Home haemodialysis model in rural communities

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The Charleville Health Service District (CHSD) is a rural and remote health service comprising one of Queensland Health's 38 Health Service Districts. The district covers 230 000 square kilometres and is situated in south-western Queensland boarding New South Wales and South Australia.

The CHSD services a population of 8724 of which 10.6% is Indigenous. The State average of Indigenous population is 2.9%. The two main townships within the district Charleville and Cunnamulla have populations of 3500 and 2000 respectively.

Approximately 25% of the 2423 residents of the Cunnamulla community identify themselves as being Indigenous. In Charleville approximately 15% of the townships 3500 residents identify with being Indigenous. Indigenous people have a higher incidence of end stage renal failure of 7–10 times that of the general population.

The first line treatment considered for end-stage renal failure in clients living in isolated rural communities in south-western Queensland is Peritoneal Dialysis (PD). The average 'life' of this form of treatment is three years. It is at this time that the treatment usually starts to 'fail'. Once this occurs the patients are changed over to haemodialysis which requires them to automatically relocate from their communities to either Toowoomba or Brisbane.

For the last 6–8 years community leaders from Cunnamulla lobbied Queensland Health to provide a haemodialysis facility at Cunnamulla. At any one time there were up to 5–6 long term Cunnamulla residents living in either Toowoomba or Brisbane receiving dialysis treatments. It was seen by the community that these people would never return to live in Cunnamulla. With the exception of 1–2 patients who received a successful renal transplant this view was correct.

While the community lobbied strongly for the introduction of what would be a Multi-User Self-Care Haemodialysis Model of Care there was an initial inability to justify the provision of such a service as there was no contemporary data supporting the existence of clients receiving haemodialysis services residing at the 4490 post code of Cunnamulla. All the former Cunnamulla clients identified as receiving haemodialysis treatment lived at alternative addresses to enable them to access the haemodialysis service.

It is worth noting that there have been a couple of instances in the last ten years where individuals receiving haemodialysis treatment (one from Cunnamulla and one from Charleville) utilised home-based self-care haemodialysis machines. These patients were the only users of the machines and experienced a high rate of complications due in part to the lack of formal local support networks linking directly with the referring Renal Unit.

In 2001 Queensland Health made the strategic decision to commit the resources necessary to develop and implement two haemodialysis machines in the townships of Cunnamulla and Charleville using a Facility Based Multi-User Self-Care Haemodialysis Model of care. The move to a facility based approach was adopted once it was clear that it would be problematic to locate a Haemodialysis Unit in any other location which would support safe and secure access whilst protecting the integrity of the machine and the service.

The development of the service infrastructure process took approximately 15 months from when the funding was provided for the project. The complications of setting up the service in south-western Queensland were significant and revolved around issues such as water quality management. There was a need to purchase a separate water treatment plant for each machine at $70 000 per machine. These units were required to improve the water quality of the water used in the dialysing process as the artesian water supply consisted of a mineral combination and Ph levels which in their natural state are not compatible with safe dialysis treatment.

Prior to commencing the service the CHSD worked closely with the Toowoomba Hospital Renal Unit to develop polices and clear guidelines for how the Self-Care Multi-User Haemodialysis Model would work. Senior renal clinicians had repeatedly raised concerns with the potential risk of cross-infection in instances where there is poor adherence to infection control guidelines and poor cleaning of machine post-use.

The infection control issue was essentially addressed through the patient selection process for identifying patients suitable to undertake the home haemodialysis treatment. Patient education and demonstrated competence in infection control processes are an essential component of the training for patients and their carers/support person. Local environmental audits were also undertaken with a view to identifying possible infection control risk factors which required active mitigation.

Staff at the Renal Unit train patients in self-care haemodialysis and once a patient and their carer are deemed competent in the art of administering self-care haemodialysis they are able to return to their community to commence their treatment locally.

The first patient commenced using the Charleville Hospital based haemodialysis machine in December 2002. From the onset there were a number of difficulties which needed to be overcome. The most serious problem was the water temperature of the circulating water used for dialysing. The artesian water temperature was consistently above 50 C which was well above the accepted level of 30 C.

This problem had not been anticipated as the water temperature from the servicing bore had previously not been this hot.

Initially a 40 litre plastic bucket was filled with coiled hosing and a large amount of ice was deposited in the bucket in the morning prior to the patient commencing dialysing. The water temperature was monitored until it was cool enough to allow dialysis to be commenced.

This was a problematic and costly exercise which involved a Wardsperson purchasing the ice on dialysing days from a local service station and placing the ice in the bucket containing the coiled hosing.

This also meant that the patient lost a degree of flexibility and autonomy in accessing their treatment and led to much frustration on the part of the patient, their support persons and staff.

The health service did not have the funds available to purchaser and installed a water cooling unit at $20 000. There was also an issue with the time delay required to source and supply such a unit over the xmas/new year period.

A local solution to the problem involved maintenance staff teaming up with local electrical and refrigeration contractors to construct a water cooling device using parts including a water cooling fountain and air conditioner compressor.

There where also a number of challenges in establishing this model of self-care haemodialysis in the hospital setting. It was very important that right from the commencement of this service that clients and staff where made aware that this was a self-care haemodialysis model which happened to be based in a hospital instead of in the community.

It was viewed as essential that users of the service were aware of their need to access the service independent of hospital staff just as if they were accessing the same service in the community setting or at home.

This in itself was a message which was able to be sold and accepted in a fairly positive manner by clients and their supports.

The major challenge identified in this area lay with nursing staff located in the general ward facility close by where the self-care haemodialysis machine was located. While it was made clear to staff that they were not responsible for managing patients undertaking haemodialysis there was a clear expectation that they would provide reasonable support to patients and their carers as required. There was some initial resistance to this with some staff refusing to assist in providing, for example, ice to a support person upon request.

These 'teething' problems were overcome over time with some education and support. It should be noted that nursing staff were in a difficult position as while essentially the majority of staff wanted to assist they were also aware of the need to reinforce the fact that this was a self-care service model which meant that patients and their carers had to take reasonable responsibility for their treatment.

Another challenge for nursing staff involved changing attitudes to encourage staff to not view the patient as someone who was receiving haemodialysis treatment via a machine which no-one knew much about but rather to encourage staff to treat any medical conditions or complications as they arose. In other words focus on the patient not the dialysis.

This issue was partly overcome by the excellent support which the hospital received from the Toowoomba Hospital Renal Unit. This support consisted of several 'on-site' visits as well as regular contact for patient and staff via telephone and videoconference. Further patient education was also delivered using these forms of communication mediums.

The implementation of this model at Charleville helped the hospital to develop closer links and enhance the relationship with the local Aboriginal Medical Service (AMS). The local AMS was integral in supporting users of the haemodialysis service and without their input and endeavour it is unlikely that the first client using the haemodialysis machine, in particular, would have been able to continue with the treatment in Charleville.

The first patient, who commenced receiving the haemodialysis service in December 2002 successfully continued to use the Charleville based haemodialysis machine until they received a renal transplant in April 2003. In a sense there was some good fortune experienced with the first haemodialysis client as they were particularly motivated and responsible individual who did all within their powers to ensure that their treatment worked.

It has been ironic that the Facility-Based Multi-User Self-Care Haemodialysis Unit based in Cunnamulla has not had a patient using the machine until February of this year. It was coincidental that in the time period since the unit was installed in Cunnamulla that there had been no local clients deemed suitable to either undertake haemodialysis treatment (as opposed to peritoneal dialysis) or more likely unsuitable to 'self-care' in relation to their treatments.

It is anticipated however that with the disease profile existing in the Cunnamulla community that within a short period of time there will be significant usage of the local haemodialysis

machine. The fact that the unit is set-up and ready to go represents an example of good strategic service planning.

OUTCOMES

One significant outcome for the Global Health Service budget is the cost savings inherent in this approach to delivering haemodialysis services. It costs at least an extra $20 000 per patient per unit to dialyse at the Toowoomba Renal Unit as opposed to being in their own communities receiving the same treatment.

With the increasing demands on renal services there would soon be a need to consider introducing a 24 renal service at Toowoomba to enable patients to access haemodialysis services. This would add an extra cost of $20 000 per patient per year. This is not withstanding the facts that it would be extremely difficult to staff a third shift due to a national shortage of trained dialysis staff as well as the patient inconvenience and difficulty in coming into the renal unit to dialyse between the hours 11pm and 7am.

Another direct benefit of this approach is that more than one patient can access the machine which allows for the efficient and cost effective use of what is expensive and high maintenance health technology.

A most significant advantage of this model of care is that it allows patients receiving haemodialysis treatment to remain in their local communities with their families and supports. This inclusion with social supports facilitates a greater sense of holistic wellness then where a person has to relocate themselves from their community and supports and travel vast distances to live and receive treatment in what is essentially an alien and potentially intimidating environment.

The other advantage of having patients remain in their communities is also one of economics in that it saves the health budget significant dollars in terms of reducing the need to pay a Patient Transit Scheme Subsidy in these cases.

Staff support of this model of care has increased significantly as has the community support for such an initiative. The ongoing support by the local AMS is also first class.

The value and innovation of this service was recognised at the end of the last year when it received a Premiers Award for Excellence in Public Sector Management in the category of Building Queensland Regions Award.

POLICY IMPLICATIONS

The benefits for regional Australians and the health system are significant when the increasing obesity and life style related illness rates are considered in the context of increasing the number of people with diabetes. One in four Australians now has or is at high risk of developing diabetes.

This model of care into rural and regional Australian potentially has significant benefit and application.

It is also recognised that this model of care is not new to regional Australia. In the early nineties for instance this model of haemodialysis service delivery was in place in the Kimberley Region in Western Australia in townships such as Fitzroy Crossing. What is needed is greater

collaborative mechanisms to be actively in place across state and federal jurisdictions so that innovation and excellence can be accessed and adopted where applicable in order to minimise any potential re-invention of the wheel.

There is also a clear need for additional resources to be allocated to rural and remote communities to treat the ever increasing incidence of rural disease in these areas.

PRESENTER

Rob Pulsford has worked in the health industry for 19 years, originally completing hospital-based Registered Nurse Training at the Royal Brisbane Hospital in 1989. Since then he has completed both Midwifery and Psychiatric Nursing Qualifications and a Bachelor of Nursing. Further postgraduate studies have been completed in project management, health economics, further education and training and business administration. Rob has worked extensively in rural, remote and regional settings and is currently the District Manager at the Charleville Health Service District in Queensland. Particular areas of interest include the development of sustainable models of health care service delivery into rural and remote areas of Australia with an emphasis on the challenges presented in recruiting and retaining suitably qualified health practitioners.