NT Renal Services with  
Joint Menzies School of Health Research – Royal Darwin Hospital Renal Unit 
Research Collaboration presents

2014 Top-End NT Renal Service Excellence, Quality and Research Session

When:       Wednesday, 3 September 2014 from 8.30 am
Where:      Menzies School of Health Research, Seminar Room  
John Mathews Building, Royal Darwin Campus

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<th>Time</th>
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<tr>
<td>0830</td>
<td>10 mins</td>
<td>Welcome and Introductions.</td>
<td>Jaqui Hughes, with Prof Cass</td>
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<td>0840</td>
<td>15 mins</td>
<td>Summary and History of Joint Menzies-RDH Renal Collaboration Meetings</td>
<td>Gill Gorham</td>
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<td>0855</td>
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<td>End Stage Kidney Disease: Improving Top-End Renal Patient Service Quality and Access</td>
<td>Heather Hall</td>
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<td>0915</td>
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<td>Renal Palliative Care – The Supportive Care role.</td>
<td>Samantha Harrington</td>
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<td>Melioidosis and End Stage Renal Disease in Tropical Northern Australia</td>
<td>William Majoni</td>
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<td>A retrospective study of the characteristics and outcomes of dialysis-requiring acute kidney injury among adults in an acute dialysis unit</td>
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<td>Survival of propensity matched Indigenous transplant &amp; dialysis patients in Australia</td>
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<td>1030</td>
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<td>Staphylococcus aureus reservoirs in renal medicine: STARRS</td>
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<td>1045</td>
<td>15 mins</td>
<td>Session Wrap Up</td>
<td>Jaqui Hughes with contribution from Prof Agar</td>
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<td>1100</td>
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<td>Quick Morning Tea</td>
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<td>Prof Agar Presentation: Internet</td>
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End stage kidney disease: improving Top-End renal patient service quality and access

Heather Hall¹,²,³ & Jaqui Hughes¹,²

¹. Division of Medicine, Royal Darwin Hospital, ². Menzies School of Health Research, Charles Darwin University ³Western Desert Nganampa Walytja Palyantjaku Tjutaku ( WDNWPT) Aboriginal Corporation

BACKGROUND

Aboriginal and Torres Strait Islander peoples with end stage kidney disease (ESKD) are more likely to start dialysis at a younger age than other Australians, have poorer access to renal transplantation, and more likely to relocate to undertake dialysis, which each contribute the success of the journey in renal medicine experienced by our clients.

Access and successfully navigating support services for clients with ESKD requires connection and collaborative partnerships between patients, their families and communities with key service providers in both the Government and Non-Government sector.

HYPOTHESIS

Initiatives that facilitate and maximise a client’s access and engagement with established services will enable meaningful and informed patient decision making which can dramatically influence a patient’s journey.

STRATEGIES

Create and support an active and respected renal consumer voice across the NT

- Facilitation between NT Renal Services and primary care service regions
  - Support Access to quality local complex case management in Urban region
- Partner with research agencies: high quality innovative research, and evaluation
- Partner with the NGO & ACCHS sector to improve patient journey between services
- Promote greater participation of Aboriginal people in the renal workforce
  - Employment: Indigenous Cultural Advisor and Patient Preceptor (ICAPP)
- Supported professional development opportunities to internally evaluate how we do business.
- Develop working relationships with PHC and Health Promotion Organisations: improve community awareness around healthy life style choices.

DISCUSSION

These initiatives have been identified and led though the renal patient consumer groups across the NT with facilitation and support from other agencies patient’s family and communities.

Currently there is no dedicated resource support for the NT Consumer Groups

The need and solutions have been driven from within a community that has been created through a shared disease burden ESKD. This process has allowed the group to share issues and solutions in a grass roots and patient led forum that has required service translation or navigation support provided in a partnership approach rather than from the “Top Down.”
Renal palliative care – the supportive care role

Ms Samantha Harrington, RN
Renal Supportive Care Coordinator, Top End Hospital Network, Department of Health

BACKGROUND
Australian Aboriginal people have one of the highest incidences of Chronic Kidney Disease (CKD) in the world. In the Northern Territory (NT), Aboriginal people make up 30% of the population, but comprise 85% of those accessing Renal Replacement Therapy. The trajectory to dialysis for NT Aboriginal’s most often results in protracted dislocation from family, community and cultural heritage.

AIM
To facilitate a coordinated approach to the education and support of clients choosing conservative management of End Stage Kidney Disease, or ceasing renal replacement therapy and returning home for End Of Life (EOL) care.

METHOD
Develop a working partnership between NT Renal Services (NTRS) and Territory Palliative Care, which assists to provide for the holistic well-being of renal clients, families and communities.

Develop networks within the NT Health Care system, including non-government organisations, to achieve best outcomes for clients

The use of Aboriginal Interpreters and Liaison Officers where ever possible, provides cultural brokerage, ensuring cultural safety. Specifically for discussions, and clarification of understanding, around goals of care

RESULTS
Results include an improved level of understanding about conservative management and palliative care for renal clients and their families. This role has enabled long-term renal clients to return home to community for EOL care, by facilitating education and supports, to client family/carers and associated healthcare staff.

IMPLICATIONS FOR CLINICAL PRACTICE
The Supportive Care nursing role enables continuity of care, in an area which has historically lacked recognition. This position facilitates processes that address the medical and psychosocial needs of renal clients.
Melioidosis and end stage renal disease in tropical northern Australia

Rachel MS Chalmers¹, Sandawana W Majoni¹, Linda Ward², Greg J Perry¹, Zulfikar Jabbar¹, Bart J Currie²,³

¹Department of Renal Services, Royal Darwin Hospital, Darwin, Northern Territory, ²Global and Tropical Health Division, Menzies School of Health Research, Casuarina, Northern Territory, ³Infectious Diseases Department, Northern Territory Medical Program, Royal Darwin Hospital, Darwin, Northern Territory.

BACKGROUND
Burkholderia pseudomallei infection or melioidosis is a common cause of pneumonia and severe sepsis in the tropical north of Australia. A high burden of disease was observed in dialysis patients in recent years.

METHODS
Using a prospective study of all melioidosis cases from October 1989 to September 2012 we describe Burkholderia pseudomallei infection in patients with end stage renal failure treated with dialysis in the tropical Top End of the Northern Territory, and determine the relative risk of acquiring the infection.

RESULTS
There were 785 cases of melioidosis, including 27 cases in patients with end stage renal failure on dialysis therapy. The incidence rate of melioidosis was 24.0/100,000 patient-years in the non-dialysis group and 988.8/100,000 patient-years in the dialysis group, with a crude relative risk of 38.4 (95% CI 25.7-57.5) for dialysis patients. Dialysis patients were more likely to present as bacteraemia without an evident underlying clinical focus on admission (37% vs 11%, p<0.001). Dialysis patients had high rates of other recognised risk factors including diabetes (63% vs 41%, p=0.02), rheumatic heart disease/congestive cardiac failure (22% vs 8%, p=0.01) and indigenous ethnicity (85% vs 52% p=0.001). Mortality was no different (11% vs 13%, p=0.72). Melioidosis has a significantly higher incidence rate in dialysis patients than in the rest of the population.

CONCLUSION
The clinical presentation of melioidosis in the dialysis population differs with more bacteraemia with no focus. An antibiotic prophylaxis policy has been implemented for dialysis patients in our melioidosis-endemic region.
A retrospective study of the characteristics and outcomes of dialysis-requiring acute kidney injury among adults in an acute dialysis unit

Majoni W¹, Kapojo J², Cass A³, Stephens D³, Goldrick P³, Campbell L³, Signal S¹, Sundaram M¹, Abeyaratne A¹, Hughes J¹²

¹Renal Unit, Royal Darwin Hospital, ²Menzies School of Health Research, ³Intensive Care Unit, Royal Darwin Hospital

Background
One in 5 adults worldwide experience acute kidney injury (AKI) during a hospital admission. Patients with prior chronic kidney disease (CKD) were more likely to be dialysis dependent at discharge. A high prevalence of CKD and dialysis requirements are known among Indigenous Territorians. AKI is a potential contributor to the burden of CKD, yet there is no published data in the Northern Territory to qualify this contribution to future development of CKD, dialysis dependency and death. It is essential to investigate key gaps knowledge in describing causes and longer term outcomes of patients with AKI requiring dialysis, in order to improve those outcomes.

Aim
This project aims to
(1) identify the baseline characteristics of patients with AKI requiring dialysis which include demographics, co-morbidities, baseline renal function, cause of kidney injury and treatment
(2) to identify 12-month outcomes for overall survival and renal survival following the hospital admission
(3) to identify health systems to support individuals most at risk after discharge

Methods
The project will describe a cohort of adults who received dialysis for AKI in Intensive Care Unit and Acute Dialysis Unit at Royal Darwin Hospital (RDH) between 1 January 2011 and 31 December 2012. The causes of AKI and renal and all-cause survival in the following year are of particular interest. The analysis links independent data sources from Australian and New Zealand Dialysis and Transplantation Registry; Australian and New Zealand Intensive Care Society Adult Patient database; RDH Acute Dialysis Unit diary; RDH Admission data; Northern Territory Register of Deaths

The investigator team comprises NT Renal Services nurses and nephrologists, RDH Intensive care physicians, NT renal Consumers and clinical researchers (Menzies School of Health Research).

RESULTS
Full Ethics approval granted August 2014

13 clients were identified in Ward 7A diary, and 130 clients in the ICU Aortic database have been identified meeting inclusion criteria. To date, there is no complete, coordinated and centrally located database of dialysis requiring AKI for Top-End renal clients, and thus no coordinated follow-up system monitoring clinical course after AKI admission.

Data linkage and individual case review for remaining variables will commence shortly.
Survival of propensity matched Indigenous transplant & dialysis patients in Australia

PD LAWTON\textsuperscript{1}, J CUNNINGHAM\textsuperscript{1}, Y ZHAO\textsuperscript{2}, MD JOSE\textsuperscript{3}

\textsuperscript{1}Menzies School of Health Research, Charles Darwin University, Darwin, Northern Territory, \textsuperscript{2}Department of Health, Northern Territory Government, Darwin, Northern Territory; \textsuperscript{3}University of Tasmania, Hobart, Tasmania

Background: Indigenous Australians have a higher incidence of renal replacement therapy (RRT), worse survival on RRT and are much less likely to be wait-listed for or receive a kidney transplant than non-Indigenous Australians. Some clinicians refer few Indigenous patients for transplantation, citing poor Indigenous outcomes compared to non-Indigenous transplants. We compared survival for Indigenous transplant patients with similar Indigenous dialysis patients, and contrasted this with non-Indigenous patients.

Methods: All patients in Australia who commenced RRT from 1\textsuperscript{st} January 1995 to 31\textsuperscript{st} December 2009 were included and followed until 31\textsuperscript{st} December 2012. Transplant recipients were paired by propensity score (using dialysis time, age, comorbidities, remoteness, late referral) with similar dialysis patients of the same ethnicity for three cohorts; time at risk for each pair was taken from the transplant date. Five year survival differences were measured using the log-rank test and Cox proportional hazards models adjusted for the propensity score.

Results: Proportionally fewer Indigenous than non-Indigenous patients were transplanted; Indigenous dialysis patients were similar to their transplanted pair at baseline, but paired non-Indigenous dialysis and transplant patients were not so alike at baseline. Indigenous transplant patients didn’t consistently have better survival than their dialysis pair; as expected, non-Indigenous transplant patients did:

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Cohort</th>
<th>Matched pair</th>
<th>Transplant deaths</th>
<th>Dialysis deaths</th>
<th>Log Rank Test</th>
<th>Hazard Ratio (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>1995-99</td>
<td>67</td>
<td>39</td>
<td>54</td>
<td>p=0.005</td>
<td>0.56 (0.37-0.85)</td>
</tr>
<tr>
<td></td>
<td>2000-04</td>
<td>55</td>
<td>19</td>
<td>23</td>
<td>p=0.487</td>
<td>0.84 (0.46-1.55)</td>
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<tr>
<td></td>
<td>2005-09</td>
<td>59</td>
<td>9</td>
<td>15</td>
<td>p=0.186</td>
<td>0.58 (0.25-1.33)</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>1995-99</td>
<td>1423</td>
<td>108</td>
<td>751</td>
<td>p=0.001</td>
<td>0.16 (0.13-0.2)</td>
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<tr>
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<td>2000-04</td>
<td>1677</td>
<td>231</td>
<td>1180</td>
<td>p=0.001</td>
<td>0.19 (0.12-0.22)</td>
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<tr>
<td></td>
<td>2005-09</td>
<td>2055</td>
<td>91</td>
<td>544</td>
<td>p=0.001</td>
<td>0.22 (0.17-0.27)</td>
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Conclusions: While non-Indigenous patients have much better survival with a transplant than on dialysis, the same is not clear for Indigenous patients in part because fewer potentially suitable dialysis patients are transplanted.
**Staphylococcus aureus** skin carriage and infection in a prospective dialysis cohort

JT HUGHES\(^1,2\), S TONG\(^1,2\), H HALL\(^1,2\), T HARRIS\(^1\), R LILLIEBRIDGE\(^1\), G PERRY\(^2\), S GRAHAM\(^1\), D CROKER\(^1\), D HOLT\(^1\), P GIFFARD\(^1\)

\(^1\)Menzies School of Health Research, Darwin, Northern Territory. \(^2\)Division of Medicine, Royal Darwin Hospital, Darwin, Northern Territory

**Aim:**
To describe the relationship of *Staphylococcus aureus* carriage and infection isolates among adults within a haemodialysis unit comprising mostly Indigenous patients.

**Background:**
Infections with *S. aureus* are a major cause of morbidity and mortality among haemodialysis patients. Understanding the relationship between carriage and infection isolates can inform preventative measures such as the utility of nasal or skin decolonisation.

**Methods:**
Participants are haemodialysis patients, longitudinally assessed over 10 months. Baseline sociodemographic data was collected, and 2 monthly *S. aureus* surveillance swabs obtained from nares, axilla, groin, dialysis access site and skin sores (if present). Isolates from significant infection events were also collected. Carriage and infection isolates were compared by genotyping and testing for Panton-Valentine leukocidin (PVL) toxin genes.

**Results:**
860 swabs were collected from 72 patients (88.7% Indigenous). 6.4% swabs (55/860) were *S. aureus* positive with nares, groin and wounds responsible for 49.1%, 21.8% and 12.7% of positive isolates respectively. Of 17 swabs obtained from wounds 7/17 (41.2%) were *S. aureus* positive, compared with 27/213 (12.7%) axilla swabs. PVL assay was performed for 69 isolates. 16.3% (8/49) of carriage compared with 16/20 (80%) of infection isolates were PVL positive (p<0.001).

**Conclusions:**
*S. aureus* infection was predominantly PVL positive whilst carriage isolates PVL negative. This suggests that carriage and infection isolates form separate populations and that a clear association exists between the presence of PVL and *S. aureus* infection. Continuation of the project will yield more detailed information regarding transmission events, and may indicate social determinants of *S. aureus* infection.