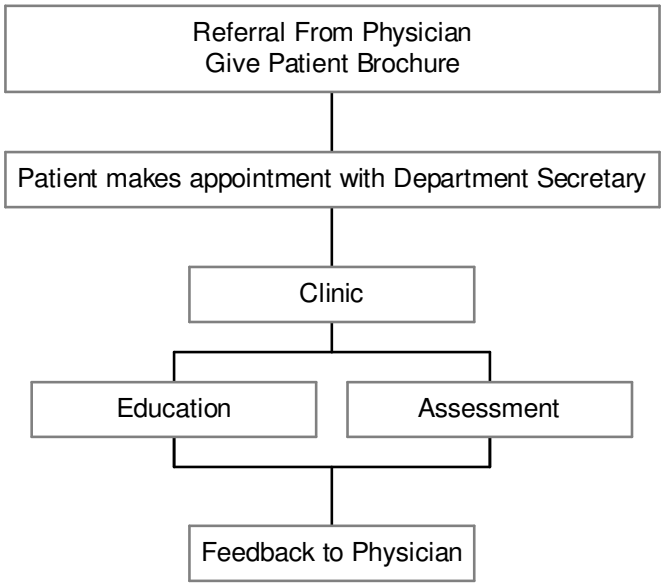
- The largest age group undergoing renal biopsy is the 25-34 yr group
- CRF is the major indication for renal biopsy
- Adequacy of core collection was excellent
- In 155 biopsies, only 3 patients (2%) suffered a major complication
- 5% patients suffered from macroscopic haematuria
- The average hospitalisation period for outpatients was 0.6 of a day
- Renal biopsies will be audited in 2005

Recommendations

- Due to the low macroscopic haematuria rate and excellent adequacy achieved by Dr Mangos and the Registrars, they will increase the number of renal biopsies performed. Dr Chan will refer biopsies to Dr Mangos and the Registrars. This action will enable the Registrars to develop their biopsy technique.

Pre Dialysis Clinic 2004

Chronic Kidney Disease (CKD) Clinic



The clinic has been operating since April 2002. There are therefore no full figures for the 2002 year. By the end of November 2004, 39 people remain on the CKD clinic pathway (not on dialysis).

Aim
The clinic is a means of educating and assessing patients with Chronic Kidney Disease.
The clinic aims to coordinate the clinical pathway for patients who will require dialysis or a conservative treatment approach. This allows for the patient and their family to reach end stage renal failure prepared for the commencement of dialysis or conservative care.

Objectives
1. To educate all patients and their family regarding dialysis options.
2. To provide nutritional assessment, education and ongoing support to all CKD patients, including review of knowledge of their medications.
3. To allow for appropriate and timely referral to members of the health care team.
4. To provide counseling and support to patients and initiate social work assistance as required.
5. To assist in the planning of dialysis services

Staffing
Coordination of the clinic is headed by the Clinical Nurse Consultant in conjunction with the Renal Dietitian, Renal Social Worker and the Renal Pharmacist.

Criteria for referral
Patients must meet the following criteria:

- Creatinine > 300umol/L
- GFR < 25ml/min
- Referral form must be completed.

Documentation
A clinical pathway is commenced for each patient attending the clinic. A standard letter is sent to the Nephrologist following each clinic visit.

CKD Clinic News for 2004
The Pre Dialysis Clinic underwent a name change during 2004. The new name CKD (Chronic Kidney Disease) Clinic would take away the emphasis on dialysis as the only choice in a treatment pathway when the conservative pathway is an option. More changes include the clinic move from the Pritchard Wing to 4 West and a format change away from group education, as it did not lend itself to the individual requirements of the patient and family.

Common Issues found in CKD clinic

- Impact of dialysis on working commitments.
- Impact on financial status.
- Lack of confidence and ability to perform home dialysis.
- Dialysis or not?
- Cultural concerns
    - Social Isolation.
    - Language barrier.

Limitations of CKD Clinic

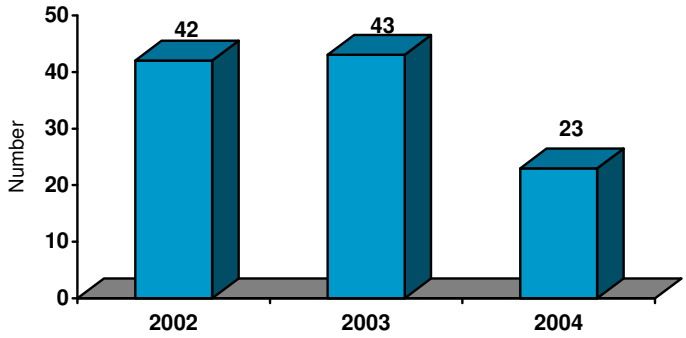
- Clinic is limited by the amount of follow up information you can source on the patients.
- Sending a copy of the GP letter to the CNC in charge of the clinic proves to be a very useful tool for tracking patient progress.

Who could have benefited from a Palliative Care Service?

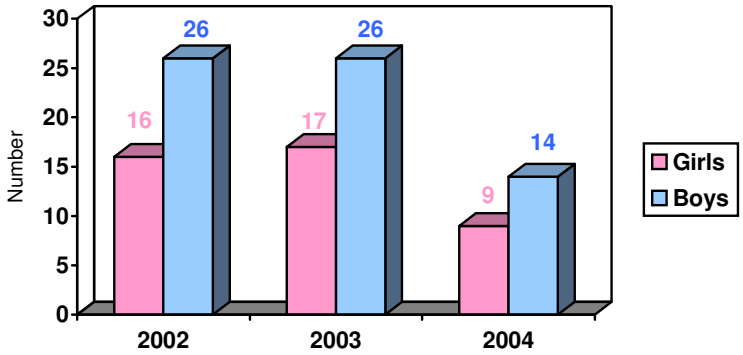
- 11/109 (10%) could have benefited.
- 4.5% may have avoided dialysis/access intervention.
- 5.5% may have had a more comfortable decision of ‘not for dialysis’.

EVALUATION

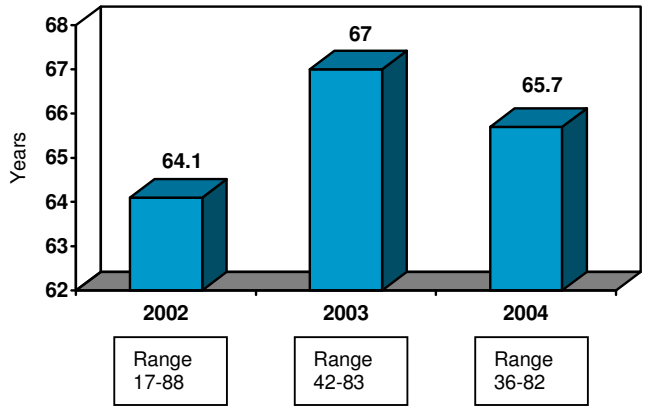
New Attendees



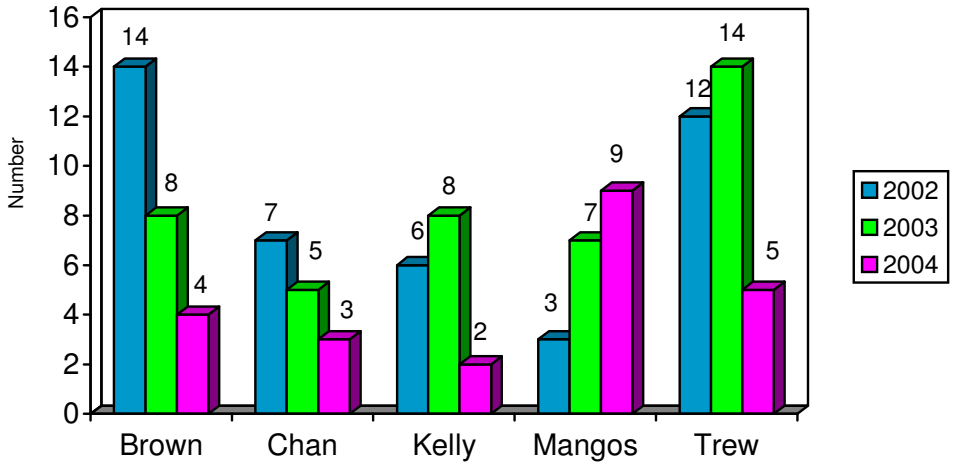
Gender



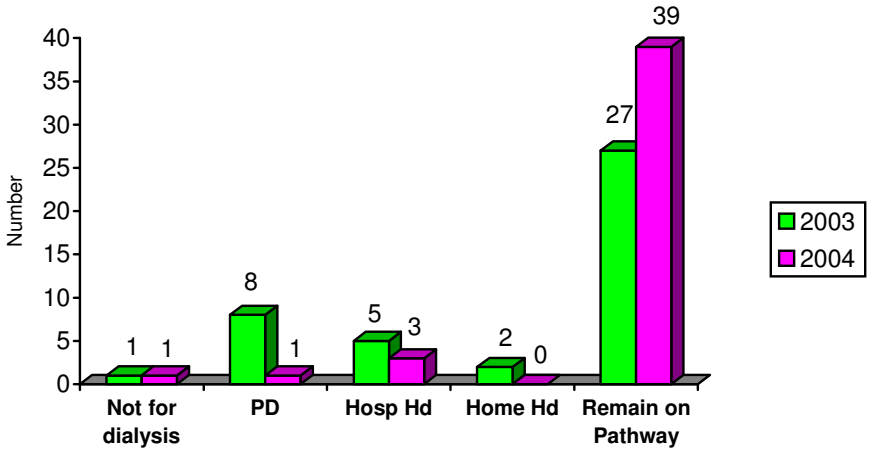
Mean Age



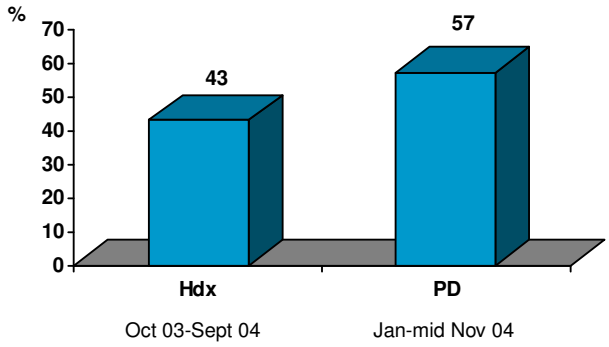
Attendance by Physician



Patient Outcome



Chronic Patients Commencing Dialysis in 2004 who attended the CKD Clinic.



Reasons for non attendance of the CKD clinic are:

- Non English Speaking backgrounds (educated outside the clinic with an interpreter, or on a home visit)
- Late Referrals from the community.

RENAL TRANSPLANTATION

2004 was a relatively busy year for the Renal Unit in terms of Transplantation. Sixteen renal transplants were performed which represents our busiest year of activity since transplantation commenced on-site at St George Hospital in 1993. Fourteen of these procedures were from deceased donors and two of the procedures were from living-related donors.

In terms of the overall program results remain good with 98% twelve month patient survival and 92% twelve month graft survival.

The St George Hospital Renal Transplant Waiting List continues to grow as the total number of patients on dialysis increases. The Renal Transplant Waiting List peaked at 50 patients in March 2004 and with the relatively high degree of transplant activity last year is currently being maintained at about 45 patients. A comprehensive system of annual review of patients on the waiting list has been commenced. All patients on the Transplant Waiting List undergo an extensive annual re-evaluation to ensure that they remain in the optimal state of preparation for transplantation if a deceased donor graft becomes available.

A comprehensive program for screening potential live renal donors is also undertaken through the Renal Unit at the hospital. Live donor assessments are performed independently of patients primary renal physician and of the primary transplant physician at the hospital. In 2004 this procedure was primarily undertaken by Dr George Mangos. A total of 12 individuals commenced assessment as live donors in 2004. A laparoscopic nephrectomy is now utilised as our routine surgical procedure for retrieval of transplant kidneys from live donors. This procedure is undertaken by Dr Peter Aslan from the urology service at St George Hospital. Acknowledgement is also given to the other surgeons involved in ensuring a successful renal transplant program, namely Dr Ray Englund, Dr David Malouf, Dr Bill Lynch, Dr Peter Nash.

There has been considerable streamlining of processes related to live donor assessment and assessment of patients on the waiting list over the last twelve months. Standardised protocols derived from the South Eastern Area Health Service Transplantation Procedures Manual have been implemented locally with the assistance of Sister Elizabeth Henness, the Area Transplant Coordinator. The local St George Hospital Transplantation Protocol is reviewed annually and is available on the hospital intranet site.

All of these areas of activity have been carried forward into 2005 with an active live donor assessment program and continuing review of patients who remain active on the Transplant Waiting List. A centralised procedure for long term assessment of renal transplant recipients has also been implemented.

RENAL NUTRITION

Ongoing QI activities performed by the renal dietitians in year 2004 included:

A. Dialysis nutrition assessment and dialysis adequacy
B. Nutritional Status at Commencement of Dialysis
C. Pre-dialysis clinic evaluation– Nutrition component
D. Clinical and nutritional profile of patients attending the renal outpatient clinic

The aims of these QI activities are to improve patient outcomes and to formulate management strategies

- **A Dialysis, nutrition and dialysis adequacy:**

Background: ***Dialysis patients of SGH receive regular nutritional assessment by dietitians using criteria as suggested by CARI and DOQI guidelines. Nutrition intervention and monitoring will be provided when once patients:***

- are identified as malnourished using Subjective Global Assessment (SGA), with a score B (mildly – moderately malnourished) and C (severely malnourished)
- ***nutritional parameters fall outside reference range eg BMI – under or overweight, low albumin, high potassium, high phosphate and high fluid weight gain etc***

Routine assessments are performed in February and August each year co-inciding with the unit's dialysis adequacy studies and audit of biochemical and haematological targets by the unit's QI officer – see separate reports

Aim: To compare audit results to CARI and DOQI guidelines and the recommended best practice in the literature

Remark: These activities have become routine care of patients in the SGH dialysis unit for more than 5 years, selected results are presented in this report.

Results: The 7 points scale SGA was used from 8/2004, which has been shown to be more sensitive to changes in the literature

Patient: HD; Assessment period: 8/2004; n=117

SGA Scale	**A well nourished**		**B mild-moderately malnourished**			**C severely malnourished**	
	7	6	5	4	3	2	1
No (%)	66 (56.4%)	21 (17.9%)	16 (14.0%)	2 (1.7%)	6 (5.1%)	2 (1.7%)	1 (0.9%)
Albumin (g/L)	34.3 ±2.8	32.7 ±3.1	29.8 ± 2.38	33.0 ±4.2	29.6 ±6.1	30.0 ± 7.1	30.0

Missing data n=3

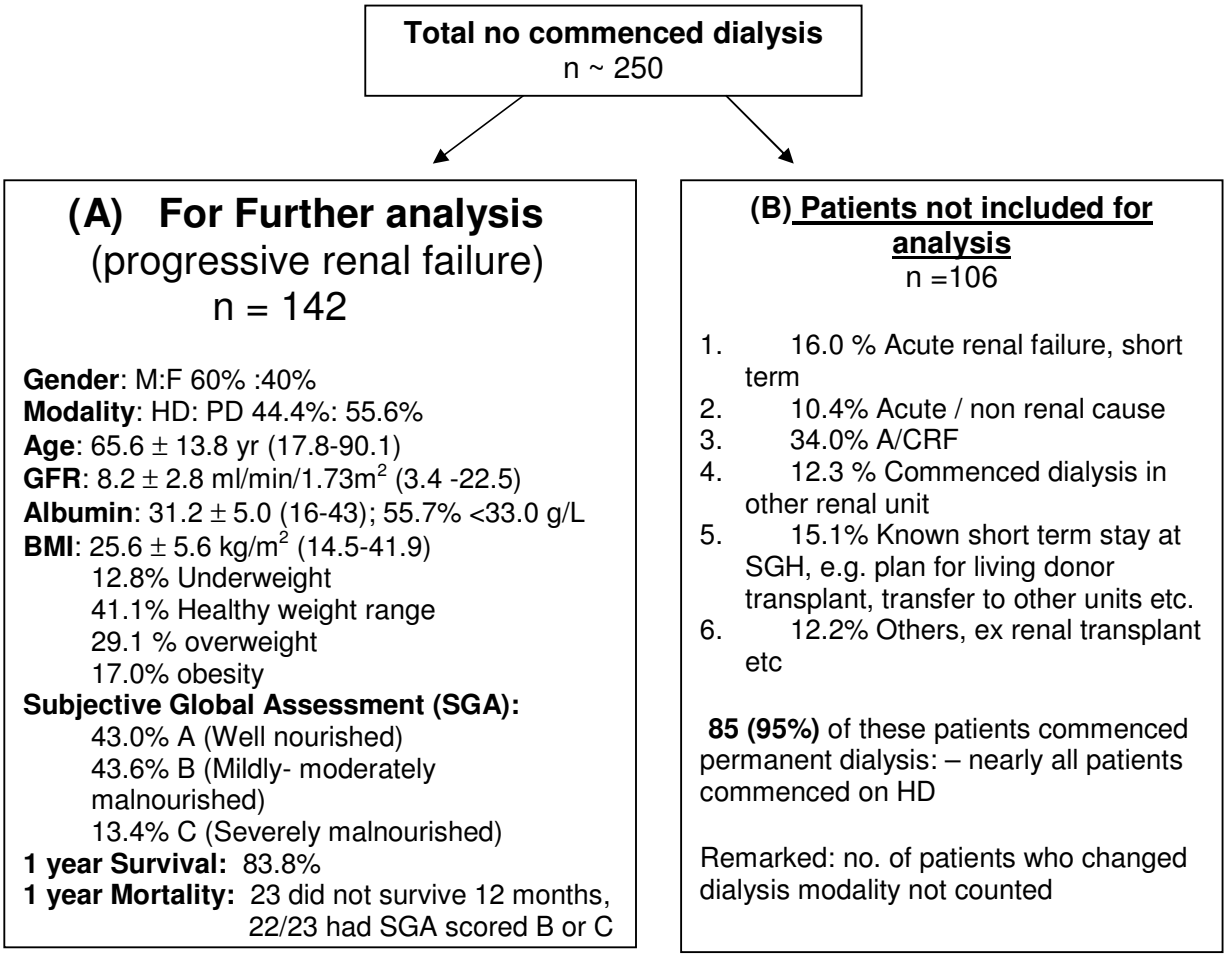
- 74.3 % were classified as well nourished (SGA=A), was 45.0% (8/2002) 47.9% (2/2003), 62.9% (8/2003)

Future Plan:

- Report of longitudinal changes and progress will commence in year 2005

B Nutritional Status at Commencement of Dialysis:

Aim: to audit clinical and nutritional characteristics of patients who commenced dialysis at the SGH renal unit between 8/2000 to 2/2004. This information is useful for planning service provision by the dietitians. The following data is extracted from current study: nutrition status at commencement of dialysis and survival (unpublished data not included in this QI report)



Comments:

- There was an average of 43 (250/3.5yr) patients newly commenced on dialysis at SGH per year plus patients who changed dialysis modality that required nutrition intervention

In group A:

- High prevalence of malnutrition (57.0%) as assessed by SGA noted and higher mortality rate was also observed in these patients. Further analysis on effect of age, and other nutritional parameters on survival will be performed.
- 58.9% of patients had BMI fell outside healthy weight range (underweight or overweight/obese) and 55.7% of patients had albumin below reference range. All these required substantial nutrition intervention

In group B:

- This group consisted of cases of very heterogeneous natures of acute renal failure which exerted minimum to extensive nutritional effects. Therefore intensity and strategies of nutrition intervention varied, often depended on the cause of ARF, length of hospital admission and ongoing post discharge care.

C. Pre-dialysis clinic evaluation– Nutrition component

Background: The establishment of multidisciplinary pre - dialysis assessment clinic in 4/2002 provided dietitian the opportunity to assess patients' nutritional status pre dialysis - see previous reports.
The first audit: April 2002 to October 2002
The 2nd audit: October 2002 to October 2003
Current audit: April 2002 to December 2004

Low physician referral rate for nutrition intervention (41.2%) was observed prior to and in the first stage of audit. Since then " blanket referral" for nutrition intervention was established in the clinic evaluation meeting (11-02) with protocols agreed by all renal physicians

Aim: Evaluation of pre-dialysis assessment clinic – nutrition component for the period of 4/2002 to 12/2004

Method: To describe demographic, clinical and nutritional characteristics of patients attended the pre- dialysis assessment clinic.

Results: Cumulative data from 4/02 to 12/2004:

Total no pf patient	111
Gender M:F	70:40 (64.0%:36.0%)
Age (yr)	70.4 ± 17.7
GFR (ml/min/1.73m^2)	15.2 ± 5.7 (4.8-41.6)
Diabetic	32.4%
SGA A:B:C (%)	55.9: 37.8: 6.3
Unintentional weight loss > 5% body weight 6 months prior to clinic	14.4%
Stages of CKD 3:4:5 (%)	1.8 : 44.1 : 51.4

Comparison of referral and intervention rate:

Period of Audit	**4/02 to 10/02 (1st audit)**	**10/02 to 10/03 (2nd audit)**	**11/03 to 12/04 (3rd audit)**
		Blanket nutrition referral	
Total no of patients	41	36	34
GFR (ml/min /1.73m^2)	13.2 ± 5.3 (7.8-30.0)	15.4 ± 5.7 (4.8-28.9)	17.0 ± 5.8 (6.6-41.6)
MO referral (before, at and after the clinic)	17/41	15/36	15/34
Screened and wait for MO referral	11/41	0/36	0/34
Dietitian initiated intervention	4/41	21/36	16/34
Total no. of pts received intervention (intended)	21/41	36/36	31/34

Comment:

1. Intervention rate (intended) increased since 10/2002.
2. Increased referral by MOs prior to pre-dialysis assessment clinic was observed

Summary:

1. A high prevalence of malnutrition was observed (44.1 %)
2. The pre dialysis clinic is useful for identifying the need for nutritional intervention
3. The clinic is sustainable

Future Plans:

To continue current audit and to audit outcome of nutrition intervention

Additional information: Follow on from section B, the number of new dialysis patients (with progressive ESRF n=142) who had attended pre-dialysis clinic:

Period	**8/2000 – 5/2002*** **prior to pre-dialysis clinic**	**5/2002*-12/2004**
No of patients	78	64
No of patient attended pre-dialysis clinic	0	32

* 1st new dialysis patient who had attended pre-dialysis clinic commenced HD on 22/5/2002, less than 1 month after clinic attendance.

Comments: within the first 14 months after pre-dialysis clinic establishment (4/02 to 12/04), ~50% (32/64) of new dialysis patients had attended the clinic. It is difficult to estimate the effect of the clinic on the outcomes of these patients because the duration and intensity of intervention varied. In addition, many non-clinic attendees had seen various team members at some stages for education and intervention.

Future plan:

- To continue current audit
- To define outcome evaluation strategies

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D. Clinical and nutritional profile of patients attending the renal outpatient clinic

Aim: to compare clinical/nutritional profiles of CKD patients to the CARI and K/DOQI guidelines recommendations. Referral rate to dietitian intervention was also audited

Methods: screening, nutrition assessment and medical record audit were performed by a nutrition research student (USyd.) and the renal unit dietitain in 8-10/2004.

Results: 205 CKD patients over 9 clinics were screened and 70 patients received further assessment:

CKG stage	Total (n)	Age (yr) & Gender (%)	**Increased risk**	**1**	**2**	**3**	**4**	**5**
Screened %	205	59.1±18.9 56: 44	16.7	13.2	18.6	27.9	16.2	7.4
Assessed %	70	69±15.6 73: 27	12.9	18.6	17.1	35.7	12.9	2.9

Prevalence of co-morbidities/ complications and treatment:

Stage 1-5:

Co-morbidities	No (%) total 61
HT	83.6% (n=51)
CVD	59.0% (n=36)
Treatment	
ACE- I and ARB	36.1% (n=22)
Lipid lowering agents	67.2% (n=41)
Dietitian referral	18.0% (n=11)

Co-morbidities	No (%) total 61
Diabetes	41.0% (n=25)
Overweight & Obesity BMI > 25kg/m^2	75.0% (n=46)
Treatment	
OHAs or insulin	31.1% (n=19)
Dietitian referral for diabetes	31.1% (n=19)
Dietitian referral for weight management	18.0% (n=11)

Stage 3-5:

Complications	No (%) total 36
Anaemia (Hb < 120g/L)	47.2% (n=17)
Hyperphosphataemia (< 1.50 mg/L)	44.4% (n=16)
Hyperkalaemia (> 5.5mmol/L)	22.2% (n=8)
Malnutrition (SGA B& C)	50.0% (n=18)
Treatment	
EPO & Iron supplement	25.0% (n=22)
Phosphate binders	44.4% (n=16)
Dietitian referral	25.0% (n=9)

Others, patients reported**:**

1. 34.4% recommended by their doctors to modify their diet
2. 47.5% reduction in total sodium intake
3. 55.0 % inclusion of regular physical activities> 150min/week
4. 86.0 % smoking cessation in current and ex smokers as advised by their doctor

50% of patients expressed an interest in including nutrition intervention as part of their treatment in an anonymous survey

Conclusion: prevalence of co-morbidities and complications were high and nutrition intervention rate was low. There is a need to review the nutrition service provision to this group of patients

Reported by
Maria Chan

Nutrition Management in Pre-Dialysis Assessment Clinic - 18 Months Experience

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Department of Nutrition and Dietetics[1] and Department of Renal Medicine[2], The St. George Hospital, Sydney, NSW, Australia

Introduction

- Nutritional status at commencement of dialysis predicts morbidity, mortality and hospitalisation
- Previous audit (8/2000 to 6/2002) of patients newly commenced on dialysis (n=97) at the St.George Hospital indicated:
  - 55% rated as malnourished using Subjective Global Assessment (SGA) - score B &C
  - 64% had albumin below reference range
  - Only ~ 30% of patients had been referred for advanced renal failure nutrition management
- A multidisciplinary Pre-Dialysis Assessment Clinic was established in April 2002 to provide assessment and education:
  - Patients: GFR< 25ml/min/1.73m^2
  - Staff: Clinical Nurse Consultant, Social Worker, Pharmacist and Dietitian
  - Source of referral: Nephrologists

Aim

To evaluate the nutrition component of the Pre-Dialysis Assessment Clinic. Audit periods:

- Phase 1: 4/2002 to 10/2002
- Phase 2: 11/2002 to 10/2003

Methods

- To describe the clinical characteristics of patients
- To audit nutritional parameters (e.g. ***A***nthropometry, ***B***iochemistry, ***C***linical signs & symptoms and ***D***ietary intake with computer analysis, SGA) and to compare these results to the clinical targets as recommended by CARI and K/DOQI guidelines
- To evaluate the implementation strategies and logistics of the clinic

Acknowledgments:
All team members in the Pre-Dialysis Assessment Clinic: Shelley Tranter (CNC), Nicole Hair (Social Worker) and Johneen Tierney (Pharmacist) and the support from all nephrologists

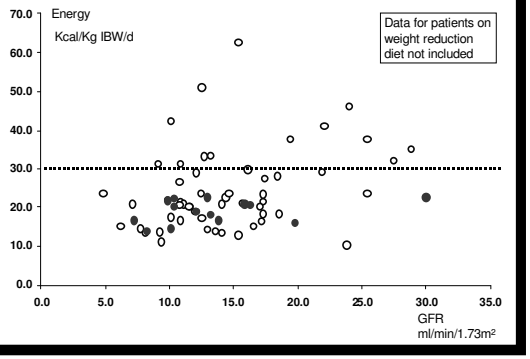
Reference:
CARI guidelines – www. kidney.org.au/cari
K/DOQI – www.kidney.org/professionals/doqi

Results (Demographics)

- **Patients**: n = 77, 49M:28F, 67.0±14 yrs
- Main **Cause of renal failure** - Glomerulonephritis (~30%) and 24.7% of patients had diabetes
- **GFR**: 14.4 ± 5.6 ml/min/1.73m^2 (range 4.8 – 30.0)

Results (Nutritional Parameters)

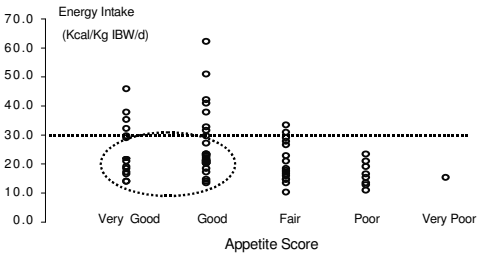
- **SGA**:
  - 44.7% = A (well nourished)
  - 47.4% = B (mild to moderately malnourished)
  - 7.9% = C (severely malnourished)
- **Anthropometry**:
  - 6.5% - underweight (BMI < 20.0 Kg/m^2)
  - 22.1% - obese (BMI > 30.0 Kg/m^2)
  - 19.5 % - unintentional weight loss > 5% in last 6 months
- **Albumin**:
  - 33% (13/40) below reference range
- **Dietary Intake - Protein**:
  - Mean 1.13 ± 0.55 g/ Kg IBW/d (0.4 - 3.4)
  - 26.0% < 0.75 g/ Kg IBW/d (Australian RDI)
  - 13.7% < 0.6g / Kg IBW/d (usual target for Low Protein Diet)
- **Dietary Intake - Energy**
  - Mean 23.4 ± 9.6 Kcal/ Kg IBW/d (10.4 - 62.7)
  - 72.6% < 30-35 Kcal/ Kg IBW/d (····· in graphs)
- **Reasons for sub-optimal intake**:
  - Poor appetite (41.5%) and symptoms (53.9%)
  - Self imposed dietary restriction (19.7%) e.g. low protein diet, lipid lowering diet, low K$^+$ diet (SGA B, n=13; SGA C, n=1) – "•" denotes individuals with self restricted diet in graph below



Results (Nutritional Parameters continued)

Energy intake and appetite score:

- 58.5% (30/ 51) reported good appetite, but intake was poor



Results (Referrals & logistics)

- **Patients received intervention (intentional)**:
  - Phase 1 – MO referrals mainly: 58.3% (21/36)
  - Phase 2 – MO + "Blanket" referrals: 90.2% (37/41)
- Remark: > 70 % new dialysis patients (with progressive ESRF) received nutrition assessment ± intervention in pre-dialysis stage (was ~ 30% prior to 6/2002)

Summary

- High prevalence of malnutrition (~ 55% SGA B + C), poor nutritional status and suboptimal intake, especially energy, were observed well before dialysis was required
- Subjective report of "good appetite" may not reflect adequate intake
- Current clinic allows an integrated approach for nutrition assessment and intervention

Conclusions

- Pre-Dialysis Assessment Clinic allows:
  - dietitian to implement nutrition management as per clinical guidelines and department protocols
  - systematic approach to nutrition management, and is **SUSTAINABLE**
- Future plan: to determine whether the "Blanket Referral" approach leads to fewer patients being malnourished at the commencement of dialysis