

Clinical pharmacists connecting with patients in rural and remote towns via telehealth

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Introduction

The consequences of 'medication misadventure' have been highlighted, prompting the development of cognitive services to enhance the management of medication use¹ however it is well established that in rural communities timely and quality access to medication services remains a significant and growing problem.² 'Australia is one of the few developed countries with vast areas comprising small and highly dispersed communities, resulting in low population densities and long distances between communities'^{3,4}. 'In Queensland 98% of the state is classified as 'outer regional', 'remote' or 'very remote'^{3,5} presenting healthcare providers with a very real challenge in the delivery of optimal medication services.

In Far North Queensland in 2006 'tele-pharmacy', utilising video technology was 'recognised as an enabling technology, which represents a unique and innovative way to deliver quality pharmacy services to rural areas'⁶. In 1997 the National Association of Boards of Pharmacy (NABP) officially defined tele-pharmacy as "the provision of pharmaceutical care through the use of telecommunications and information technologies to patients at a distance."^{7,8} In Queensland Health the use of video technology to deliver health care and interact with patients from a distance is known as telehealth.⁹ A feasibility study¹⁰ undertaken in Queensland in 2010 demonstrated that tele-pharmacy could be used successfully to provide pharmacist medication reviews for inpatients at rural facilities. However very few studies on tele-pharmacy have been conducted in Australia and the uptake of this technology to provide pharmacy services in rural areas to date has not evolved.

Commencing in 2013-2014, the Queensland Government approved additional funding of \$51.9 million over four years to enable better access to health care services for Queenslanders living in regional, rural and remote communities. Identified rural hospitals were invited to apply and criteria included that the proposed initiative must improve services to Queenslanders living in a locality defined as outer regional, remote, or very remote according to the 2011 Australian Standard Geography Standard: Remoteness Structure and that the initiative should result in improved health outcomes and/or patient experience¹¹. A successful funding application to the Rural and Remote Revitalisation (R&RR) programme is now allowing for delivery of a clinical pharmacy service to patients in a large rural and remote area of Northern Queensland. The clinical pharmacy service is being delivered via telehealth, from a medium sized rural hospital to seven rural and remote healthcare facilities, covering an area of approximately 160,000 kilometres.

The main aim of this new service is to provide equitable access to a pharmacist for patients and clinicians living and working in these rural and remote communities. Medication supply at these facilities is currently undertaken by Rural and Isolated Practice Registered Nurses (RIPRN) and governed according to the Primary Clinical Care Manual.¹² Previous pharmacy services to the seven rural and remote facilities consisted of supply and occasional phone information for nursing staff. Clinical pharmacist outpatient medication reviews are now taking place and pharmacist support for visiting medical officers and nursing staff is currently under development as part of the new service.

Methods

Exemption from ethical review for R&RR programme evaluation was applied for and granted by the Far North Queensland Human Research Ethics Committee.

Videoconferencing equipment

Health Services Information Agency (HSIA) is the branch of Queensland Health that procures all videoconferencing equipment and provides 24 hour technical support. Videoconferencing infrastructure was already in place at the rural and remote facilities and would consist of, for example, a 32 / 40 Inch TV', which includes the Cisco Videoconferencing system, a Sony Bravia LED Monitor and an Ergotron WideView Workspace Trolley. An estimated cost for this system would be \$12,000.

Also in use for the clinical pharmacist in the hub rural hospital is the 'Cisco Jabber Video for Telepresence Software' which enables use of a personal webcam from a desktop computer. This is licensed software and costs start at \$230.

Clinical Pharmacist Medication Review

A clinical pharmacist outpatient clinic was set up in the Hospital Based Corporate Information System (HBCIS) for appointment booking and activity data collection. A pharmacy assistant has been trained to use this software and is responsible for data collection.

Patients from the rural and remote sites who are discharged from the rural hospital site are identified from a HBCIS report and followed up in their communities post discharge by the telehealth pharmacist in conjunction with the clinic nurse.

Clinic nurses identify patients from their communities, thought at risk from medication misadventure, using the following referral criteria adapted from the Australian Pharmaceutical Formulary and Handbook.^{13,14}

Referral criteria

Must meet at least one of the following:

- Taking more than four regular medications
- Patient at risk of medication misadventure
- Patient has a complicated medication regimen and/or chronic diseases
- Recent hospital admission
- Medications prescribed by multiple GPs and/or dispensed by multiple pharmacies, if known
- Patients on medications requiring additional education – inhalers, eye drops, patches, blood glucose monitors

The referral list is reasonably encompassing as the idea is to provide a medication service to the wider community with the list being designed more as a guide for clinic nurses.

Appointments

Once a patient has been referred to the clinic, an appointment letter (Appendix 1) and a telehealth explanation brochure is emailed either direct to the patient or to the patient via the clinic nurse; the patient is advised to bring all their medicines with them to the consult. A letter detailing the appointment is also sent to the patient's general practitioner (GP) (Appendix 2); in the remote communities the GP service is provided by the Royal Flying Doctor Service (RFDS). The clinic nurse attends the consult with the patient in their community and the pharmacist conducts the medication review via telehealth from the rural hospital site.

Medication review

The clinical pharmacist conducts a review of all medications and this is guided by the Society of Hospital Pharmacists of Australia (SHPA) Standards of Practice for Clinical Pharmacy Services¹⁵.

The review of medications includes as per the SHPA standard¹⁵:

- Medication reconciliation
- Assessment of current medication management
- Clinical review/therapeutic drug monitoring and adverse drug reaction management
- Formulation of a 'Medication Action Plan' (MAP)

- Provision of medicines information
- Facilitation of continuity of medication management on transition between care settings

The Queensland Health Medication Action Plan¹⁶ (Appendix 3) is used to document all medication activities and pharmacist recommendations. An electronic medication list is compiled for the patient using the enterprise-wide Liaison Medication System¹⁷ (eLMS). The eLMS software is Queensland Health wide and contains any medication information inputted by pharmacists in other facilities i.e. on patient discharge. The clinical pharmacist also has access to 'The Viewer' which is 'a read-only web-based application that displays consolidated clinical information sourced from a number of existing Queensland Health enterprise clinical and administrative systems¹⁸'. The eLMS application combined with information from 'The Viewer' can provide patient discharge information that may aid the clinical pharmacist with their patient consult.

Post consult

After the consult a copy of the electronic medication list and medicines information is supplied to the patient along with a thank you letter (Appendix 4). The electronic medication list and any pharmacist recommendations are then communicated to the general practitioner/RFDS via letter (Appendix 5) with any urgent recommendations communicated by telephone. Copies of all documentation are also sent to the clinic nurse for information and filing.

Data collection

Data collection includes:

- Telehealth activity from HBISC to measure patient uptake
- Patient survey to measure service satisfaction (Appendix 6)
- Pharmacist interventions/recommendations.

Results

Telehealth activity

Month/Year	Number of Telehealth consults
November 2014	1
December 2014	2
January 2015	2
February 2015	6
March 2015	8

Patient survey

Five patients completed patient surveys which is a 26% response rate. The clinic nurse has now been asked to offer help to patients in completing this survey post consult in case an issue such as literacy is a barrier impeding completion.

- **All five patients strongly agreed with the statement:** To be able to get local pharmacy services are important to me
- **All five patients strongly agreed with the statement:** My needs are adequately met by videoconferencing
- **All five patients strongly agreed with the statement:** I thought the waiting time for an appointment was reasonable
- **All five patients strongly agreed with the statement:** The staff member introduced him/herself

- **All five patients strongly agreed with the statement:** My privacy was respected at all times.
- **All five patients strongly agreed with the statement:** The medication advice was adequate and practical for my home situation.
- **All five patients strongly agreed with the statement:** The information was easy to understand.
- **All five patients strongly agreed with the statement:** I was encouraged to participate and take responsibility in the planning of my care.
- **All five patients strongly agreed with the statement:** My personal needs and lifestyle were considered.
- **All five patients strongly agreed with the statement:** I am satisfied with the service I received.

Comments received included:

"I was quite happy with the procedure, not rushed and explained adequately. Thank you"

"I enjoyed talking to the pharmacist and thought it was quite good"

"Easy to understand the pharmacist"

"I understand about things now"

"I was taking two indomethacin tablets at lunchtime instead of one as prescribed. I am very pleased to have the paperwork to clarify dosages"

An excellent example of how the pharmacist is reaching patients and helping them is provided by one patient who had very poor insight to her medical conditions and subsequently her medication literacy was very poor. This particular patient enjoyed the opportunity to learn more about her medications, where simplistic analogies were used to educate. These analogies likened the cardiovascular system to "a running creek and waterhole", with cholesterol being "silty mud"; and the treatment goal avoiding shallowing of the waterhole and causing the river to "block up and burst". The patient responded incredibly well, and provided feedback "it was good having it told so I understand".

Pharmacist intervention/recommendations

Month/Year	Number of telehealth consults	Number of medications being taken:	Number of interventions/recommendations
November 2014	1	8	1
December 2014	2	16	4
January 2015	2	22	3
February 2015	6	49	11
March 2015	8	59	14

From the nineteen (19) telehealth consults a total of one hundred and fifty four (154) medications were being taken by patients which averages as 8 medications per patient. A total of thirty three (33) recommendations have been made to patient's general practitioners averaging at 1.7 recommendations per patient.

Types and numbers of intervention/recommendation

Medication Dose Alteration	4
Medication Cessation	8
Medication addition or change to more suitable therapeutic option	6
Patient specific monitoring	8
Miscellaneous recommendations	7

The following are examples of pharmacist intervention/recommendations:

- **Medication Dose Alteration:** A patient prescribed frusemide twice daily was taking their dose in the morning and in the evening. This was resulting in sleep disruption and the pharmacist recommended taking the second dose in the early afternoon which is usual practice.
- **Medication Cessation:** A patient was on dual antiplatelet therapy (DAPT) of clopidogrel and aspirin following a coronary artery stent in 2004. A recommendation was made to the GP to review the need for DAPT as current guidelines¹⁹ recommend twelve months of DAPT followed by eighteen months further therapy if tolerated.
- **Medication Addition:** A patient had a past medical history of chronic obstructive pulmonary disease and asthma with no evidence of inhalers in use except a short acting B-agonist reliever. A recommendation was made to the GP for review and supply of preventative inhalers.
- **Change to a more suitable therapeutic option:** A patient was splitting their slow release quetiapine in order to achieve quicker effect. This may result in inconsistent medication release and a recommendation was made to the GP to prescribe short acting twice daily quetiapine.
- **Patient Specific Monitoring:** A patient was taking frusemide, spironolactone, perindopril, digoxin and insulin – the patient was not aware of any recent pathology and a recommendation was made to the GP to monitor potassium levels
- **Miscellaneous recommendations:** A patient with severe heart disease was continuing to smoke cigarettes. The pharmacist took the opportunity to offer some smoking cessation counselling.

An excellent example of a possible serious pharmacist intervention/recommendation is that of a patient who asked for a consult with the pharmacist to discuss her apixiban, one of the new novel oral anticoagulants. During the discussion the pharmacist elicited that the patient had observed blood in her urine, which may be a possible serious side effect of the medication, this resulted in an urgent referral to the general practitioner.

Conclusions

The results show that the new clinical pharmacy telehealth service is gradually gaining momentum with a steady increase in clinical pharmacist consults. The acceptance of the new service has not been the same for all the clinic nurses and their communities with certain clinics demonstrating greater utilisation. It is only through the combined effort of the telehealth pharmacist and clinic nurse promoting the service, that rural and remote community confidence in clinical pharmacy telehealth can be won. The following feedback from a clinic nurse who is a champion of the service emphasises the pivotal role the rural and remote nurses play in winning the community's confidence:

“At first acceptance of the service by the community members was slow. A contributing factor to this reluctance may have been that people were wary of new technology and could not grasp the concept of consulting from a distance. Over time and with a concerted effort to educate people about the benefits of telehealth many obstacles have been overcome and the service is now an accepted part of the health centre”.

The following barriers to the utilisation of the new service were perceived:

- An ageing population who were wary of technology
- Limited understanding of how the service was to operate
- Concerns regarding confidentiality, i.e. who would have access to the information collected and how would the information be used.
- The impersonal nature of 'talking to a person on a screen'. Not talking to a real person affecting the development of trust and rapport.
- Fear that the pharmacist would change their medications without their treating doctor being involved and they would lose control.
- Reluctance of individuals living in remote areas to give up an opportunity to go shopping when they attended a one on one appointment in the larger towns.

The clinic nurse champion overcame these barriers using the following techniques:

- Spoke with each client who attended the centre about the advantages of using the telehealth service i.e. not having to travel long distances, not having to sit for long periods in a waiting room for just a five minute appointment
- Discussed the associated paperwork i.e. consent forms and outcomes such as the pharmacist contacting the GPs, medication plans sent to the client
- Showed the clients the telehealth equipment and discussed how it is used to familiarise them with the process
- Careful selection of respected community members to attend the first telehealth consult with the intention that they would 'spread the word' about the benefits of using the service because of their own positive experience
- Explained to the client that the pharmacist has access to their collected data and therefore becomes part of the treating team if the client ever presents at the hospital
- Explained that adverse reactions are on record and this reduces risk if the client presents as the result of an emergency and is unable to provide the information themselves
- Emphasised the reduced cost to the client because they do not have to pay for fuel or accommodation

The results of the patient survey although small do show that patients receiving the service are very satisfied with it. It is anticipated that with time the service will become an accepted model of care for all the rural and remote clinics and their communities. The results also show an increasing number of pharmacist recommendations/interventions consistent with the increasing number of consults. The recommendations are varying across a wide spectrum and also highlight the telehealth consults as an opportunity for pharmacist life style interventions in areas such as smoking cessation. The data collected so far from this new service, although small, does highlight telehealth as an appropriate and accepted service delivery model for clinical pharmacy services in rural and remote communities. It can be concluded that telehealth can enhance the provision of pharmacy consultation to rural areas improving patient access to a pharmacist and decreasing patient risk of medication misadventure.

The 5th Community Pharmacy Agreement governs the Home Medicines Review (HMR) programme which aims to enhance the quality use of medicines and reduce adverse medicines events²⁰. This is undertaken through a comprehensive medication review conducted by an accredited pharmacist in the patient's home and the HMR is Medicare funded. Patients living in rural and remote communities

are unable to access pharmacists in this way as the distances involved are too far for community pharmacists to travel. A hospital based clinical pharmacy telehealth service provides an alternative to the HMR for rural and remote patients.

Recommendation

It is therefore a policy recommendation that the use of telehealth as a model of care for clinical pharmacy outpatient consults is recognised, endorsed and Medicare funded resulting in equity for patients living in rural and remote communities.

Acknowledgments

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Presenter

Michelle Rothwell is passionate about providing safe and equitable health care for rural patients. Michelle is an experienced clinical pharmacist based at Atherton District Hospital on the Cairns Hinterland in Far North Queensland. Michelle has the responsibility for medication management for two large rural hospitals and ten rural and remote sites. Michelle is also experienced in the field of patient safety and is passionate that health care services are as safe for rural patients as they are for our city counterparts. Michelle studied at Aston University in the UK and completed her Research Masters with the Queens University, Belfast. Michelle has a strong interest in research and was awarded a Health Practitioner research grant to investigate the number of emergency readmissions due to medication. Michelle was recently successful in obtaining rural and remote revitalisation funding which is currently allowing for Michelle to implement new clinical pharmacy services into rural hospitals and remote sites in Far North Queensland. Current roles include chair of the Rural Director of Pharmacy Services Advisory Committee of Queensland and Rural Advisor to the Society of Hospital Pharmacists Queensland Branch.

Appendix 1

Appointment Letter

Date

Patients Name
Patients Address

Dear First name,

Telehealth consultation – Rural and Remote Pharmacist

An appointment has been booked for you to have a **Telehealth Consultation** with the **Rural and Remote Pharmacist to review your medications**.

Please present this letter to the receptionist on arrival and bring with you all of your own medications including any of the following:

- Dose Administration Aids – commonly known as Websters, Blister or Bubble Packs.
- Over the counter medications (e.g. cold and flu, laxatives, pain relief)
- Complimentary medicines/herbal preparations/vitamins
- Devices (e.g. inhalers, insulin syringes)

You will be able to see and speak to the Pharmacist via videoconference equipment (through a TV screen or computer screen with a digital video camera and microphone). This means you do not need to travel to Cairns or Atherton for your appointment. This is an opportunity for you to ask any questions regarding your medications you may have.

Your appointment details are:

Day: (Day of appointment)

Date: (Date of appointment)

Time: (Time of appointment)

Location: (Clinic location)

Location Contact: (Clinic Nurse contact - person referring)

If you are unable to attend your appointment, please phone ----- to cancel.

If you require attention for your condition before this date, you should contact your General Practitioner. Alternatively, you should attend the Emergency Department at your nearest hospital if you require urgent medical attention.

Please be aware your Doctor may be involved prior to, during or after your telehealth service. This is to ensure the best possible care can be provided to you.

Yours sincerely,

Pharmacist, Atherton District Hospital | Rural & Remote Pharmacy Services

Appendix 2

General Practitioner Letter

Date

Dr (Doctors full Name)
(Doctors Address)

Dear Dr (doctors last name),

RE: Telehealth Consultation for (patient full name) DOB:(patient DOB)

An appointment has been booked for the above mentioned patient as an outpatient of Queensland Health to have a **Telehealth Consultation** with the **Rural & Remote Clinical Pharmacist**. A Telehealth consultation encompasses patient education, compliance assessment and a medication review. You will be notified of the results of the consultation and any suggestions regarding the patients care.

The patient will be accompanied by a doctor, nurse or health worker at the local clinic or hospital during the consultation with the Pharmacist.

The patient has been asked to bring along **all** of their own medications, including:

- Dose Administration Aids (commonly known as Websters, blister or bubble packs)
- OTC medications
- Complimentary/herbal/vitamin
- Devices, e.g. inhalers

Appointment details:

Day: (Day of consultation)

Date: (Date of consultation)

Time: (Time of consultation)

Patient Location (Qld Health Clinic): (Location of patient/clinic)

Contact: (Nurse contact and phone number)

A letter has been sent to your patient along with a brochure explaining Telehealth.

If you have any questions or concerns regarding this appointment, please phone -----

Pharmacist

Atherton District Hospital | Rural & Remote Pharmacy Services

Appendix 4

Date

Patients Name
Patients Address

Dear First name,

Telehealth consultation – Rural and Remote Pharmacist

We would like to thank-you for attending **Telehealth Consultation** with the **Rural and Remote Pharmacist**. Please find attached a copy of a medication list of your current medications. You may also find extra information, such as Medicines Information included for your benefit.

We trust the service provided to you has been of benefit and met your expectations. Please feel free to contact us if you would like to provide further feedback.

Please be aware your Doctor may be involved prior to, during or after your telehealth service. This is to ensure the best possible care can be provided to you.

Yours sincerely,

Pharmacist
Atherton Hospital | Rural & Remote Pharmacy Services

Appendix 5

Date

Dr (Doctors full Name)
(Doctors Address)

Dear Dr (doctors last name),

RE: Telehealth Consultation for (patient full name) DOB:(patient DOB)

Patients name; age; sex has been seen by the Rural and Remote Pharmacist from the Atherton Hospital for a Pharmacy review via Telehealth.

The current medical history includes: Current Med Hx

Current medications include: Current medications

The following issues and potential solutions were found during the consultation:

(Insert Assessment and Recommendations)

If you have any questions or concerns regarding this consultation, please feel free to contact me by phone on -----; alternatively email at -----@health.qld.gov.au .

Pharmacist
Atherton Hospital | Rural & Remote Pharmacy Services

Appendix 6

Patient survey

Patients are asked to score each question using the following:

1	2	3	4	5
Disagree Strongly		Neutral		Agree Strongly

- To be able to get local pharmacy services are important to me
 - My needs are adequately met by videoconferencing
 - I thought the waiting time for an appointment was reasonable
 - The staff member introduced him/herself
 - My privacy was respected at all times.
 - The medication advice was adequate and practical for my home situation.
 - The information was easy to understand.
 - I was encouraged to participate and take responsibility (in the planing) of my care.
 - My personal needs and lifestyle were considered.
 - I am satisfied with the service I received.
 - For further comments:
-