Evaluation of the PATS-Telehealth Project December 2015

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Introduction

A visit to the doctor is usually a simple proposition for people living in urban areas. Most patients will access medical services close to home, travel will be straight forward and the trip will take only a small part of their day. For people living in remote areas 'going to the doctor' is a more complex proposition. Employment and schooling can be interrupted and hundreds of kilometres travelled, sometimes on infrequently scheduled public transport. Families may need to organise alternative care arrangements for children and daily routines will be difficult to maintain. For some patients leaving country for unfamiliar locations will contribute to the stress of needing medical treatment. In addition to these pressures patients experience 'out of pocket expenses' for travel costs that are only partially subsidised by the Patient Assistance Travel Scheme (PATS).

And as we live in a world where connecting through communications technology is an integral part of daily life, delivering effective patient centred health services requires that we embrace the available technologies. This is especially the case if we are to more effectively meet the health needs of people who live in remote locations throughout the Northern Territory.

In 2009, the Australian Government announced a Digital Regions Initiative to fund improved services in health and other key sectors across rural and remote areas. These were collaborative projects and in December 2009 the Northern Territory was successful in their bid to implement the Health *e*Towns program.

This program covered a range of e-health initiatives of which telehealth was one. As a result of the work done by TeleHealth NT there is now over 50 telehealth enabled centres in major cities and towns, regional areas and remote locations which improve access to health services for Territorians and enhance the capacity and support for the health workforce to deliver a range of services.

Background

In 2013, a full review was undertaken of the Patient Assistance Travel Scheme (PATS) as part of an election commitment. Under the Review's terms of reference, subsidies were to be increased and work done to make the scheme more sustainable.

Research identified that as the 100% funded component of PATS (fares and aircraft charters) was approximately 78% of the budget, to reduce costs in a meaningful way meant reducing or eliminating patient travel and this could be done by telehealthing appointments. As a result one Review recommendation was to fund a project to drive the uptake of Telehealth.

The PATS-Telehealth Project (the Project), was designed in early 2014 to explore ways in which dedicated support resources could support an increased use of telehealth and improve the patient journey. The project commenced on 1 July 2014 and finished on 30 September 2015.

The project was based in three sites; Alice Springs, Katherine and Tennant Creek, with dedicated staff tasked with increasing attended appointments and the number of specialities, doctors and remote communities using telehealth.

The overall aims of the project were to:

- Reduce the need to travel to access health services
- Improve attendance rates at clinics
- Reduce unnecessary admissions to hospitals
- Enhance follow-up care and increase service integration for patients
- Avoid costs to the PATS budget
- Engage remote communities with health care initiatives
- Up skill local health staff

These aims were supported by the following principles:

- Patient quality and safety is not compromised.
- Clinical practice is not compromised.
- The equitable access principle of PATS is not compromised.

The project also endeavoured to demonstrate this model of dedicated resources driving telehealth uptake could be funded by avoided costs to the PATS budget.

Executive summary

This evaluation identifies opportunities to improve patient care and satisfaction while limiting costs usually incurred when patients are required to travel long distances to access specialist health services. The Project focused on extending the use of the existing telehealth system to connect patients and doctors via video enabled technology. The evaluation makes key recommendations on a sustainable telehealth model; workforce and service development and these are detailed in full on page 13.

The Project

The Project focused on outpatient appointments in three sites – Alice Springs, Katherine and Tennant Creek. These sites were chosen because they provided the opportunity to work with existing clinical champions who were already familiar with telehealth and there were processes in place.

Importantly, the Project recognised that already busy people could not practically engage with a new mode of service delivery without additional resources to support changed work practices. To this end dedicated positions to support the expansion of telehealth were created and these dedicated positions were integral to the Projects success.

The Project was managed centrally to ensure oversight, focus and clarity of purpose. Central coordination also reduced the risk that local work pressures would lead to the redeployment of staff to other tasks.

Key findings

Objective One - Was there an increase in the uptake of telehealth and if so, to what extent?

- The project achieved a significant increase in attended appointments over the term of the project compared to the 2013/2014 financial year.
- The number of remote communities serviced by telehealth increased.
- More specialities and doctors commenced telehealth.

Objective 2 - Was there a reduction in the number of DNAs and if so, to what extent?

- The Did Not Attend (DNA) rate for telehealth specialist outpatient appointments in Alice Springs and Katherine was substantially lower than for the standard hospital outpatient clinics but approximately the same for Tennant Creek Hospital.

Objective 3 - Has service coordination improved?

- Staff follow procedures, however the successful functioning of telehealth clinics is based on relationships rather than established procedures and is not sustainable in the long term.
- Patients attending telehealth appointments were less likely to be accompanied by a family member or escort than was expected based on previous PATS experience.
- Continuity of care was improved by staff being aware of treatment plans and specialist discussions.

- Rapid access clinics were used in low numbers, but it has potential to drive responsive healthcare at a hospital level.
- Further expansion of telehealth is being hindered by poor connections.

Objective 4 - Has the telehealth service been appropriate?

- Doctors support Tele-specialist Clinics as a model of care.
- Patients support and want to continue their appointments via telehealth.

Objective 5 - Has the increased use of telehealth made the PATS program more sustainable?

- Costs to the PATS scheme were avoided.
- Increased telehealth appointments reduced the work load of PATS staff.
- The burden on scarce resources, such as accommodation, was reduced.
- While Medicare revenue figures cannot be robustly assessed due to Medicare reporting parameters there appears to be considerable room for growth based on Medicare billing figures for the 2014/2015 financial year.

Objective 6 - Have staff in remote clinics been up-skilled clinically and technically by conducting Telehealth clinics?

- Remote staff received informal telehealth training and support, prior to clinics and on commencement of new staff; however training is not structured or systemic.
- An introduction to telehealth should be part of orientation packages for remote staff.
- There are opportunities for staff to be upskilled technically and clinically using telehealth.

Project outcomes

1) Utilisation

The Project achieved the objective of increasing the utilisation of telehealth. Tennant Creek had a 737% increase in usage, 481% in Alice Springs and 231% in Katherine. These increases led to reductions in travel, when by the last quarter of the project 'in scope' patients from Tennant Creek were more likely to telehealth than travel.

The rolling success of the Project led to additional communities participating and available specialist services increased from six specialities in Alice Springs to 21, from four in Katherine to 18 and from six in Tenant Creek to 21. This was supported by a significant increase in doctors utilising telehealth within those specialities as they recognised the benefits of this model of care.

2) DNAs

The Project achieved improvements in DNA rates in Alice Springs and Katherine, but DNA rates in Tennant Creek remained approximately the same as Alice Springs Hospital Outpatients. The reasons for this are discussed in the report. Note however that a DNA for a telehealth appointment does not incur travel costs and if clinics are booked efficiently to anticipate DNAs then the utilisation of specialists time is not compromised either.

3) Supporting Growth

Another objective of the Project was to build relationships with and promote the use of telehealth in remote health centres. There were some successes in this area evidenced by the increased number of health centres participating. However as telehealth grows there will be a requirement for more formal systems and structures to ensure the continued efficient operation of telehealth by clinics. Maximising the use of telehealth for primary care will require staff to be trained in utilising telehealth before they are posted to clinics.

4) Families

Telehealth has great potential for patients to be supported by family during medical appointments at their local health centre. PATS may provide one escort per patient when travelling, however this is insufficient if multiple family members wish to travel and attend appointments. The evaluation identified that many patients attended telehealth appointments on their own. Clinic staff commented that this may be due to patients feeling less alienated and in less need of support when they attend appointments in their own communities. Telehealth does have the flexibility for families to be present at an appointment if that is the choice of the patient, for example when a family conference is required.

5) Continuity of Care

One of the biggest successes identified by primary care centres (using telehealth) was continuity of care. Being part of the conversation with the specialist and hearing 'first hand' the decisions around patient treatment and care was, as one clinic manager commented, "*invaluable*." Clinics can wait weeks for a discharge letter or notes to arrive from hospitals only to find that medication was supposed to be altered. Another clinic manager said that telehealth meant "*patient care is managed in real time*." No clinics or doctors reported adverse clinical events as a result of their telehealth appointments.

6) Rapid Access

A system of clinics called 'rapid access' was scoped within the project as it was already operating in Katherine Hospital and it was thought that the additional staff resources available in Katherine Hospital for the Project could help drive the uptake of these clinics, however numbers remained low. The clinician involved remarked that there was significant overlap between this service and the rural District Medical Officer (DMO) service and these overlaps need to be resolved. However, it remains an important component of responsive healthcare and would benefit from further evaluation, particularly around what structures could support it.

7) Patient Satisfaction

Patient surveys were collected during the project; 159 from Barkly and Central Australia and 63 from Katherine. Analysis of these surveys showed overwhelming support for telehealth from patients and a strong desire to do telehealth in the future.

8) Doctors Evaluation

As part of the evaluation doctors currently using telehealth were surveyed. Analysis showed doctors support telehealth as a model of care, particularly for review appointments, and chronic care management and pre admission appointments but there was varying opinions on initial appointments with some doctors still preferring a 'laying on of hands' when they meet a patient for the first time. However, some doctors did say they used telehealth to triage patients to determine whether they should be seen under their speciality or transferred elsewhere. Doctors overwhelmingly endorsed telehealth in improving continuity of care and were also positive about supporting telehealth in the future and recommending it to colleagues. Doctors also supported the dedicated staff with one commenting "*if that support can continue for some time that is a big incentive*" [to do more telehealth].

9) PATS Budget

The increased use of telehealth avoided costs to the PATS budget. The exact amount cannot be estimated as the patients (and escorts) did not travel, but an estimated cost was developed for each community based on a standard travel episode. The same was estimated for DNAs. The estimated avoided costs for the project for patients, escorts and DNAs were $1.189 million. The methodology for estimating avoided costs is discussed in the report.

However, the financial benefits of telehealth are not limited to avoided travel costs. There is work time saved for PATS staff and for remote clinics with patients not travelling. Clinic staff commented that even though there was work involved in telehealthing people, it didn't compare to the time spent arranging travel. There is also the added benefit with telehealth of being able to charge a Medicare rebate at both ends for the telehealth consult.

Patient Story - 1

LL is an older man living approximately 100kms from Katherine Hospital who does not like visiting town. LL requires a family member in attendance to interpret and ensure that he fully understands what the doctor is explaining however it is often not possible for his family to travel with him. Also, LL is not eligible for PATS assistance and having to pay for him to attend the hospital puts a financial and social burden on his family. LL is a gentleman that requires constant follow up with a number of different specialities and the option of having out-patient appointments via telehealth was a huge relief for LL and his family. Through these telehealth appointments LL has received optimal health care, which in the past was not always possible due to him not attending appointments. Through telehealth, Katherine Hospital staff, local clinic staff and family members have discussed resuscitation, an advanced care directive and pain management. LL has also accessed Katherine Hospital's rapid access clinics several times for pain management. Each time LL would attend a telehealth appointment a family member was present to interpret, something not possible when LL travelled to Katherine Hospital. This access to a family interpreter allows for a clear understanding from all parties involved and ensures that LL and family are completely aware of all disease processes and plans for LL.

Future Opportunities

This project showed there are many benefits to telehealth, particularly for patients. However there are risks if telehealth is not operationalised at the health service level.

One of the reasons this project was successful was that centralised management ensured integrity and oversight of the strategic objectives of the project. However, the resources available and timeline of the project were insufficient to embed telehealth into everyday practice at the health service level.

To make telehealth sustainable long term will require a strong focus from Health Services executive and continued dedicated resources at least in the short term or until it becomes 'business as usual'.

And as the Project has demonstrated a clear return on investment in telehealth both in patient care and avoided PATS expenditure, this continuation will at the very least be cost neutral.

The Project identified three key themes for the future development of telehealth utilisation in the Northern Territory.

- There is potential for additional specialities to utilise telehealth including chronic disease management, mental health, primary health care and allied health. Telehealth may also assist in improving the frequency of GP clinics especially for smaller communities providing a more responsive healthcare at a local level.
- Telehealth may also be able to be utilised to increase the timeliness and frequency of many allied health services while reducing patient and staff travel and assisting with the integration of acute, community and remote allied health teams. Telehealth could also improve patient access to services including for example occupational therapy, speech pathology and physiotherapy.
- The survey of doctors utilising telehealth identified the following areas for expansion: clinical training and staff education, improving the interface between primary health care and specialists, case conferencing with colleagues and patient education and patient counselling.

Telehealth cannot be utilised in all health delivery but over the course of the project the perception that telehealth was 'second best' has been challenged and found wanting and as one clinic manager commented:

> *"it is not often you can say you have saved money and everyone has got really good health care for that saving. And you are not losing anything – usually when you make savings of money you have lost something."*

Recommendations

1. Sustainable Telehealth Model

1.1 Health Services to retain the project model of dedicated telehealth resources, with appropriate governance arrangements, until embedded into routine practice.

1.2 The Department of Health to alter PATS guidelines to elevate telehealth (where appropriate) as an option of first choice before specialist outreach and travel.

1.3 The Northern Territory Government to invest further on infrastructure resources to develop the telehealth network, equipment and improve connections to remote areas.

1.4 Health Services to embed telehealth into their policies, procedures and manuals as a model of care.

2 Workforce

2.1 Health Services to develop workforce strategies which embed telehealth into everyday delivery.

2.2 Health Services to orientate all staff in telehealth before they travel to primary health care clinics.

2.3 Primary Health Care services to build and monitor capacity to ensure all staff are familiar with telehealth procedures and perform telehealth consults.

3 Service Development

3.1 Health Services to examine targeted expansion of telehealth into areas such as primary health care, allied health and other identified areas of greatest need.

3.2 Central Australia Health Service to investigate commencement of Ear, Nose and Throat and paediatrics telehealth services.

Scope

In scope for the project were specialist outpatient appointments (Tele-specialist), Tele-Rapid Assessment and pre admission appointments.

TeleHealth NT is responsible for building partnerships and networks around Australia and for participatory models of care. TeleHealth NT's service model is to deliver secure access video services for patients and staff. This project and evaluation focussed on the operational aspects of outpatient appointments at the designated hospitals, therefore the connection and infrastructure operations of Telehealth NT are out of scope. Also out of scope is Tele-critical.

Methodology

The data from the Project was tracked during its operation. Statistics on appointments were collected by the project team and monthly reports produced to track appointment numbers, estimated savings and DNAs. Every quarter a more in-depth progress report was produced reporting on the project objectives and identifying areas for attention.

Patient surveys were also collected during the project. From 711 appointments in Central Australia 159 were collected (31%) and from 331 appointments in Katherine 63 were collected (19%). For the evaluation these surveys results were entered manually into survey monkey per region and analysed. The results of this survey form the basis for the findings of Objective 4.

A survey was developed for doctors and distributed via survey monkey. Of 54 invitations, 27 completed the survey (50%). The results of this survey form the basis for the findings of Objective 4.

As part of the evaluation, meetings were held with patients, community health centres and doctors between the 5th and 16th November across the project sites to provide qualitative input into the evaluation.

Patient Story - 2

AA is a 30 year old male who lives and works on a Barkly Station. AA got his left hand wedged between two salt sticks, which resulted in a left midshaft fracture and he was transferred to Alice Springs Hospital to undergo surgery in June 2015. AA was followed up via telehealth with the orthopaedic team in Alice Springs from the Tennant Creek General Practice. AA's first telehealth consult was in June 2015. This was very convenient for AA as even though he had to drive from the station to Tennant Creek that much closer than Alice Springs. Travelling to Tennant Creek allowed AA to continue working and he didn't lose wages. In all AA has had four telehealth appointments.

Findings

Objective 1- Was there an increase in the uptake of telehealth and if so, to what extent?

Key findings

- The project achieved a significant increase in attended appointments over the term of the project compared to the 2013/2014 financial year.
- The number of remote communities serviced by telehealth increased.
- More specialities and doctors commenced telehealth.

Summary of evidence

Over the term of the project Alice Springs Hospital had 192 attendances, Katherine 331 and Tennant Creek 519. A full table of attendances is at Table One at the rear of the report.

The below table provides a comparison between specialist outpatient activity in 2013/2014 and from 1/7/2014 to 30/9/2015.

Alice Springs Hospital was a provider end service for the project, whereas Tennant Creek was the patient end. Tennant Creek's figures reflect the services provided by Alice Springs. The Alice Springs figures reflect the number of appointments where Alice Springs was again the provider site, this time to Central Australian remote communities.

In Katherine the figures are a combination of patient end and provider end.

The growth rate experienced during the project is indicative of dedicated staff being in place to facilitate the increased uptake of telehealth.

Hospital	Period	No. attendances	% Inc
Alice Springs	2013-2014	33	
	1/7/2014 - 30/9/2015	192	**481%**
Katherine Hospital	2013/14	100	
	1/7/2014 - 30/9/2015	331	**231%**
Tennant Creek Hospital	2013/14	62	
	1/7/2014 - 30/9/2015	519	**737%**

Patient Story- 3

AB is a working mother from a remote town whose son broke his leg. Her son was treated at the local hospital but also telehealthed to a specialist in Alice Springs when treatment in Tennant Creek proved a challenge. Travel is not possible for this family without a great deal of organisation. It means AB's husband having to be in town and off work and AB being off work too. AB commented that even though PATS subsidises travel it doesn't cover all the costs and the family aren't always in a position to cover the rest. AB likes telehealth and doesn't see it as any different from talking face to face and her son said he liked talking to the doctor on the computer. AB said she would prefer to do all appointments via telehealth in the future and that she would ask for it even if it wasn't offered. AB commented that sometimes it would be beneficial for an initial discussion to determine whether they really needed to travel given the burden travel imposed on the family.

Comparison of travel to telehealth episodes

Another measure run during the project from the second quarter was the ratio of travel episodes to telehealth episodes. The current reporting system on the Travel Management System (TMS) does not have dedicated business objects reports so 'daily travel reports" were run to ascertain travel numbers. Whilst not an optimal reporting mechanism it did provide an indication (as more specialities and communities came on board) as to how the project was tracking against travelling patients and indicates telehealth eligible patients were being identified in the triage process and referred accordingly.

Please note the travel figures only include the communities and specialties within the project scope, not all PATS travel requisitions; these were significantly higher.

The figures have also been presented in this format because even though the patient has been booked to travel (column one) they may not have travelled or they may have DNA'd, so we cannot directly compare them to kept appointments (column two). The telehealth episodes are attended appointments.

Alice Springs

Dates	Booked PATS	Telehealth Episodes	% TH/to Travel
1/10/2014 – 31/12/2014	352	26	7
1/1/2015 – 31/3/2015	120	16	13
1/4/2015 – 30/6/2015	219	55	25
1/7/2015 – 30/9/2015	136	79	58

Katherine

Dates	Booked PATS	Telehealth Episodes	%TH/to Travel
1/10/2014 – 31/12/2014	212	59	28
1/1/2015 – 31/3/2015	231	58	25
1/4/2015 – 30/6/2015	275	81	29
1/7/2015 – 30/9/2015	275	83	30

Tennant Creek

Dates	Booked PATS	Telehealth Episodes	%TH/to Travel
1/10/2014 – 31/12/2014	340	70	21
1/1/2015 – 31/3/2015	232	91	39
1/4/2015 – 30/6/2015	220	116	52
1/7/2015 – 30/9/2015	145	169	>100

Communities added during the project

A number of communities were added during the term of the project (see Appendix One).

At the commencement of the project Katherine serviced Lajamanu, Kalkarindji and Borroloola. Robinson River was added in the first three months. The appointments for Katherine were a mix of these communities and Katherine residents' telehealthing to Darwin. Katherine Hospital also telehealthed to Pine Creek. These patients were only eligible to be included in project numbers if they had to go to Darwin for an appointment, but not to Katherine.

No other communities could be added to the Katherine region during the project due to connectivity issues and delays in finalising MoUs between the Department of Health and Aboriginal Medical Associations in the region.

At the commencement of the project Alice Springs was predominantly a provider end site for the Barkly region, however during the course of the project telehealth appointments were commenced from a number of Central Australia communities. Alice Springs did a number of telehealth appointments from non-PATS communities such as Santa Teresa and Hermannsberg and patients in the Anangu Pitjantjatjara Yankunytjatjara (APY) homelands. Alice Springs also operated as a patient end service to Darwin and at the very end of the project to Adelaide.

In the Barkly, Ali Curung and Elliott were targeted as pilot sites and during the project Canteen Creek and Epenarra were added; although the vast majority of patients during the project for the Barkly region were from Tennant Creek. Ali Curung utilised the service regularly, less so Elliott. Canteen Creek and Epenarra could use the service depending on connectivity. People also came in from stations to Tennant Creek for appointments. This still involved travelling significant distances but they preferred this to travelling to Alice Springs.

In working to resolve connection issues the National Telehealth Connection Service (NTCS) is working to overcome barriers to access by connecting the existing telehealth networks. Currently TeleHealth NT and the Central Australia Health Service are the lead agencies, with Telstra Health and community stakeholders, in delivering this service and as the four connection phases complete telehealth can expand.

The NTCS gives the Department of Health the ability to increase the footprint of telehealth service capabilities, not only to the non-government sector but allows for quality connections to between patients and clinical staff from anywhere in Australia.

Specialities added during the project

All project sites increased the number of specialities offered as telehealth clinics over the 15 months of the project (See Appendix 2) and within those specialties the number of doctors signing on for telehealth clinics.

Alice Springs increased their number of specialities from six to 21; Katherine from four to 18 and Tennant Creek from five to 21.

Katherine's appointments tended to be spread across specialities, whereas in Central Australia and particularly Tennant Creek the predominant clinic was Orthopaedics. For Tennant Creek in particular it was the availability of radiology facilities which allowed a greater number of telehealth appointments for Orthopaedics.

Katherine have ENT and paediatric clinics, two specialities Central Australia does not have, even though remote clinics specifically identified those as being of benefit to them via telehealth.

Patient Story - 4

LM had an accident and needed to travel to Alice Springs for treatment. Subsequently she has had 3-4 appointments via telehealth. If her husband is out of town (which he can be for six months of the year) a trip would mean either having to find someone to look after the children or to take them with her which means time away from school. She is also away from work which places a strain on her employer as he can't cover her and has a busy business. LM has to take at least two days to travel, sometimes longer and says the cost (even with PATS reimbursement) is an issue for her family. LM enjoys telehealth and especially how it doesn't take a lot of time out of her day. LM commented that sometimes when seeing a doctor in Alice Springs she has waited two-three hours in outpatients and then turn around and drive 4-5 hours. In her town she is seen quickly and usually on time, but even if it isn't the telehealth staff ring and tell her they are running late. When discussing where telehealth could expand, LM commented that there have been several times when her children needed to see a GP but the service was booked weeks in advance so she has taken them to ED which has annoyed staff there, so she thought being able to telehealth a GP would be good.

Objective 2 – was there a reduction in the number of DNAs and if so, to what extent?

Key findings

1 The DNA rate for telehealth specialist outpatient appointments in Alice Springs and Katherine was substantially lower than for the standard hospital outpatient clinics but approximately the same for Tennant Creek Hospital.

Summary of evidence

The Alice Springs Hospital outpatient DNA rate is approximately 26-29% (calculated over 2014-2015 calendar years). This is significantly lower than it has been in previous years with Alice Springs outpatients having made it a particular area for improvement.

In Katherine is DNA rate for outpatients is approximately 30% (self-reported). Tables of monthly details can be found at Table Two and Table Three.

The final DNA rate for the project sites for the July 2014 to September 2015 period is:

- Katherine 15%
- Tennant Creek 25%
- Alice Springs 13%

The DNA rates overall for Alice Springs and Katherine were relatively low and significantly lower than the outpatient clinic DNAs for Alice Springs and Katherine Hospitals.

In Tennant Creek the DNA rate remained relatively high and only slightly less than the DNA rates experienced in ASH Outpatients. There were several reasons for this.

1. *Locating patients*

   Attendance at the Tennant Creek clinic for local Aboriginal patients is heavily reliant on the Aboriginal Liaison Officer travelling around the town on the day of the clinic locating the patients and bringing them to the hospital for their appointments; if they agree to go.

   In interviewing the ALO at Tennant Creek Hospital, she stated it was not her role to go and pick up patients, but doing so means they will sometimes go to appointments and this improves their health outcomes. The ALO believes if she didn't go and pick them up they wouldn't attend and she does not believe there was any other way of getting the patients to attend.

   Another issue was patients seemed to believe appointment times are flexible and if they didn't want to come in the morning they could attend in the afternoon. But even being advised this was not the case did not mean they would agree to go with her to the hospital for the appointment.

   And even though this practice of locating patients has been relatively successful in getting patients to clinics it is not sustainable over the long term.

2. *Substantial increase in patient numbers*

   In the first few months of the project the DNA rates were high while the processes and form of the telehealth clinics settled and then for November 2014 to February 2015 were relatively low (14-19%).

   However, with the administration position / coordinator role coming online in Alice Springs, Tennant Creek's appointments rose substantially and the time available to advise and reaffirm appointments with patients lessened; as did the time available for the Tennant Creek Hospital Aboriginal Liaison Officer to travel around the town finding the patients on the day of the appointment. This led to a rise in DNA's.

   For example in August 2015 when Tennant Creek had 72 appointments, they had 32 DNA's at a rate of 31% as opposed to November 2014 when they had 30 appointments and five DNAs at a rate of 14%.

3. *Community events*

   Funerals are held in the Barkly on Fridays and this is the day when Tennant Creek Hospital has the most clinics and potentially the biggest patient numbers for clinics. In Alice Springs Hospital a minimum of twenty four hours' notice is required prior to a patient cancelling a scheduled specialist outpatient appointment. If on the day, or day before, the ALO finds the patient is attending a funeral it stands as a DNA. For example for the 26 June orthopaedics clinic, four out of ten appointments were DNAs for sorry business.

4. *Serial DNAs*

   Some of the patients in Central Australia were also 'serial' DNAs. *The Failure to Attend Appointments ASH Ambulatory Care Procedure* policy states if patients fail to attend two consecutive appointments they are to be removed from the waitlist. However, this often does not happen and the specialists requests patients be rebooked. This is done with the staff knowing the patient is almost certain not to attend.

Two strategies were put in place to address the DNAs in Tennant Creek

Firstly, if the office thought it likely a patient would DNA they were booked towards the end of the clinic so interruption to a clinic was at a minimum. However, this caused clinic delays if the patient required x-rays. So Tennant Creek moved to the second strategy of booking two patients per time slot and this has proved more effective. There have been occasions where everyone has arrived for their appointments which meant the clinic ran late, but generally it has been the better solution.

It was suggested further resources at the hospital level could address the issue of time to follow up and locate patients but there is a cost to this approach which double booking appointments doesn't carry and it is also a person specific solution rather than a system based solution.

Objective 3 – has service coordination improved?

Key findings

- Staff follow procedures, however the successful functioning of telehealth clinics is based on relationships rather than established procedures and is not sustainable in the long term.
- Patients attending telehealth appointments were less likely to be accompanied by a family member or escort than was expected based on previous PATS experience.
- Continuity of care was improved by staff being aware of treatment plans and specialist discussions.
- Rapid access clinics were used in low numbers, but it has potential to drive responsive healthcare at a hospital level.

Summary of evidence

Staff are following practice / standardised procedures

The planning and booking processes for telehealth clinics are similar to the processes in place for outpatient clinics. The main variation is on the day of the clinic as it requires coordination of two sites and staff.

Additionally, this coordination at present relies on good networks and relationships developed by the project staff during the operation of the project, but this mode of delivery is not sustainable in the long term. And for the remote communities, to do telehealth requires them to perform as an outpatient clinic and this role is not clearly defined for them or appropriately resourced.

The Remote Health Atlas policy states that "*each primary health centre will have a dedicated telehealth coordinator*." But in reality this position doesn't exist.

As we have had dedicated project staff whose role has been to drive the uptake in telehealth this informality has not presented too many problems. However, going forward, as telehealth is embedded as business as usual; more clearly defined processes and roles will need to be developed.

This could involve such solutions as upskilling Aboriginal health workers in the community as they can claim the same amount of Medicare as a remote area nurse, they are part of the community itself and less likely to be a transient work force influence.

Patient Story – 5

SR is a 71 year old indigenous man who has lived in the Katherine region most of his life. SR had a car accident and after an initial period in hospital he telehealthed his reviews. SR says "It was pretty good hey. Pretty smart. I never done anything like that before. I didn't think I'd ever see something like that, you know talking on the tv."

Culturally appropriate care

Prior to the commencement of the project it was thought that patients being able to have family with them would be an attractive option, however in operation not many patients chose to have someone with them.

Of attended appointments over the term of the project:

- In Alice Springs 6 of 192 appointments had family attend;
- In Katherine 57 of 331 appointments
- In Tennant Creek 84 of 519 appointments.

These figures do not include paediatric appointments as by their very nature the patients will have family in attendance.

The remote clinics who provided feedback believed telehealth is culturally appropriate and although patients are aware they can bring family with them they generally come on their own.

One clinic manager said that people seen on country are far more comfortable and happy to come to the appointment on their own. She commented:

> *"they don't need someone with them if they are in their own community. No one has expressed a desire to have someone with them. Because they aren't travelling away they don't feel isolated or alienated. Because you have kept it here they feel they are in their place and can call on people they trust, for example staff, if need be."*

The Manager feels the patients are comfortable with telehealth and although they are usually a bit unsure the first time, as the consult progresses and/or they have more appointments, the patient comfort increases and they are able to discuss their issues with the doctor.

A Katherine clinic manager commented that (for those who did have family)

> *"being able to have family attend and participate in the consult as an interpreter or support person makes the service so much less frightening for some clients, they are far more likely to absorb information in the non-threatening environment."*

The Manager also believed patients are more likely to attend their appointments because they won't have to miss work or family commitments.

Telehealth – Better for the Community

GH runs a community service to vulnerable clients in a remote area and travelling means closing the service for three days. And although personally GH has issues with the logistical aspects of travel, she is most worried about the message it sends to her clients if they arrive at the service and it is closed. GH said although some of her patients' book appointments, most arrive on a casual basis and if they present and the service is closed this reinforces their negatives attitudes towards government services; i.e. people don't stay and there is no one to rely on and they disengage and it can take some time to rebuild trust and have them return to the service. Personally GH enjoys telehealth and feels no "separation" from the specialist, but commented even if you did it was still better than travelling.

A Barkly clinic had one instance where telehealth allowed an important family conference to take place. An elderly nursing home patient in Alice Springs wanted to come back to the community and his family wanted him to return. However, previously, this had meant the family bringing him to the clinic every day because they couldn't care for him at home. Utilising telehealth meant that all the family and clinic staff could connect from the community to the doctor, nurse, social worker and patient in Alice Springs and have a frank discussion about what the patient returning to the community meant.

Another clinic believed telehealth made it easier for Aboriginal patients to have culturally appropriate discussions on their health care as they could access the appropriate spokesperson within the community, whereas if they had travelled to Tennant Creek or Alice Springs that would not always be possible.

Staff are aware of patient treatment plans and work towards compliance

One of the biggest areas of improvement for the clinics (in telehealth) is the continuity of care. Under standard operations remote clinics can wait some time for discharge summaries or notes to arrive from a doctor when the patient has travelled to a specialist service. But if the appointment is done via telehealth then they know straight away what care is required or if medication needs changing.

And although some managers didn't feel that telehealth appointments necessarily clinically upskilled the staff, being able to hear firsthand from the doctor and discuss issues of concern and ask questions added another dimension to patient care.

One clinic commented they like talking with their colleagues and having the ability to ask questions and get clarification immediately, rather than waiting for a letter or discharge summary, *is "invaluable*." The clinic can also be proactive in having patient medication managed which is in line with the Quality Use of Medicines principle. As the manager commented "*patient care is managed in real time.*"

Another clinic said they were also happy with the continuity of care telehealth provides saying getting a summary during the consultation is a significant improvement on having to wait a week or more for a letter or discharge summary to come from the hospital – if they get them at all. Staff in this clinic felt that their clinical skills improved in interactions with the specialists and that it contributed to their professional development.

No clinic reported any adverse clinical events as a result of using telehealth.

Doctors were also supportive of this aspect of telehealth with 100% of survey respondents saying the believed telehealth improved the continuity of care for patients.

One clinic raised the question about whether they could utilise specialists in other regions. They gave the example of one speciality where they had 500 patients, unlikely to travel, on a waitlist and a specialist in Alice Springs that won't telehealth. This has occurred previously between Alice Springs and Darwin so it is an avenue Health Services could explore to reduce lists.

Has healthcare been more responsive; retrievals reduced; care being provided in the community

The 'rapid access general medicine telehealth service' has been operating with some limited success at Katherine Hospital over the past 18 months. The service is provided to all telehealth enabled remote sites in the Katherine Region, and allows remote clinicians to have same-day specialist general medical review of unwell patients in community. The service is designed to assist remote practitioners to make complex care decisions in community.

As an example, an elderly patient in a remote community presented to a clinic with a severe infection. The patient was very reluctant to leave community and the treating clinicians in community were concerned that the patient would experience a poor outcome.

The treating GP contacted the Katherine Hospital telehealth office who arranged with the local physician a time on that same day for urgent review and this occurred within three hours of the original telephone call. A consultation was held, family members attended the remote end with the patient, and a decision was made to administer intravenous antibiotics through the remote clinic and avoid transfer, as per the patients' wishes. The General and Acute Care Physician at Katherine Hospital negotiated a plan to institute palliative care measures if further deterioration occurred, as per the patient and family wishes. The same antibiotic therapy that would have been administered within hospital was administered by remote clinic staff and over the coming three days the patient made a full recovery.

Uptake of rapid access clinics has been limited but is gradually improving. There is significant overlap with the Rural DMO service, and these areas of overlap have yet to be formally resolved. Over the next 12 months, a regional outreach service will be provided by Katherine-based general physicians, and this will be supported by a local telehealth service, and it is anticipated that this improved contact between specialists and remote sites will improve utilisation of rapid access clinics.

Rapid access is bordering on tele-critical care as it is a slightly different model of care; the referral and triage process is not structured therefore uptake of it is reactive. However, this is the nature of the service and it is an important component of responsive healthcare and another example of the uses of the telehealth network which are many and not the focus of this project.

Telehealth – Better for Business

EF lives in a remote town which is a 1500km round trip from Alice Springs and needs reviews every three months. EF has a shop in the town which does not have access to alternate staff so if she travels to see the specialist the shop has to close and three days business and wages are lost. Also if she has her husband travel with her (given the long distance) he loses work too. EF thinks everyone who needs a specialist appointment should be offered telehealth and has no problems with the technology or the quality saying "it is just like FaceTime". EF's next appointment requires x-rays so she will still have to travel for that, but only to the nearest town which can be done in a day. EF thinks it should be promoted more within regional and remote areas.

Objective 4 – has the telehealth service been appropriate?

Key findings

- Doctors support tele-specialist clinics as a model of care
- Patients support and want to continue their appointments via telehealth.
- Further expansion of telehealth is being hindered by poor connections

Summary of evidence

Invitations were sent to 54 clinicians who provide telehealth in the Northern Territory to gain feedback via a survey; 27 responses were received (50%).

Some of the survey results and doctor comments are detailed below. The full results and all comments are at Appendix Three.

How many telehealth consultations did you participate in over the last 15 months (since 1 July 2014 when the telehealth project started)?		
Answer Options	**Response Percent**	**Response Count**
0 - 20	51.9%	14
21 - 40	18.5%	5
41 - 60	14.8%	4
61 +	14.8%	4

Do you believe telehealth appointments are appropriate for?			
Answer Options	**Yes**	**No**	**Response Count**
Initial appointments	18	8	26
Pre admission appointments	21	3	24
Review appointments	25	1	26
Chronic Care Management	26	0	26

Where the doctors had commented that they did not believe that telehealth appointments were appropriate, the comments were mainly around the need for doctors to meet the patient for initial appointments.

> "*In my opinion, when we meet the patient for the first time, we need to be close to them and touch them to know them and to create a rapport. Once a relationship is established, it is easy to review them remotely.*"

However as one specialist noted:

> "*There is a place for telehealth in all of these. Even if you do a telehealth for an initial [consult] I think you need a face to face at some point, but an initial telehealth can help plan this.*"

Another noted that he used telehealth to triage patients given that the information provided in the referral letter was not always robust. The introduction of electronic stethoscopes may also allay some clinicians concerns about the limits telehealth can place on examining patients.

How satisfied are you with providing consultations via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Not at all satisfied	0.0%	0
Slightly satisfied	3.7%	1
Moderately satisfied	22.2%	6
Very satisfied	51.9%	14
Extremely satisfied	22.2%	6

On average how confident are you about managing patient care via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Not confident	0.0%	0
Slightly confident	7.4%	2
Moderately confident	22.2%	6
Very confident	55.6%	15
Extremely confident	14.8%	4

Do you see telehealth as a time efficient way of delivering health services?		
Answer Options	**Response Percent**	**Response Count**
Not at all	0.0%	0
Rarely	0.0%	0
Sometimes	14.8%	4
Often	59.3%	16
All the time	25.9%	7

Do you believe telehealth services allow you to provide a better service for your patients?		
Answer Options	**Response Percent**	**Response Count**
Yes	85.2%	23
No	3.7%	1
Undecided	11.1%	3

Do you believe telehealth is a culturally appropriate mode of delivery: e.g. services are provided on country and family are involved in health care decision		
Answer Options	**Response Percent**	**Response Count**
Yes	96.3%	26
No	3.7%	1
Comments:		7

Do you think telehealth improves continuity of care for patients?		
Answer Options	**Response Percent**	**Response Count**
Yes	100.0%	26
No	0.0%	0

Do you think telehealth improves patient outcomes?		
Answer Options	**Response Percent**	**Response Count**
Yes	96.3%	26
No	3.7%	1

What supports are needed to better facilitate telehealth services?		
Answer Options	**Response Percent**	**Response Count**
No further supports required	7.7%	2
Equipment/ infrastructure	11.5%	3
Workforce support/ training for telehealth services and equipment	26.9%	7
Better resources at point of referral (knowing who provides telehealth Services)	11.5%	3
Dedicated administrative support	30.8%	8
More defined procedures	0.0%	0
Other	11.5%	3

When asked what could be done to make telehealth more attractive to doctors; the doctors responded:

> *"the most attractive thing you have now is the support. There is more support in the telehealth space than you get in general outpatient clinics."*
>
> *"we are very spoilt for support with telehealth. There is someone there to remind you, trouble shoot and having someone at the other end. If that support can continue for some time that is a big incentive."*

Telehealth going forward

Are you planning to book more telehealth sessions in the future?		
Answer Options	**Response Percent**	**Response Count**
Very unlikely	3.7%	1
Somewhat likely	0.0%	0
Not sure	11.1%	3
Somewhat likely	7.4%	2
Very likely	77.8%	21

Would you recommend using telehealth sessions to a colleague?		
Answer Options	**Response Percent**	**Response Count**
Yes	92.6%	25
No	0.0%	0
Undecided	7.4%	2

Doctors were also asked to identify what areas telehealth can expand into; some identified training and staff education, particularly for remote staff and others for case conferences about patient or patient counselling. Or as one specialist noted:

> *"Everywhere - I can't see any area, except procedures or some tests, that you can't use telehealth"*

Possible barriers to doctors using telehealth

Over the term of the project there was an increase telehealth uptake by doctors (see Appendix Two) however there are some who are still resistant.

In addition to the survey monkey, discussions were held with several doctors to ascertain what they thought the barriers were for doctors in using telehealth.

Please note that these are individual doctor's opinions. They are anecdotal and no research was done to substantiate, although the identified barriers could be a matter for the health services to consider.

One doctor thought time was an issue. He felt telehealth meant you saw more patients. He gave the example of a telehealth clinic booked with one community and on the day they added two more patients who, while the clinic thought it would be beneficial for them to be seen, probably wouldn't have been referred if it couldn't be done by telehealth.

The doctor noted that there are already crowded outpatient clinics with lots of waitlists and telehealth patients were often patients that wouldn't have travelled otherwise or wouldn't normally have been referred. As he commented:

> *"In other words telehealth meets unmet need, but doesn't necessarily reduce demand, so it means increased workload - but obviously it is wonderful for patients."*

The doctor found it was more effective if there is another doctor at the other end but realised it's not always easy to coordinate. It was his preference to have a doctor as he felt they could be entrusted to do more of the things with follow up and examination and added it has the advantage of upskilling GPs.

The doctor has found the technology effective (some communities are difficult with poor bandwidth) and has also done telehealth over the phone but noted "you don't get paid for that."

The doctor prefers to see patients face to face for initial appointments to get a rapport saying:

> "*personal examination remains one of the skills….person to person is good but if you have to be away for four days to do it, it's ridiculous. And it's not only savings but we can earn more money*."

The doctor believed dedicated administration was "really important" to drive the uptake in telehealth but also thought normal clinics should be able to do telehealth just as well.

He found telehealth appointments were generally shorter - "it's business." And the work involved in getting someone physically to a hospital clinic appointment is greater and the clinics get less back.

Another doctor thought that once you make started (on telehealth) you are quickly won over, but felt because it is not 'business as usual', doctors don't immediately think about it. He thought hospitals needed to actively recruit people and win them over and then doctors will move to the point where they are comfortable with the infrastructure.

The doctor thought telehealth was "superb" for reviews but has slowly been increasing the scope for the first consultation as well and thinks it is also good for triage. He commented:

> *"when you think it through there is a lot you can do." And "sometimes you realise you do need to see someone before the surgery but by doing a telehealth appointment as well you have lost nothing by it."*

Patient Story - 6

NN is a 42 year old diabetic female who lives in Tennant Creek. NN was transferred to Alice Springs Hospital with a wound breakdown of her left foot in May 2015. Surgery was performed with amputation of her big toe. During her stay the wound got infected and required further amputation of her second and third toes. A skin graft was also performed. During her stay in Alice Springs Hospital NN became distressed from being separated from family and missing her three children. NN was transferred back to Tennant Creek Hospital and discharged home in June 2015. Due to the complex nature of NN's wound, previous history of recurrent infections and long standing and poorly controlled diabetes, a team of health professionals both from Alice Springs Hospital and Tennant Creek case conferenced on a weekly basis via telehealth to plan and deliver care. As a result of this plan and the regular telehealth consults NN's left foot wound is nearly completely healed and she has not had to make any more trips to Alice Springs or be away from her family.

One issue was being able to rely on the clinical staff at the patient end, their observational skill and their assessment.

> "*You won't necessarily get a doctor unless you specifically request one. A nurse at the other end only works if they have good skills. Staff at the other end need to know the form of the appointment. It's not just taking notes, its knowing what is going to happen next."*

The doctor also thought that several doctors within a speciality needed to do telehealth which would make it more sustainable. For example a speciality has a regular spot and then the doctors are rostered on each week. He did not see any benefit in one specialist being seen as "the "telehealth guy".

Another doctor thought the bad connectivity to some areas was a barrier to doing more telehealth. Only 11% of doctors identified in the survey experienced difficulties 'often' or 'all the time' however it was an area several clinics identified as a problem too.

This doctor thought that dedicated screens (such as HDXs and Med Carts) provided a far better experience than a camera on the computer.

The doctor felt better access to telehealth would help reduce the reliance on outreach and said:

> *"I know some colleagues love doing outreach but invariably you go out to a community and you can't find the patients and although you might see other people you haven't seen the one you came for. " and*
>
> *"a charter plane costs $10,000 and a specialists wage and you might only see 4-6 patients so it isn't cost effective as a service."*

Another doctor made this point also, but said conversely you needed doctors to travel to communities occasionally so that they could see first-hand the conditions and challenges remote clinics face day to day.

Another doctor commented:

> *"paradoxically there is no interpretation services when you go out to the community on outreach. There is less help in the community than there is here [at the hospital] from an interpreting point of view."*

Telehealth – Better for Business

WV has a small light industrial business in a remote town in Northern Territory.

The business employs one administration person who injured themselves and had to travel to hospital for treatment and post-surgery reviews. While she was gone WV was unable to cover her and for several days couldn't process sales (about 10 a day), do the internet banking or on one occasion process payroll because she was the only person who knew how to do these tasks.

Fortunately his administration person now has her review appointments via telehealth so is absent from work for only an hour rather than three days.

Patient Story - 7

CD's elderly mother is unable to travel by car due to her condition and finds being away from home unsettling. The last time CD's mother went to hospital they flew her to Alice Springs, but she was so distressed at being away from home, crying all the time, that the family have decided they don't want to subject her to it again. CD's mother likes telehealth (she is a proficient Skyper) and also likes that the appointments go quickly and she doesn't have to sit for long periods of time in outpatients. CD says of telehealth it "is one of the best things since sliced bread, particularly for older people."

Patient experience of telehealth

During the project patient surveys were completed. In Barkly and Central Australia 159 surveys were completed and in Katherine 63. The results were entered into survey monkey and analysed by region.

Key findings

- Patients overwhelmingly support telehealth as a mode of delivery for Tele-specialist appointments.

Barkly and Central Australia

159 surveys were completed over a range of clinics, but the largest group of respondents was from orthopaedics patients. A range of questions was asked to cover the process and satisfaction with telehealth.

Was a health professional in attendance?		
Answer Options	**Response Percent**	**Response Count**
Yes	100.0%	157
No	0.0%	0

Did the patient have family in attendance?		
Answer Options	**Response Percent**	**Response Count**
Yes	19.7%	31
No	80.3%	126

Before you came, did you know you would be seeing the Doctor via telehealth today?		
Answer Options	**Response Percent**	**Response Count**
Yes	96.2%	152
No	3.8%	6

Questions were asked around the technical quality of the appointment.

At your clinic appointment, could you see the Doctor?		
Answer Options	**Response Percent**	**Response Count**
Yes	98.7%	155
No	1.3%	2

At your clinic appointment, could you hear/understand what the Doctor was saying to you?		
Answer Options	**Response Percent**	**Response Count**
Yes	98.1%	152
No	1.9%	3

Did you feel comfortable talking to the Doctor via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Yes	98.7%	151
No	1.3%	2

One commenting that they were “old fashioned and like it face to face.”

What do you like about telehealth?		
Answer Options	**Response Percent**	**Response Count**
Not having to travel	91.9%	137
Being able to have family in attendance	28.2%	42
Not being away from home	50.3%	75
Other (please specify)	42.3%	63

Of the 42.3% who noted ‘other’; most of these centred on work commitments, convenience and no, or minimal, cost being involved in attending telehealth appointments.

Would you like to have future appointments via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Yes	98.7%	150
No	1.3%	2

Other comments, observations and patient journeys can be found at Appendix Four.

Katherine

63 surveys were completed over a range of clinics, but the largest group of respondents were from paediatrics and pre-admission patients. A range of questions was asked to cover the process and satisfaction with telehealth.

Was a health professional in attendance?		
Answer Options	**Response Percent**	**Response Count**
Yes	96.72%	59
No	3.28%	2

Did the patient have family in attendance?		
Answer Options	**Response Percent**	**Response Count**
Yes	49.21%	31
No	50.79%	32

Before you came, did you know you would be seeing the Doctor via telehealth today?		
Answer Options	**Response Percent**	**Response Count**
Yes	96.83%	61
No	3.17%	2

At your clinic appointment, could you see the Doctor?		
Answer Options	**Response Percent**	**Response Count**
Yes	92.06%	58
No	7.94%	5

Questions were asked around the technical quality of the appointment.

At your clinic appointment, could you hear/understand what the Doctor was saying to you?		
Answer Options	**Response Percent**	**Response Count**
Yes	98.31%	58
No	1.69%	1

Did you feel comfortable talking to the Doctor via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Yes	93.10%	54
No	6.90%	4

Two negative comments centred on the language barrier; however this would have been present in a face to face consult as well.

What do you like about telehealth?		
Answer Options	**Response Percent**	**Response Count**
Not having to travel	94.74%	54
Being able to have family in attendance	22.81%	13
Not being away from home	49.12%	28
Other (please specify)	15.79%	9

Of the 15% who noted 'other' most centred on work commitments and being able to see a doctor quickly (with rapid access appointments) or not having to wait months for a specialist to visit the region.

Would you like to have future appointments via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Yes	96.61%	57
No	3.39%	2

Other comments, observations and patient journeys can be found at Appendix Four.

Telehealth – Better for Business

ST is a business owner in a very remote part of the Northern Territory. ST and her husband own several businesses in their town. ST's husband is an orthopaedics patient who has had five to six telehealth appointments in the past 12 months. If he had to travel to the hospital for the appointment he would be away a minimum of three days and two nights and that is 15-18 days lost productivity over the 12 months. But as ST commented, "it is difficult in remote locations to get staff and some times of year worse than others; and then they need training which is difficult with hospitality." Plus there is "the double cost of having to spend money [to travel] while you are losing money on your businesses." If ST's husband is away she doesn't get a chance to cover the logistical side of the businesses and has to work all shifts for the two of them. ST has attended several telehealth appointments with her husband and thinks the sound and vision "remarkably good, better than I thought it would be." ST commented that telehealth also seems to run more on time. She and her husband have spent hours waiting in the hospital outpatients, whereas in their home town the clinic runs on time or if it is running a little late the telehealth staff call you and let you know. ST thinks telehealth is "fabulous."

Patient Story - 8

HL is a Tennant Creek male who sustained multiple injuries which included closed and compound fractures. HL was transferred to Alice Springs Hospital for orthopaedic surgery and referred to Addiction Medicine for alcohol issues. His immediate care concluded HL was discharged back to Tennant Creek on. HI subsequently had telehealth consults from Tennant Creek on 27/7/15 and 21/8/15 for review and assessment of his hand and foot fractures by the orthopaedic team in Alice Springs and a consultation by the Addiction Medicine team on 8/7/15. X-rays were also done and reviewed via telehealth. Not having to travel to Alice Springs for these appointments meant the patient could be managed in and care for in Tennant Creek by clinical staff and his family.

Remote clinic experience of telehealth

During the evaluation remote clinics were visited, or spoken to, to get a perspective on telehealth. Their experience was generally positive. Specific observations with regard to the project aims are in objectives three and six, however some general observations are below.

Key themes that emerged were:

- The communities with least access to transport and in some cases greatest need also have the poorest connections.
- Poor connections and limited equipment is hindering growth of telehealth and patient care.
- Central Australia communities need large specialities such as ENT and paediatrics to commence telehealth.

Katherine region

One clinic manager reported they were satisfied with telehealth consultations and believed it was very good for reviews and treatment discussions but less so if the patient needed to be examined. This could sometimes be due to connectivity and sometimes to the availability of staff to be with the patient. They believed it was very good for chronic disease management.

They had not had any adverse treatment events as a result of an appointment being via telehealth.

Another clinic reported a different experience of telehealth. Whereas the staff are very keen to do telehealth, community members avoided it as they preferred to travel to Katherine.

The clinic manager commented:

> *"The Bodhi Bus is air conditioned and shows movies. It is a social event for community members. When they are in town they get accommodation for a couple of nights and get to go shopping. They actively avoid having telehealth appointments so that they can go into town."*

For this community they have three options for appointments – the bus into town; a flight or telehealth. The bus is fully attended, flights are mostly attended and telehealth is poorly attended.

However, this was the only community that reported this issue. In all other communities it was the preference of members not to leave country.

For the appointments the community does do, the Manager finds telehealth "fast, efficient and cost effective."

The Manager believes telehealth is appropriate for initial, pre admission, review and chronic care management, particularly as they have a full time chronic care nurse in the community.

Another Katherine regional clinic commented "the telehealth experience has been extraordinary in its effectiveness for the clients."

They said most of their Aboriginal clients did not have transport so getting to Katherine or Darwin for treatment was difficult for them. They also found telehealth was good for aged care, palliative care and for working clients as it meant they did not have to lose a day's work.

Barkly

One Barkly clinic is very positive about telehealth. They have had approximately 40-60 appointments in the last 18 months. Not all of these are outpatient appointments booked through JCCB, sometimes it is visiting nurses or nutritionists who come to the community and then telehealth in with the specialist to go through the waiting list.

The clinic is confident patient care is well managed and patients like it and find it far preferable to travelling hundreds of kilometres for a two or five minute appointment. There been no adverse clinical events as a result of telehealth being deployed.

The community rarely has a problem with the equipment and they all know how to use it. The clinic could do more telehealth but don't have the time to arrange it.

They feel it does have the potential to expand, particularly into mental health but would be useful for GP appointments too.

One speciality the clinic is particularly interested in having telehealthed is ENT. That is their largest clinic and they have ongoing problems with travelling families causing damage to rooms which means they are barred from certain hostels and motels and when they can't travel, the children can't be treated.

The clinic has also found they save money on DNAs with telehealth. In September 2015 they lost $10,000 on DNA's alone, whereas the rate on the community is very low and it doesn't cost them anything if the patient can't be found.

The clinic is very positive about their telehealth experiences and using telehealth into the future. As the manager commented:

> *"it is not often you can say you have saved money and everyone has got really good health care for that saving. And you are not losing anything – usually when you make savings of money you have lost something."*

Another Barkly clinic has an interest in doing more telehealth but had limited numbers to date. The reason for this wasn't entirely clear. The clinic manager felt it was because the doctors didn't want to use it, but over the term of the project doctor usage increased, as did the number of clinics, so this is unlikely to be the reason. One reason is because the largest telehealth clinic in the Barkly is orthopaedics, most patients still need x-rays done and this is only available from Tennant Creek Hospital. This means some travel for the patient, but is much reduced and can be done in one day. This clinic is a good candidate for telehealth given the issues it has with travelling patients and difficult transport schedules so further investigation could be done as to why more patients aren't being telehealthed.

An Aboriginal health service in Barkly was also contacted for a discussion on their telehealth experience. They have been telehealthing since August 2014 and have done approximately 50-60 consultations.

They find telehealth appropriate for all forms of appointments, but particularly review. To travel to Alice Springs means patients catching a bus in the middle of the night and with no way to get to the bus stop (there are no taxis in town) many patients do not make the trip. Recently a 'day' bus has commenced but they thought telehealth was still better.

They felt telehealth appointments are conducted faster and are more efficient but have never felt "*hurried along*" and don't feel that issues are not being fully investigated.

They generally don't have problems with equipment, but have had some bad connections and this can put people off. They felt it was important to support clinicians with good technology.

DNA's are reduced with telehealth; the clinic works off a recall list and finds a much higher completion rate with telehealth as opposed to travel.

And while the clinic felt (for them) that telehealth is a "*bit ad-hoc at the moment*" they felt it could develop. They were particularly interested in utilising the equipment for training clinical staff too.

A small clinic in the Barkly region, servicing 180-200 people, has performed between 10 and 20 consults in the last 15 months and would do more if there was a reliable connection.

A bus used to travel to the community but the service has ceased so for patients to be treated they either have to travel to Tennant Creek (6-7 hour round trip) on the clinic bus or make their way to Alice Springs. The clinic manager said they "*have a whole page full*" of patients who they cannot get treated because of a lack of transport.

The clinic is very positive about telehealth saying it is "*excellent – the whole process, the whole scenario, the whole reason*." However, with the connectivity issues they often experience technical difficulties with consultations. The town has temporary Telstra cabling and without that being upgraded the connectivity issue will not improve. The clinic manager believes that if the connectivity issue can be improved then it will "*improve clinical outcomes two fold*."

Central Australia

A clinic in Central Australia (approximately 150 people) has had success with telehealth and would like to do more, however is hampered by poor connections and lack of suitable equipment. They can do some appointments in the mornings but once members of the community get up and start using computers and mobile devices the bandwidth collapses and they cannot get a reliable connection to have consults. Also, they only have a small camera attached to a computer on a small monitor, rather than an HDX, so it is suitable only for discussions not close examinations.

One of the nurses said she didn't like the concept at first but once she had done a telehealth consult she saw the possibilities for it and is now happy to do appointments via telehealth, commenting:

> *"and even though it is extra work at the clinic level if you are travelling patients there is still time involved in arranging travel and finding the patient on the day and getting them on to a bus."*

They felt it would be particularly useful for the community if ENT came on board and see telehealth could expand into chronic care management.

Another CA clinic also has technical problems due to poor connections and as a result of this their transient population choses to see specialists in the eastern states via Skype rather than go through the Northern Territory health system.

They have had instances where people have made appointments with the GP at the clinic to Skype with a private specialist in the eastern states, or return home for an elective operation and then Skype their reviews.

Out of a population of 1200, approximately 50 people are on chronic care management plans (mostly diabetes) but again this is managed by people with their health care physicians on Skype rather than through the clinic and is more lost revenue. With this dichotomy in place the clinic becomes more acute than primary care.

For the telehealth that is performed at the clinic there has been a good number of orthopaedic reviews done, general medical is increasing and they have found pre-admission particularly useful as if the surgery is cancelled there has been no unnecessary travel undertaken. They are also doing more dermatology. The system isn't clear enough for digital exams but the clinic staff send digital photos beforehand and discuss via telehealth.

As noted before the clinic is limited to what they can do via telehealth, but with better connections would do far more. As the clinic manager noted:

> *"It is disappointing because there is good uptake in the community and saves phenomenal amount of travel and cost for the locals."*

Patient Story - 9

IJ is remote patient who has utilised telehealth many times across outpatient appointments and rapid access. IJ believes telehealth is the best way to go "saves everyone money and stress" and thinks every centre and outback area should be on telehealth. IJ said "doctors do surgery over telehealth overseas so why don't we do more in Australia." For IJ to travel means she has to take a minimum of three days off work, which she doesn't get paid for, and her employer is also without a staff member. IJ also commented that even with PATS reimbursement she is still significantly out of pocket travelling for an appointment. If IJ had to go to Darwin then she would be away for a week. IJ commented "I can organise it, some people can't and I can't imagine what that is like for them." IJ believes doctors should be promoting telehealth more and that it should be part of their training. IJ feels completely comfortable using telehealth and doesn't think there is any loss of communication.

Objective 5 – has the increased use of telehealth made the PATS program more sustainable?

Key findings

- Costs to the PATS scheme were avoided.
- Increased telehealth appointments reduced the work load of PATS staff.
- The burden on scarce resources, such as accommodation, was reduced.
- While Medicare revenue figures cannot be robustly assessed due to Medicare reporting parameters there appears to be considerable room for growth based on Medicare billing figures for the 2014/2015 financial year.

Summary of evidence

For the fifteen months of the project an estimated $739,869 in costs was avoided (see Table Four) by patients not travelling for appointments. This estimate does not include costs avoided for escorts or DNAs.

To estimate the costs saved for DNAs, an average cost per patient per trip was calculated. For escorts an escort rate was calculated based on current PATS usage. Katherine historically has a low percentage of escorts so a nominal rate of 25% was used. Central Australia has traditionally had a high escort rate so conservatively a rate of 60% was used for this region, but it is likely to be higher.

Therefore the estimated costs avoided for the term of the PATS – Telehealth project are estimated at:

	Patients travel	DNA	Escort	Total
Katherine	411,820.00	128,132.00	102,955.00	642,907.00
Tennant Creek	206,604.00	73,630.00	123,962.00	404,196.00
Alice Springs	121,445.00	13,272.00	7,963.00	142,680.00
	739,869.00	215,034.00	234,880.00	1,189,783.00

Note: the estimated costs for Katherine are higher because charter planes are often used to transport patients.

Project staffing

At the commencement of the project, dedicated administration and nursing staff were placed into Katherine and Tennant Creek Hospitals and a nurse in Alice Springs Hospital.

There was also a telehealth support person situated in Darwin in the e-health area to support the systems and operate the Telehealth Help Desk.

The administration and nursing positions remained at Katherine and Tennant Creek but the position in Alice Springs was altered to an administration position in December 2014.

This alteration was made as it was discovered that after the initial period of socialising the concept of telehealth with communities and setting up the systems in the hospital what was actually required was someone to drive the booking component of the project and this was not best suited to a nursing position.

Also, the nurse in the position at the time identified that she spent approximately 80% of her time on administration tasks.

The change was agreed in December 2014 and an A04 appointed in January. The benefits were realised immediately with increased numbers being booked and these increases continued per month until the end of the project.

There were problems employing and retaining nursing staff during the project. The same administration staff were employed for the term of the project but three nurses were appointed in Katherine (including a period of three months without one) and three in Tennant Creek.

In Tennant Creek there were general practitioners or student doctors available to cover clinics, but there were also times where nurses had to be sourced from other areas. Conversely the telehealth nurse was often taken from the clinic to cover other areas in Tennant Creek Hospital.

One of the issues identified by the nursing staff was they felt their clinical skills suffered as a result of being dedicated solely to telehealth and not performing general nursing duties outside of this role. One of the remote clinic managers spoken to during the evaluation said she randomly selected staff to sit in on telehealth consultations so that all clinical staff had experience in utilising it and a doctor spoken to commented that he thought it should be spread across his speciality so that one person didn't become known as the 'telehealth guy'. Given the concerns raised by the nursing staff about skill retention in the future a more sustainable model would be advisable.

Over the project, planning and operation (May 2014 to September 2015) the salaries, superannuation and associated HR costs totalled approximately $611,000; this included the IT support person in Darwin.

Resources not used

Bed nights saved

A lack of accommodation is an issue in the Northern Territory, particularly in Central Australia where some Aboriginal Hostels have closed over the last year. In the Katherine region use of accommodation is less of an issue as many people from outlying communities are flown in and out on the same day and only need to stay if further procedures are done.

In Central Australia when the standard hostel rooms have been allocated the PATS offices have to book commercial premises where they pay the full room rack rate which can be between $90 and $145. By increasing the uptake of telehealth these resources have been saved and the burden on the PATS budget reduced.

In the Barkly, people from Tennant Creek formed the vast majority of telehealth appointments and they could expect to be away for two nights minimum so for the term of the project that is 1038 bed nights saved. For communities outside of Tennant Creek the number of nights away would depend on the bus schedules.

For Central Australia accommodation nights depended on the communities they travelled from. A sample was taken from January 2015 – September 2015 and it was assessed that 274 bed nights were saved from 150 appointments across a range of communities.

Staff resources saved

With patients not travelling PATS staff are not involved in booking travel and this staffing resource is saved. PATS offices estimated that a return booking takes approximately one hour to process. Taking into account appointment numbers in the regions it is estimated that the following hours were saved:

	Attended appointments	DNAs	Hrs Total
Alice Springs	**192**	**21***	**213**
Katherine	**331**	**103**	**434**
Tennant Creek	**519**	**185**	**704**
Hours saved	**1042**	**309**	**1351**

* from January 2015 – September 2015

Medicare revenue

One of the benefits of telehealth for the Health Services is the ability to claim Medicare for the provider end and patient end sites.

It was the responsibility of each site to process their claim forms and they were encouraged to do so since it is an increased revenue opportunity.

Figures were obtained from the Medicare reporting site, however the information was not limited to the Northern Territory Government (i.e. includes private) so there was no robust way of reporting Department of Health specific activity.

However, what the information did show is that there is significant room for growth in telehealth in the Northern Territory.

The project had a total of 1042 attended appointments and covered (amongst other things) review and initial consults in medical and surgical. The Medicare data showed that for the 2014/2015 financial year alone the following were listed as occasions of service:

- 22,291 Specialist Consultation Surgery reviews
- 21,437 Specialist Consultation Surgery initial
- 25,154 Consultant Physician reviews
- 10,867 Consultant Physician initial

And while not all communities in the Northern Territory are telehealth enabled, and some of these figures would be from urban areas, it shows that there is still a significant number of initial consults and reviews performed that could be assessed for telehealth delivery.

Objective 6 - have staff in remote clinics been up-skilled clinically and technically by conducting telehealth clinics?

Key findings

- Remote staff received informal telehealth training and support prior to clinics and on commencement of new staff; however training is not structured or systemic.
- An introduction to telehealth should be part of orientation packages for remote staff.
- There are opportunities for staff to be upskilled technically and clinically using telehealth.

Summary of evidence

As part of the project two off road vehicles were leased to enable nursing staff to travel to remote communities and orientate clinic staff to telehealth.

This happened extensively in the first few months from Alice Springs and it was this familiarisation activity that was the cornerstone of bringing so many Central Australian communities on board.

Fewer trips were made within Barkly and Katherine. In part this was because there were periods of time where the nursing positions were not occupied and for Tennant Creek specifically, as appointment numbers grew the nurse was required to attend clinics so could not be out visiting communities.

Another issue was the high turnover of staff in remote clinics. It was common for staff to travel out to a community for an in-service only to have the clinic staff change a week or so later.

Ultimately video link became the primary mode of training for remote centres with irregular trips to communities to socialise telehealth and fix or deliver equipment.

Also, to complement this support, procedures are available through the telehealth directory service and through the telehealth support desk based in Darwin. However, it was noted that in most remote centres they are nurse run and the procedures available aren't necessarily tailored to that workforce and this should be addressed in the near future.

Ultimately Telehealth NT want to link Converge to the National Health Service Directory to provide a service list for all telehealth providers. This enables referral pathways and connections to be made.

But the biggest issue, as noted in Objective 3, is that the training and orientation to telehealth is not systemic and has been available only because dedicated staff were available to perform this function during the project. To ensure ongoing support, training needs to be imbedded into orientation packages and formalised through health services systems.

Clinical skills have increased through interaction with other specialists on telehealth appointments

Clinic managers varied in their opinions about whether telehealth upskilled their staff. The biggest benefit for the clinics was the continuity of care.

A Katherine region clinic manager felt there was an increase of clinical skills for nurses by being present for telehealth consultations. She commented:

> "*When the specialist explains the condition and treatment to the patient the clinical staff gain knowledge on how to treat the patient and are also able to better understand the decision the specialist has taken."*

The clinical staff may also become aware of an aspect of the patients treatment that they weren't before and more aware of the patients treatment regime and this can help towards patient compliance.

This particular clinic has clear procedures in place and the Manager randomly picks staff to do the consults so that they are all upskilled. And although staff have been apprehensive at first they enjoy it once it is done. This approach also ensures there isn't one person who is left to be the 'telehealth person.'

Staff are also upskilled by being "part of the conversation with their colleagues, particularly around complex cases." And they are instructed to type notes directly into their system rather than relying on notes to come from the hospital and this promotes cohesive case management and care plans.

Some staff said they weren't upskilled by interacting with the specialists but there is further work to be done between primary health and acute sectors and telehealth can help facilitate communication and appreciation of the challenges each sector faces which isn't always apparent at the moment.

Staff attitudes and experience to telehealth are also important in the future and clinic managers can manage this. Limited exposure to telehealth possibly reduces the capacity of staff to include this into management of patients. Telehealth is not necessarily their 'go to' for care delivery but in future it needs to be.

Some nurses commented on their reluctance to use telehealth until they had actually performed a clinic and the mystique was removed. Orientation could remove some of this reluctance.

Patient Story – 10

PO fell from a horse on a station in the Barkly Region and broke her collar bone. She attended a remote hospital and they telehealthed her to determine if her injury would require surgery in Alice Springs. As it transpired she did need surgery so travelled down, however this 'triaging' via telehealth saved what could have been an unnecessary and uncomfortable trip given her only option was bus travel. Subsequently PO moved to the Katherine region but continued her reviews via telehealth to Alice Springs. PO commented "I would just like to say from my experience and after personally having to use this telehealth service on multiple occasions, this is a service that is irreplaceable and must continue to be provided in the future, in order to connect people in isolated areas with educated specialists and therefore enable them to receive the best possible advice care and treatment they require. I believe the telehealth service is second to none and must be a serviced that is continued in the future."

Telehealth into the future

Given the cost benefits of telehealth and the high patient satisfaction, a key strategy for health care delivery in the future has to be telehealth.

Telehealth could be expanded into specialities that manage chronic disease and there is room for expansion into primary care and allied health.

Currently GPs visit communities, but the frequency depends on the community size and visits can vary from two weeks to a month. GP telehealth clinics would mean more responsive healthcare at a local level.

For allied health, telehealth has been identified as a solution for some of the service gaps. There is potential for it to increase the timeliness and frequency of many allied health services, reduce patient and staff travel and assist with the integration of acute, community and remote allied health teams. Allied health telehealth could also offer services to patients in community that aren't currently available, for example occupational therapy, speech pathology and physiotherapy.

In the doctor survey, clinicians identified clinical training and staff education as areas telehealth could expand into, as well as improving the interface between primary health care and specialists.

Several doctors said they use telehealth to case conference with their colleagues and one said "sometimes that can be just as beneficial as a formal appointment with the patient." But this is done informally and is not captured in any meaningful way.

Doctors also identified patient education and patient counselling as areas that could be telehealthed.

Appendix One – communities/towns serviced during the project

*** communities coloured in red were targeted at the commencement of the project**

Top End

Katherine

Lajamanu

Kalkarindji

Borroloola

Pine Creek

Robinson River

Central Australia

Adelaide

Alice Springs

Darwin

Docker River

Finke

Harts Range

Imanpa

Laramba

Lake Nash

Mt Liebig

Nyirripi

Willowra,

Ti Tree

Yuendumu

Yulara

Kings Canyon

Santa Teresa

Hermannsberg

Barkly

Tennant Creek

Ali Curung

Elliott

Canteen Creek

Epenarra

Appendix Two - specialties added during the project

Alice Springs

2013-2014	2014-2015
General Medicine	Addiction Medicine
Orthopaedic	Cardiac
Respiratory	Dermatology
Rheumatology	Endocrinology
Sleep Disorder	Endoscopy
Surgical	General Medicine
	Gynaecology
	Haematology
	Hepatobiliary
	Infectious Diseases
	Medical Oncology
	Memory
	Orthopaedic
	Pain Medicine
	Pre-admission
	Radiation Oncology
	Rheumatology
	Sleep Disorder
	Surgical
	Urology
	Vascular

Katherine

2013-2014	2014-2015
Anaesthetics	Anaesthetics
General Medical	Cardiac
Hepatobiliary	Dermatology
Surgical	Endocrinology
	ENT
	Gastroenterology
	General Medical
	Haematology
	Hepatobiliary
	Immunology
	Obstetrics
	Oncology
	Paediatrics
	Palliative Care
	Renal
	Respiratory
	Rheumatology
	Surgical

Tennant Creek

2013-2014	**2014-2015**
Orthopaedic	Addiction Medicine
Respiratory	Cardiac
Rheumatology	Dermatology
Sleep Disorder	Endocrinology
Surgical	Endoscopy
	General Medicine
	Gynaecology
	Haematology
	Hepatobiliary
	Infectious Diseases
	Medical Oncology
	Memory
	Orthopaedic
	Pain Medicine
	Pre-admission
	Radiation Oncology
	Rheumatology
	Sleep Disorder
	Surgical
	Urology
	Vascular

Appendix Three - full results from doctors survey

How many telehealth consultations did you participate in over the last 15 months (since 1 July 2014 when the telehealth project started)?		
Answer Options	**Response Percent**	**Response Count**
0 - 20	51.9%	14
21 - 40	18.5%	5
41 - 60	14.8%	4
61 +	14.8%	4

Which region do you provide telehealth consultations to?		
Answer Options	**Response Percent**	**Response Count**
Top End	40.7%	11
Central Australia	51.9%	14
Both	7.4%	2

How many years have you been practising?		
Answer Options	**Response Percent**	**Response Count**
0 - 5	7.4%	2
6 - 10	11.1%	3
11 - 15	14.8%	4
16 - 20	22.2%	6
21 +	44.4%	12

Do you use other forms of video connection in and outside of work; for example Skype?		
Answer Options	**Response Percent**	**Response Count**
Not at all	22.2%	6
Rarely	25.9%	7
Sometimes	22.2%	6
Often	25.9%	7
All the time	3.7%	1

Do you believe telehealth appointments are appropriate for?			
Answer Options	**Yes**	**No**	**Response Count**
Initial appointments	18	8	26
Pre admission appointments	21	3	24
Review appointments	25	1	26
Chronic Care Management	26	0	26

"*In my opinion, when we meet the patient for the first time, we need to be close to them and touch them to know them and to create a rapport. Once a relationship is established, it is easy to review them remotely*."

"*With quite a few of the initial appointments, the specialists need to examine the patient personally (which is not possible via telehealth)."*

"Telehealth are useful for initial appointments if the issue is a 'learning' or 'behaviour' problem; not useful if the referral is for an issue that requires a paediatric physical examination at the first appointment (i.e. new heart murmur!)"

"*There is a place for telehealth in all of these. Even if you do a telehealth for an initial I think you need a face to face at some point, but an initial telehealth can help plan this*."

How satisfied are you with providing consultations via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Not at all satisfied	0.0%	0
Slightly satisfied	3.7%	1
Moderately satisfied	22.2%	6
Very satisfied	51.9%	14
Extremely satisfied	22.2%	6

"Very time efficient for both ends & also great opportunity for case conference with remote primary health care staff"

"It is very convenient and an excellent way expanding clinical coverage of remote areas."

"Learning curve initially, but then benefits realised rapidly."

"Vary depending on quality of the connection and what is required. Disadvantage is no ability to examine patient. Big advantage with clinic staff at other end and efficiency."

"These [appointments] are dependent upon the nursing staff member at the site being proactive and completing the physical observations etc prior to the session as otherwise much of the consultation time is lost or not fully informed for clinical decision making."

"Not as good as seeing and examining patient."

On average how confident are you about managing patients care via telehealth?		
Answer Options	**Response Percent**	**Response Count**
Not confident	0.0%	0
Slightly confident	7.4%	2
Moderately confident	22.2%	6
Very confident	55.6%	15
Extremely confident	14.8%	4

"Good avenue to continue management for existing patients."

"It depends who is with the patient at the consultation. I think the GP is the most suitable person; it can also enhance their education in a very constructive way."

"Concerns always remain about follow up, but more likely to be done as clinic staff often involved."

Do you see telehealth as a time efficient way of delivering health services?		
Answer Options	**Response Percent**	**Response Count**
Not at all	0.0%	0
Rarely	0.0%	0
Sometimes	14.8%	4
Often	59.3%	16
All the time	25.9%	7

"When there are delays or patients don't turn up - can get on with other tasks on computer whilst waiting for link up."

"Time efficient vs travelling by road to Katherine."

"I see it is part of a comprehensive integrated care process with direct clinical consultations and outreach."

"Certainly for patients and this is an important but often forgotten aspect of care."

"More efficient for the patient, however there is significant admin task involved, but the Katherine team take care of most of this they do an excellent job."

"Permits delivery of specialist outreach services to remote areas without the lost travel time to get there (often several hours)."

Do you believe telehealth services allow you to provide a better service for your patients?		
Answer Options	**Response Percent**	**Response Count**
Yes	85.2%	23
No	3.7%	1
Undecided	11.1%	3

"Less waiting time for patients."

"Improves flexibility in offering appointments to patients in various communities as they travel."

"VERY popular with patients. Save a huge amount of inconvenience for patients."

"Saves time, money and avoids the inconvenience of travelling long distances to see specialists."

"In-person consultations are better. But telehealth allows for more frequent consultations and more timely reviews given that visits in person to KDH/ community are infrequent."

"It prevents a number of unnecessary long journeys for patients. However, as mentioned above it should be part of an integrated process with other forms of clinical care consultations. It will not be sufficient as a sole form of clinical consultation."

"With reservations e.g. depending on strength and confidence of diagnosis."

"I think it is potentially as good as a face to face consultation if the images are good with photos provided prior to appointment. It is not however better but definitely more convenient and less costly for a patient."

"Alternative is either no service or delayed service."

"Provides access to a service that would otherwise not occur, but there is a lost efficiency and clinical assessment capacity form a face: face consultation."

"Saving them 900km return drives.....!!!!"

On average how satisfied are you with the clinical support you received at the patient end service?

Answer Options	Response Percent	Response Count
Not at all satisfied	0.0%	0
Slightly satisfied	7.4%	2
Moderately satisfied	40.7%	11
Very satisfied	48.1%	13
Extremely satisfied	3.7%	1

In general how satisfied were you with the administrative support you received from the telehealth coordinator in providing telehealth services?

Answer Options	Response Percent	Response Count
Not at all satisfied	0.0%	0
Slightly satisfied	7.7%	2
Moderately satisfied	0.0%	0
Very satisfied	65.4%	17
Extremely satisfied	26.9%	7

Do you believe telehealth is a culturally appropriate mode of delivery: e.g. services are provided on country and family are involved in health care decision

Answer Options	Response Percent	Response Count
Yes	96.3%	26
No	3.7%	1
Comments:		7

"I think some research into the cultural appropriateness of this service for Aboriginal people would be valuable."

"In our consultations, our patients have been very happy and accepting."

"If the appropriate family members are present."

"Opportunity to include family that would otherwise not be approved to travel."

"Permits the patient less distraction away from their community and family support."

Do you think telehealth improves continuity of care for patients?		
Answer Options	**Response Percent**	**Response Count**
Yes	100.0%	26
No	0.0%	0

"If I see a patient for the first time, I will be available at that location only after four weeks' time. If I need to see them in two weeks' time, I need not request my colleagues to do that job for me. I can continue providing care remotely."

"More frequent reviews by same paediatrician."

"Provides comprehensive follow up after discharge from hospital and planning post discharge care with primary care."

"More likely to attend follow-ups."

"Attendance at a clinic a long distance from home can be an unrealistic expectation. A more accessible option has potential to reduce non-attendance and therefore maintain continuity."

"Yes, and their families that are central to decision making."

"In liver cancer and transplant management excellent to speak with the patient family and clinician on the ground about the plan."

"Enables timely review and modification of therapy compared to the rationalisation of review consultation due to allowance for travel time etc."

"Patients are more likely to attend a telehealth appointment than an outpatient appointment in a different town."

Do you think telehealth improves patient outcomes?		
Answer Options	**Response Percent**	**Response Count**
Yes	96.3%	26
No	3.7%	1

"Able to facilitate more timely local investigations. Or if need to be done in Darwin, can batch them and order ahead, so all are on the same day."

"Just in the timing of follow up which otherwise would have to wait until my next visit in three months."

"There are a high number of non-attendees to OPD due to long distance travelling. telehealth certainly cuts down the number of non-attendees."

"More frequent reviews by same paediatrician; can highlight issues of concern earlier."

"But should not be used as an excuse for limiting face-to-face consultations when required for optimal assessment and outcomes."

"More likely to attend telehealth than in person appointments."

"Difficult to show until longer term service undertaken."

"Enables informed consent and timely work up to care."

"Timely ability to review and modify therapy."

"Patient was more willing to attend follow up if did not have to drive 1000km (500km x2)."

Technical

Did you experience any technical difficulties with telehealth consultations?

Answer Options	Response Percent	Response Count
Not at all	18.5%	5
Rarely	25.9%	7
Sometimes	44.4%	12
Often	7.4%	2
All the time	3.7%	1

What technical difficulties did you experience with telehealth consultations, if any?

Answer Options	Response Percent	Response Count
Sound	22.7%	5
Vision	27.3%	6
No Connection	36.4%	8
Other	13.6%	3

How often did you experience any logistical difficulties with telehealth consultations?

Answer Options	Response Percent	Response Count
Not at all	7.7%	2
Rarely	23.1%	6
Sometimes	53.8%	14
Often	15.4%	4
All the time	0.0%	0

What logistical difficulties did you experience with telehealth consultations, if any?

Answer Options	Response Percent	Response Count
No problems experienced	7.4%	2
Patient cancelled without notice	59.3%	16
Patient cancelled with notice	7.4%	2
No access to IT support	14.8%	4
Other	11.1%	3

"Patients are very mobile and may not be in the community on the day of appointment. However, this is no different to the situation when medical staff physically visit communities and is preferable to attempting to bring patients with chronic diseases, who otherwise feel well, to hospital for review."

"IT support limited at times."

"Fine if you are in your office as you can do other things."

"Lack of experience of nurse or doctor at the far end."

"Patients cancelled with/ without notice & patients often late (thus whole 'session' running late)."

"Same old problem (as with face to face) of not coming at the designated time- if the clinic is busy then they have to be rebooked."

"Lack of jabber software on outpatient pcs are a major oversight this needs resolution."

"Sometimes problems co-ordinating schedules. Some patients have DNA'd although often can still provide useful service with discussion with clinic staff. With TC patients I have had problems accessing patient results. Billing processes have sometimes been poor (and very hampered by not using electronic billing)."

What supports are needed to better facilitate telehealth services?		
Answer Options	**Response Percent**	**Response Count**
No further supports required	7.7%	2
Equipment/ infrastructure	11.5%	3
Workforce support/ training for telehealth services and equipment	26.9%	7
Better resources at point of referral (knowing who provides telehealth Services)	11.5%	3
Dedicated administrative support	30.8%	8
More defined procedures	0.0%	0
Other	11.5%	3

"If you make it difficult for doctors they won't do it."

"Better resources at the point of referral Dedicated admin support Workforce support and training."

"Need improved training of staff in remote clinics who frequently leave patients alone to discuss complex issues with doctor by telehealth in English, which may be their 3-4th language, using a technology of which they have very limited experience."

"Staff at remote sites need training, some don't."

"Workforce support, better resources at point of referral, training and more defined procedures."

"Increased awareness of service & increased access to computers with software installed (at RDH end)."

"I have outlined services above that I have provided from RDH to remote Top End. We do not have a telehealth coordinator at RDH & hence that is our major barrier - we need more admin support. Another major barrier is support at the remote end - remote clinics may well become over-burdened with telehealth if they are not given appropriate workforce to support it."

"Need more links with tertiary interstate hospitals, need more screens, problem with keeping cws active at time of consult (witnessing of results keeps timing out necessitating closing off vision),need to be able to book telehealth consults into current face to face JCCB clinics (i.e. not having to create separate clinic."

"And better referral points."

"For my consultations I was provided with images of the patient prior to the appointment time. This is essential for new patients especially, but also helpful for reviews. If there is good vision on screen they may not be needed although I did note the patient at the other end was sometimes in a relatively public area so I could never ask them to disrobe and show me a rash."

"Admin will assist with the other areas."

"We need more equipment to expand service to all clinics. Administrative support needs to be continued and expanded. Need to improve cross border firewall issues."

Do you understand how Medicare billing for telehealth works?		
Answer Options	**Response Percent**	**Response Count**
Yes	48.1%	13
No	51.9%	14

Into the future

Are you planning to book more telehealth sessions in the future?		
Answer Options	**Response Percent**	**Response Count**
Very unlikely	3.7%	1
somewhat likely	0.0%	0
Not sure	11.1%	3
Somewhat likely	7.4%	2
Very likely	77.8%	21

Would you recommend using telehealth sessions to a colleague?		
Answer Options	**Response Percent**	**Response Count**
Yes	92.6%	25
No	0.0%	0
Undecided	7.4%	2

"I have supported a further 2 consultants within my specialty/department at RDH to commence telehealth in last 6 months"

"It's variability leads to reservations."

"Useful PDP for doctors."

"Yes but I would warn them about the challenges of using it."

Into what areas do you think telehealth can expand? For example clinical or training and workforce support.

"Everywhere - I can't see any area, except procedures or some tests, that you can't use telehealth."

"Training."

"Staff education. Refreshing health workers and skills on community. Interface between PHC and specialist."

"This technology has enormous potential in the area of clinical training and support for remote staff."

"Basic infrastructure present. It would be good to know what times may suit larger remote clinics and get some standardised times at their end."

"Support for local clinic staff of having more timely access to medical opinion."

"Could be useful for training e.g. GP reg being the nads on doctor at the clinic end and specialist in their office"

"Teaching?"

"Case conference without patients can sometimes be as beneficial as a formal appointment with the patient."

"Primarily it should be specialist support for remote doctors."

"GP training."

"Remote communities for primary care paediatrics."

"Clinical outpatient, but this need to married with support and training to ops staff in addition to equipment installation."

"Community education , patient counselling."

"Patient education sessions; Inhaler training; CPAP support"

Further comments

"*Need some early adopters in each area to demonstrate benefits to their colleagues and also work through local 'issues' with getting it working.*"

"*Telehealth should be in addition rather than a replacement for outreach. Further expansion of outreach will supply unmet need rather than replace existing clinics so will need an increase in workforce (but the remuneration from increased activity should help fund this)."*

Appendix 4 – patient journeys

PATIENT JOURNEY – KATHERINE

Lajamanu is located on the northern edge of the Tanami Desert approximately 560kms south west of Katherine and only accessible via unsealed road (6+ hour drive) or charter plane (1.5hr).

It can cost up to $2774 for a patient to travel from Lajamanu to Katherine via charter. The Lajamanu clinic has a GP and limited visiting specialists every three to six months.

Clinic staff find it difficult to keep informed of intervention/ outcomes for patients that visit Katherine Hospital because it is an Aboriginal Community Controlled Health Organisation, meaning it is separate from Northern Territory Government and uses different software. It is especially difficult for clinic staff to understand the outcome of a specialist appointment if the patient understands limited English, like GT from Lajamanu.

GT is an 80 year old traditional aboriginal woman, speaking very little English and not believing in 'white man medicine'. GT has been a part of the community for 40+ years and prefers not to have to come to Katherine.

GT did not attend several specialist out-patient appointments prior to the telehealth appointment due to her fear of flying and not wanting to leave her family (she is the main carer for her grandchildren) but also because of her limited English.

GT has several significant family members that are involved in her care, but it is impossible for all to attend appointments if GT travels to Katherine.

GT's first telehealth appointment was regarding geriatric issues. In attendance was (patient end) a Lajamanu remote area nurse, GT, three important family members for discussion and interpreting for GT and (specialist end) specialist consultant and RN.

GT was amazed at the technology and at first speechless. It had to be explained to her that the doctor was in Katherine but could still see and hear her via video conferencing. It was obvious that GT had never experienced telehealth/ video conferencing because of her excitement; laughing loudly and waving eagerly at the specialist. It was an excellent experience for all people involved to see how far health care has come for people living so remotely.

Important health issues were discussed with the family (DNAR orders; medication changes and carer issues) which have not previously been discussed, and may not have been discussed if telehealth had not been offered - given GTs refusal to attend appointments at Katherine Hospital. Family members were happy they had a thorough conversation with the specialist and Lajamanu clinic staff was also happy that these issues were discussed to provide optimal health care and that an advanced care directive was now in place.

In conclusion, through GT's experiences it is easy to see the benefits of telehealth appointments for patients. There are several difficulties to overcome when patients need to attend hospital for out-patients appointments such as; several significant family members wanting to attend appointments to discuss optimal care for the patient; patients not wanting to leave community/ fear of flying and the patient not being able to leave their family because of carer issues. With telehealth, it is possible for all patients to have access to specialist care no matter of their location.

PATIENT JOURNEY - KATHERINE

CP is a 62 year old female who lives on a station approximately 40kms from Borroloola. Borroloola Clinic has a regular GP and specialists visit occasionally. The clinic services a community of approximately 1000 people. Most patients are sent via charter or bus to Katherine Hospital for out-patient appointments. The distance between Borroloola and Katherine is 654km via road (approximately a 7-8hr drive depending on weather) or 1.25hr flight.

CP has an extensive medical history with many of her co-morbidities requiring regular review by several different consultants. Travelling to Katherine hospital is exhausting for CP and she prefers not to fly via charter due to the plane being very small and claustrophobic. However, travelling by bus means staying in Katherine for up to three nights as the bus only travels back to Borroloola twice a week. And as CP cares for her husband at home and does not like to spend time away from her family this is not convenient either.

CP was offered a telehealth appointment, which at first she was hesitant to use, stating that “I thought that I wouldn’t be able to see properly, or it might not even work at all because I’m not very tech-savvy”.

The first telehealth consult with CP ran very smoothly. CP was very happy with the quality of the picture and sound of the ‘Medi-cart’ (telehealth equipment used at Borroloola), “It was like I was sitting in the room with the Doctor”. CP now requests all her out-patient appointments to be via telehealth, stating it makes visiting a specialist some much easier, is less financial stress and less time away from her family.

CP also makes use of Katherine Hospitals Rapid Access General Medical Clinic. It is designed to ensure patients requiring urgent to semi urgent review by the physician specialist is seen as soon as required instead of having to be placed on the waitlist. CP suffers from severe osteoarthritis, which is sometimes extremely painful and debilitating for her. Having quick access to a specialist for pain management has made a huge difference to CP’s life, physically and mentally.

It the past two months alone, CP has had four successful telehealth appointments. If CP had flown via charter to Katherine for each appointment, it would have cost a total of $9,200, or thousands of dollars more if she had to be transferred via Careflight due to uncontrollable pain issues.

In conclusion, telehealth has made a positive impact on CPs life. It has negated the need to travel which has benefitted her and her family and provided her with regular support in such a remote area of the Northern Territory. Telehealth enables remote patient’s access to holistic care, and better health outcomes for all.

PATIENT JOURNEY – TENNANT CREEK

AZ is a 59 year old female who lives in Tennant Creek. She requires regular dialysis treatment at the hospital three times a week plus has the responsibility of her grandchildren while her daughter is at work.

In 2014, AZ needed to have a surgical procedure which involved travel to Alice Springs Hospital. After being discharged from Alice Springs Hospital AZ returned to Tennant Creek but developed an infection which complicated the healing process so she returned to Alice Springs Hospital for treatment and stayed as an inpatient for three months. AZ reported feeling incredibly lonely and isolated during this time. She missed her friends and family and also her local dialysis unit.

It was decided that AZ would be a good candidate for telehealth. This would mean that she would no longer need to travel and could get on with life as normal in Tennant Creek and be able to stick to her regular dialysis days at the Tennant Creek Renal Unit.

In October 2014, AZ had her first telehealth appointment at the telehealth unit in Tennant Creek Hospital. It was decided that the best use of AZ's time would be for her to have her morning dialysis as usual and then be picked up by telehealth staff and taken to the telehealth appointment.

The telehealth consultation took less than 20 minutes. She was able to ask lots of questions and both the telehealth nurse at Tennant Creek Hospital and the specialist in Alice Springs Hospital were able to ensure that she fully understood the treatment plan that had been put in place.

AZ did not experience any major disruption to her day. The telehealth nurse was then able to relay relevant information obtained in the consult, to the staff on the Renal Unit ensuring continuity of care.

PATIENT JOURNEY – ALICE SPRINGS

KS is a young lady who lives in Darwin, NT and was diagnosed as an 11 year old with Ankylosing Spondylitis (inflammatory arthritis that targets the spine). For some time Royal Darwin Hospital (RDH) was not performing rheumatology clinics so KS opted to utilise the telehealth facility at ASH.

When KS attended her first telehealth appointment, she expressed an appreciation for the facility in catering to her condition and medication management. The equipment was easy to work with and the monitor was clear, with no problems with sound. KS was also happy that she did not have to travel to Alice Springs, which in her condition would have been very uncomfortable whether by plane or road.

KS is happy to attend telehealth appointments to manage her condition and seek specialist advice on a regular basis. This was her first telehealth appointment where she had nothing but praise for the organisation, the doctors, the nursing staff and the contact she received to arrange her attendance. She attended her second telehealth appointment early September which by then, she said, has helped her manage her pain better as the specialist altered her medication regime with good effect.

In conclusion, KS has had a comfortable telehealth journey thus far and most importantly, it has been beneficial to the management of her condition. As a regular at RDH and known to staff, this has helped KS understand the existing hospital system making transition to telehealth smooth and as KS understands the concept of telehealth and its benefits for long term treatment, she will remain a regular attendee to her telehealth appointments.

PATIENT JOURNEY – TENNANT CREEK

AZ is a 59 year old female who lives in Tennant Creek. She requires regular dialysis treatment at the hospital three times a week plus has the responsibility of her grandchildren while her daughter is at work.

In 2014, AZ needed to have a surgical procedure which involved travel to Alice Springs Hospital. After being discharged from Alice Springs Hospital AZ returned to Tennant Creek but developed an infection which complicated the healing process so she returned to Alice Springs Hospital for treatment and stayed as an inpatient for three months. AZ reported feeling incredibly lonely and isolated during this time. She missed her friends and family and also her local dialysis unit.

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AZ did not experience any major disruption to her day. The telehealth nurse was then able to relay relevant information obtained in the consult, to the staff on the Renal Unit ensuring continuity of care.

PATIENT JOURNEY – TENNANT CREEK

SB is a young woman who is originally from Nepal. English is not her first language.

She lives and works as a chef at a roadhouse which is approximately a 50k return trip by car from Tennant Creek. Both she and her husband work for the same employer.

SB and her husband moved to Australia six years ago. They are both waiting for residency visas and are aware of the importance having regular work with an employer who has been willing to sponsor them both. And because English is not their first language and they are in a country which is not familiar to them, they rely heavily on each other for emotional support.

Several months ago SB sustained an injury which resulted in admission via ED at Tennant Creek Hospital. She has required lots of orthopaedic input involving trips to Tennant Creek Hospital to have her cast replaced, visits for repeat x-rays and to see the GP. SB's telehealth appointments commenced in July 2014.

As SB's injury is *'non weight bearing'* this has meant she cannot drive on her own to clinic appointments and has to rely on her husband to drive her. The thought of having to attend Alice Springs Hospital for appointments was a real concern for the couple. Their finances were depleting due to having less income and they were worried about SB losing her job. This could lead to accommodation loss, loss of a sponsor and a much needed visa. Being a couple they would both have to find other jobs and start the visa process all over again.

Fortunately, after her initial admission to ED in Tennant Creek Hospital, SB was able to be referred for a telehealth appointment. She has, up to the time of writing, attended five telehealth appointments.

Attending telehealth appointments has been a very smooth process for SB. She has been able to have her x-ray done on the same day as her telehealth appointment, she has also been able to have her cast removed and re-applied on each occasion. Her husband has attended the appointments with her on each occasion and has felt involved in her care. SB reports that they have found the whole telehealth experience a positive one. They both found that communicating with the orthopaedic specialist via the telehealth screen extremely easy and they were not intimidated by the technology. The specialist was able to relay to them, instructions for physiotherapy exercises, and this also saved another trip to Alice Springs Hospital.

In conclusion, being able to attend telehealth appointments has been extremely helpful for SB. It has alleviated a lot of pressure and eased her concerns about losing employment and jeopardising the couple's chance of obtaining permanent residency. It has enabled her to have her husband accompany her to telehealth clinic appointments and it has saved her employer the inconvenience of finding two replacement staff instead of one. It has also enabled SB and her husband to remain within their new community and also develop good relationships with local hospital staff.

PATIENT JOURNEY – BARKLY

JG is a 63 year old man who lives and works in the Barkly.

JG has a long standing history of polyarthritis in his shoulders and knees plus an old tibia and right knee sprain, all of which have helped to exacerbate his persistent pain and discomfort.

Coupled with ongoing pain, JG has sleep apnoea and is required to wear a CPAP mask each night. He is overweight, a heavy smoker and finds the CPAP mask very uncomfortable. This string of complications further impacts upon his poor sleep patterns.

Another major health concern is that JG has reported falling asleep during the day, especially when he is in a comfortable chair. If he did not have the opportunity to attend telehealth clinics at Tennant Creek Hospital, the long car journey to Alice Springs Hospital may cause him to fall asleep at the wheel putting himself and others at risk.

Also in the past, staying in unfamiliar accommodation in Alice Springs has caused exacerbation of the pain in his shoulders and knees and impacted upon his already problematic sleep patterns. This experience has meant that he is reluctant to attend clinic appointments in Alice Springs hospital and his symptoms are not being relieved and he is not receiving adequate care.

In view of JG's multiple health problems, it would be impractical to send him to Alice Springs Hospital for appointments unless absolutely necessary.

It is hoped that in the near future JG will be able to have a 'sleep study' which will take place at Tennant Creek Hospital. At present, sleep studies only take place in Alice Springs Hospital.

JG is extremely grateful that he is able to attend telehealth appointments for rheumatology and sleep disorder clinics at Tennant Creek Hospital.

JG has found his recent telehealth clinic appointment for sleep disorder clinic unproblematic. He reported feeling very comfortable chatting with someone on the screen. JG is already familiar with Skype, so this appointment was pretty straightforward for him. He is looking forward to attending his next telehealth appointment for rheumatology in the near future.

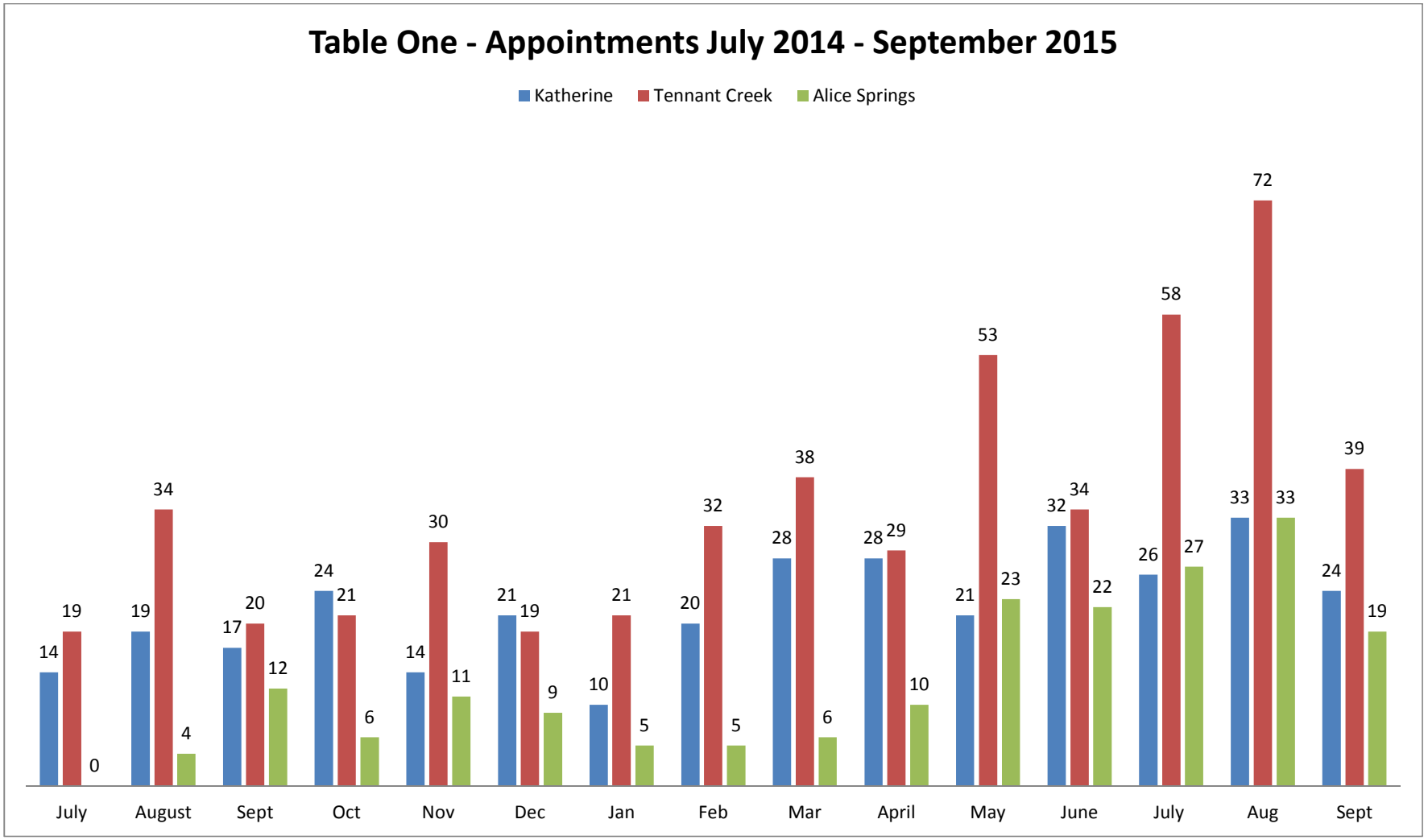


Table One - Appointments July 2014 - September 2015
Katherine
Tennant Creek
Alice Springs
14 19 0
July
19 34 4
August
17 20 12
Sept
24 21 6
Oct
14 30 11
Nov
21 19 9
Dec
10 21 5
Jan
20 32 5
Feb
28 38 6
Mar
28 29 10
April
21 53 23
May
32 34 22
June
26 58 27
July
33 72 33
Aug
24 39 19
Sept

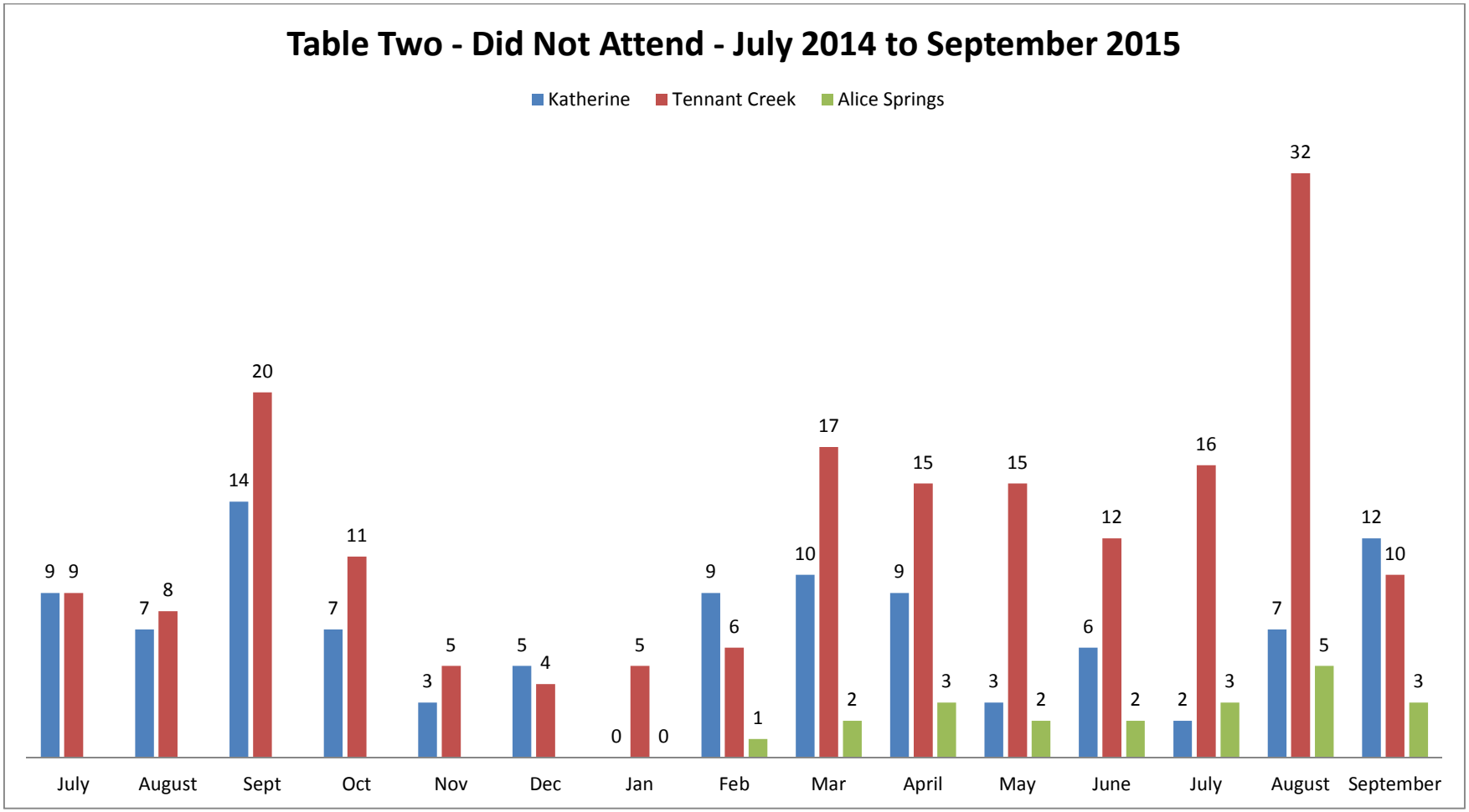


Table Two - Did Not Attend - July 2014 to September 2015
Katherine
Tennant Creek
Alice Springs
9 9
7 8
14 20
7 11
3 5
5 4
0 5 0
9 6 1
10 17 2
9 15 3
3 15 2
6 12 2
2 16 3
7 32 5
12 10 3
July
August
Sept
Oct
Nov
Dec
Jan
Feb
Mar
April
May
June
July
August
September

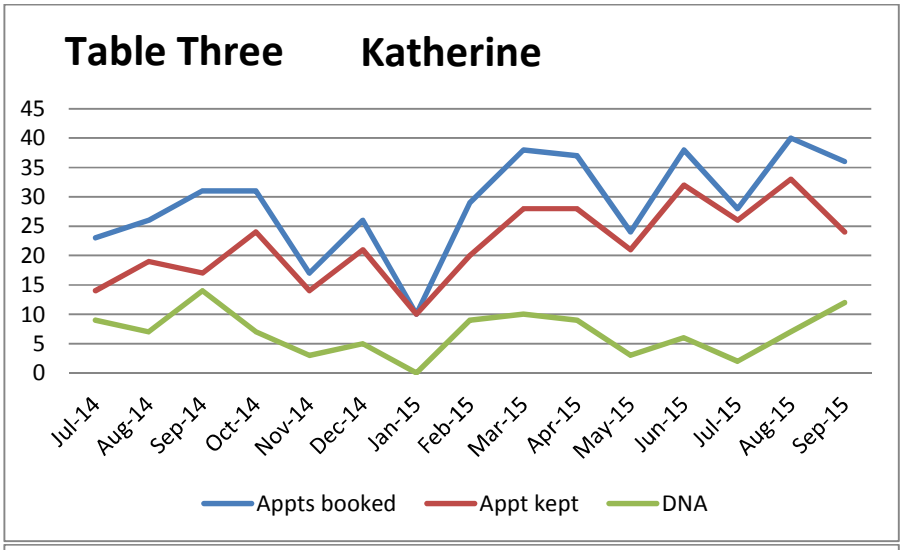
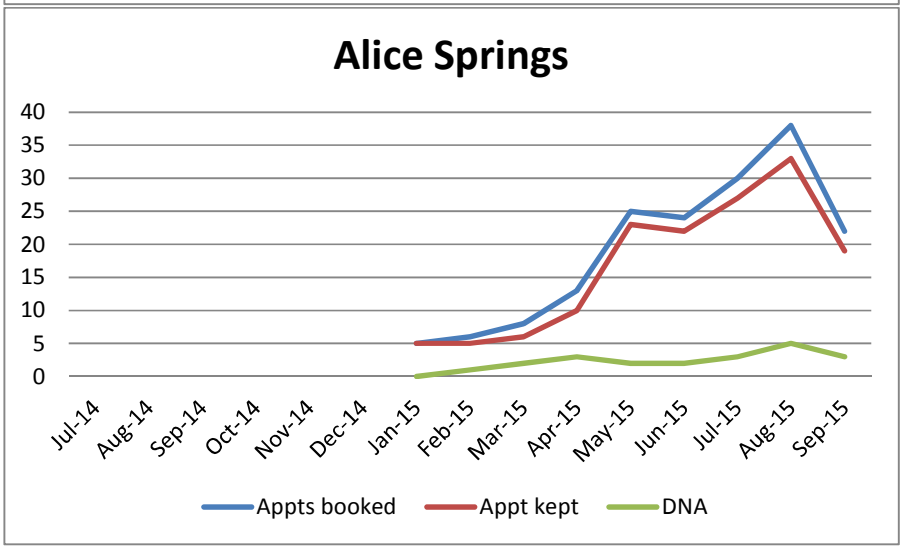


Table Three Katherine
45
40
35
30
25
20
15
10
5
0
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Appts booked
Appt kept
DNA


Alice Springs
40
35
30
25
20
15
10
5
0
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Appts booked
Appt kept
DNA

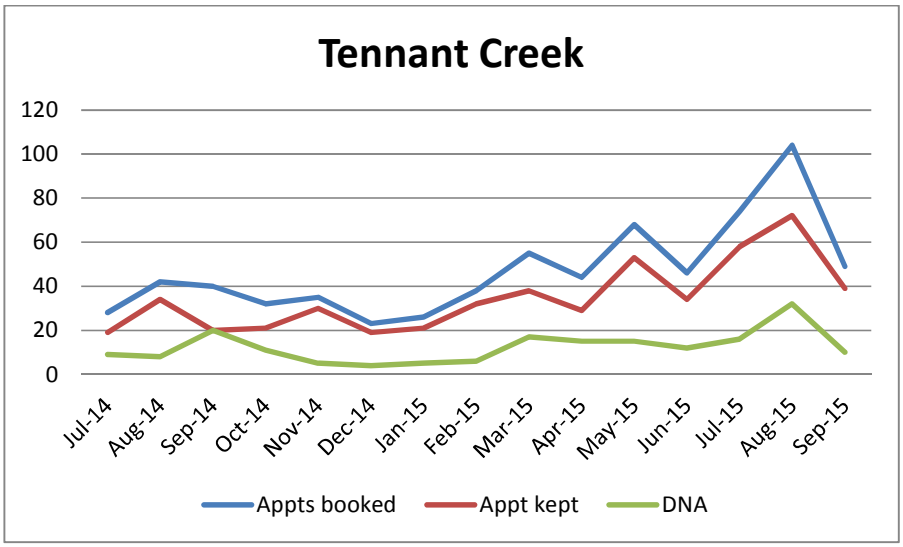
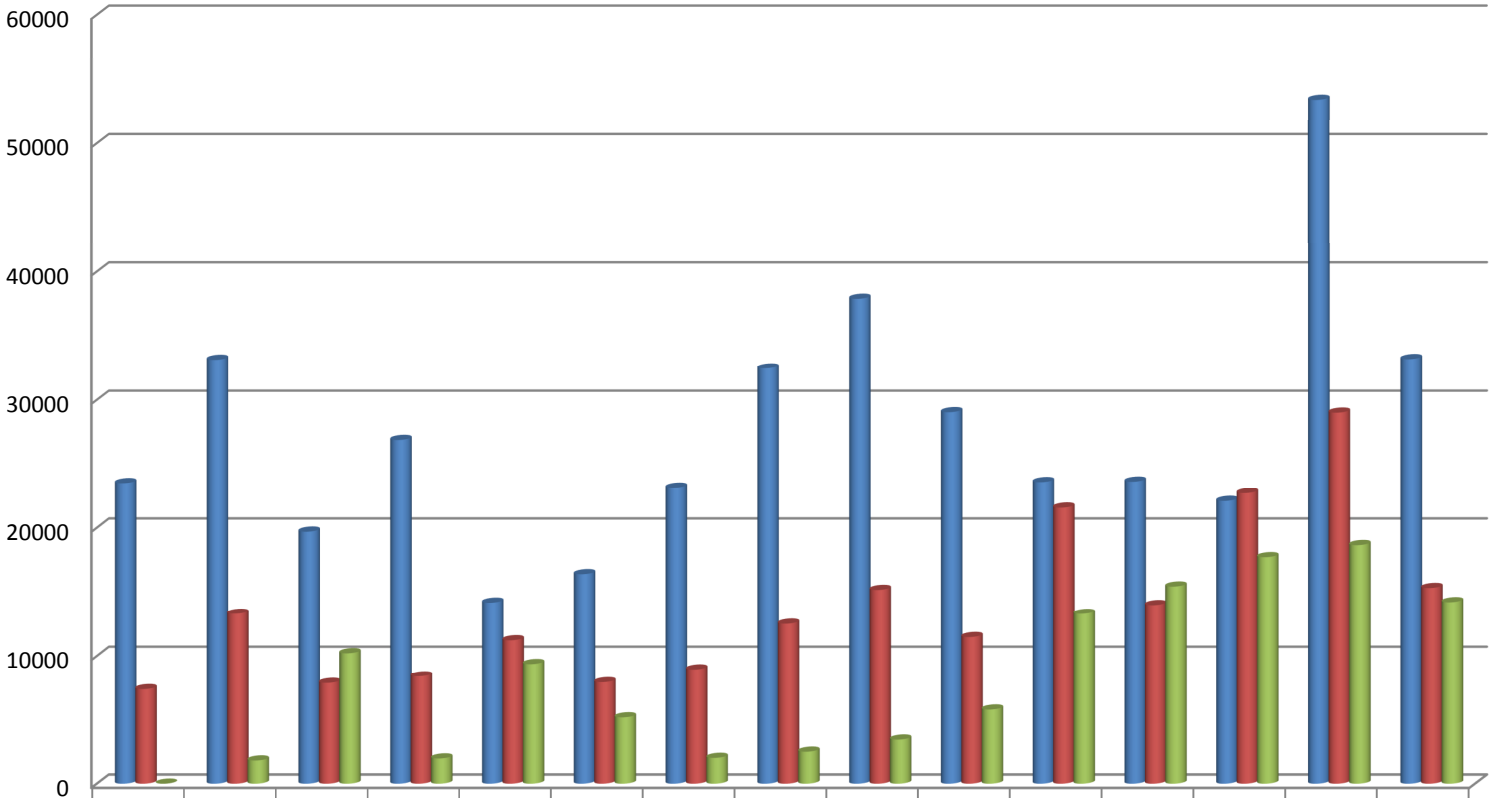

Tennant Creek
120
100
80
60
40
20
0
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Appts booked
Appt kept
DNA

Table Four - Avoided Costs; July 2014 - September 2015



	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept
Katherine	23454	33136	19700	26814	14136	16353	23098	32464	37885	29043	23536	23572	22053	53390	33187
Tennant Creek	7410	13260	7895	8420	11210	7950	8960	12480	15130	11458	21541	13944	22658	29008	15280
Alice Springs	0	1800	10209	1957	9377	5217	2002	2480	3419	5823	13251	15392	17672	18675	14172