Exploring telehealth options for outreach services

Final report prepared by The Centre for Online Health for CheckUP and Queensland Health

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About us – The Centre for Online Health

The Centre for Online Health (COH) is part of the School of Medicine within the Faculty of Medicine and Biomedical Sciences at The University of Queensland. The COH was established in 1999. Our research, service delivery, and education and training in telehealth is internationally recognised. The university leads the world in peer-reviewed telehealth publications with almost twice the number of publications of any university.

The COH's key areas of activity are:

- Clinically focused research with an emphasis on examining the feasibility, efficacy, clinical effectiveness and economics of telehealth in a variety of settings
- Academic and vocational education and training in clinical telehealth
- As a service provider of clinical telehealth services

The COH has hosted the Queensland Telepaediatric Service for over 16 years. On the strength of the achievements of this service, the Princess Alexandra Hospital (PAH) executive commissioned the Centre to design and manage a state of the art telehealth centre. The creation of a centralised telehealth hub has created opportunities to address more broad aspects of telehealth service development, such as demand profiling, development of telehealth protocols, financial models to ensure sustainable services, and access to current innovations in technology. Together, these two services have conducted more than 32,000 consultations in over 50 specialty areas.

Our multidisciplinary team of clinicians, academic researchers, health economists, educators, technicians, engineers and administrators bring together a broad mix of skills to adult, paediatric and geriatric telehealthcare.

Executive Summary

Background and objectives

This report analyses how CheckUP supported outreach services and costs may be impacted through the substitution of these services with telehealth. This report was commissioned by Queensland Health in association with CheckUP. The Centre for Online Health was engaged to perform the analysis to help inform future service development and negotiations with state and Commonwealth government, such that telehealth may be incorporated into outreach services.

The specific objectives of this engagement were:

- Identify and analyse any gaps in the existing funding of outreach services in Australia;
- Provide examples of how current costs and funding arrangements (specifically the Medicare Benefits Schedule) compare if telehealth services were to be substituted, and how this substitution may improve the delivery of such services to patients;
- Determine factors that influence the cost of providing in-person specialist outreach services and identify how telehealth substitution could modify these factors;
- Model and report potential costs and savings of telehealth substitution.

Methodology

The Centre for Online Health undertook a variety of tasks in preparing this report including: review and cataloguing of current funding models for outreach services; selection of case studies; descriptive reporting of the practical requirements of telehealth substitution, summarisation of actual CheckUP activity data, cost and funding, and modelling of cost for seven telehealth scenarios at 25%, 50% and 75% telehealth substitution rates.

Key findings

Telehealth substitution of outreach services

- The use of telehealth requires substantial reorganisation of conventional models of health service delivery.
- Telehealth is best used in conjunction with face-to-face outreach services. Hence, should not be treated as a complete replacement strategy for visiting outreach services.
- When planning a program which includes telehealth and face-to-face outreach, case mix needs to be considered, to ensure that patients are allocated to the most appropriate clinic.
- The allocation of patients to either face-to-face or telehealth clinics should be done purposely so that the most efficient method is used — for example, outreach clinics could be reserved for complex cases which require detailed discussions and/or physical assessment.

- Review of existing (known) cases may be more appropriate for telehealth. Depending on the discipline, some health care providers may choose to reserve new cases for the outreach clinic and all reviews for the telehealth clinic.
- Ad-hoc cases reviewed by telehealth may be an appropriate means to get timely advice from a specialist.
- Suitability for telehealth is best determined by the healthcare provider.
- Funding models, degree of substitutability of face-to-face with telehealth, travel savings, cost of infrastructure, cost of telecommunications, cost of additional equipment and cost of additional staff, required for a teleconsultation, need to be considered on a case-by-case basis to determine if telehealth will result in cost savings.
- For telehealth to result in cost savings, whole clinics would need to be substituted with telehealth.
- Appropriate infrastructure (consultation room, videoconference equipment, telecommunications network) is needed for telehealth.
- Peripheral devices and the ability to transmit ancillary information are sometimes needed for telehealth.
- Patient-end support staff are often required for a successful telehealth consultation.
- Patient-end support staff may require telehealth specific training.
- A healthcare provider's willingness-to-practice is a determinant of telehealth substitution.
- Funding models need to be identified particularly for services which are not supported by MBS payments.

MBS Funding for telehealth

- MBS telehealth item numbers are available for specialist video consultations.
- There are no MBS telehealth item numbers for allied health consultations.
- There are no MBS telehealth item numbers for nursing consultations.
- There are no MBS telehealth item numbers for GP consultations however, a GP can claim a Medicare benefit if they accompany the patient during a video consultation with a specialist (this is in addition to the specialist telehealth specialist claim).
- Specialists, optometrists, nurse practitioners, midwives, practice nurses, Aboriginal and Torres Strait Islander health practitioners or Aboriginal health workers can also claim Medicare benefits if they accompany the patient during a video consultation with a specialist.
- Telehealth specialist services can be provided to patients when there is no patient-end support service provided.
- In circumstances where a CheckUP outreach consultation is substituted by a telehealth consultation performed at a Queensland Health facility there is the potential for transfer of costs from Commonwealth funded programs to Queensland Health.

Modelling of telehealth substitution of CheckUP services

- Net cost reductions increase with an increasing rate of substitution of telehealth for face-to-face delivery modes.
- In some cases, telehealth substitution (notably general practice and podiatry) have a cost reduction under the modelled conditions.
- In many health practitioner types, regardless of the substitution rate, telehealth did not result in a cost reduction under the modeled conditions.
- In some cases, (for instance psychiatry) it is very likely that telehealth will result in cost reductions, but only under radically different funding conditions.
- For telehealth substitution of outreach services across a wide range of practitioner types to be economically sensible, **new and innovative approaches to funding are needed.**
- The presented models need to be considered with respect to the assumptions and limitations outlined in this report.
- Clinician acceptance of the remuneration offered under the models also needs to be considered.

Substitution of face-to-face outreach services with telehealth

Telehealth can help reduce the need for travel – whether that involves a patient travelling to see a health care provider face-to-face (FTF); or a provider or multi-disciplinary team (MDT) travelling to a remote site to conduct an outreach clinic. Telehealth not only reduces the need for travel but also reduces the associated cost and inconvenience. Telehealth is being used by many specialties as an alternative method of delivery health care services which traditionally may have only ever been available face-to-face.

Organisation of telehealth services

Most commonly telehealth is used to complement face-to-face services (e.g. outreach visits). It is considered "best practice" to provide healthcare using a combination of face-to-face and telehealth as opposed to a complete replacement strategy of outreach services. The suitability and proportion of telehealth substitution for face-to-face consultation varies by specialty, complexity, and case mix. Suitability for telehealth is determined by the healthcare provider.

Consultations which are not completely reliant on physical assessment lend themselves well to telehealth. Hence, specialties such as psychiatry, geriatrics, endocrinology and nephrology are considered highly substitutable; as are nurse-led services such as heart failure drug titration and diabetes education as well as allied health services assessments and therapy such as physiotherapy, speech pathology and dietetics. For these services, telehealth substitution could potentially be up to 75% of consultations. Telehealth is less likely to be used if consultations require a procedure (e.g. surgery, minor surgery, endoscopy, bronchoscopy or biopsy) or requires fixed equipment (e.g. optometric eye examination).

The type of consultation is also an important determinant in the organisation of telehealth services and again is determined by the healthcare provider. For example, some clinicians prefer the initial appointment with a patient to be face-to-face and then use telehealth for follow-up appointments. The complexity of the consultation is also a determinant of substitutability. Complex cases which require detailed discussions and/or physical assessment may be best done face-to-face. Whereas, simple consultations, such as; repeat prescriptions, review of test results and post-surgical follow-up are more amenable to a telehealth service.

If physical assessment is required − provided that appropriate support staff are available at the patient-end − then telehealth can also be an effective consultation technique. For example, for an effective rheumatology teleconsultation, our experiences have shown that a staff member trained in joint count assessment is needed at the patient-end. Similarly, ante-natal consultations have proven to be effective when there is a midwife with the patient to assist during a teleconsultation

with an obstetrician. The quality of geriatric consultations can be improved by having a nurse-led comprehensive geriatric assessment performed prior to the teleconsultation.

The patient-end support staff may be a local medical officer, nursing, allied health or Indigenous health worker. Involvement of the patient-end support staff has ancillary benefits because the delivery of care becomes a much more collegiate effort — local health care providers are included in the specialist consultation and this enhances continuity of care, clinical communication and skills development in remote areas.

Other configurations of substitution are possible, including the combination of telehealth and face-to-face outreach clinics by a MDT. For example, on occasions some members of the MDT (e.g. nursing or allied health) may travel to the remote site whereas, other members may remain at their primary health service and consult with patients by telehealth. This works well when patient-end support staff cannot accurately undertake a physical examination or suitable equipment (e.g. ultrasound machine, spirometer, audiometer, tonometer) is not available at the patient end and is instead transported by the outreach team.

In some circumstances, telehealth may be the only option available for delivering patient care (e.g. due to distance, time or inability to travel). In these circumstances, the decision to use telehealth is usually based on necessity rather than choice.

Case studies

This section presents four case studies to demonstrate implementation strategy, substitution rates, time frames and cost implications that have resulted from telehealth substitution for outreach services in actual telehealth services. Two of these case studies are from our experiences in implementing telehealth,the third case study is from Veteran's Affairs (VA) in the United States – a large health service and telehealth service provider and the fourth case study is for a store-and-forward dermatology service in Australia.

Case study 1: Queensland Telepaediatric Endocrinology Service

This case study demonstrates a staged introduction to telehealth substitution of outreach clinics. Initially, half of the outreach clinics were substituted with telehealth and with greater acceptance of telehealth over time, the number of outreach clinics was further reduced. The service is more responsive with ad-hoc urgent cases able to be seen by telehealth and an increase in the number of available clinics.

In Queensland, a regular paediatric diabetes outreach program has been provided to selected regional hospitals by staff from the Lady Cilento Children's Hospital (and formerly the Royal Children's Hospital). At inception of this service, the outreach visits involved a paediatric endocrinologist and diabetes nurse educator travelling (4 times per year) to a regional hospital to

provide a face-to-face clinic. These outreach clinics involved at least two full days – accounting for travel and time away from the hospital.

Telehealth clinics were introduced as a substitute for some of the outreach clinics. Initially, the telehealth clinics occurred every two months which resulted in the number of outreach trips by the paediatric endocrinology team being reduced to twice per year. Additional telehealth clinics for ad-hoc urgent cases were also provided.

One year later, given the positive response to the routine telehealth clinics, the visiting outreach service was reduced to once per year. In this example, the travel requirements were reduced by 75%, whilst the frequency of clinics available at the remote site increased, giving regional clinicians and their patients a much more responsive service.

	Original schedule	**Current schedule**
Outreach visits to remote site	4	1
Telehealth clinics	0	5
Total clinics per year	**4**	**6**

Case study 2: Queensland Child and Youth Mental Health Service

This case study demonstrates how a combination of telehealth and face-to-face services are organised to provide a highly responsive mental health service.

A child and youth mental health team provided an outreach service to eight small regional towns at least twice a year. Outreach clinics comprised individual consultations with families; joint consultations with regional clinicians; team meetings and case discussions; and training. The MDT included a senior psychiatrist, clinical psychologist and nurse coordinator. Every outreach clinic required 2-3 full days depending on the regional location. When telehealth clinics were first introduced about 10 years ago, the number of visits was reduced to an annual outreach clinic with the addition of weekly telehealth clinics between the MDT and local mental health service. In this example, the need for travel by the specialist team was reduced significantly, whilst access to the specialist increased to a weekly clinic by telehealth. The weekly clinic schedule ensured that local clinicians had the opportunity to present cases, and receive advice and support from the specialist team in Brisbane. In addition, referring sites had access to a direct number to the service

coordinator who provided initial advice and liaised with other specialists within the team. The service is highly responsive and well regarded by regional mental health services.

	Original schedule	**Current schedule**
Outreach visits to remote site	16	8
Telehealth clinics	0	45
Total clinics per year	**16**	**53**

Case study 3: Veterans Affairs, White River Junction, Vermont, USA [1]

This case study demonstrates the use of telehealth predominantly for allied health services. This service has only been able to realise small rates of substitution of telehealth for face-to-face consultations. However, as the health service also funds patient travel they have been able to realise cost savings with the introduction of telehealth.

The Veterans Affairs (VA) healthcare system has been actively engaged in broadening the application of telehealth to increase access to services for its aging and often rural population. The White River Junction VA service is an integrated care provider that has offered video consultations for the last eight years. The alternative to video consultation is for the patient to travel to the VA medical centre for a face-to-face consultation. Patient travel is subsidised by the VA for low income earners.

At White River Junction VA hospital, telehealth has been used predominantly in mental health (46% of all telehealth occasions of service), physiotherapy (23%), podiatry (13%), occupational therapy (2.6%) and dietetics (1.9%). They also perform relatively small numbers of consultations performed in speech therapy, geriatrics, and otolaryngology.

For this service, telehealth activity accounts for less than 3% of face-to-face activity and has resulted in travel savings of $63,000 (3.5%) per annum.

[1] Adapted from Russo JE, McCool RR, Davies L *VA Telemedicine: An analysis of cost and time saving*, 2016, Telemedicine and e-Health, Vol. 22:No. 3

Case Study 4: Tele-Derm National: Store-and-forward teledermatology [2]

This case demonstrates the use of store-and-forward technology for a telehealth consultation.

Tele-Derm National is a store-and-forward teledermatology service for rural GPs. The service allows GPs to submit a dermatology case online via the Tele-Derm website. GPs register for access to the service via the Rural and Remote Medical Education Online (RRMEO) website (accessible at www.rrmeo.com).

GPs interested in obtaining advice on the diagnosis and management of skin disease can upload a case by submitting a digital photo of affected skin and a patient history. A specialist dermatologist examines the case and reports back to the GP with diagnosis and/or treatment options. All patient cases are de-identified at the time of submission to Tele-Derm National by their GP. Patient consent for their images and history to be posted on the Tele-Derm National website is gained by the referring clinician.

A consultation may involve iterative communication between the dermatologist and the GP - for example, additional case history, provision of histopathological reports or additional photographs may be requested by the dermatologist. The dermatologist may also request additional investigations - for example, biopsy or wound swab for culture.

During a 12-month period in 2012, 406 cases were submitted to the service. The average time from submission of a case to Tele-Derm and the Tele-Derm dermatologist reply was 5.5 hours. The dermatologist recommended referring the patient to another medical specialist (paediatrician, medical physician, surgeon or dermatopathologist) in 7% of cases. A face-to-face dermatology consult was recommended in 26 cases (6.4%). There were 20 cases (4.9%) which could not be managed by Tele-Derm. In the remaining cases (approximately 324) the dermatologist was able to provide treatment and management advice to the GP.

The Tele-Derm national service is funded by the Australian Government's Department of Health, Rural Health Outreach Fund (RHOF).Ancillary services such as a dermatology education and a discussion forum are also available through the Tele-Derm National website.

Practical requirements

Decisions concerning how and when telehealth is used as a substitute for face-to-face consultations will depend upon a variety of factors including degree of clinical suitability, infrastructure

[2] Adapted from Byrom, L., Lucas, L., Sheedy, V., Madison, K., McIver, L., Castrisos, G., Alfonzo, C., Chiu, F. and Muir, J. (2015), *Tele-Derm National: A decade of teledermatology in rural and remote Australia*. Australian Journal of Rural Health

availability and readiness, the clinician's willingness-to-practice, availability of appropriately trained patient-end support staff and availability of funding.

Degree of clinical suitability for telehealth

When considering the use of telehealth it is necessary to consider what proportion of cases can be appropriately managed via telehealth versus face-to-face whilst on outreach. This proportion will change depending on the specialty, type of consultations (new *versus* review) and case mix (consultative *versus* procedural) of referrals. Significant re-organisation of a service is required to ensure telehealth appropriate cases and face-to-face appropriate cases are grouped accordingly, thereby allowing an outreach clinic to be substituted with telehealth. For savings to be realised, entire clinics would need to be substituted with telehealth.

Other clinical considerations include:

1. Is there a need for physical assessment? If yes, can this be done by a patient-end support staff? Is additional training required for the support staff?
2. Will certain tests/procedures be required? Can these be done locally and the results shared with the telehealth provider?
3. Is the health care provider familiar with this patient i.e. a new referral or follow-up (review) consultation?
4. Has the health care provider identified the patient is suitable for a teleconsultation?

Infrastructure readiness

When telehealth substitution is being explored, then certain technical requirements need to be met. [3] Most notable is the availability of videoconferencing (VC) equipment. Since many health practitioners practice in public hospitals, one option is to use the existing VC infrastructure within the state health departments to provide the specialist-end VC endpoint. If the patient-end is not within a public hospital then the facility will need to be equipped with VC equipment before a telehealth consultation can take place. The quality of VC is an important consideration. For complex consultations high-end VC is often preferred over social media applications. In addition to VC equipment, an appropriate telecommunication network with Internet connectivity is also required.

Further infrastructure requirements that need to be considered are:

- What videoconferencing (VC) capabilities are available (hardware or software options available)?
- Are the VC capabilities interoperable between specialist end and the patient end?
- Does the patient-end have adequate access to a reliable telecommunication network? Will this network sustain a videoconference call of appropriate quality? [4]
- Access to health department VC networks may be a viable option but consideration also needs to be made for practitioners wanting to consult from private facilities.
- What clinical information is being shared e.g. video, X-rays, vital signs, physical observations, auscultation, pathology results, ECG, still photographs?
- Are peripheral devices necessary for a telehealth consultation e.g. dermoscope, spirometer, video otoscope, fundus camera?
- Is there an appropriate physical environment for video-consultations (similar features of a standard consultation room with attention on privacy, lighting, acoustic dampening and sound proofing)?
- Shared medical records – a process is required for the transmission of information between the interacting sites in a private and secure manner.

[3] Detailed technical requirements outlined in the Centre for Online Health report *Telehealth Business Case, Advice and Options* prepared for the Commonwealth Department of Health in 2011 prior to the introduction of MBS item numbers for video consultations and available at http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/E9F2448C7C016735CA257CD20004A3AE/$File/UniQuest%20Telehealth%20Business%20Case%20Advice%20and%20Options.pdf

[4] Generally considered to be 384 Kb/s upload speed

Personnel

Telehealth consultations involve more than one site and therefore careful planning with the participating sites needs to occur to ensure that the roles and responsibilities of each site are clearly defined.

- Is support staff available with the necessary skills to assist with a telehealth consultation? These may include technical skills and/or clinical experience if involved in the consultation process.
- Willingness to practice: are the clinicians willing and able to provide telehealth services? Clinician attitudes play a very important role in the utilisation of telehealth. [5,6] Even in circumstances where telehealth is technically feasible, negative clinician attitudes can obstruct the uptake of telehealth.
- The role of the clinical champion is often referred to as an important driver. However, too much reliance on clinical champions may be risky if looking for widespread adoption.

Funding model

Whilst there are savings to be made in regards to reduced outreach travel costs; the actual costs of providing telehealth (equipment, telecommunications, staffing) also need to be considered. MBS funding for telehealth excludes patient-to-general practitioner, patient-to-allied-health and patient-to-nurse consultations. Hence, alternative funding (e.g. out-of-pocket payment, activity-based-funding, other government funding schemes) models are needed to support these consultations.

- Is there a funding model to support telehealth consultations?
- Does telehealth result in a financial disincentive for health practitioners?

Key findings

- The use of telehealth requires substantial reorganisation of conventional models of health service delivery.
- Telehealth is best used in conjunction with face-to-face outreach services. Hence, should not be treated as a complete replacement strategy for visiting outreach services.
- When planning a program which includes telehealth and face-to-face outreach, case mix needs to be considered, to ensure that patients are allocated to the most appropriate clinic.

[5] In a recent CheckUp survey only 8% of provider were planning to use telehealth

[6] Wade VA, Eliott JA, Hiller JE. *Clinician acceptance is the key factor for sustainable telehealth services*. Qual Health Res. 2014 May;24(5):682-94.

- The allocation of patients to either face-to-face or telehealth clinics should be done purposely so that the most efficient method is used — for example, outreach clinics could be reserved for complex cases which require detailed discussions and/or physical assessment.
- Review of existing (known) cases may be more appropriate for telehealth. Depending on the discipline, some health care providers may choose to reserve new cases for the outreach clinic and all reviews for the telehealth clinic.
- Ad-hoc cases reviewed by telehealth may be an appropriate means to get timely advice from a specialist.
- Suitability for telehealth is best determined by the healthcare provider.
- Funding models, degree of substitutability of face-to-face with telehealth, travel savings, cost of infrastructure, cost of telecommunications, cost of additional equipment and cost of additional staff required for a teleconsultation need to be considered on a case-by-case basis to determine if telehealth will result in cost savings.
- For telehealth to result in cost savings full clinics would need to be substituted with telehealth.
- Appropriate infrastructure (consultation room, videoconference equipment, telecommunications network) is needed for telehealth.
- Peripheral devices and the ability to transmit ancillary information are sometimes needed for telehealth.
- Patient-end support staff are often required for a successful telehealth consultation.
- Patient-end support staff may require telehealth specific training.
- A healthcare provider's willingness-to-practice is a determinant of telehealth substitution.
- Funding models need to be identified particularly for services which are not supported by MBS payments.

Funding of outreach health services in Queensland

This section describes the various funding arrangements for outpatient health services in rural and remote Queensland. Outreach services are currently funded by a combination of Commonwealth Government funding programs (administered by CheckUP), Medicare benefits funding via fee-for-service payment to eligible service providers, Queensland Health's activity based funding (ABF), the patient travel subsidy scheme (PTSS) and out-of-pocket payments made by the patient.

Examples are presented to illustrate different funding arrangements for the provision of outpatient health services. These examples examine provision of services through outreach and telehealth models.

CheckUP funding programs

In 2014-2015, CheckUP dispersed $15.2 million of Commonwealth Department of Health funds to support outreach health services in Queensland. The resultant activity was over 12,926 outreach visits and 122,959 outreach consultations.

CheckUP's outreach services are funded from four programs:

1. Rural Health Outreach Fund (RHOF),
2. Medical Outreach Indigenous Chronic Disease Program (MOICDP),
3. Healthy Ears – Better Hearing, Better Listening (HE-BH, BL) Initiative and
4. Visiting Optometrists Scheme (VOS)

Each of these programs has a specific focus.

The RHOF focuses on chronic conditions such as: maternity and paediatric health, eye health, mental health, support for chronic disease management and more recently women's health. The RHOF now provides services that were previously funded under the Medical Specialist Outreach Assistance Program (MSOAP), Maternity Services Program (MSOAP – MS) and the Rural Women's GP Services (RWGPS).

The MOICDP aims to increase access to multidisciplinary health services to Aboriginal and Torres Strait islander people specifically in the early detection, treatment and management of chronic disease, such as: diabetes, cardiovascular disease, chronic respiratory disease, chronic renal (kidney) disease and cancer. The MOICDP now provides services previously funded under the Medical Specialist Outreach Assistance Program - Indigenous Chronic Disease (MSOAP – ICD)

Program and the Urban Specialist Outreach Program (USOAP) and include support for the treatment of chronic conditions, such as mental health disorders.

The Healthy Ears, Better Hearing, Better Listening Initiative also known as the Better Ears Program aims to improve the ear health of Indigenous children and young people (0-21 years) through provision of outreach services according to location and services types of greatest need. This program builds on existing outreach services by way of incorporating an ear and hearing focus to current programs**.**

The VOS provides access to optometric services to those in rural and remote locations without easy access to such specialist services.

All CheckUP outreach service programs support services currently provided by:

- Specialist medical services
- Allied health professionals
- Nursing support
- Combination of eligible services
- Outreach GP services.

In order to support the programs, funding is provided for:

- Coordination and administration support
- Travel expenses
- Cultural awareness and safety training for participating outreach service providers
- Upskilling and training
- Professional support associated with outreach services.

All programs aim to support increased access to much needed health care services by reducing the financial disincentives often associated with Outreach service delivery. All programs are supported by a regional approach to service planning, coordination and implementation.

Eligible expenses to outreach service providers

CheckUP fund out-of-pocket expenses incurred by visiting health professionals in delivering outreach services. Eligible expenses include:

- Travel costs including; charter flights, commercial airfares, car hire, mileage for hire car, mileage for use of personal car, taxi hire
- Accommodation
- Meals and incidentals allowance
- Facility fee: hire of consultation rooms in which to conduct outreach clinic

- Administration support: administrative costs associated with the delivery of outreach services, such as the organisation of appointments, processing of correspondence and follow up with patients, at the outreach location
- Professional support: Informal support provided by the visiting health professional to the general practitioner and/or other local health for example, lunchtime meetings and/or telephone/email support once the health professional has returned to their principal practice.
- Absence from practice allowance: a payment made to a non-salaried private health professionals for time spent travelling to and from a location where they are providing a service
- Backfilling (public specialists only): the salary costs of backfilling salaried medical staff who provide approved outreach services.
- Workforce support: Under exceptional circumstances, financial support (at sessional rates) may be provided to private health professionals who provide outreach in RA4 (remote) and RA5 (very remote) to mainly Indigenous communities. A workforce support payment may be paid in circumstances where access to Medical Benefits Schedule (MBS) payments are not assured and/or patient compliance with appointments is uncertain. Medical professionals who receive a workforce support payment are also eligible to receive payments such as the Absence from Practice Allowance.

Medicare funding to outreach service providers

Eligible service providers are able to claim MBS payment on fee-for-service basis whilst undertaking CheckUP administered outreach services. The preferred option is for CheckUP outreach providers to bulk bill so there is no gap payment for the patient. Receipt of a workforce support payment precludes a service provider from also claiming a MBS payment.

Telehealth policy context for CheckUP funding programs

Appropriate use of Commonwealth funding is described in program specific service delivery standards. The service delivery standards for RHOP, MOICDP, HE; BH, BL and VOS all support the use of telehealth for service delivery (Table 1). It should be noted that the telehealth is described in the service delivery standard as a *supplemental* means of delivering health care and therefore complete replacement of face-to-face visits with telehealth may not be supported. The combination of face-to-face and telehealth is considered best practice.

The VOS service delivery standard does not directly advocate the use of telehealth. This is presumably due to low substitutability of face-to-face optometry services with telehealth.

Table 1. Telehealth service delivery standards for CheckUP administered funding programs

Funding program	Service delivery standard
Rural Health Outreach Fund (RHOF)	The Fund supports the use of telemedicine services as a supplement to usual face-to-face consultations between patients and health professionals. The Fund does not support the capital costs associated with the establishment of telemedicine services but may cover costs, such as hire of venue and equipment, associated with consultations using this medium. [7]
Medical Outreach Indigenous Chronic Disease Program (MOICDP)	The MOICDP supports the use of telemedicine services as a supplement to usual face-to-face consultations between patients and health professionals. The MOICDP does not support the capital costs associated with the establishment of telemedicine services but may cover costs, such as hire of venue and equipment, associated with consultations using this medium. [8]
Healthy Ears – Better Hearing, Better Listening (HE-BH,BL) Initiative	The Healthy Ears - Better Hearing, Better Listening Program supports the use of telemedicine services as a supplement to usual face-to-face consultations between patients and health professionals. As with the MOICDP, Healthy Ears - Better Hearing, Better Listening Program does not support the capital costs associated with the establishment of telemedicine services but may cover costs, such as hire of venue and equipment, associated with consultations using this medium. [9]

Medicare Benefits Schedule (MBS) for telehealth

This section describes the MBS for telehealth that could be used by CheckUP's service providers who perform consultations by telehealth.

Key points

- MBS telehealth item numbers are available for specialist video consultations.

7 Australian Government Department of Health Rural Health Outreach Fund Service Delivery Standards 2012
8 Australian Government Department of Health Medical Outreach - Indigenous Chronic Disease Program Service Delivery Standards 2012
9 Australian Government Department of Health Healthy Ears - Better Hearing, Better Listening Service Delivery Standards 2013

- The same criteria (e.g. valid referrals) that apply to Medicare claims for face-to-face consultations apply to telehealth consultations.
- Additional criteria apply to Medicare claims for telehealth. Namely, the patient and specialist must be:
    - At least 15km apart
    - Not in the RA1-Major Cities geographical classification (this ruling does not apply to residential aged care facilities or patients of Aboriginal Medical Services)
- There are no MBS telehealth item numbers for allied health consultations.
- There are no MBS telehealth item numbers for nursing consultations.
- There are no MBS telehealth item numbers for GP consultations however, if a GP can claim a Medicare benefit if they accompany the patient during a video consultation with a specialist (this is in addition to the specialist telehealth specialist claim).
- Specialists, optometrists, nurse practitioners, midwives, practice nurses, Aboriginal and Torres Strait Islander health practitioners or Aboriginal health workers can also claim Medicare benefits if they accompany the patient during a video consultation with a specialist.
- Telehealth specialist services can be provided to patients when there is no patient-end support service provided.

Specialist services

The Medicare Benefits Schedule provides item numbers for video consultations with specialists.[10]

There are six stand-alone MBS item numbers (Table 2). These are for initial consultations of less than 10 minutes duration.

Table 2. Stand-alone telehealth MBS items for short (<10 minute) consultations

Telehealth MBS Item	MBS Group
113	GROUP A3 – SPECIALIST ATTENDANCES
114	GROUP A4 – CONSULTANT PHYSICIAN

[10] Specialist, consultant physician, consultant occupational physician, pain medicine specialist/consultant physician, palliative medicine specialist/consultant physician or neurosurgeon as defined by the *Health Insurance Act 1973*

384	GROUP A12 – CONSULTANT OCCUPATIONAL PHYSICIAN ATTENDANCES
2799	GROUP A24, SUBGROUP 1 – PAIN MEDICINE ATTENDANCES
3003	GROUP A24, SUBGROUP 3 – PALLIATIVE MEDICINE ATTENDANCES
6004	GROUP A26 – NEUROSURGERY ATTENDANCES

In addition to the stand-alone item numbers, there are a range of item numbers that must be associated with a consultation item number (Table 3). The consultation item number is the same as would be used for a face-to-face consultation. The remuneration for the telehealth MBS item is (in most instances) 50% of schedule fee for the associated consultation item claimed.

For example:

> *An endocrinologist has a follow up appointment with a patient via videoconferencing. The patient lives in Roma (a telehealth eligible area) and attends the appointment with his GP at the GPs practice. The endocrinologist can claim MBS item number 116 ($75.50) for the consultation plus the telehealth item number 112 which at 50% of the schedule fee amounts to $37.75.*

Table 3. Telehealth MBS items for use with an associated consultation item number

Telehealth MBS Item	MBS Group	Associated Items (Schedule Fee)
99	GROUP A3 – SPECIALIST ATTENDANCES	104, 105
112	GROUP A4 – CONSULTANT PHYSICIAN	110 , 116, 119, 132, 133
149	GROUP A28 – GERIATRIC MEDICINE – CONSULTANT PHYSICIAN OR SPECIALIST	141, 143
288	GROUP A8 – CONSULTANT PSYCHIATRIST ATTENDANCES	291, 293, 296, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 319, 348, 350, 352
389	GROUP A12 – CONSULTANT OCCUPATIONAL PHYSICIAN ATTENDANCES	385, 386
2820	GROUP A24, SUBGROUP 1 – PAIN MEDICINE ATTENDANCES	2801, 2806, 2814
3015	GROUP A24, SUBGROUP 3 – PALLIATIVE MEDICINE ATTENDANCES	3005, 3010, 3014
6016	GROUP A26 – NEUROSURGERY ATTENDANCES	6007, 6009, 6011, 6013, 6015
13210	GROUP T1 – MISCELLANEOUS THERAPEUTIC PROCEDURES SUBGROUP 3 – ASSISTED REPRODUCTIVE SERVICES	13209
16399	GROUP T4 – OBSTETRICS	16401, 16404, 16406, 16500, 16590, 16591
17609	GROUP T6 – ANAESTHESIA	17610, 17615, 17620, 17625, 17640, 17645, 17650, 17655,

Criteria for claiming

Generally, the same criteria (e.g. valid referrals) that apply to face-to-face billing also apply to claims for telehealth consultation. Additional criteria for telehealth claims are listed in Table 4.

Table 4. MBS billing criteria

Eligible for MBS telehealth item	Ineligible for MBS telehealth item.
The patient and specialist are required to be at least 15 kilometres by road apart at the time of the video consultation. †	
Patient must be in telehealth eligible area at the time of consultation. Eligible areas include those classified according to the Australian Standard Geographic Classification as RA2 – Inner regional RA3 – Outer regional RA4 – Remote RA5 – Very remote.	Patient within RA1- Major City (see Figure 1) †
There must be a visual and audio link between the patient and the remote practitioner i.e. the consultation	If the remote practitioner is unable to establish both a video/visual and audio link with the patient, a MBS rebate for a telehealth attendance is not payable Or telephone consultations Or email consultations
Teleradiology	Other store-and-forward [11]consultations e.g. dermatology

†Does not apply to patients in Residential Aged Care or Aboriginal Medical Services

[11] Store-and-forward is an asynchronous modality of telehealth where some information (e.g. consultations question, digital image, patient history) is sent by the referring clinician for subsequent review and response by a consulting clinician. Store-and-forward is most often used in teleradiology, teledermatology, tele-ENT (most often for screening of ear conditions form otoscopic images, audiograms and tympanograms) and teleophthalmology (most often for the diabetic retinopathy screening from fundal images of the retina).

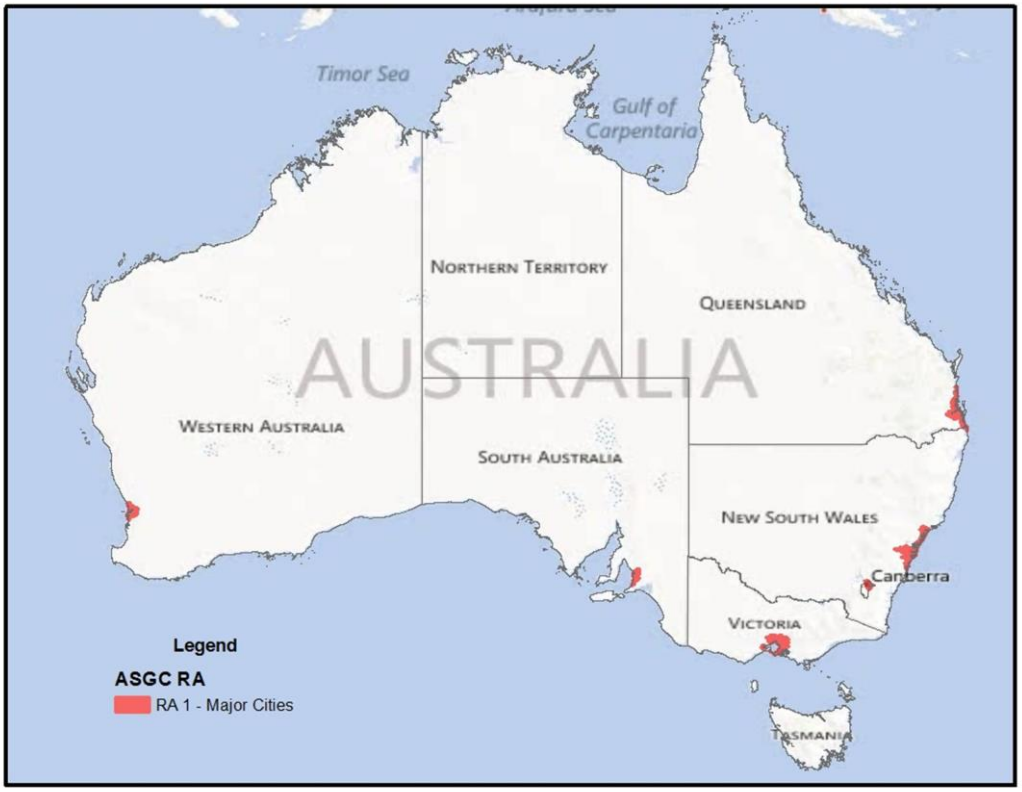


Figure 1 [12] **Telehealth eligible areas are shown in white. Ineligible areas are shaded in red.**

Patient-end support services

In addition to the MBS item numbers for specialist consultations, another specialist, general practitioner, optometrist, nurse practitioner, midwife, practice nurse, Aboriginal and Torres Strait Islander health practitioner or Aboriginal health worker can also claim a Medicare benefit if they accompany the patient during a video consultation with a specialist. A bulk bill incentive payment [13] is also available for some patient-end support service claims.

For medical officer accompanying a patient the item number is dependent on the time spent at the video consultation (Table 5). This is very similar to the item numbers for face-to-face GP

[12] Image source:
http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/111F2B7B1A055ECBCA257CD20004A3A6/$File/Telehealth%20Eligible%20Areas%20(from%201%20January%202013).pdf

[13] Bulk bill incentive items 10990 or 10991 may be billed in conjunction with the telehealth items 2100, 2122, 2125, 2126, 2137, 2138, 2143, 2147, 2179, 2195, 2199 and 2220.

consultations. However, for a GP, the telehealth item numbers provide greater benefits than the equivalent face-to-face consultations (Table 6).

A Medicare benefit is available if a practice nurse or an Australian Health Practitioner Regulation Agency (AHPRA) registered Indigenous Health Practitioner (IHP) or Indigenous Health Worker (IHW) accompanies the patient on behalf of a medical practitioner during a video consultation with specialist (Table 7). The item number and schedule fee ($32.40) is the same regardless of whether a practice nurse or IHW accompanies the patient.

Only one patient-end support service claim can be made — for example, a claim for a practice nurse cannot be made in addition to the claim for a GP patient-end support service.

Table 5. Telehealth items numbers for a medical practitioner accompanying the patient during a telehealth consultation with a specialist or consultant physician

Telehealth MBS Item	MBS Group	Location of Service
2100 ‡ 2126 ‡ 2143 ‡ 2195 ‡	GROUP A30, SUBROUP 1	At consulting rooms in a telehealth eligible area or at an eligible Aboriginal Medical Service
2122 ‡ 2137 ‡ 2147 ‡ 2199 ‡	GROUP A30, SUBGROUP 1	Other than consulting rooms such as a home visit or other institution in a telehealth eligible area
2125 ‡ 2138 ‡ 2179 ‡ 2220 ‡	GROUP A30, SUBGROUP 2	At a residential aged care facility

‡ Eligible for bulk bill incentive payments; can be claimed by a GP, specialist or consultant physician

Table 6. Comparison of telehealth and face-to-face item numbers and schedule fee for GP consults

Type	Duration	Face-to-face item number / schedule fee	Telehealth item number /schedule fee
Level A	At least 5 minutes	3/$16.95	2100 / $22.90
Level B	Less than 20 minutes	23/$37.05	2126 / $49.95
Level C	20 – 39 minutes	36/$71.70	2143 / $96.85
Level D	At least 40 minutes	44/$105.55	2195 / $142.50

Table 7. Telehealth item numbers for a practice nurse of Aboriginal health worker attending video consultations

Telehealth MBS Item	MBS Group	Location of Service
10983	GROUP M12, SUBGROUP 1	In a telehealth eligible area or at an eligible Aboriginal Medical Service
10984	GROUP M12, SUBGROUP 2	At a residential aged care facility

A Medicare benefit is available when an eligible nurse practitioner or a midwife, attend a video consultation. The nurse practitioner or midwife does not need to be under the supervision of a medical practitioner. The schedule fee ($28.30) is the same for both professions; however the item numbers are different (Table 8 and Table 9).

Table 8. Telehealth item numbers for midwives attending video consultation

Telehealth MBS Item	MBS Group	Location of Service
82150 82151 82152	GROUP M13, SUBGROUP 2	In a telehealth eligible area or at an eligible Aboriginal Medical Service

Table 9. Telehealth item numbers for nurse practitioners attending video consultation

Telehealth MBS Item	MBS Group	Location of Service
82220,82221, 82222	GROUP M14, SUBGROUP 2	In a telehealth eligible area or at an eligible Aboriginal Medical Service
82223, 82224, 82225	GROUP M14, SUBGROUP 3	At a residential aged care facility

Allied health

MBS item numbers are available for a limited number and range of allied health services. The MBS item descriptors and explanatory notes do not specifically preclude or allow these services to be delivered by telehealth. However, popular consensus is they must be delivered face-to-face. [14]

Queensland Health Activity Based Funding, telehealth incentives and MBS

In 2015/2016 Queensland Health's Hospital and Health Services (HHS) were the providers of 254 CheckUP outreach services (see Appendix A). Salaried medical officers who have substantive position at a QH Hospital and Health Service can also undertake CheckUP administered outreach clinics. This section describes how Queensland Health funds telehealth. The intention is to highlight potential impact to Queensland Health if a service provider working on a CheckUP funded program performs a video consultation from a QH facility.

Key points

- Larger QH hospitals are funded on activity under a model known as Activity Based Funding (ABF)
- Small regional and rural hospitals are block funded i.e. not funded on activity
- ABF is available for specialist video consultations
- ABF for a telehealth consultation is the same as for a face-to-face consultation
- ABF is not available for video consultations with a GP, nor for store-and-forward consultations
- ABF is payable to both the specialist-end hospital and patient-end hospital (contingent on the patient-end hospital being ABF)

[14] Nielsen I, Kirkpatrick J Allied Health Telehealth Capacity Building: Scoping Project, 2015 Available from https://www.health.qld.gov.au/ahwac/docs/telehealthreportpt1.pdf Last accessed March 2016

- The patient-end hospital is eligible for funding if the patient is accompanied by a medical officer or a nurse or allied health practitioner

Activity Based Funding

In 2012–13, Queensland adopted an activity based funding (ABF) model to fund 34 of Queensland's largest public hospitals. The remaining hospitals (small regional and rural hospitals) are block funded.

The ABF model calculates funding to public hospitals based on the volume of health care services (referred to as 'activities') they deliver multiplied by a price. The price is the product of the national efficient price (NEP) as set by Independent Hospital Pricing Authority (IHPA) and a weighted activity unit (WAU). The WAU is based on determinants such as type of activities and confounders. There is Queensland specific WAU known as the QWAU.

Consultations for outpatients attract the same ABF regardless of whether the consultation was face-to-face or a video consultation. However, telehealth funding is only available to specialist consultations (not GP consultations). Store-and-forward telehealth consultations are not currently funded.

The ABF is medical specialty specific. Further, different prices apply to new and review consultations.

For example:

> *ABF for an endocrinology consultation on a new patient is funded at $310 and a follow-up consultation at $273. Whereas, a dermatology consultation is funded at $258/$265 for a new/ follow-up consultation.*

For telehealth consultations, ABF is also paid to the patient-end hospital (provided the patient is located at an ABF funded hospital). The patient may be accompanied by a medical officer or a nurse or allied health practitioner. A different price applies to medical officers and nurses and allied health practitioners. The price list is consultation type (new/review) specific, as well as medical specialty specific (that is the medical specialty of specialist providing the video consultation).

For example:

> *If a GP accompanies a patient during a follow-up video consultation with an endocrinologist the patient-end hospital is eligible for $273 in ABF. Whereas, when the patient is accompanied by a nurse or an allied health practitioner the patient-end hospital is eligible for $217 in ABF. For a follow-up dermatology consultation, the patient-end hospital is eligible for $265/$191 in ABF when a GP/nurse accompanies the patient.*

QH are incentivising telehealth by providing an incentive payment for telehealth activities in excess of the previous year's telehealth activity at a HHS. The incentive payment is in addition to the ABF payment and available for both the specialist-end and the patient-end hospital (including ABF and non-ABF hospitals).

For 2015/2016 total incentive payments for the state are capped at $5.5m[15]. Each additional telehealth event across the HHS will be funded an amount pro-rated to the total funding and up to a maximum of $318 per event. Incentive payments will be time limited.

Medicare funding to QH service providers

Many of the telehealth services provided by QH are also eligible for a Medicare funding as per the discussion in the above section. However, in practice only a percentage of claims are made due to the administrative overhead of MBS billing. This is determined on a case-by-case basis.

Case study – Diabetes care

Purpose

To demonstrate the various models and associated funding arrangements by which health consultations can be conducted in rural Queensland.

Specialist endocrinology consultation – follow-up review for complex diabetes patient

In this case, the patient is known to the specialist and is undertaking a routine follow-up consultation for monitoring and management of diabetes. There are some difficulties with control that require specialist input.

OPTION 1: PATIENT VISITS A METROPOLITAN CENTRE WHERE A SPECIALIST ENDOCRINOLOGIST CONSULTS FACE-TO-FACE IN PRIVATE

The patient bears the costs associated with travel and potentially the loss of work time.

Medicare supports the consultation with a schedule fee payment of $75.50. The specialist may charge above the schedule fee in which case the patient bears the cost of the gap fee.

[15] Increased from $2.5million to $5.5million February 2016

OPTION 2: PATIENT VISITS A METROPOLITAN QUEENSLAND HEALTH PUBLIC HOSPITAL AND ATTENDS A SPECIALIST OUTPATIENT CLINIC

The patient bears the costs associated with travel and potentially the loss of work time. Eligible patients may receive a travel subsidy from Queensland Health Patient Travel Subsidy scheme (PTSS) which is valued at 30 cents per km travelled. Alternatively, public transport could be used to attend the appointment and costs covered by the PTSS. If the distance is great and an overnight stay is required, there is a support payment of $60 per night for accommodation.

The hospital is eligible for ABF of $273.

The endocrinologist may optionally choose to claim a Medicare benefit for the consultation with a schedule fee payment of $75.50.

OPTION 3: THE PATIENT ATTENDS A CLINIC ORGANISED BY CHECKUP WHERE THE SPECIALIST OPERATES AN OUTREACH CLINIC IN THE LOCAL COMMUNITY.

The patient bears the costs associated with travel and work down-time, which in most cases will be modest (compared to travel to a regional or metropolitan centre).

Medicare supports the consultation with a schedule fee payment of $75.50.

CheckUP bears the cost of travel expenses (transport, accommodation, meals) for the specialist endocrinologist and potentially a Workforce support payment or an Absence from practice payment or an Administrative support payment. If the cost was pro-rated across the number of patients who attended the clinic the cost per patient could reasonably be $124. [16]

OPTION 4: A TELEHEALTH CONSULTATION IS PROVIDED FROM THE PATIENT'S GP SURGERY TO A PRIVATE SPECIALIST IN A METROPOLITAN CENTRE.

The patient bears the costs of travel and work down-time (modest as in Option 3)

Medicare supports the consultation with two payments:

1. A payment to support GP involvement in a brief consultation of less than 20 minutes ($49.95) or the practice nurse ($32.40). If the consultation was bulk-billed by the GP an incentive payment ($10.85) can also be claimed. The GP may charge above the schedule fee in which case the patient bears the cost of the gap fee.
2. A payment for the specialist consultation ($75.50) and the telehealth payment ($37.75). The specialist may charge above the schedule fee in which case the patient bears the cost of the gap fee.

[16] Calculated using Physician-Endocrinology budget and activity form 2014/2015

OPTION 5: A TELEHEALTH CONSULTATION IS PROVIDED FROM A RURAL QUEENSLAND HEALTH PUBLIC HOSPITAL TO A METROPOLITAN QUEENSLAND HEALTH PUBLIC HOSPITAL SPECIALIST OUTPATIENT CLINIC

The patient bears the costs of travel and work down-time (modest as in Option 3)

There are two options for payment to the hospitals, which can be determined by the treating hospitals

OPTION 5A: THE RURAL QUEENSLAND HEALTH PUBLIC HOSPITAL IS BLOCK FUNDED

Queensland Health supports the consultation through:

- An ABF payment to the metropolitan hospital of $273

OPTION 5B: THE RURAL QUEENSLAND HEALTH PUBLIC HOSPITAL IS ABF

- An ABF payment to the metropolitan hospital of $273 Option
- An ABF payment to the rural hospital of $273 if patient is accompanied by a medical officer or $217 if patient is accompanied by a nurse.

In addition:

- Medicare supports the consultation with a schedule fee payment of $75.50 for the endocrinologist
- Medicare supports the consultation with a schedule fee payment of $49.95 if an eligible medical officer accompanies the patient.

OPTION 6: A PATIENT ATTENDS LOCAL FACILITY FOR A TELEHEALTH CONSULTATION AS PART OF A CHECKUP FUNDED OUTREACH SERVICE. THE ENDOCRINOLOGIST PERFORMS THE TELECONSULTATIONS FROM METROPOLITAN QH HOSPITAL.

In this scenario the endocrinologist is employed at the metropolitan QH hospital as a staff specialist.

This Option is a potential replacement for Option 3.

The patient bears the costs of travel and work down-time (modest as in Option 3).

CheckUP funding for telehealth consultations is not defined. However, it could be reasonably assumed that CheckUP will save on travel expenses (compared to Option 3) but will continue to pay an Administrative support payment. CheckUP may incentivise the use of telehealth with an hourly payment. Different configuration will be modelled in the *Data Analysis and Modelling* section of this report.

Medicare supports the consultation with a schedule fee payment of $75.50

Queensland Health supports the consultation through an ABF payment to the metropolitan hospital of $273 and potentially a $318 incentive payment.

Summary table

Option	Cost to patient	Cost to CheckUP	Cost to Medicare	Cost to Queensland Health
1.Patient visits private endocrinologist	▪ Travel & work down-time (significant). ▪ Gap fee (variable)	Nil	Schedule fee ($75.50)	Nil
2. Face-to-face appointment at QH specialist outpatient clinic	▪ Travel & work down-time (significant) less PTSS subsidy payment (variable)	Nil	Schedule fee ($75.50) [optional]	ABF payment ($273)
3.CheckUP outreach clinic	▪ Travel & work down-time (modest)	Expenses & support payment to service provider ($124 per patient [refer to Footnote 9])	Schedule fee ($75.50)	Nil

4.Private telehealth consultation	▪ Travel & work down-time (significant). ▪ Gap fee (variable)	N/A	Schedule fees (GP and specialist) and bulk billing incentive (up to $136.30)	Nil
5a. Telehealth consultation from a non-ABF funded rural QH facility	▪ Travel & work down-time (modest)	Nil	Schedule fee for endocrinologist ($75.50) [optional]	▪ ABF payment metropolitan hospital ($273) ▪ Incentive payments (metropolitan and rural hospital) up to $636
5b. Telehealth consultation from an ABF funded rural QH facility	▪ Travel & work down-time (modest)	Nil	Schedule fees (GP and specialist) (up to $125.45) [optional]	▪ ABF payment to metropolitan and rural hospital (up to $546) ▪ Incentive payments (metropolitan and rural hospital) up to $636
6.Telehealth consultation from a QH facility for a CheckUP funded outreach program	▪ Travel & work down-time (modest)	Support payment to service provider (unknown)	Schedule fees (GP and specialist) (up to $125.45) [optional]	▪ ABF payment metropolitan hospital ($273) ▪ Incentive payments up to $318

Option 1 is most likely to be substituted by Option 4 adding an additional GP end payment to the Medicare benefit. Option 2 is most likely to be substituted by Option 5 adding additional telehealth incentive payments to QH. Option 3 is most likely to be substituted by Option 6 - QH potentially would then incur costs for ABF and the telehealth incentive payment.

This case study has identified that in circumstances where a CheckUP outreach consultation is substituted by a telehealth consultation performed at a QH facility there is the potential transfer of costs from Commonwealth funded programs to Queensland Health.

Modelling of telehealth substitution for CheckUP services

Introduction

This section describes the modelling of cost and savings resulting from the substitution of face-to-face services with telehealth. The costs and savings are reported from the perspective of CheckUP. The activity data is actual activity from CheckUP services for the 2014-2015 financial year. [17] Seven telehealth scenarios were modelled at 25%, 50% and 75% substitution rates. A 25% substitution rate means that 25% of outreach visits were substituted with a telehealth visit. The seven models are summarised in Table 10.

Modelling telehealth substitution

Definitions, assumptions and limitations

- Costs are reported in Australian dollars.
- It is assumed clinical outcomes for face-to-face and telehealth service delivery are equivalent.
- It is assumed facilities exist to host the telehealth consultation i.e. capital expenditure for telehealth infrastructure was not included in the modelling
- For the purposes of these analyses, a *visit* was defined as a single outreach trip by a single practitioner. While several practitioners may have attended the same outreach visit, it was not possible to incorporate this in the modelling. For the purposes of these analyses, two practitioners attending the same outreach is modelled as two separate visits.
- A single year (financial year 2014-2015) of activity data was used, summarised and modelled.
- Modelling was conducted from the CheckUP perspective.

[17] Two CheckUP Excel spreadsheets were used for these analyses: (i) budgeted activity for financial year 2014-2015 ("*Outreach_Budget_FY2014-15"*); and (ii) actual visit activity for financial year 2014-2015 ("*LVRReport 2014-15*"). These spreadsheets were joined using *service number* as the common key. The resulting data set contained 12,917 observations, where each observation represented a visit by a practitioner.

- Clinician income from non-CheckUP sources (MBS or otherwise) is unknown. Hence, it was not possible to incorporate it in the modelling of telehealth scenarios. While the models do not present changes in costs from the clinician perspective, this has been explored in the case studies.
- Modelling is a 'broad-brush' approach, it cannot provide definitive information, but should be viewed as an estimate for changes that may occur in the modelled circumstances.

Table 10 Summary of the seven models / scenarios.

	Model 1	Model 2 (a)	Model 2 (b)	Model 3 (a)	Model 3 (b)	Model 4 (a)	Model 4 (b)
Workforce Support Payment	$200 per day	$120 per hour	$120 per hour	$120 per hour - Allied Health $210 per hour – General Practitioner $244 per hour – Specialist	$120 per hour - Allied Health $210 per hour – General Practitioner $244 per hour – Specialist	$120 per hour - Allied Health $210 per hour - General Practitioner No hourly rate for Specialist	$120 per hour - Allied Health $210 per hour - General Practitioner No hourly rate for Specialist
Professional Support Payment						$244 per day (specialist only)	$244 per day (specialist only)
Administration fee	$80 per day			$50 per day	$50 per day	$110 per day (specialist only)	$110 per day (specialist only)
Venue Hire and Equipment	At cost	At cost	At cost	At cost	At cost	At cost	At cost
MBS Eligibility							
	Specialist only.	Specialist only.	Specialist only.	Specialist only.	Specialist only.	Specialist only.	Specialist only.
Clinician Payments							
Assumption		Duration of consultation is assumed to be equivalent to face-to-face	Duration of consultation is assumed to be half that of face-to-face	Duration of consultation is assumed to be equivalent to face-to-face	Duration of consultation is assumed to be half that of face-to-face	Duration of consultation is assumed to be equivalent to face-to-face	Duration of consultation is assumed to be half that of face-to-face
Half day (4 hours)	$140	$480	$480	· $505 – Allied Health · $865 – General Practitioner · $1001 - Specialist	· $505 – Allied Health · $865 – General Practitioner · $1001 - Specialist	· $480 – Allied Health · $840 – General Practitioner · $177 - Specialist	· $480 – Allied Health · $840 – General Practitioner · $177 - Specialist
Full day (8 hours)	$280	$960	$960	· $1010 – Allied Health · $1730 – General Practitioner · $2002 - Specialist	· $1010 – Allied Health · $1730 – General Practitioner · $2002 - Specialist	· $960 – Allied Health · $1680 – General Practitioner · $354 - Specialist	· $960 – Allied Health · $1680 – General Practitioner · $354 - Specialist

Overview of methods

The conceptual framework for the model of telehealth substitution is shown in Figure 1. Given a fixed number of patients (N), the use of telehealth allows a fraction (r) of these patients to be treated outside of the traditional face-to-face approach. This leads to a total number of (1-r)*N face-to-face consultations and r*N telehealth consultations. Hence, the higher is the rate of substitution between face-to-face and telehealth services, the more patients are treated via telehealth. Moreover, given the structure and format of the available CheckUP data, we are initially required to work with the total number of visits by health professionals instead of the number of patients seen. To this end, as illustrated via the left branch of Figure 1, we are still able to convert the number of visits into the number of patients by observing the average number of patients seen per visit per professional service. This allows us to work out the monetary cost per visit and finally the total cost of face-to-face health service provision.

On the other hand, to estimate the total cost of the telehealth modes of service provision, we simply consider the cost per telehealth consultation and multiply this by the total number of telehealth consultations or patients seen. The cost of a telehealth consultation can vary due to a number of factors and underlying assumptions, which we detail and examine in the next section.

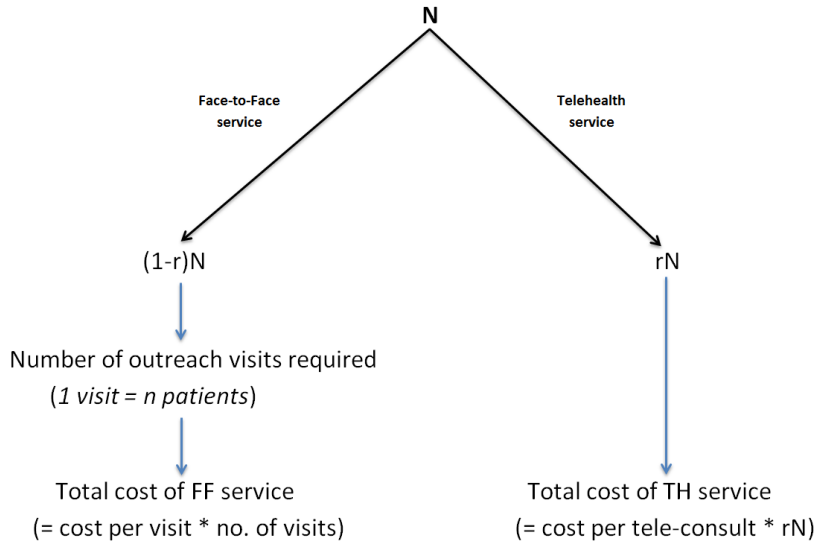


Figure 1 Conceptual framework for model of total health service costs

Total cost of health service provision

To estimate the total cost of healthcare service provision when both face-to-face and telehealth alternatives are available, we consider equation 1 which formally expresses and combines the total costs of the two alternative service delivery modes:

$$Total\ Cost = C_{FF} \times (1 - r)N + C_{TH} \times rN \qquad (1)$$

where C_{FF} is the total cost of face-to-face consultations; C_{TF} is the total cost of telehealth consultations; N is the total number of patients seen; and r is the substitution rate between face-to-face and telehealth services. The empirical value of the latter parameter is unknown and requires further research to approximate. Here, we do not go into such an exercise, and instead examine an assumed range of substitution rates, namely 0.25, 0.50, and 0.75. Overall, equation 1 represents the underlying equation of the used modelling approach and corresponding cost estimates.

To test the intuition and inner workings of the above theoretical model, we propose the following question of interest: *How does the total cost of service provision respond to the rate of substitution between face-to-face and telehealth consultations?* To answer this, we take the first derivate of the total combined cost with respect to the rate of substitution, r. Equation 2 provides the solution,

$$\frac{\partial Total\ Cost}{\partial r} = (C_{TH} - C_{FF})N \qquad (2)$$

where it can be seen that as the substitution rate between face-to-face and telehealth consultations increases, the total cost of health services decreases if, and only if, the total cost of face-to-face consultations is higher than the total cost of telehealth consultations. This result is rather intuitive.

Overview of cost estimates

The above conceptual framework and equations were used to estimate the total cost of healthcare provision under the presence of telehealth substitution. We considered seven alternative telehealth scenarios and compared the total costs of such healthcare delivery models relative to one where only the standard face-to-face mode is present. The total cost differences and net cost reductions between such alternatives are summarised by the tables presented in the Appendices.

Results

Top 50% of services

This section provides a summary for of CheckUP's service costs for

i) the top 50% of services based on frequency of visit (Figure 2) and

ii) the top 50% of services based on current cost (Figure 3).

Generally, the potential savings in service costs are found to increase with the rate of substitution between face-to-face and telehealth delivery models.

The following calculation is used to determine the cost savings:

Cost savings ($) = Current outreach services cost – Predicted service cost with telehealth substitution

When interpreting the following graphs, a positive cost saving implies it is more economical to substitute outreach services with telehealth. A negative cost saving implies it is more expensive to substitute outreach services with telehealth.

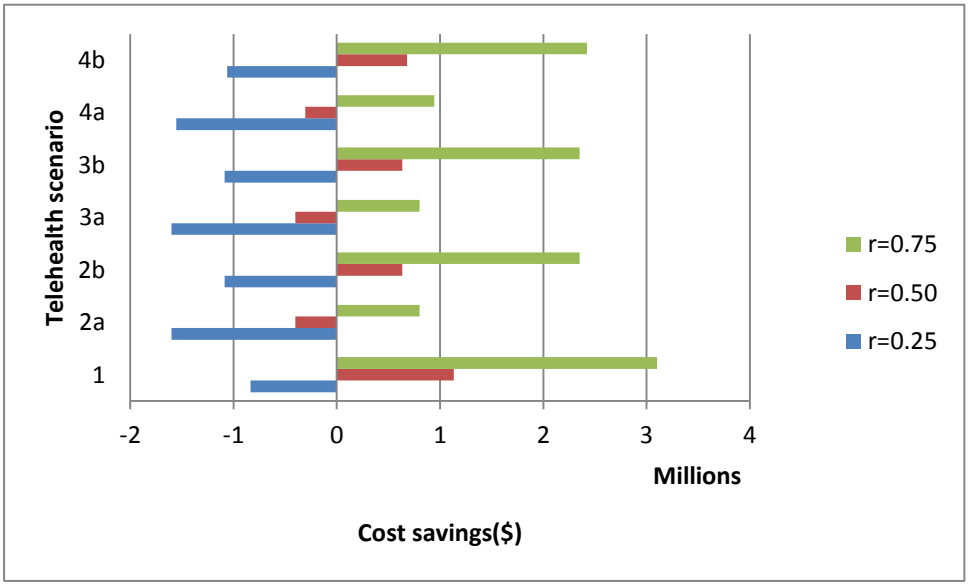


Figure 2 Modelled total (all CheckUP services in top 50% based on frequency of visit) cost savings by telehealth scenario and substitution rate (r)

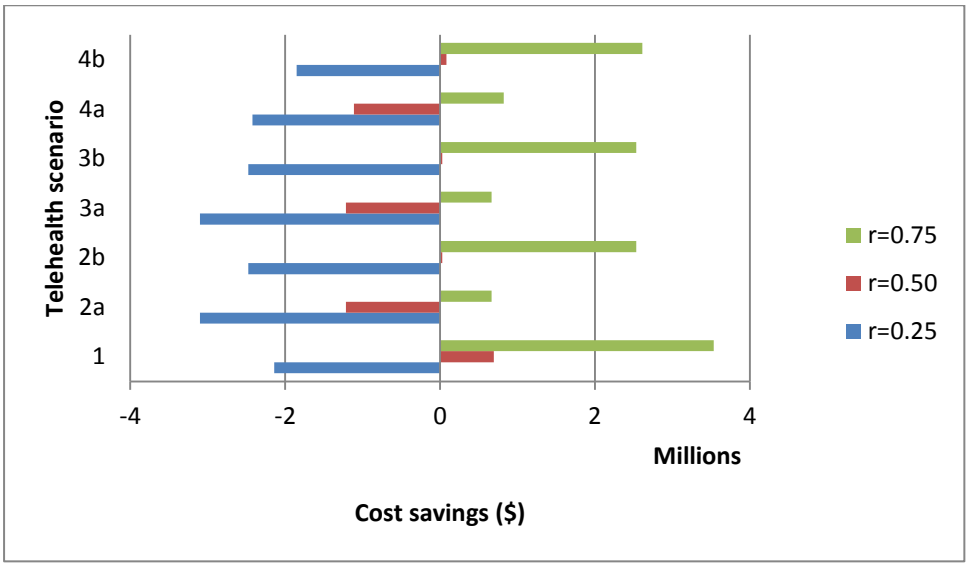


Figure 3 Modelled total (all CheckUP services in top 50% based on current costs) cost savings by telehealth scenario and substitution rate (r)

Practitioner types

This section provides modelling stratified by practitioner type for:

i) the top 50% of services base on frequency of visit and

ii) the top 50% of services based on current cost.

Substitution rates are modelled at 25%, 50% and 75%.

Again, a positive cost saving implies it is more economical to substitute outreach services with telehealth. A negative cost saving implies it is more expensive to substitute outreach services with telehealth.

25% TELEHEALTH SUSTITUTION RATE

General practitioner and podiatry (Figure 4 and Figure 6) were the only practitioner types where a cost savings was observed for telehealth substitution at 25% for all modelled scenarios. Cost savings for general practitioners ranged from $582,000 to $731,000 per annum depending on the scenario. For podiatrist the cost savings ranged from $65,000 to $148,000 per annum again depending on the scenario.

Very modest cost savings were identified for nursing services and speech pathology (Figure 5 and Figure 7) under some of the modelled scenarios. The remainder of practitioner types (Figure 4, Figure 5, Figure 6 and Figure 7) in the top 50% of activity or top 50% of current costs did not result in cost savings at 25% substitution.

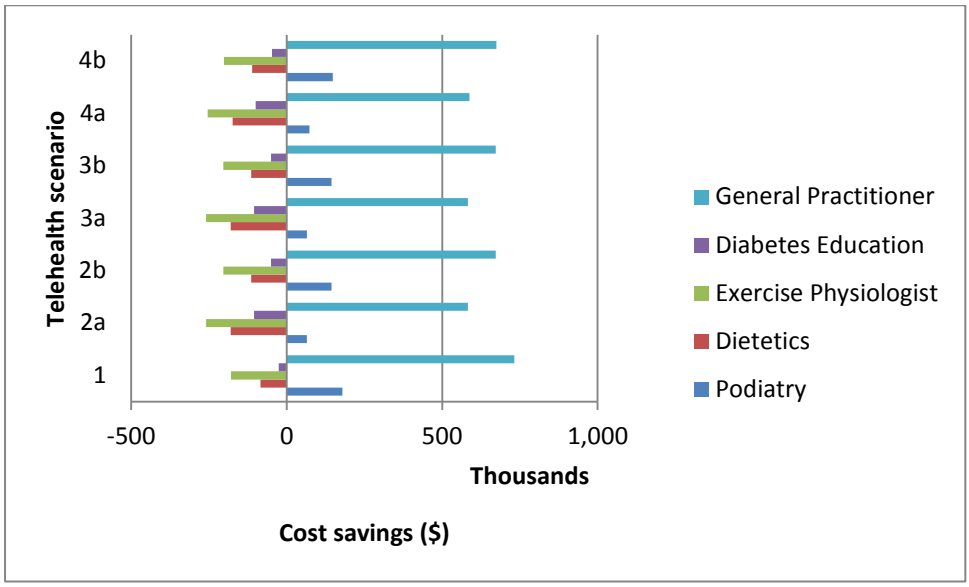


Figure 4 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.25) for the top 50% of practitioner types based on frequency of visits

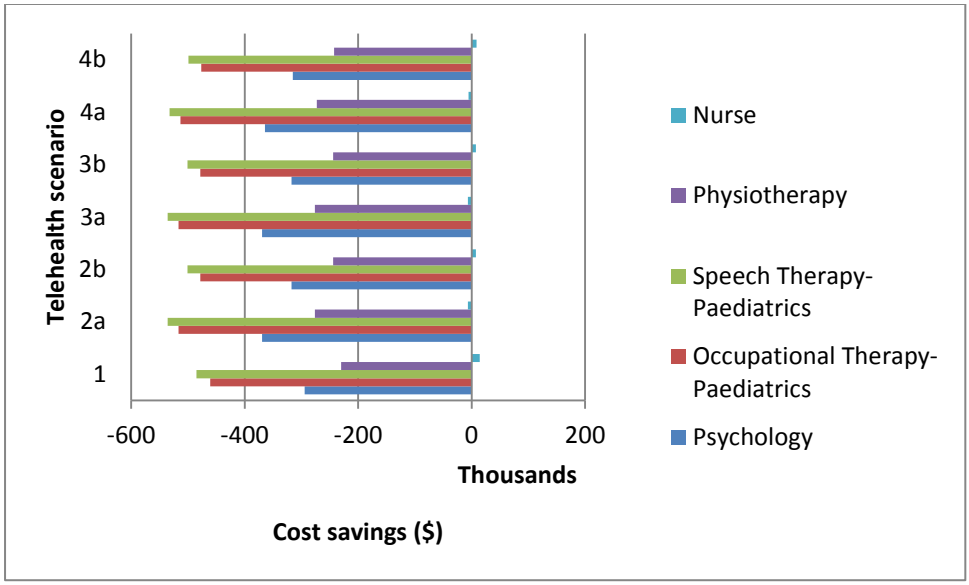


Figure 5 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.25) based on frequency of visits

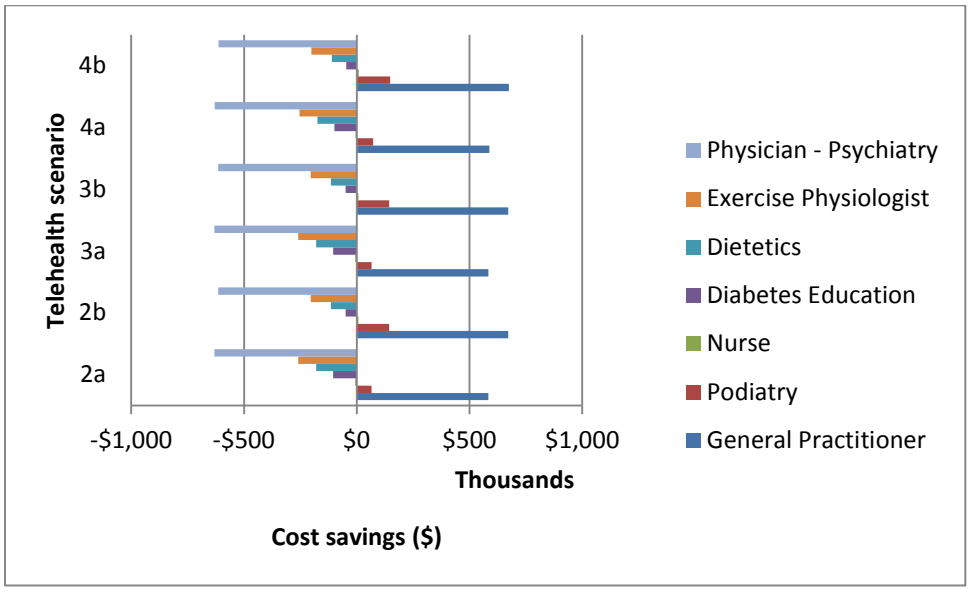


Figure 6 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.25) based on current costs

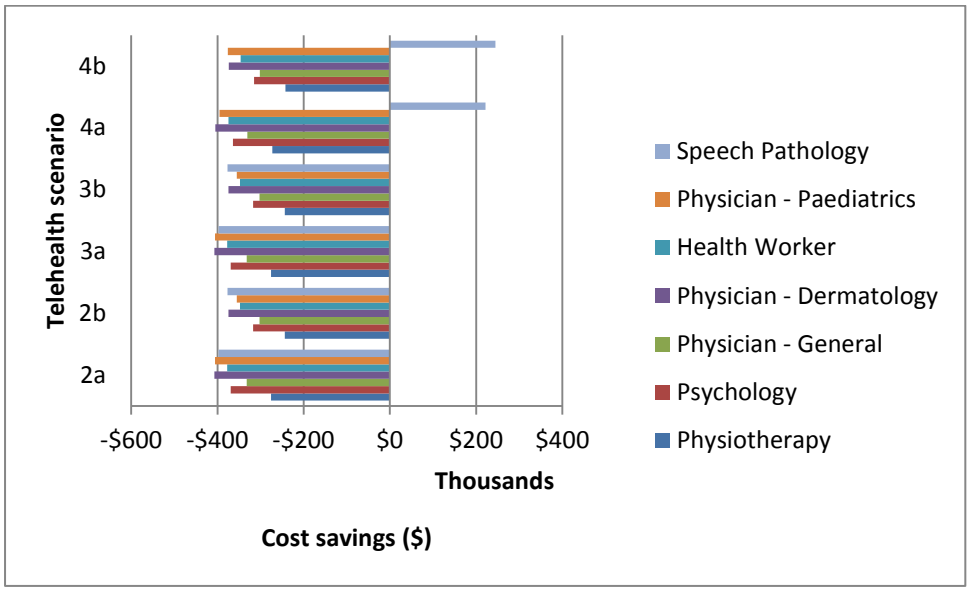


Figure 7 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.25) s based on current costs

50% TELEHEALTH SUSTITUTION RATE

At a 50% telehealth substitution rate the number of practitioner types which showed a costs savings increased. In addition to general practitioner and podiatry, diabetes education and nursing demonstrated costs saving in all scenarios (Figure 9 and Figure 9) and in some of the modelled scenarios dietetics (Figure 88) also showed costs savings. The cost savings at 50% substitution rate increased relative to the 25% substitution rate – for example, for a general practitioner the cost savings ranged from $628,000 to $926,000 per annum depending on the scenario (compared with $582,000 to $731,000 at a 25% telehealth substitution rate).

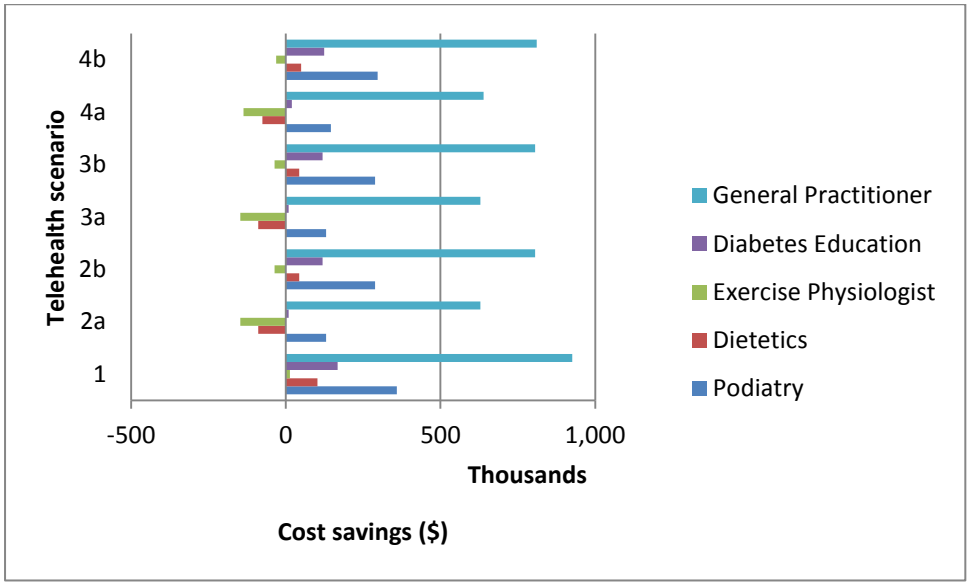


Figure 8 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.50) based on frequency of visits

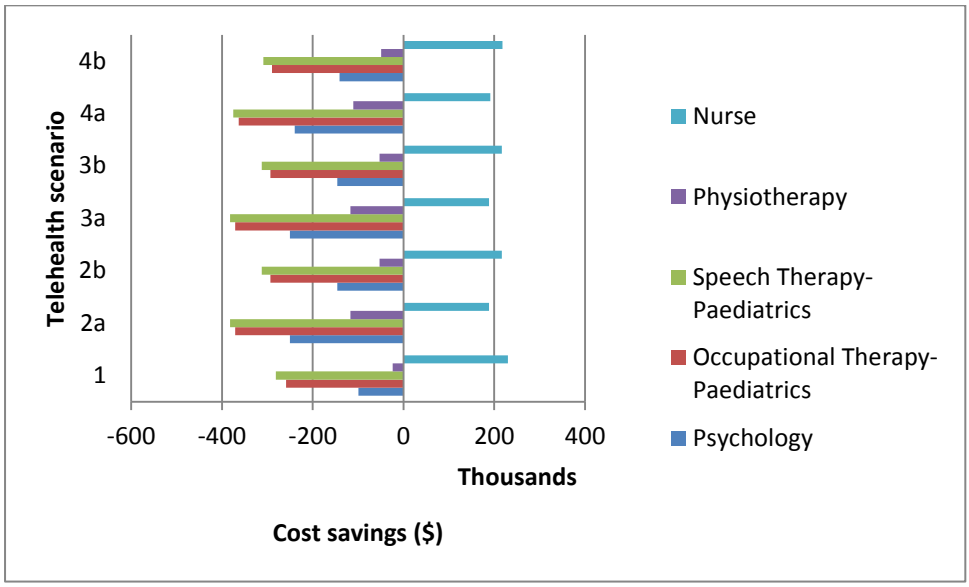


Figure 9 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.50) based on frequency of visits

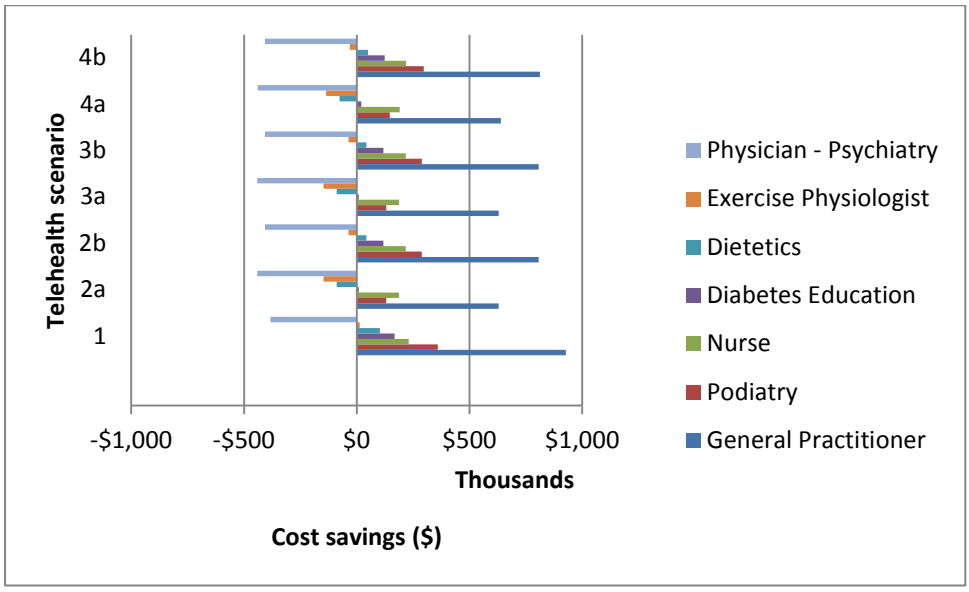


Figure 10 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.50) based on current costs

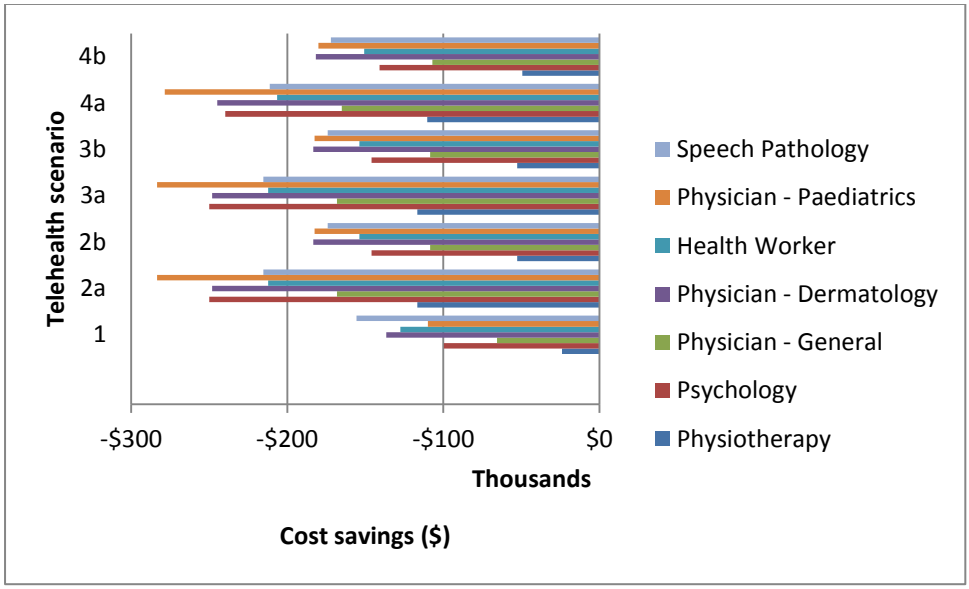


Figure 11 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.50) based on current costs

75% TELEHEALTH SUBSTITUTION RATE

At 75% telehealth substitution rate, physiotherapy (in addition the previously recognised general practitioner, podiatry, diabetes education, dietician, nurse, GP and podiatry) also showed costs savings and in all scenarios (Figure 133 and Figure 155). In some (not all) telehealth scenarios the following professional type also showed cost savings: speech pathology, exercise physiology,

Physician – paediatric, Physician- general, health worker, Physician- dermatology and psychology (Figure 122, Figure 144 and Figure 155). The modelling of the 75% telehealth substitution rate showed increased cost savings relative to 25% and 50% substitution rates – for example, saving for general practitioner ranged from $674-$1,121k, $628-$926k, $582-$731k for 75%, 50% and 25% substitution rates respectively.

Other than for a general practitioner, cost savings for medical services were only observed at a 75% substitution rate. At this rate of substitution, physician – paediatrics, physician – dermatology and physician – general, showed cost savings associated with telehealth but only in a limited number of telehealth scenarios.

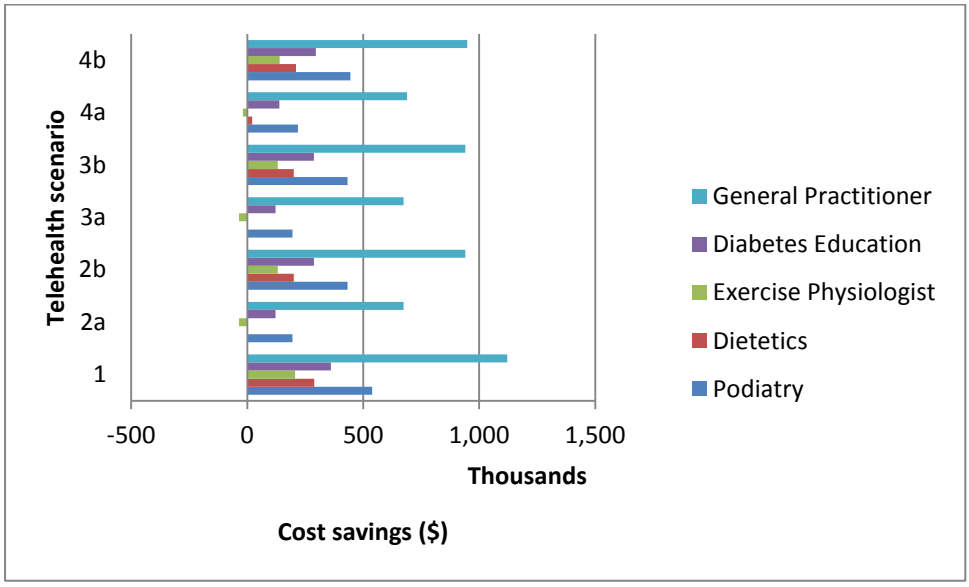


Figure 12 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.75) based on frequency of visits

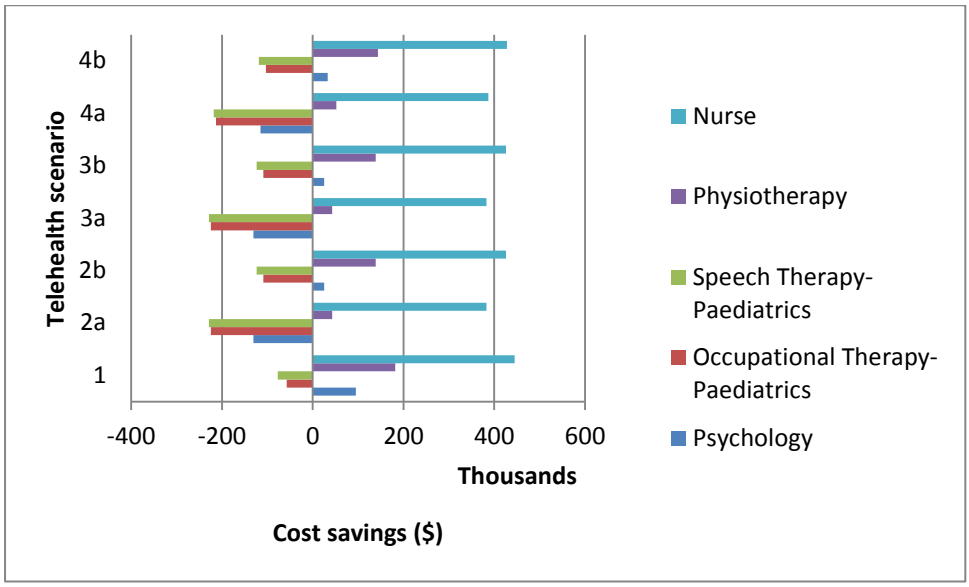


Figure 13 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.75) based on frequency of visits

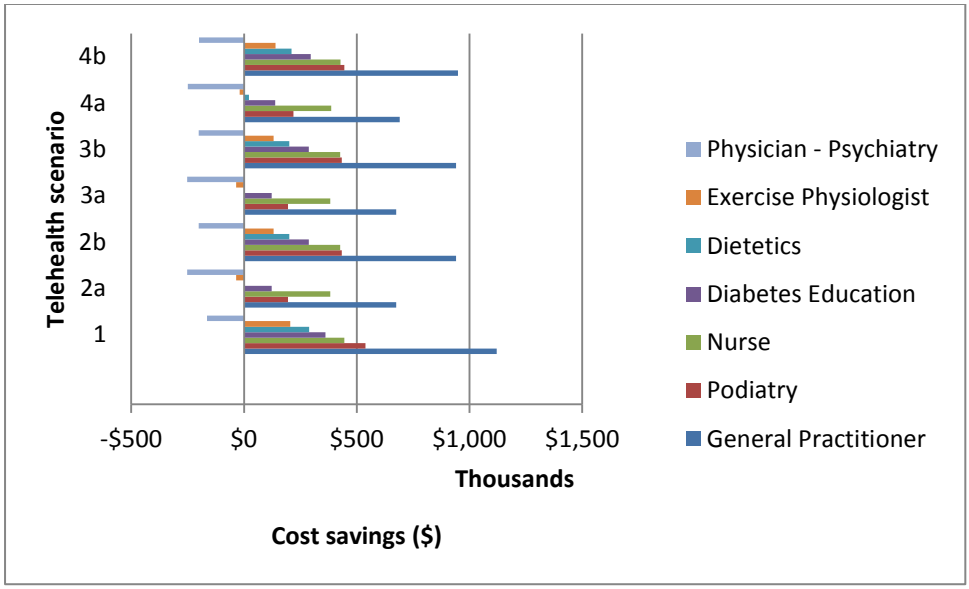


Figure 14 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.75) based on current costs

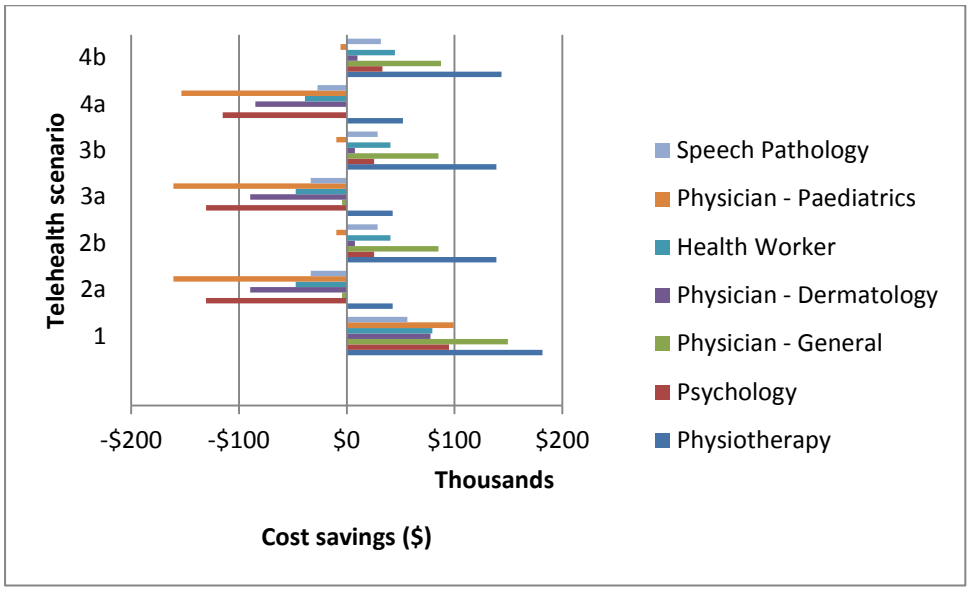


Figure 15 Modelled cost savings by telehealth scenario and practitioner type (substitution rate, r=0.75) based on current costs

No cost savings were observed for adult psychiatry (Figure 144). While the literature strongly suggests that telehealth is well suited to many psychiatry services (i.e. highly substitutable), this modelling indicates that a radically different funding model is required to make telepsychiatry economically feasible for outreach services in Queensland.

Detailed data are included in Appendices.

Summary of CheckUP activity data

Activity data was summarised and tabulated as follows:

- Frequency of visits by health professional type
- Frequency of services visits collapsed by health professional category
- Frequency of visits by provider
- Frequency of visits by health priority
- Health professional type ranked by patients seen
- Health professional type ranked by budgeted cost
- Frequency of visits by Australian Standard Geographic Classifications (ASGC) RA
- ASGC RA1 facilities by frequency of visits provided
- Frequency of visits provided in ASGC RA1 facilities by health professional type
- ASGC RA of general location for top 50% of activity
- General locations of service by ASGC RA Category for top 50% of activity

Cost factors were summarised and presented as pie charts for:

- Actual costs for the top 50% of CheckUP funded activity, by health professional type
- Actual costs for the top 50% of CheckUP expenditure, by health professional type

Results

Activity data

One hundred and sixteen health professional types were identified, with 10 of those representing 50% of the total funded activity. Podiatry was identified as having the highest number of visits by practitioner type, accounting for almost 10% of activity. Allied health accounted for 7 of the top 10 health practitioner types. Thirty health practitioner types accounted for 80% of the activity, of which 13 (43%) were allied health, 11 (37%) medical, and 6 (20%) nursing (See Appendix B).

Across all visits, allied health professions accounted for 62% of activity. Fifty percent of the activity was accounted for by four providers, with 26 providers accounting for 80% of the activity (See Appendix B).

By health priority, support for chronic disease management and diabetes accounted for 50% of activity. Of note, mental health (which is highly substitutable by telehealth) accounted for 6.3% of

activity or when combined with ancillary mental health services (e.g. counselling, social work, mental health nurse, psychology accounted for 8.2% occasions of service and 11.3% of visits. (See Appendix B).

By number of patients seen, podiatry ranked highest and accounted for 8.2% of patients, followed by general practitioner, accounting for 7.4%. Twelve health practitioner types accounted for 50% of the total patients seen, of which 6 (50%) were allied health, 3 (25%) medical, and 3 (25%) nursing (See Appendix B).

By budgeted cost, general practitioner ranked as the highest health professional type (9.4% of budget) followed by podiatry (6.1% of budget). Fourteen health professional types accounted for 50% of the budgeted cost, of which 7 (50%) were allied health, 5 (36%) medical and 2 (13%) nursing.

For all visits, by remoteness category, 31.3% of visits were provided within the major city (RA1) category, and 68.7% outside of major cities. A summary of services provided in RA1 is presented in Appendix B. These services are not eligible for MBS funding if substituted by telehealth unless they occurred in an Aboriginal Medical service or a residential aged care facility. Most of CheckUp services To RA1 locations occur in Aboriginal medical services.

For 50% of all activity, 43.5% of facilities were in RA1, with the remainder being in outer regional, remote or very remote locations. Four allied health professional types accounted for the top 50% of services provided in RA1 locations, podiatry being the leading profession with 16.1% of visits provided. Locations of the top 50% of RA1 locations are provided in Appendix B.

Overall, allied health professions were strongly represented. In the context of telehealth substitution, this is important because they would not currently be covered by MBS telehealth item numbers.

Cost factors

When viewed by the top 50% of activity, charter airfares accounted for 28% of costs, service administration support 14%, private fuel 12%, workforce support 11%, and commercial airfares 10%. Each of the other costs accounted for less than 10% of the total (see Appendix C). When viewed by the top 50% of expenditure, charter airfares accounted for 36% of costs, service administration support 12%, and workforce support 10%. Each of the other costs accounted for less than 10% of the total (see Appendix C). There was considerable variability of the distributions of costs across practitioner types, however in most cases airfares, service administration support and workforce support were important contributors. This was most notable for the medical health professional types and particularly for adult psychiatry, where charter airfares accounted for 71% of costs (see Appendix C), a discipline that has been recognised as highly substitutable by telehealth.

Appendix A: CheckUP outreach services provided by Queensland Health Hospital and Health Service districts

Health Professional	Facility	General Location	Provider Name
Nurse - Renal	Doomadgee Rural Hospital	Doomadgee	North West Hospital and Health Service
Nurse - Renal	Normanton Hospital	Normanton	North West Hospital and Health Service
Nurse - Renal	Mornington Island Rural Hospital	Mornington Island	North West Hospital and Health Service
Nurse - Cardiology	Barcaldine Hospital	Barcaldine	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Barcaldine Hospital	Barcaldine	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Blackall Hospital	Blackall	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Blackall Hospital	Blackall	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Blackall Hospital	Blackall	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Longreach Hospital	Longreach	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Longreach Hospital	Longreach	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Longreach Hospital	Longreach	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Mount Isa Base Hospital	Mount Isa	Townsville Hospital and Health Service
Physician - Paediatrics - General	Emerald Hospital	Emerald	Central Queensland Hospital and Health Service
Nurse - Cardiology	Moura Hospital	Moura	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Moura Hospital	Moura	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Moura Hospital	Moura	Metro North Hospital and Health Service (ICOP)

Health Worker - Cardiology - Rheumatic Heart	CU - Moura	Moura	Metro North Hospital and Health Service (ICOP)
Nurse	CU - Murray/Darnley/Yorke Islands	Murray/Darnley/Yorke Islands	Torres and Cape Hospital and Health Service
Nurse	CU - Warraber/Coconut/Yam Islands	Warraber/Coconut/Yam Islands	Torres and Cape Hospital and Health Service
Nurse	CU - Collinsville	Collinsville	Mackay Hospital and Health Service
Physician - Obstetrics & Gynaecology	Normanton Hospital	Normanton	North West Hospital and Health Service
Nurse - Cardiology	Isisford Primary Health Care Centre	Isisford	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Isisford Primary Health Care Centre	Isisford	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Isisford Primary Health Care Centre	Isisford	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Roma Hospital	Roma	South West Hospital and Health Service
Physician - General	St George Hospital	St George	Darling Downs Hospital and Health Service
Physician - Geriatrics	Roma Hospital	Roma	South West Hospital and Health Service
Sonography - Cardiology	Roma Hospital	Roma	South West Hospital and Health Service
Physician - Surgery - Ear Nose & Throat	Woorabinda Multipurpose Health Service	Woorabinda	Central Queensland Hospital and Health Service
Physician - Cardiology	Biloela Hospital	Biloela	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Biloela Hospital	Biloela	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Blackwater Multipurpose Health Service	Blackwater	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Blackwater Multipurpose Health Service	Blackwater	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Emerald Hospital	Emerald	Metro North Hospital and Health Service (ICOP)

Physician - Respiratory	Bidgerdii Community Health Service - Rockhampton	Rockhampton	Metro North Hospital and Health Service (IROC)
Health Worker - Cardiology - Rheumatic Heart	Woorabinda Multipurpose Health Service	Woorabinda	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Woorabinda Multipurpose Health Service	Woorabinda	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Woorabinda Multipurpose Health Service	Woorabinda	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Woorabinda Multipurpose Health Service	Woorabinda	Metro North Hospital and Health Service (ICOP)
Health Worker - Cardiology - Rheumatic Heart	CU - Biloela	Biloela	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	CU - Biloela	Biloela	Metro North Hospital and Health Service (ICOP)
Health Worker - Cardiology - Rheumatic Heart	CU - Blackwater	Blackwater	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	CU - Blackwater	Blackwater	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Nhulundu Health Service	Gladstone	Metro North Hospital and Health Service (ICOP)
Health Worker - Cardiology - Rheumatic Heart	Nhulundu Health Service	Gladstone	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Nhulundu Health Service	Gladstone	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Nhulundu Health Service	Gladstone	Metro North Hospital and Health Service (ICOP)
Health Worker - Cardiology - Rheumatic Heart	CU - Rockhampton	Rockhampton	Metro North Hospital and Health Service (ICOP)
Nurse	Aurukun Primary Health Care Centre - Aurukun Hospital	Aurukun	Torres and Cape Hospital and Health Service
Physician - General	Aurukun Primary Health Care Centre - Aurukun Hospital	Aurukun	Cairns and Hinterland Hospital and Health Service
Physician - General - Registrar	Aurukun Primary Health Care Centre - Aurukun Hospital	Aurukun	Cairns and Hinterland Hospital and Health Service

Physician - General	Bamaga Hospital	Bamaga	Cairns and Hinterland Hospital and Health Service
Nurse	Coen Primary Health Care Centre	Coen	Torres and Cape Hospital and Health Service
Physician - General	Coen Primary Health Care Centre	Coen	Cairns and Hinterland Hospital and Health Service
Physician - General - Registrar	Coen Primary Health Care Centre	Coen	Cairns and Hinterland Hospital and Health Service
Physician - General	Cooktown Hospital	Cooktown	Cairns and Hinterland Hospital and Health Service
Physician - General - Registrar	Cooktown Hospital	Cooktown	Cairns and Hinterland Hospital and Health Service
Nurse	Hopevale Primary Health Care Centre	Hope Vale	Torres and Cape Hospital and Health Service
Nurse	Kowanyama Primary Health Care Centre	Kowanyama	Torres and Cape Hospital and Health Service
Nurse	Lockhart River Primary Health Care Centre	Lockhart River	Torres and Cape Hospital and Health Service
Physician - General	Lockhart River Primary Health Care Centre	Lockhart River	Cairns and Hinterland Hospital and Health Service
Physician - General - Registrar	Lockhart River Primary Health Care Centre	Lockhart River	Cairns and Hinterland Hospital and Health Service
Health Worker	CU - Boigu/Saibai/Dauan Islands	Boigu/Saibai/Dauan Islands	Torres and Cape Hospital and Health Service
Health Worker	CU - Mabuiag, Badu, Kubin and St Paul Islands	Mabuiag, Badu, Kubin and St Paul Islands	Torres and Cape Hospital and Health Service
Health Worker	CU - Murray/Darnley/Yorke Islands	Murray/Darnley/Yorke Islands	Torres and Cape Hospital and Health Service
Nurse	Pormpuraaw Primary Health Care Centre	Pormpuraaw	Torres and Cape Hospital and Health Service
Nurse - Cardiology - Rheumatic Heart	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Cairns and Hinterland Hospital and Health Service
Nurse	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Torres and Cape Hospital and Health Service
Sonography - Cardiology	Charters Towers Health Centre	Charters Towers	Townsville Hospital and Health Service

Echo Technician - Cardiology	Joyce Palmer Health Service - Palm Island Public Hospital	Palm Island	Townsville Hospital and Health Service
Physician - Cardiology	Joyce Palmer Health Service - Palm Island Public Hospital	Palm Island	Townsville Hospital and Health Service
Physician - Endocrinology	Mount Isa Base Hospital	Mount Isa	Metro South Hospital and Health Service (PA)
Sonography - Cardiology	Barcaldine Hospital	Barcaldine	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Bedourie Clinic	Bedourie	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Bedourie Clinic	Bedourie	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Bedourie Clinic	Bedourie	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Birdsville Clinic	Birdsville	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Birdsville Clinic	Birdsville	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Birdsville Clinic	Birdsville	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Boulia Primary Health Care Centre	Boulia	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Boulia Primary Health Care Centre	Boulia	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Boulia Primary Health Care Centre	Boulia	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Burketown Primary Health Care Clinic	Burketown	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Burketown Primary Health Care Clinic	Burketown	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Burketown Primary Health Care Clinic	Burketown	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Camooweal Primary Health Care Clinic	Camooweal	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Camooweal Primary Health Care Clinic	Camooweal	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Camooweal Primary Health Care Clinic	Camooweal	Metro North Hospital and Health Service (ICOP)

Physician - Surgery - Vascular	Cloncurry Hospital	Cloncurry	North West Hospital and Health Service
Nurse - Cardiology	Dajarra Health Centre	Dajarra	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Dajarra Health Centre	Dajarra	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Dajarra Health Centre	Dajarra	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Doomadgee Rural Hospital	Doomadgee	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Doomadgee Rural Hospital	Doomadgee	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology - Rheumatic Heart	Doomadgee Rural Hospital	Doomadgee	North West Hospital and Health Service
Sonography - Cardiology	Doomadgee Rural Hospital	Doomadgee	Metro North Hospital and Health Service (ICOP)
Physician - Endocrinology	Doomadgee Rural Hospital	Doomadgee	North West Hospital and Health Service
Physician - Surgery - Vascular	Doomadgee Rural Hospital	Doomadgee	North West Hospital and Health Service
Nurse - Cardiology	CU - Gregory	Gregory	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	CU - Gregory	Gregory	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	CU - Gregory	Gregory	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Mornington Island Rural Hospital	Mornington Island	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Mornington Island Rural Hospital	Mornington Island	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Mornington Island Rural Hospital	Mornington Island	Metro North Hospital and Health Service (ICOP)
Physician - Endocrinology	Mornington Island Rural Hospital	Mornington Island	North West Hospital and Health Service
Nurse - Cardiology	Gidgee Healing - Mount Isa	Mount Isa	Metro North Hospital and Health Service (ICOP)

Physician - Cardiology	Gidgee Healing - Mount Isa	Mount Isa	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Gidgee Healing - Mount Isa	Mount Isa	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Normanton Hospital	Normanton	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Normanton Hospital	Normanton	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Normanton Hospital	Normanton	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Urandangi Health Clinic	Urandangi	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Urandangi Health Clinic	Urandangi	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Urandangi Health Clinic	Urandangi	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Windorah Primary Health Care Centre	Windorah	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Windorah Primary Health Care Centre	Windorah	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Windorah Primary Health Care Centre	Windorah	Metro North Hospital and Health Service (ICOP)
Nurse - Cardiology	Winton Hospital	Winton	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Winton Hospital	Winton	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Winton Hospital	Winton	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology - Paediatrics	Mornington Island Rural Hospital	Mornington Island	North West Hospital and Health Service
Physician - Cardiology - Paediatrics	Normanton Hospital	Normanton	North West Hospital and Health Service
Physician - Cardiology	CU - Inala	Inala	Metro South Hospital and Health Service (Logan)
Physician - Endocrinology	Inala Community Health Centre	Inala	Metro South Hospital and Health Service (Logan)

Physician - Psychiatry	Inala Community Health Centre	Inala	Metro South Hospital and Health Service (Logan)
General Practitioner	Cunnamulla Aboriginal Corporation for Health (CACH)	Cunnamulla	Metro South Hospital and Health Service (Logan)
IROC Indigenous Project Officer	Charleville and Western Areas Aboriginal and Torres Strait Islanders Community Health Limited (CWAATSICH) - Roma	Roma	Metro North Hospital and Health Service (IROC)
Nurse - Respiratory	Charleville and Western Areas Aboriginal and Torres Strait Islanders Community Health Limited (CWAATSICH) - Roma	Roma	Metro North Hospital and Health Service (IROC)
Physician - Respiratory	Goondir Health Services St George	St George	Metro North Hospital and Health Service (IROC)
Physician - Respiratory	Charleville and Western Areas Aboriginal and Torres Strait Islanders Community Health Limited (CWAATSICH) - Charleville	Charleville	Metro North Hospital and Health Service (IROC)
Nurse - Cardiology	Cherbourg Hospital	Cherbourg	Metro South Hospital and Health Service (PA)
Physician - Cardiology	Cherbourg Hospital	Cherbourg	Metro South Hospital and Health Service (PA)
Physician - Cardiology	CU - Cherbourg	Cherbourg	Metro South Hospital and Health Service (PA)
Sonography - Cardiology	Cherbourg Hospital	Cherbourg	Metro South Hospital and Health Service (PA)
Physician - Respiratory	Cunnamulla Aboriginal Corporation for Health (CACH)	Cunnamulla	Metro North Hospital and Health Service (IROC)
Physician - Respiratory	Goondir Health Services Dalby	Dalby	Metro North Hospital and Health Service (IROC)
Physician - Respiratory	Charleville and Western Areas Aboriginal and Torres Strait Islanders Community Health Limited (CWAATSICH) - Roma	Roma	Metro North Hospital and Health Service (IROC)
Physician - Psychiatry - Adult	Biggenden Multi-Purpose Health Service (MPHS)	Biggenden	Wide Bay Hospital and Health Service
Physician - Surgery - Ear Nose & Throat	Biloela Hospital	Biloela	Central Queensland Hospital and Health Service
Physician - Palliative Care	Biloela Hospital	Biloela	Central Queensland Hospital and Health Service

Physician - Sexual Health	Bundaberg Hospital	Bundaberg	Wide Bay Hospital and Health Service
Physician - Palliative Care	CU - Calliope	Calliope	Central Queensland Hospital and Health Service
Physician - Psychiatry - Adult	Childers Hospital	Childers	Wide Bay Hospital and Health Service
Physician - Psychiatry - Adult	Eidsvold Multi-Purpose Health Service	Eidsvold	Wide Bay Hospital and Health Service
Physician - Palliative Care	Emerald Hospital	Emerald	Central Queensland Hospital and Health Service
Physician - Psychiatry - Adult	CU - Gayndah	Gayndah	Wide Bay Hospital and Health Service
Physician - Psychiatry - Adult	Gin Gin Hospital	Gin Gin	Wide Bay Hospital and Health Service
Physician - Psychiatry - Adult	CU - Monto	Monto	Wide Bay Hospital and Health Service
Physician - Palliative Care	CU - Theodore	Theodore	Central Queensland Hospital and Health Service
Physician - Paediatrics - General	Woorabinda Multipurpose Health Service	Woorabinda	Central Queensland Hospital and Health Service
Physician - Palliative Care	Woorabinda Hospital	Woorabinda	Central Queensland Hospital and Health Service
Nurse - Cardiology	Bidgerdii Community Health Service - Rockhampton	Rockhampton	Metro North Hospital and Health Service (ICOP)
Physician - Cardiology	Bidgerdii Community Health Service - Rockhampton	Rockhampton	Metro North Hospital and Health Service (ICOP)
Sonography - Cardiology	Bidgerdii Community Health Service - Rockhampton	Rockhampton	Metro North Hospital and Health Service (ICOP)
Physician - Psychiatry - Adult	CU - Mundubbera	Mundubbera	Wide Bay Hospital and Health Service
Physician - Surgery - Ear Nose & Throat	CU - Emerald	Emerald	Central Queensland Hospital and Health Service
Physician - Paediatrics	Atherton Hospital	Atherton	Cairns and Hinterland Hospital and Health Service

Physician - Obstetrics & Gynaecology - Registrar	Mossman Multi Purpose Health Service	Mossman	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology - Registrar	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Cairns and Hinterland Hospital and Health Service
Physician - Surgery - General	Atherton Hospital	Atherton	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Atherton Hospital	Atherton	Cairns and Hinterland Hospital and Health Service
Physician - Endocrinology	Atherton Hospital	Atherton	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology - Registrar	Atherton Hospital	Atherton	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Aurukun Primary Health Care Centre - Aurukun Hospital	Aurukun	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	CU - Aurukun	Aurukun	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Badu Island Primary Health Centre	Badu Island	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	CU – Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	CU – Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child & Adolescent - Registrar	CU – Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	CU - Bamaga	Bamaga	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and	CU - Bamaga	Bamaga	Cairns and Hinterland Hospital and Health Service

Adolescent			
Physician - Psychiatry - Child & Adolescent - Registrar	CU - Bamaga	Bamaga	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Coen Primary Health Care Centre	Coen	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	Coen Primary Health Care Centre	Coen	Cairns and Hinterland Hospital and Health Service
Physician - Surgery - General	Cooktown Hospital	Cooktown	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Cooktown Hospital	Cooktown	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	CU - Cooktown	Cooktown	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	CU - Cooktown	Cooktown	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult - Registrar	CU - Cooktown	Cooktown	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Croydon Hospital - Croydon Primary Health Centre	Croydon	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult - Registrar	CU – Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Badu/Coconut/Darnley/Horn/Kubin/Mabuiag/Murray/Saibai/Warraber Islands	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Forsayth Hospital	Forsayth	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Georgetown Primary Health Care Centre	Georgetown	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Hopevale Primary Health Care Centre	Hope Vale	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry -	Hopevale Primary Health Care	Hope Vale	Cairns and Hinterland Hospital and Health Service

Adult	Centre		
Physician - Psychiatry - Child and Adolescent	Hopevale Primary Health Care Centre	Hope Vale	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult - Registrar	Hopevale Primary Health Care Centre	Hope Vale	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Innisfail Hospital	Innisfail	Cairns and Hinterland Hospital and Health Service
Physician - Paediatrics - General	Innisfail Hospital	Innisfail	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology - Registrar	Innisfail Hospital	Innisfail	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Kowanyama Primary Health Care Centre	Kowanyama	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Kowanyama Primary Health Care Centre	Kowanyama	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	Kowanyama Primary Health Care Centre	Kowanyama	Cairns and Hinterland Hospital and Health Service

Physician - Psychiatry - Child & Adolescent - Registrar	**Kowanyama Primary Health Care Centre**	**Kowanyama**	**Cairns and Hinterland Hospital and Health Service**
Physician - Obstetrics & Gynaecology	Lockhart River Primary Health Care Centre	Lockhart River	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Lockhart River Primary Health Care Centre	Lockhart River	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	Lockhart River Primary Health Care Centre	Lockhart River	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child & Adolescent - Registrar	Lockhart River Primary Health Care Centre	Lockhart River	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Mapoon Primary Health Care Centre	Mapoon	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	Mapoon Primary Health Care Centre	Mapoon	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child & Adolescent - Registrar	Mapoon Primary Health Care Centre	Mapoon	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Mareeba Hospital	Mareeba	Cairns and Hinterland Hospital and Health Service
Physician - Surgery - General	Mossman Multi Purpose Health Service	Mossman	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Mossman Multi Purpose Health Service	Mossman	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Napranum Community Health Centre	Napranum	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Napranum Community Health Centre	Napranum	Cairns and Hinterland Hospital and Health Service

Physician - Psychiatry - Child and Adolescent	Napranum Community Health Centre	Napranum	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child & Adolescent - Registrar	Napranum Community Health Centre	Napranum	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Pormpuraaw Primary Health Care Centre	Pormpuraaw	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Pormpuraaw Primary Health Care Centre	Pormpuraaw	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	CU - Horn Island/Thursday Island	Horn Island/Thursday Island	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	CU - Horn Island/Thursday Island	Horn Island/Thursday Island	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult - Registrar	CU - Horn Island/Thursday Island	Horn Island/Thursday Island	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	CU - Tully	Tully	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Cairns and Hinterland Hospital and Health Service
Psychology	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Torres and Cape Hospital and Health Service
Physician - Psychiatry - Child and Adolescent	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child & Adolescent - Registrar	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Adult	Wujal Wujal Primary Health Care Centre	Wujal Wujal	Cairns and Hinterland Hospital and Health Service
Physician - Psychiatry - Child and	Wujal Wujal Primary Health Care Centre	Wujal Wujal	Cairns and Hinterland Hospital and Health Service

Adolescent			
Physician - Psychiatry - Adult - Registrar	Wujal Wujal Primary Health Care Centre	Wujal Wujal	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology	Gurriny Yealamucka Health Service (Yarrabah)	Yarrabah	Cairns and Hinterland Hospital and Health Service
Physician - Paediatrics - General	Gurriny Yealamucka Health Service (Yarrabah)	Yarrabah	Cairns and Hinterland Hospital and Health Service
Physician - Obstetrics & Gynaecology - Registrar	Gurriny Yealamucka Health Service (Yarrabah)	Yarrabah	Cairns and Hinterland Hospital and Health Service
Physician - Paediatrics	Mareeba Hospital	Mareeba	Cairns and Hinterland Hospital and Health Service
Physician - Paediatrics - Community	CU - Thursday Island	Thursday Island	Cairns and Hinterland Hospital and Health Service
General Practitioner	CU - Warraber/Coconut/Yam Islands	Warraber/Coconut/Yam Islands	Torres and Cape Hospital and Health Service
Nurse	CU - Boigu/Saibai/Dauan Islands	Boigu/Saibai/Dauan Islands	Torres and Cape Hospital and Health Service
Nurse	CU - Mabuiag, Badu, Kubin and St Paul Islands	Mabuiag, Badu, Kubin and St Paul Islands	Torres and Cape Hospital and Health Service
Nurse	CU - Horn and Stephen Islands	Horn and Stephen Islands	Torres and Cape Hospital and Health Service
Physician - Paediatrics - Community	Weipa Integrated Health Service (Weipa Hospital)	Weipa	Cairns and Hinterland Hospital and Health Service
Nurse Practitioner - Maternity	Joyce Palmer Health Service - Palm Island Public Hospital	Palm Island	Townsville Hospital and Health Service
Audiology	Clermont Multi-Purpose Health Service	Clermont	Mackay Hospital and Health Service
Physician - Paediatrics -	Normanton Hospital	Normanton	North West Hospital and Health Service

Physician - Paediatrics - General	**Camooweal Primary Health Care Clinic**	**Camooweal**	**North West Hospital and Health Service**

Physician - Obstetrics & Gynaecology	Cloncurry Hospital	Cloncurry	North West Hospital and Health Service
Physician - Paediatrics - General	Cloncurry Hospital	Cloncurry	North West Hospital and Health Service
Physician - Paediatrics - General	Doomadgee Rural Hospital	Doomadgee	North West Hospital and Health Service
Pharmacy	Doomadgee Rural Hospital	Doomadgee	North West Hospital and Health Service
Physician - Obstetrics & Gynaecology	Karumba Health Clinic / Karumba Health Centre	Karumba	North West Hospital and Health Service
Physician - Surgery - Vascular	Mornington Island Rural Hospital	Mornington Island	North West Hospital and Health Service
Physician - Obstetrics & Gynaecology	Mornington Island Rural Hospital	Mornington Island	North West Hospital and Health Service
Pharmacy	Mornington Island Rural Hospital	Mornington Island	North West Hospital and Health Service
Physician - Cardiology	Cunnumulla Aboriginal Corporation for Health (CACH)	Cunnamulla	Metro South Hospital and Health Service (Logan)
Sonography - Cardiology	Cunnumulla Aboriginal Corporation for Health (CACH)	Cunnamulla	Metro South Hospital and Health Service (Logan)
Clinical Nurse Consultant - Respiratory	Cunnumulla Aboriginal Corporation for Health (CACH)	Cunnamulla	Metro South Hospital and Health Service (Logan)
Physician - Endocrinology	Cunnumulla Aboriginal Corporation for Health (CACH)	Cunnamulla	Metro South Hospital and Health Service (Logan)
Nurse - Child Health	Cunnamulla Hospital	Cunnamulla	South West Hospital and Health Service
Physician - Cardiology	Goondiwindi Hospital	Goondiwindi	Metro South Hospital and Health Service (PA)
Sonography	Goondiwindi Hospital	Goondiwindi	Metro South Hospital and Health Service (PA)
Physician - Cardiology	Kingaroy Hospital	Kingaroy	Metro South Hospital and Health Service (PA)
Sonography	Kingaroy Hospital	Kingaroy	Metro South Hospital and Health Service (PA)
Nurse - Cardiology	Kingaroy Hospital	Kingaroy	Metro South Hospital and Health Service (PA)

Physician - Cardiology	CU - Kingaroy	Kingaroy	Metro South Hospital and Health Service (PA)

Appendix B: CheckUP Data Financial Year 2014-2015

Frequency of visits by health practitioner type

Rank	Health Professional	n	%	Cumulative%
1	Podiatry	1,247	9.65	9.65
2	Dietetics	815	6.31	15.96
3	Exercise Physiologist	745	5.77	21.73
4	Diabetes Education	688	5.33	27.06
5	General Practitioner	632	4.89	31.95
6	Psychology	617	4.78	36.73
7	Occupational Therapy - Paediatrics	562	4.35	41.08
8	Speech Therapy - Paediatrics	474	3.67	44.75
9	Physiotherapy	446	3.45	48.20
10	Nurse	402	3.11	51.31
11	Physician - Paediatrics	357	2.76	54.08
12	Health Worker	313	2.42	56.50
13	Occupational Therapy - Adult	270	2.09	58.59
14	Physician - Psychiatry - Adult	261	2.02	60.61
15	Audiology	237	1.83	62.44
16	Physician - General	208	1.61	64.06
17	Speech Pathology	192	1.49	65.54
18	Physician - Cardiology	185	1.43	66.97
19	Nurse - Chronic Disease - Maternal & Ch	182	1.41	68.38
20	Midwife	180	1.39	69.78
21	Medical Officer	178	1.38	71.15
22	Physician - Psychiatry	154	1.19	72.35

23	Physician - Surgery - General	152	1.18	73.52
24	Occupational Therapy	141	1.09	74.61
25	Physician - Obstetrics & Gynaecology	134	1.04	75.65
26	Sonography - Cardiology	125	0.97	76.62
27	Physician - Dermatology	123	0.95	77.57
28	Physician - Endocrinology	122	0.94	78.52
29	Nurse Practitioner - Maternity	121	0.94	79.45
30	Nurse - Maternal & Child Health	113	0.87	80.33
31	Counselling - Alcohol & Other Drugs - Y	102	0.79	81.12
32	Nurse - Midwife	99	0.77	81.88
33	Physician - Ophthalmology	93	0.72	82.60
34	Physician - Paediatrics - General	91	0.70	83.31
35	Physician - Respiratory	83	0.64	83.95
36	Nurse - Health Worker	78	0.60	84.56
37	Physician - Surgery - Ear Nose & Throat	78	0.60	85.16
38	Nurse - Cardiology	72	0.56	85.72
39	Physician - Addiction Medicine	70	0.54	86.26
40	Physician - General - Registrar	65	0.50	86.76
41	General Practitioner - Registrar	62	0.48	87.24
42	Physician - Gastroenterology	61	0.47	87.71
43	Physician - Geriatrics	57	0.44	88.16
44	Physician - Psychiatry - Adult - Regist	56	0.43	88.59
45	Dietetics - Exercise Physiology	54	0.42	89.01
46	Physician - Psychiatry - Child and Adol	54	0.42	89.42

47	Physician - Paediatrics - Community	47	0.36	89.79
48	Sonography	47	0.36	90.15
49	Health Worker - Social & Emotional Well	46	0.36	90.51
50	Physician - Obstetrics	45	0.35	90.86
51	Physician - Surgery - Orthopaedics	45	0.35	91.21
52	Health Worker - Maternal & Child Health	42	0.33	91.53
53	Counselling - Social & Emotional Wellbe	40	0.31	91.84
54	Psychology - Adult	40	0.31	92.15
55	Clinical Nurse Consultant - Respiratory	39	0.30	92.45
56	Health Worker - Chronic Disease	38	0.29	92.75
57	Physician - Obstetrics & Gynaecology -	38	0.29	93.04
58	Health Worker - Podiatry	37	0.29	93.33
59	Occupational Therapy - Diabetes	37	0.29	93.61
60	Physician - Community - Paediatrics - R	37	0.29	93.90
61	Speech Therapy	37	0.29	94.19
62	Physician - Respiratory - Registrar	36	0.28	94.46
63	Occupational Therapy - Dietetics	34	0.26	94.73
64	Nurse - Chronic Disease - Child Health	31	0.24	94.97
65	Physiotherapy - Cardiac Rehabilitation	30	0.23	95.20
66	Physician - Ear Nose & Throat	29	0.22	95.42
67	Cardiac Testing/Sleep Testing	28	0.22	95.64
68	Nurse - Mental Health	27	0.21	95.85
69	Health Worker - Mental Health	26	0.20	96.05
70	Endocrinology - Registrar	24	0.19	96.24
71	Physician - Anaesthetics - Consultant	24	0.19	96.42

72	Physician - Surgery - Urology	24	0.19	96.61
73	Ophthalmology Assistant	22	0.17	96.78
74	Nurse - Renal	21	0.16	96.94
75	Nurse - Respiratory	21	0.16	97.10
76	Pharmacy	21	0.16	97.27
77	Optometry	20	0.15	97.42
78	Physician - Anaesthetics - Technician	20	0.15	97.58
79	Nurse - Womens Health	19	0.15	97.72
80	Allied Health Assistance	18	0.14	97.86
81	Physician - Psychiatry - Child & Adoles	18	0.14	98.00
82	Counselling	17	0.13	98.13
83	Care Coordinator – Diabetes	16	0.12	98.26
84	Physician - Palliative Care	15	0.12	98.37
85	Nurse - Child Health	14	0.11	98.48
86	Physician - Ear Nose & Throat - Paediat	13	0.10	98.58
87	Physician - Sexual Health	12	0.09	98.68
88	Physician - Anaesthetics - Ear Nose & T	11	0.09	98.76
89	Physician - Surgery - Vascular	11	0.09	98.85
90	Cardiology	10	0.08	98.92
91	General Practitioner - Chronic Disease	10	0.08	99.00
92	Health Worker - Maternity	10	0.08	99.08
93	Physician - Paediatrics - Cardiology	10	0.08	99.16
94	Physician - Anaesthetics - Ear Nose & T	9	0.07	99.23
95	Physician - Ear Nose & Throat - Registr	9	0.07	99.30
96	Physician - Paediatrics - Chronic Disea	9	0.07	99.37

97	Physician - Paediatrics - Community - R	9	0.07	99.43
98	Physician - Dermatology - Registrar	8	0.06	99.50
99	General Practitioner - Dermatology	7	0.05	99.55
100	Echo Technician - Cardiology	5	0.04	99.59
101	Health Worker - Cardiology - Rheumatic	5	0.04	99.63
102	Physician - Anaesthetics - Registrar	5	0.04	99.67
103	Physician - Surgery - Orthopaedics - Re	5	0.04	99.71
104	General Practitioner - Paediatrics - Re	4	0.03	99.74
105	Health Promotion Officer	4	0.03	99.77
106	Nurse - Cardiology - Rheumatic Heart	4	0.03	99.80
107	Physician - Ear Nose & Throat - Paediat	4	0.03	99.83
108	Physician - Rheumatology	4	0.03	99.86
109	Physician - Surgery - General - Registr	4	0.03	99.89
110	Social Work	4	0.03	99.92
111	Nurse - Ear Nose & Throat	2	0.02	99.94
112	Physician - Anaesthetics	2	0.02	99.95
113	Physician - Respiratory - Scientist	2	0.02	99.97
114	Physician - Surgery - Paediatrics	2	0.02	99.98
115	IROC Indigenous Project Officer	1	0.01	99.99
116	Physician - Orthopaedics - Registrar	1	0.01	100.00
	Total	**12,917**		**100.00**

Frequency of services visits collapsed by health professional category

Rank	Health Professional Category	n	%	Cumulative%
1	Allied Health	8,045	62.28	62.28
2	Specialist	2,612	20.22	82.50
3	Nurse	1,124	8.70	91.21
4	GP	649	5.02	96.23
5	Specialist (Reg)	300	2.32	98.55
6	Nurse Practitioner	121	0.94	99.49
7	GP (Reg)	66	0.51	100.00
	Total	**12,917**		**100.00**

Frequency of visits by provider

Rank	Provider Name	n	%	Cumulative%
1	Institute for Urban Indigenous Health	3,578	27.70	27.70
2	Apunipima Cape York Health Council Abor	1,466	11.35	39.05
3	Cairns and Hinterland Hospital and Heal	978	7.57	46.62
4	Royal Flying Doctor Service of Australia	494	3.82	50.45
5	North and West Remote Health	429	3.32	53.77
6	Vital Health - Roma	404	3.13	56.89
7	Torres and Cape Hospital and Health Ser	376	2.91	59.80
8	Central Queensland Medicare Local	358	2.77	62.58
9	Metro North Hospital and Health Service	218	1.69	64.26
10	Dr Manjula Palee Kannangara	211	1.63	65.90

11	Compleat Nutrition	183	1.42	67.31
12	Townsville Hospital and Health Service	163	1.26	68.58
13	Townsville Aboriginal and Islander Heal	160	1.24	69.81
14	Metro South Hospital and Health Service	145	1.12	70.94
15	O'Brien Health Care	144	1.11	72.05
16	Riga Medical Enterprise Pty Ltd	132	1.02	73.07
17	Amanda Gale Physiotherapy & Wellbeing	118	0.91	73.99
18	North West Hospital and Health Service	114	0.88	74.87
19	Hadgraft Speech Pathology	112	0.87	75.74
20	Central West Hospital and Health Service	110	0.85	76.59
21	ISIS Psychology Services	104	0.81	77.39
22	Townsville-Mackay Medicare Local	88	0.68	78.08
23	Vital Health – Dalby	81	0.63	78.70
24	Barry Sheehan	80	0.62	79.32
25	CQ RAICCHO	80	0.62	79.94
26	Dr Anjali Sainani	75	0.58	80.52
27	Indigenous Wellbeing Centre Limited	75	0.58	81.10
28	Wowan Dululu Community Volunteer Group	74	0.57	81.68
29	Children's Health QLD Hospital and Heal	71	0.55	82.22
30	Wide Bay Hospital and Health Service	67	0.52	82.74
31	Crystel Poggioli	63	0.49	83.23
32	Lex Peters	62	0.48	83.71
33	South West Hospital and Health Service	62	0.48	84.19
34	Deborah Rothsay	57	0.44	84.63

35	William Boyd Medical Pty Ltd	55	0.43	85.06
36	Mackay Hospital and Health Service	54	0.42	85.48
37	Oxley Clinic	53	0.41	85.89
38	S Kumar (Medical) Pty Ltd	51	0.39	86.28
39	Dr Farhan Syed T/A Syed Cardiology Pty	48	0.37	86.65
40	Ms Francisca Hutton	48	0.37	87.02
41	Pioneer Podiatry	48	0.37	87.40
42	Addiction Sciences Queensland Pty Ltd	46	0.36	87.75
43	Diamond Jubilee Partnerships Ltd t/as I	46	0.36	88.11
44	Dr Leo Ryan	43	0.33	88.44
45	Central Queensland Hospital and Health	42	0.33	88.77
46	A.J.S Medical Services	41	0.32	89.08
47	Dr Aisling Marie Fleury	41	0.32	89.40
48	Ingrid Hagne	38	0.29	89.70
49	Rural Ultrasound Services	38	0.29	89.99
50	Integrated Therapy Solutions Goondiwind	37	0.29	90.28
51	Lifestyle Therapies and Training Soluti	34	0.26	90.54
52	Dr Andrea McGlade	32	0.25	90.79
53	Gidgee Healing - Normanton	32	0.25	91.04
54	Malouf Medical Pty Ltd	32	0.25	91.28
55	Mr Jamie Spark	32	0.25	91.53
56	RM Miller Medical Pty Ltd	31	0.24	91.77
57	Costello-Singh Family Trust	30	0.23	92.00
58	Baralaba Private Clinic	28	0.22	92.22
59	Wuchopperen Health Service (Reef House)	28	0.22	92.44

60	Darling Downs Hospital and Health Servi	27	0.21	92.65
61	Earlsay Pty Ltd	27	0.21	92.85
61	Evolution Podiatry	26	0.20	93.06
63	Brisbane Bone & Joint Centre	25	0.19	93.25
64	Dr Oluwaseun Adewole Akosile	24	0.19	93.44
65	Dr Russell Bird	24	0.19	93.62
66	Dr S Zeeman	24	0.19	93.81
67	Dr Sandra Katherine Peters	24	0.19	93.99
68	Ossulton Services Pty Ltd	24	0.19	94.18
69	Dr Irene Skiathitis	21	0.16	94.34
70	Dr Jasper van der Westhuyzen	21	0.16	94.50
71	Dr Kunwarjit Singh Sangla	20	0.15	94.66
72	Mulungu Aboriginal Corporation Medical	20	0.15	94.81
73	Mrs Janice Hagon	19	0.15	94.96
74	Dr William Earnshaw	18	0.14	95.10
75	CQ Physio Group	17	0.13	95.23
76	Dr Tommy Tran	17	0.13	95.36
77	Mr Graeme Conway	17	0.13	95.49
78	Rachel Stone Podiatry	17	0.13	95.63
79	Darben Medical Pty Ltd	16	0.12	95.75
80	Julian Boulnois Medical Pty Ltd	16	0.12	95.87
81	Palm Island Community Company	16	0.12	96.00
82	Samahl Investments Pty Ltd	15	0.12	96.11
83	CR Schull Medical	14	0.11	96.22
84	Dr David Frith Leslie	14	0.11	96.33

85	Dr Steven Rodwell	14	0.11	96.44
86	FNQDocs Inc	14	0.11	96.55
87	DPB O'Brien Medical Pty Ltd	13	0.10	96.65
88	Dr Amy Louise Whittaker	13	0.10	96.75
89	ENT Specialists	13	0.10	96.85
90	Sweet as Diabetes Solutions	13	0.10	96.95
91	Bernard Chin Medical Pty Ltd	12	0.09	97.04
92	Diabetes Care New Beginnings	12	0.09	97.14
93	Dr Alan Dugdale	12	0.09	97.23
94	Dr John W Cox	12	0.09	97.32
95	Dr L M Davies	12	0.09	97.41
96	Dr Mark Norrie	12	0.09	97.51
97	Maria Zauner	12	0.09	97.60
98	NQ Family Practice Pty Ltd	12	0.09	97.69
99	Dr Michael Likely Pty Ltd	11	0.09	97.78
100	Optical Lenses Pty Ltd	11	0.09	97.86
101	Brian Todd Medical Pty Ltd	10	0.08	97.94
102	Dr Christopher J Danesi	10	0.08	98.02
103	Dr Fiona Frances Panizza	10	0.08	98.10
104	Dr Navin Naidoo	10	0.08	98.17
105	Kent Taylor	10	0.08	98.25
106	Cape York Pharmacy	9	0.07	98.32
107	Dr Katherine Smallcombe	9	0.07	98.39
108	Heart of Australia	9	0.07	98.46
109	Ms Joy Marion Young	9	0.07	98.53

110	Renew Vision Pty Ltd T/As Moreton Eye G	9	0.07	98.60
111	Ritchie and Associates - Psychologists	9	0.07	98.67
112	T R Porter Pty Ltd	9	0.07	98.74
113	Diabetes Education Outreach Service	8	0.06	98.80
114	Dr Alan Robert Ruben	8	0.06	98.86
115	Dr Simon F Journeaux	8	0.06	98.92
116	Dr Wayne Thomas Kelly	8	0.06	98.99
117	I G Brown Medical Pty Ltd	8	0.06	99.05
118	Miss Jaime Parnell	8	0.06	99.11
119	YM & J Tan (Medical) Pty Ltd	8	0.06	99.17
120	Dr Rowan Porter	7	0.05	99.23
121	Lisa Grice T/As Private Diabetes Educat	7	0.05	99.28
122	Clarity Hearing Solutions	6	0.05	99.33
123	Dr Brett Collins	6	0.05	99.37
124	Dr Matthew Broadhurst	6	0.05	99.42
125	Dr Thomas Anthony Dover	6	0.05	99.47
126	Kirsty Cummings	6	0.05	99.51
127	Rural and Remote Psychology Service	6	0.05	99.56
128	ERG Pty Ltd T/As Brisbane Eye Clinic	5	0.04	99.60
129	Mater Misericordiae Health Service Bris	5	0.04	99.64
130	CAM Barrett Pty Ltd	4	0.03	99.67
131	CQ EYE	4	0.03	99.70
132	Dr Elena Klestov	4	0.03	99.73
133	Dr Jan Steel	4	0.03	99.76
134	Dr Simon Bowler	4	0.03	99.79

135	Dr W. Glasson	4	0.03	99.82
136	Stalewski Medical Pty Ltd	4	0.03	99.85
137	Susan Pavey Pty Ltd	4	0.03	99.88
138	Dr John Andrew Dyer	3	0.02	99.91
139	Dr Katherine Dobinson	3	0.02	99.93
140	Cairns Audiology Group	2	0.02	99.95
141	Dr David Shaker	2	0.02	99.96
142	Queensland Sleep Disorder Unit	2	0.02	99.98
143	Dr Algenes Aranha	1	0.01	99.98
144	Dr Ashim Kumar Sinha	1	0.01	99.99
145	Mrs Lyndell Ilka-Chittick	1	0.01	100.00
	Total	**12,917**		**100.00**

Frequency of visits by health priority

Rank	Health Priority	n	%	Cumulative%
1	Support for chronic disease management	3,402	26.34	26.34
2	Diabetes	3,267	25.29	51.63
3	Hearing Health	1,664	12.88	64.52
4	Chronic respiratory disease	1,176	9.10	73.62
5	Cardiovascular disease	1,165	9.02	82.64
6	Maternity and paediatric health	1,115	8.63	91.27
7	Mental health [18]	810	6.27	97.55

[18] Combined mental health service are made up of a number of services and practitioner type namely: Physician – Psychiatry, Health Worker - Social & Emotional Wellbeing – Men, Psychology, Social Work, Psychology – Adult, Physician - Psychiatry – Adult, Physician - Psychiatry - Adult – Registrar, Physician - Psychiatry - Child & Adolescent – Registrar, Physician - Psychiatry - Child and Adolescent, Counselling - Alcohol & Other Drugs – Youth, Counselling - Social & Emotional Wellbeing, Health Worker - Mental Health, Nurse - Mental Health, Counselling. This represents

8	Cancer	146	1.13	98.68
9	Eye health	123	0.95	99.63
10	Chronic renal disease	48	0.37	100.00
	Total	**12,916**		**100.00**

Health practitioner type ranked by patients seen

Rank	Health Professional	n	%	Cumulative%
1	Podiatry	10,027	8.16	8.16
2	General Practitioner	9,035	7.35	15.51
3	Nurse	5,927	4.82	20.33
4	Health Worker	5,568	4.53	24.86
5	Exercise Physiologist	5,286	4.30	29.16
6	Physician - Ophthalmology	4,526	3.68	32.85
7	Dietetics	4,191	3.41	36.26
8	Nurse - Chronic Disease - Maternal & Child Health	3,909	3.18	39.44
9	Medical Officer	3,664	2.98	42.42
10	Physiotherapy	3,552	2.89	45.31
11	Diabetes Education	3,474	2.83	48.14
12	Audiology	2,909	2.37	50.50

Health practitioner type ranked by budgeted cost

Rank	Health Professional	AUD (exGST)	%	Cumulative%
1	General Practitioner	1,432,425.00	9.44	9.44
2	Podiatry	922,802.70	6.08	15.52
3	Nurse	698,969.50	4.61	20.13
4	Diabetes Education	593,806.00	3.91	24.04
5	Dietetics	589,677.50	3.89	27.93
6	Exercise Physiologist	508,154.70	3.35	31.27
7	Physician - Psychiatry - Adult	444,905.00	2.93	34.21
8	Physiotherapy	442,330.10	2.91	37.12
9	Psychology	404,495.90	2.67	39.79
10	Physician - General	381,369.70	2.51	42.30
11	Physician - Dermatology	361,062.10	2.38	44.68
12	Health Worker	350,888.20	2.31	46.99
13	Physician - Paediatrics	331,660.10	2.19	49.18
14	Speech Pathology	326,654.30	2.15	51.33

Total investment: $1,511,592.76 ($15,125,647.53) = 10.0%; Occasions of service: 7964 (122402) = 8.2%; Number of visits: 1462 (12884) = 11.3%

Frequency of visits by ASGC RA

ASGC RA	n	%	Cumulative%
Major City	4,045	31.32	31.32
Inner Regional	738	5.71	37.03
Outer Regional	2,665	20.63	57.66
Remote	2,135	16.53	74.19
Very Remote	3,334	25.81	100.00
Total	**12,917**	**100.00**	

ASGC RA1 facilities by frequency of visits provided

Rank	Facility	n	%	Cumulative%
1	Yulu-Burri-Ba Capalaba	455	11.25	11.25
2	CU - Logan	413	10.21	21.46
3	Moreton Aboriginal and Torres Strait Is	324	8.01	29.47
4	Moreton Aboriginal and Torres Strait Is	292	7.22	36.69
5	Aboriginal and Torres Strait Islander C	274	6.77	43.46
6	CU - Acacia Ridge	227	5.61	49.07
7	CU - Deception Bay	204	5.04	54.12
8	Moreton Aboriginal and Torres Strait Is	180	4.45	58.57
9	CU - Browns Plains	177	4.38	62.94
10	CU - Goodna	175	4.33	67.27
11	Kalwun Medical Centre (Kalwun Health Se	173	4.28	71.55
12	CU - Ipswich	166	4.10	75.65
13	CU - Northgate	152	3.76	79.41
14	CU - Morayfield	136	3.36	82.77
15	Kambu Medical Services Ipswich (Ipswich	133	3.29	86.06
16	CU - Burleigh Heads	97	2.40	88.45
17	CU - Coolangatta	81	2.00	90.46
18	CU - Woolloongabba	62	1.53	91.99
19	Aboriginal and Torres Strait Islander C	61	1.51	93.50
20	CU - Strathpine	54	1.33	94.83
21	Aboriginal and Torres Strait Islander C	50	1.24	96.07
22	CU - Oxenford	46	1.14	97.21
23	CU - Capalaba	32	0.79	98.00
24	CU - Croydon	30	0.74	98.74
25	Inala Community Health Centre	16	0.40	99.13
26	CU - Maroochydore	9	0.22	99.36
27	CU - Inala	8	0.20	99.56
28	Croydon Hospital - Croydon Primary Heal	8	0.20	99.75
29	CU - Miami	6	0.15	99.90
30	Buderim Specialist Practice	4	0.10	100.00
	Total	**4,045**	**100.00**	

Frequency of visits provided in ASGC RA1 facilities by health professional type

Rank	Health Professional	n	%	*Cumulative%*
1	Podiatry	650	16.07	16.07
2	Occupational Therapy - Paediatrics	538	13.30	29.37
3	Speech Therapy - Paediatrics	454	11.22	40.59
4	Exercise Physiologist	444	10.98	51.57
5	Psychology	343	8.48	60.05
6	Occupational Therapy - Adult	270	6.67	66.72
7	Physician - Paediatrics	269	6.65	73.37
8	Dietetics	187	4.62	78.00
9	Physician - Psychiatry	150	3.71	81.71
10	Audiology	135	3.34	85.04
11	Diabetes Education	130	3.21	88.26
12	Physiotherapy	114	2.82	91.08
13	Physician - Addiction Medicine	58	1.43	92.51
14	Physician - Cardiology	56	1.38	93.89
15	Physician - Dermatology	51	1.26	95.15
16	Physician - Geriatrics	35	0.87	96.02
17	Physician - General	27	0.67	96.69
18	General Practitioner	26	0.64	97.33
19	Physician - Surgery - Orthopaedics	25	0.62	97.95
20	Physician - Ear Nose & Throat	22	0.54	98.49
21	Physician - Endocrinology	14	0.35	98.84
22	Physician - Ophthalmology	12	0.30	99.13
23	Physician - Respiratory	10	0.25	99.38
24	Physician - Ear Nose & Throat - Paediat	9	0.22	99.60
25	Physician - Surgery - Ear Nose & Throat	6	0.15	99.75
26	Nurse - Health Worker	4	0.10	99.85
27	Physician - Psychiatry - Adult	3	0.07	99.93
28	Physician - Respiratory - Registrar	2	0.05	99.98
29	Clinical Nurse Consultant - Respiratory	1	0.02	100.00
	Total	**4,045**	**100.00**	

ASGC RA of general location for top 50% of activity

Rank	General Location	ASGC RA	n	%	Cumulative%
1	Capalaba	1	487	3.77	3.77
2	Morayfield	1	460	3.56	7.33
3	Aurukun	5	434	3.36	10.69
4	Logan	1	413	3.20	13.89
5	Deception Bay	1	384	2.97	16.86
6	Strathpine	1	346	2.68	19.54
7	Woolloongabba	1	336	2.60	22.14
8	Kowanyama	5	304	2.35	24.49
9	Ipswich	1	299	2.31	26.81

10	Mareeba	3	282	2.18	28.99
11	Acacia Ridge	1	277	2.14	31.14
12	Napranum	5	260	2.01	33.15
13	Mount Isa	4	255	1.97	35.12
14	Hope Vale	4	229	1.77	36.90
15	Atherton	3	204	1.58	38.48
16	Roma	3	197	1.53	40.00
17	Wujal Wujal	4	197	1.53	41.53
18	Coen	5	192	1.49	43.01
19	Lockhart River	5	187	1.45	44.46
20	Cherbourg	3	183	1.42	45.88
21	Miami	1	179	1.39	47.26
22	Browns Plains	1	177	1.37	48.63
23	Palm Island	4	176	1.36	50.00

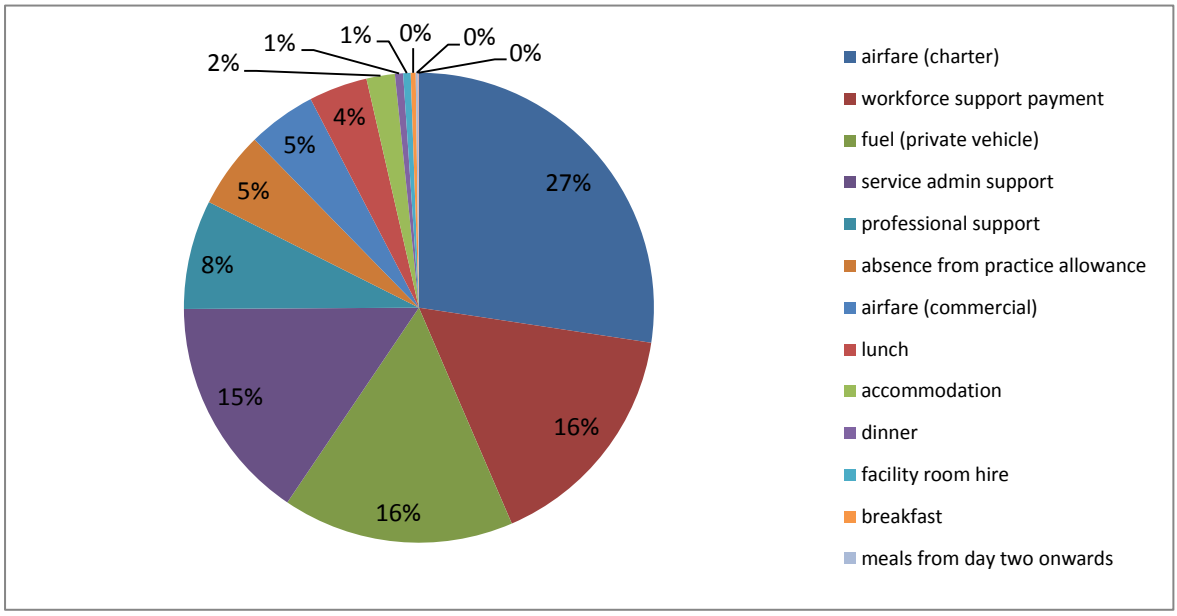
General locations of service by ASGC RA Category for top 50% of activity

ASGC RA	n	%	Cumulative%
Major City	10	43.48	43.48
Inner Regional	0	0	0
Outer Regional	4	17.39	60.87
Remote	4	17.39	78.26
Very Remote	5	21.74	100.00
Total	23	100.00	

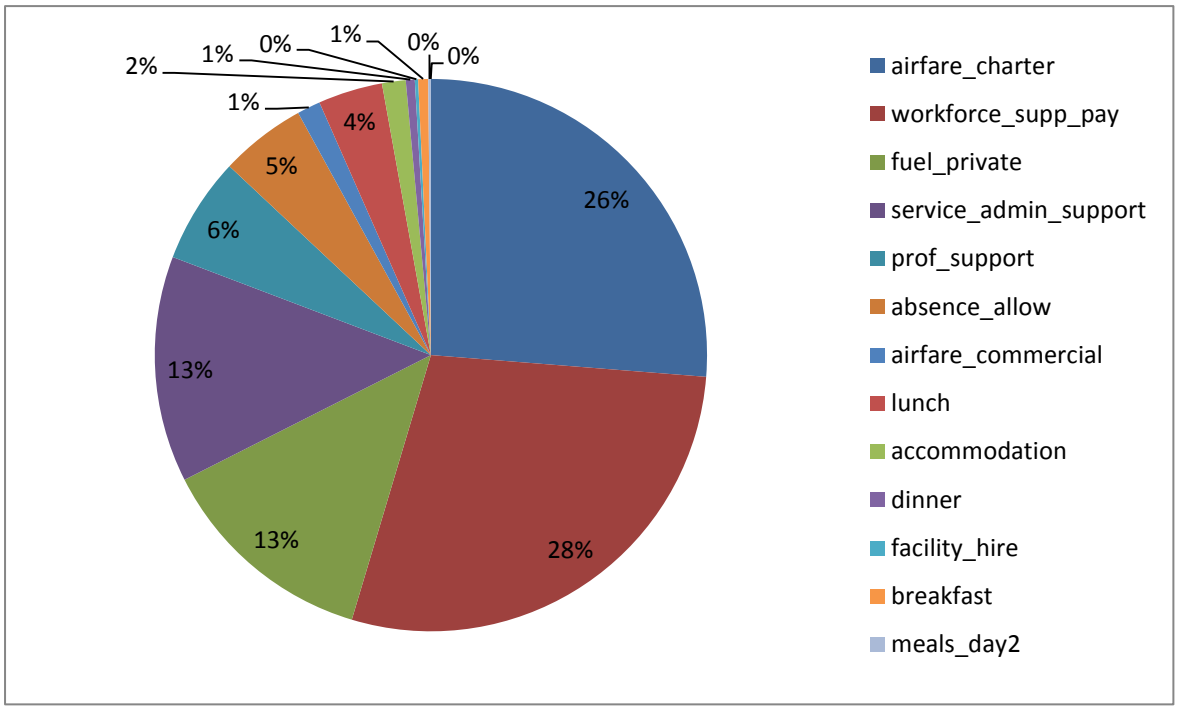
Appendix C: Actual costs by expenditure type

(NB: in the pie charts, where items represent <1%, they are shown as 0%)

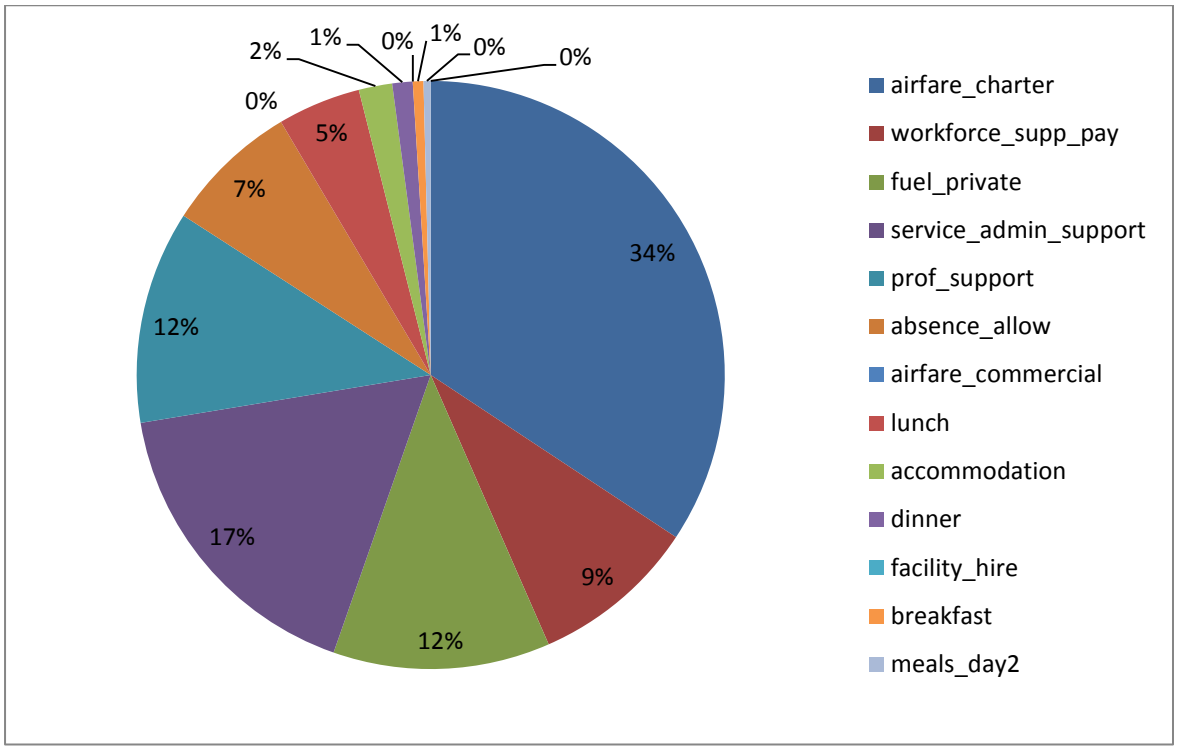
Top 50% of activity



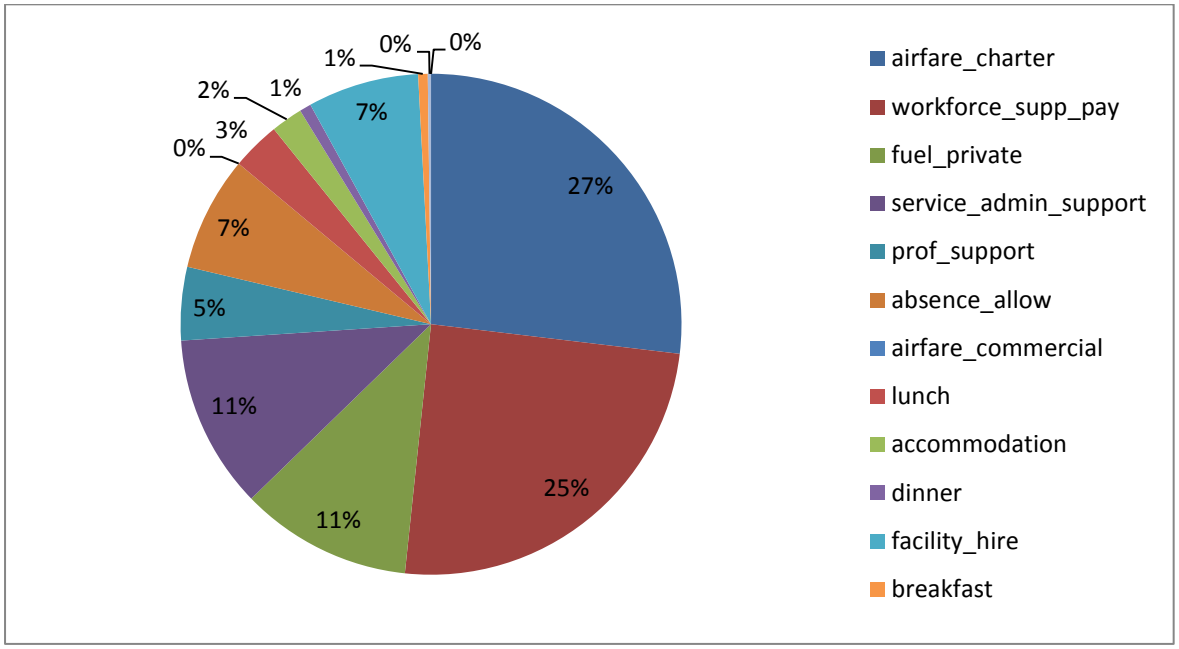
Actual costs by expenditure type – Podiatry



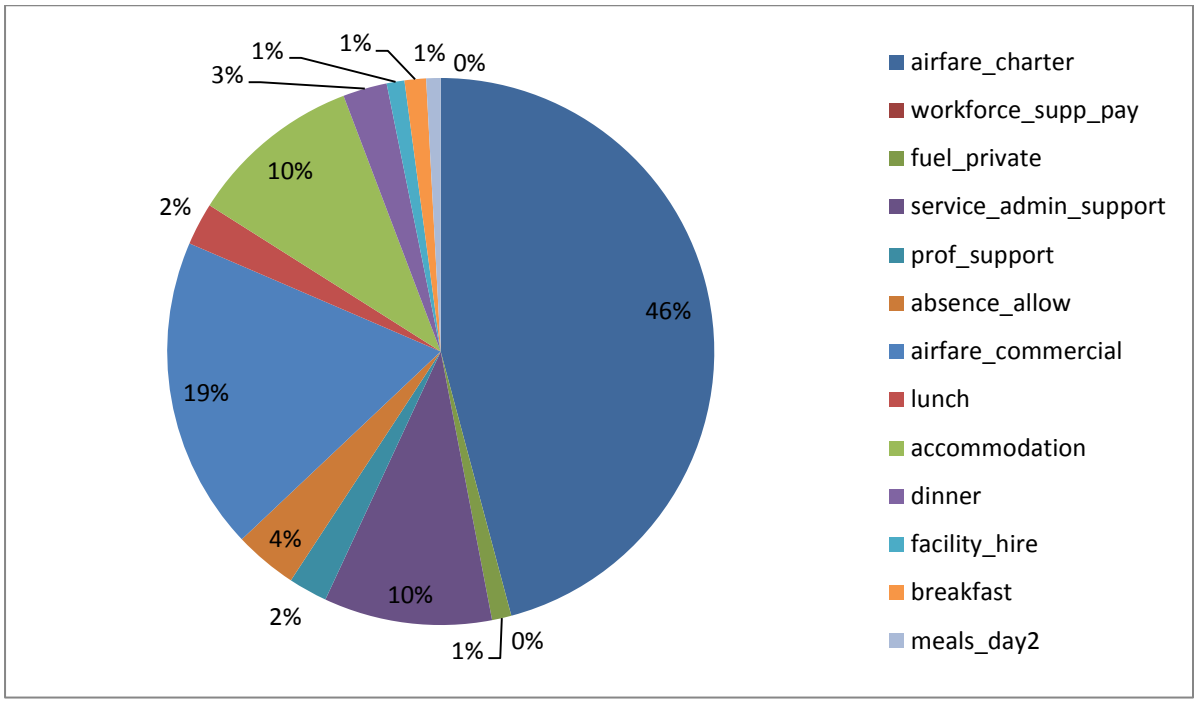
Actual costs by expenditure type - Dietetics



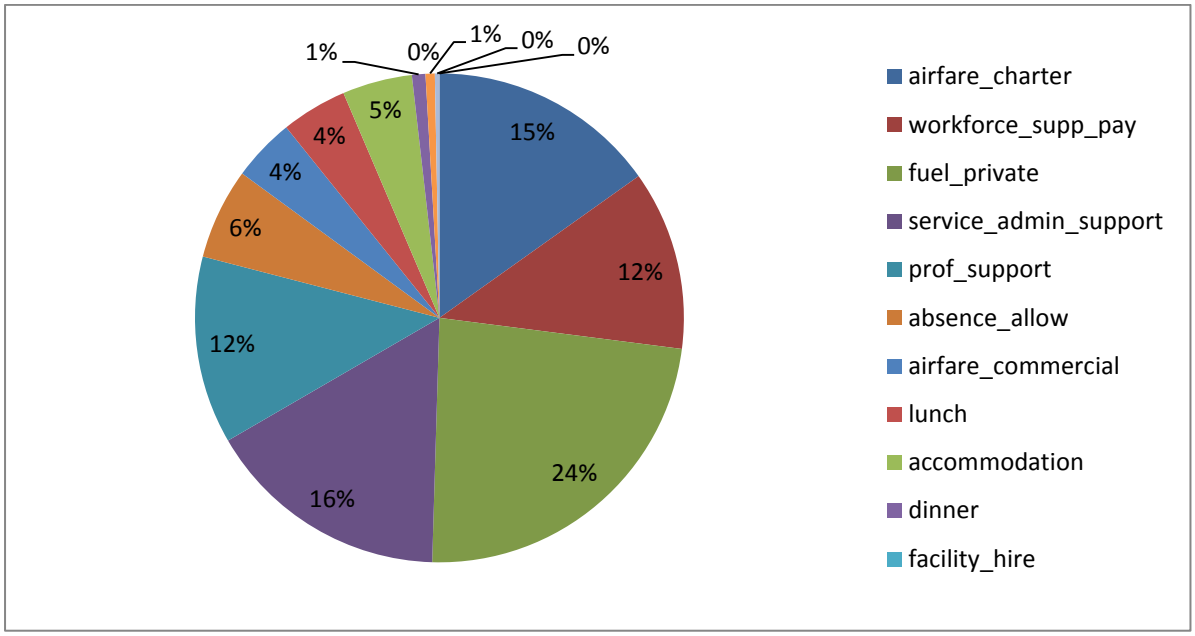
Actual costs by expenditure type - Exercise Physiologist



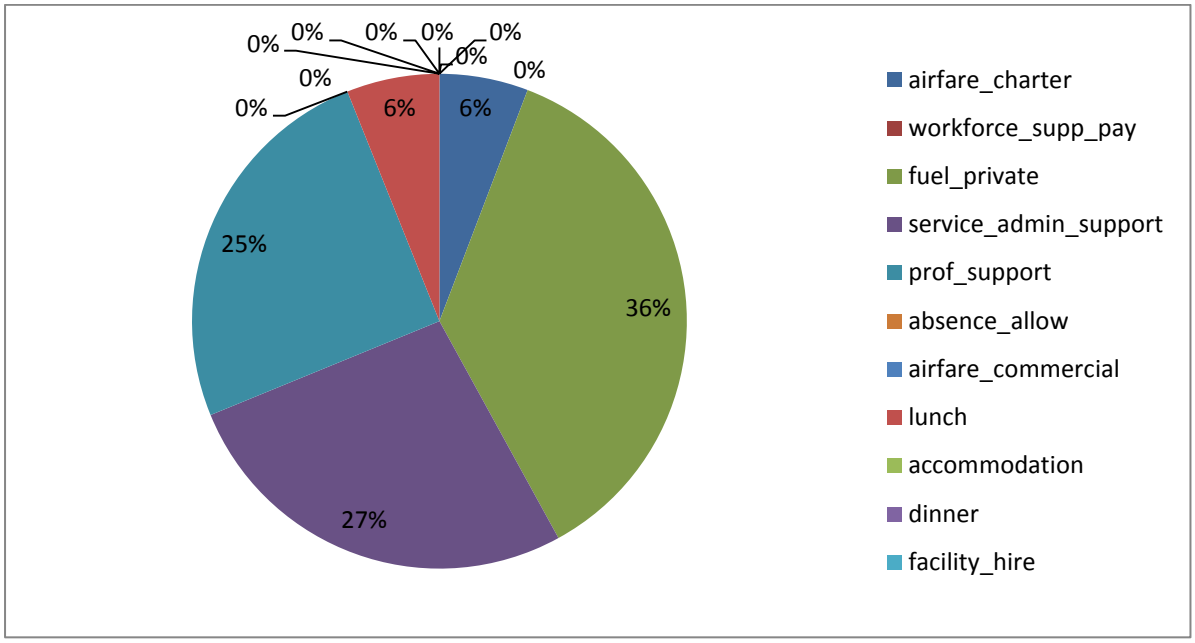
Actual costs by expenditure type - Diabetes Education



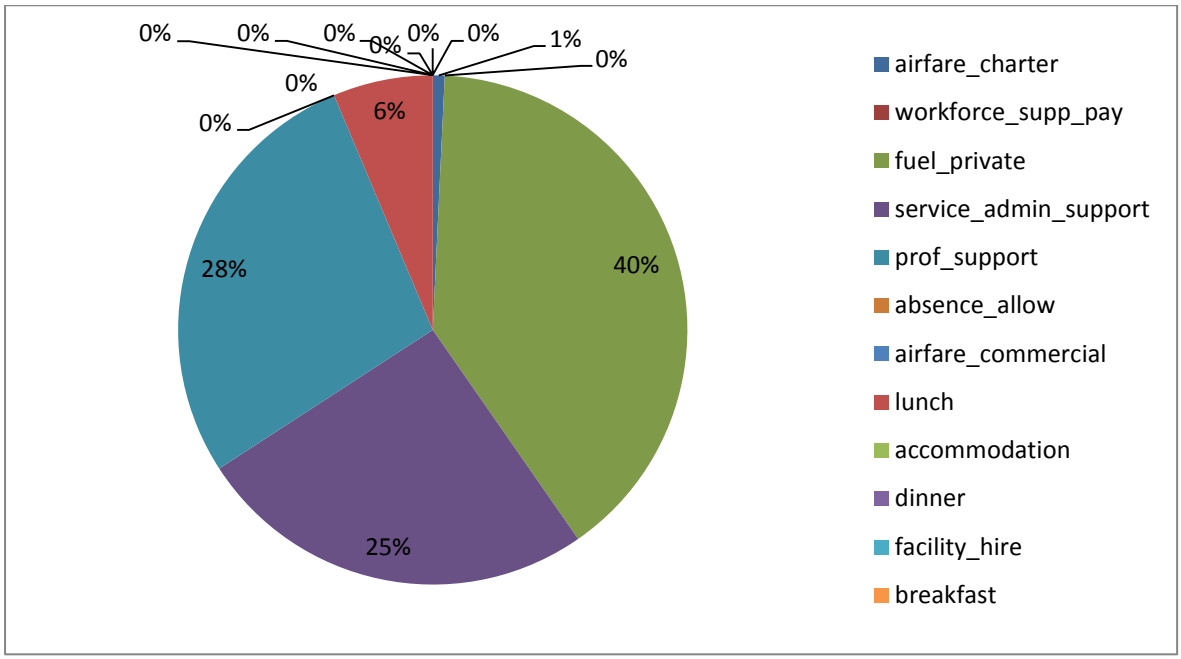
Actual costs by expenditure type - General Practitioner



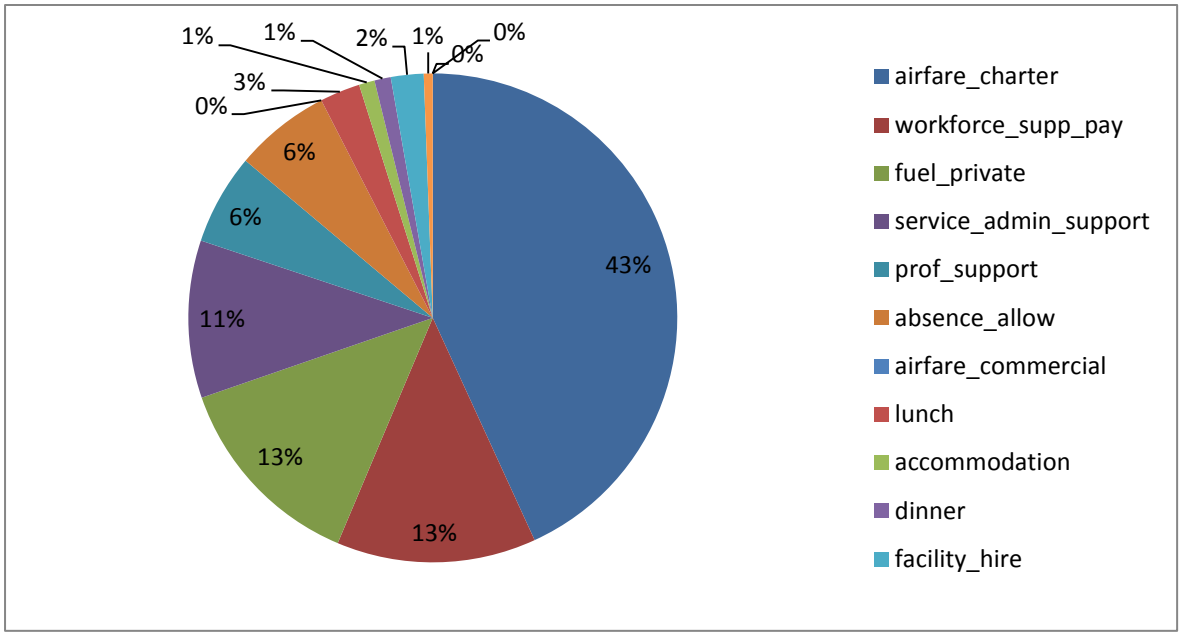
Actual costs by expenditure type - Psychology



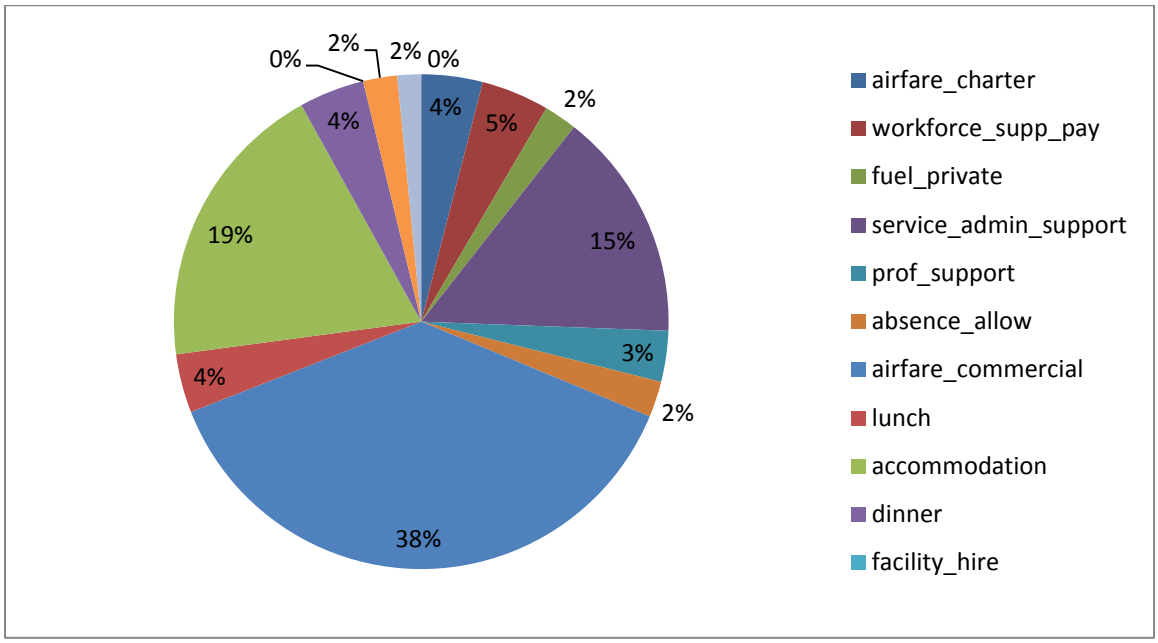
Actual costs by expenditure type - Occupational therapy – paediatrics



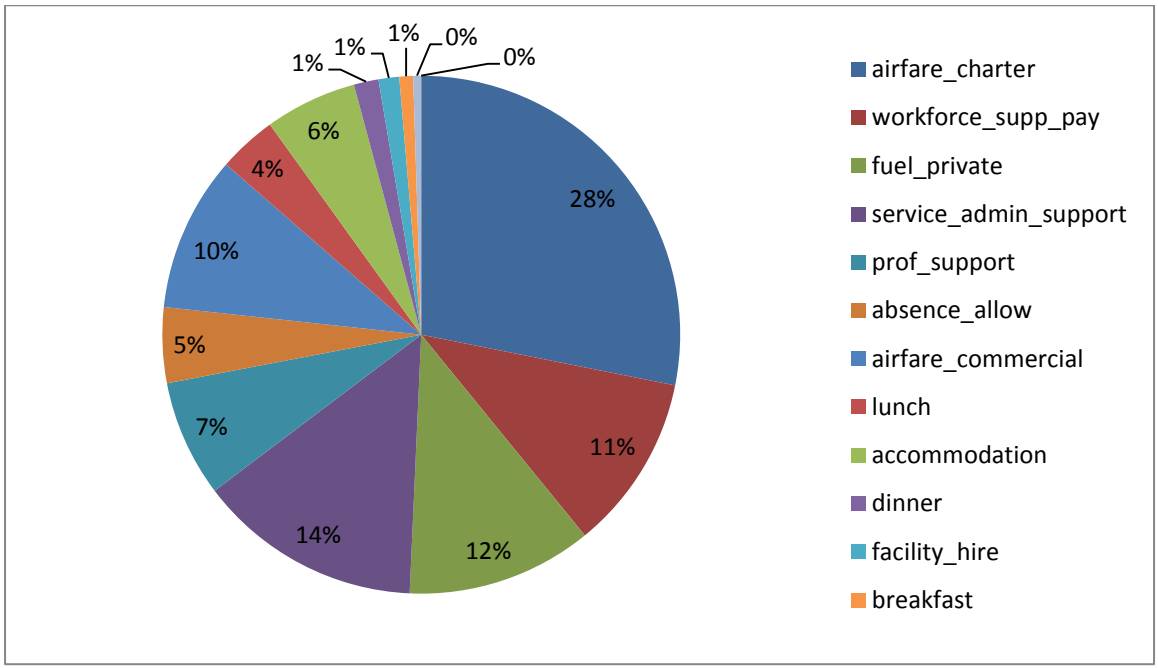
Actual costs by expenditure type - Speech therapy – paediatrics



Actual costs by expenditure type - Physiotherapy

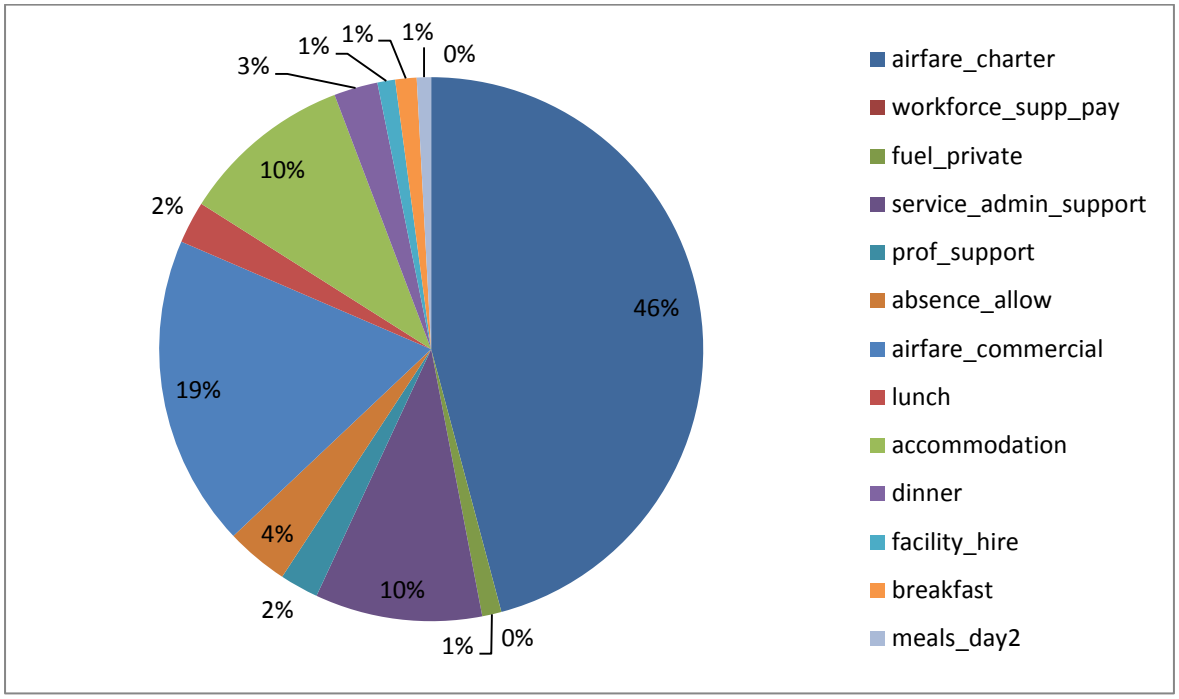


Actual costs by expenditure type - Nurse

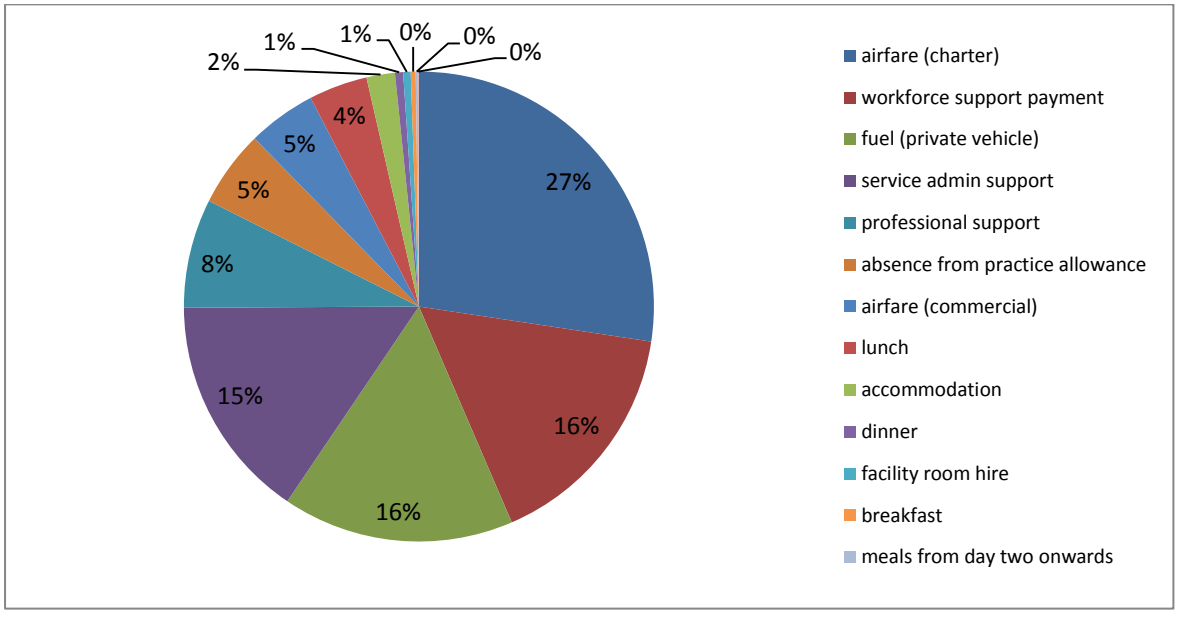


Actual costs by expenditure type - All combined (top 50% by activity)

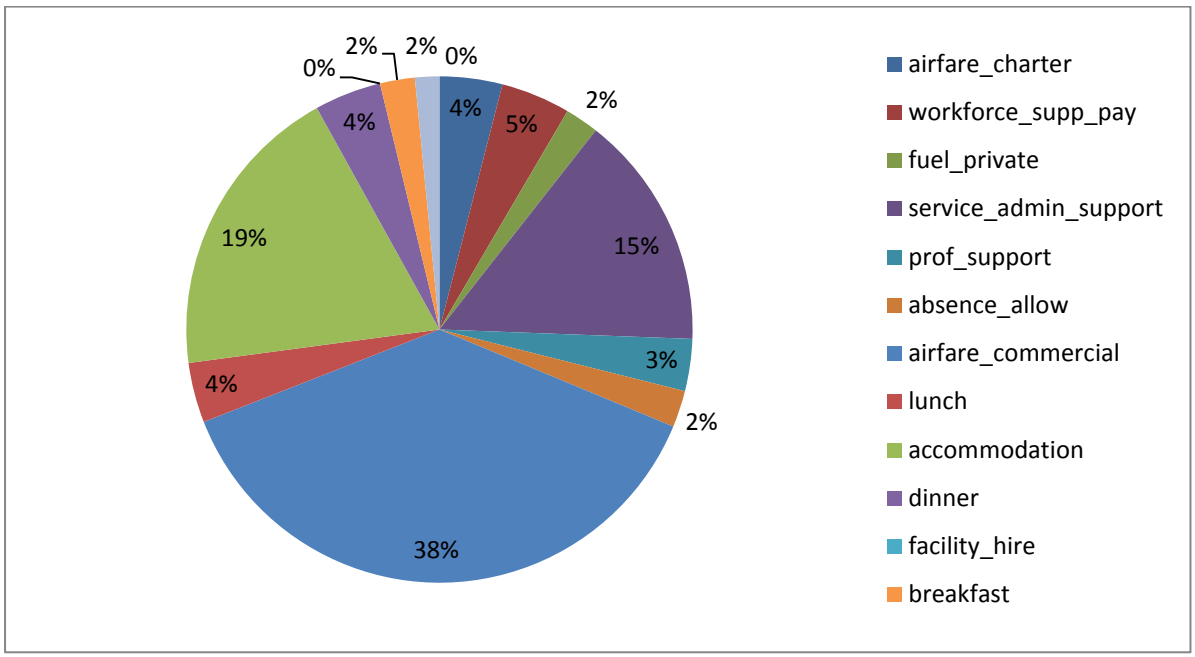
Top 50% of cost



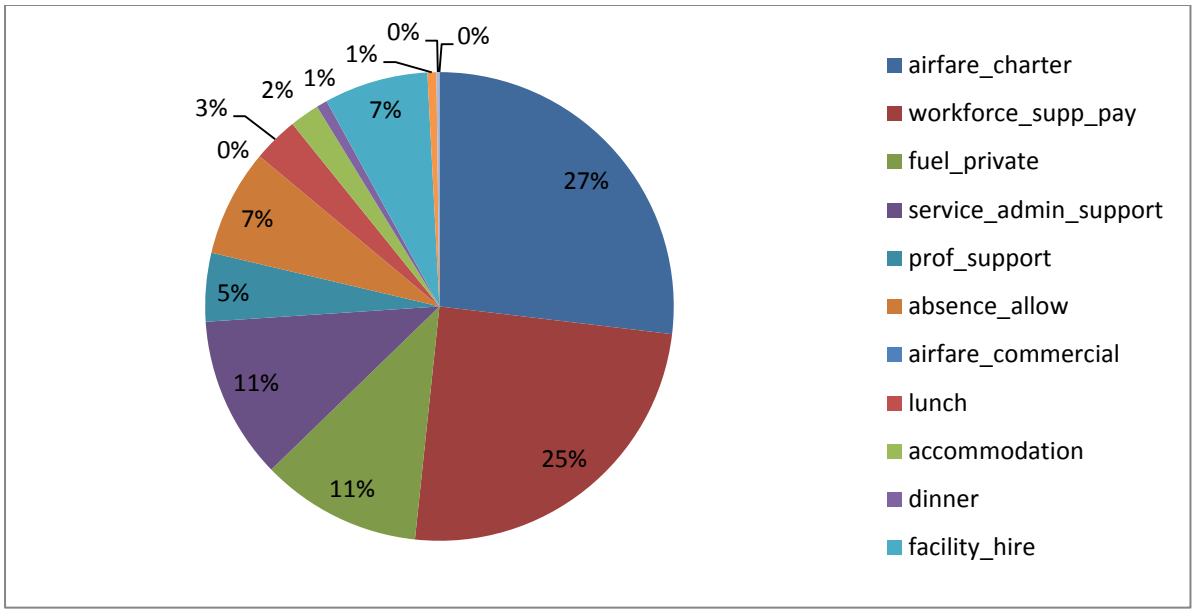
Actual costs by expenditure type - General practitioner



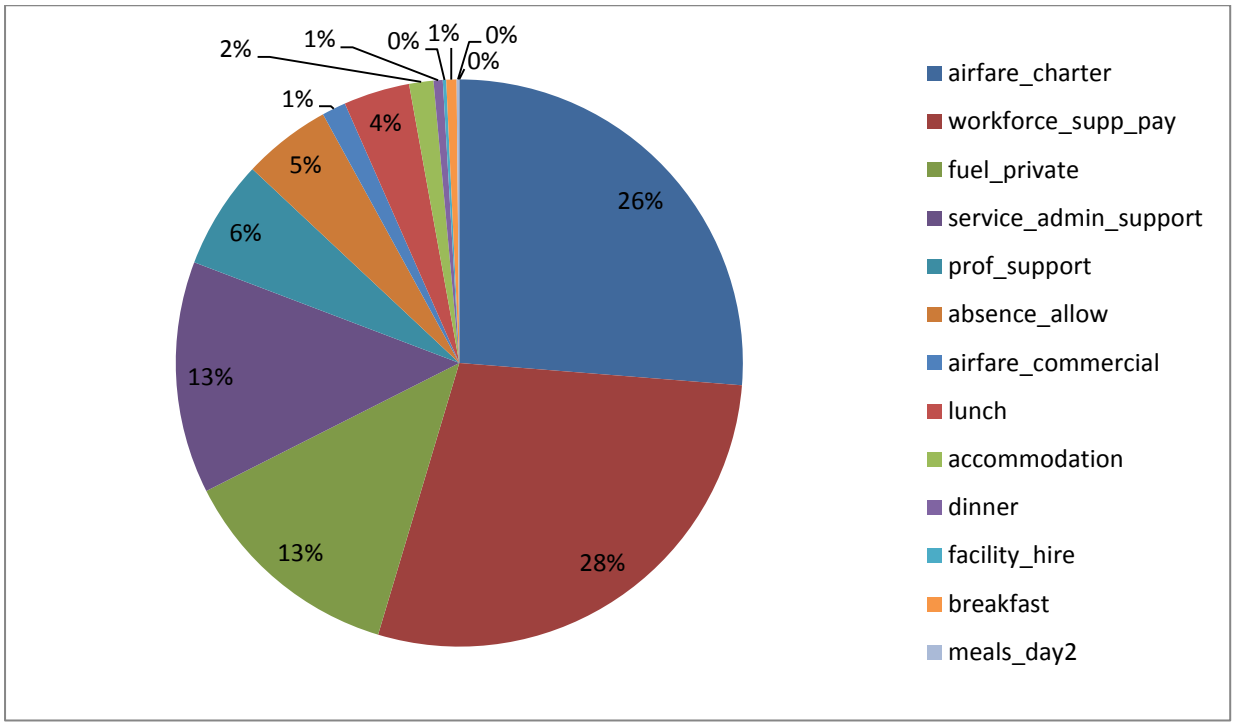
Actual costs by expenditure type - Podiatry



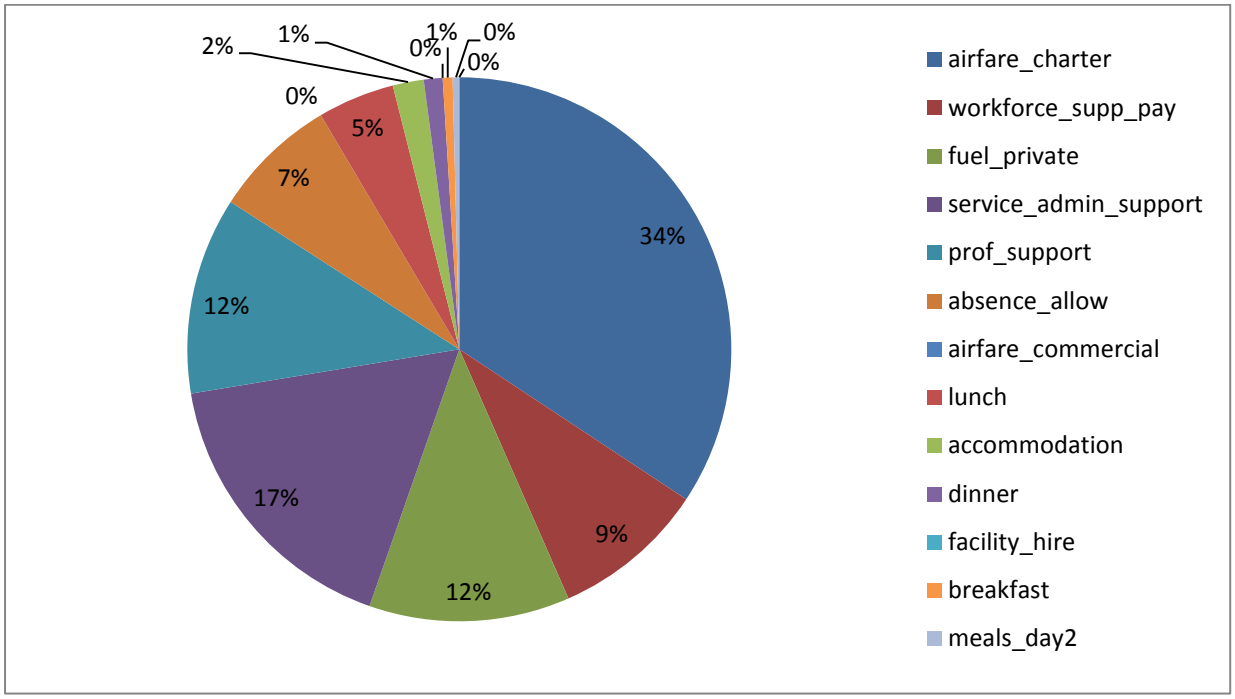
Actual costs by expenditure type - Nurse



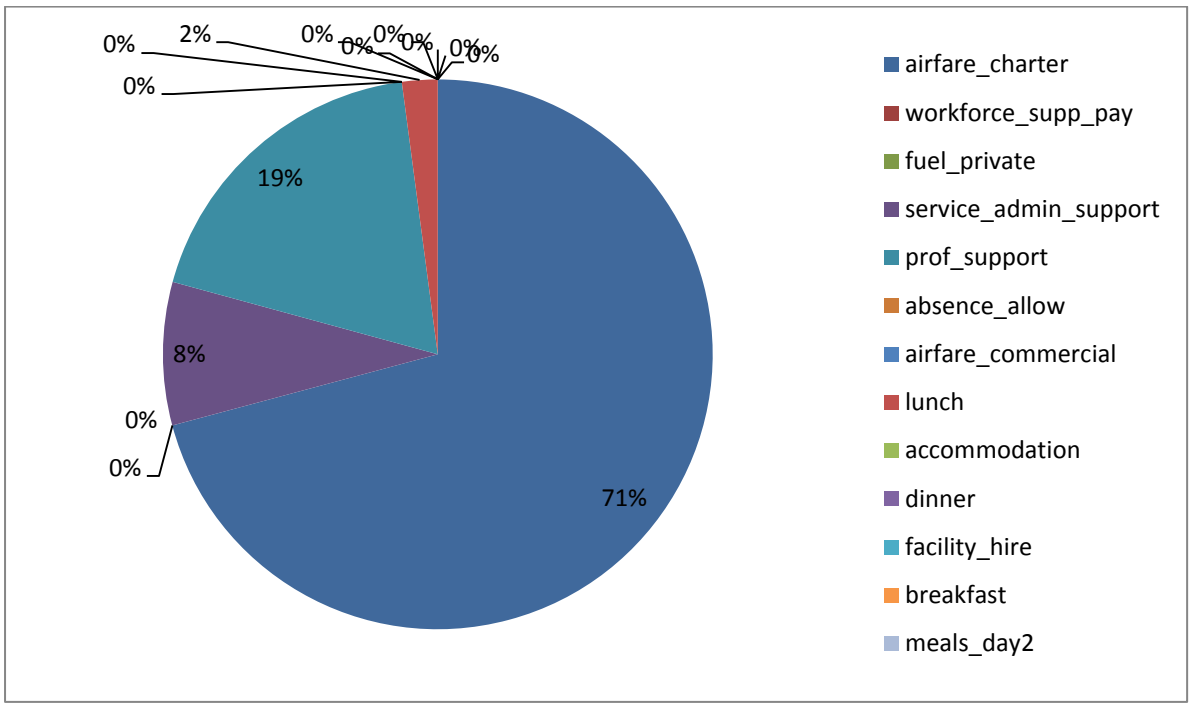
Actual costs by expenditure type - Diabetes education



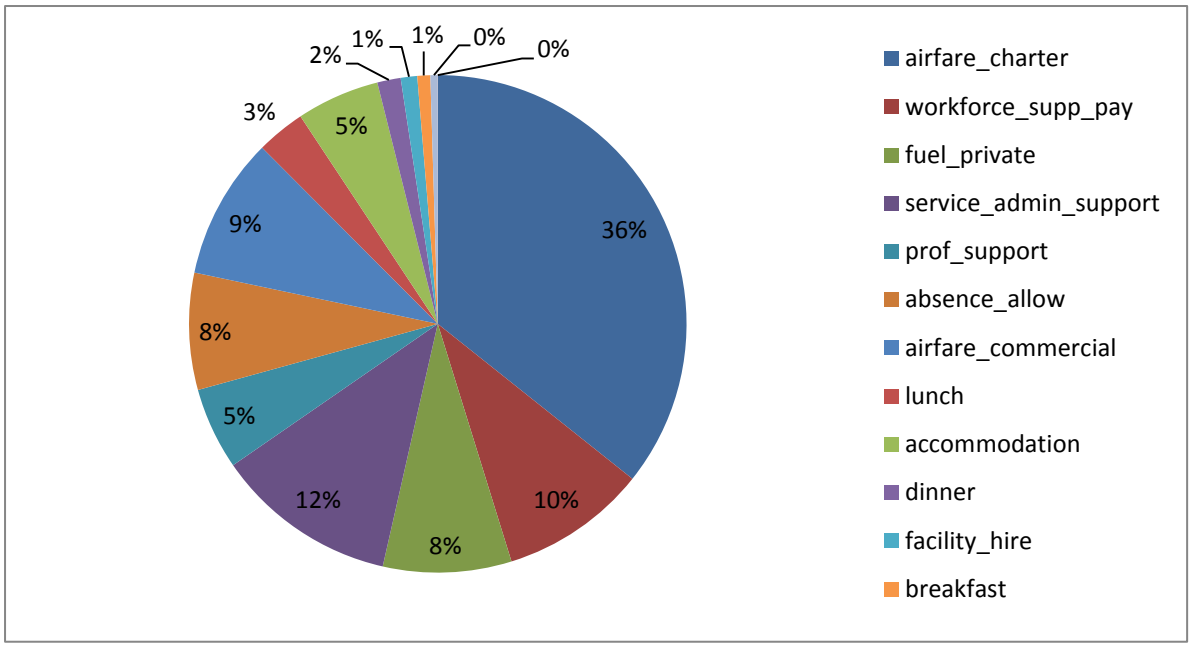
Actual costs by expenditure type - Dietetics



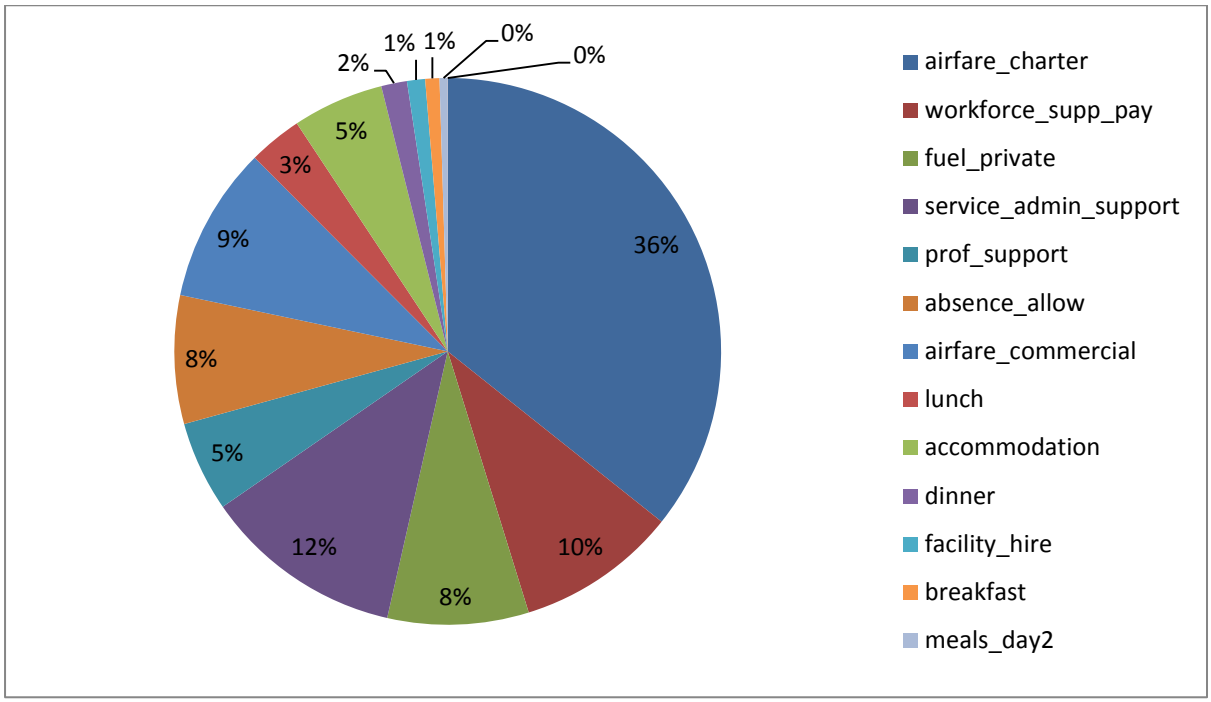
Actual costs by expenditure type - Exercise physiologist



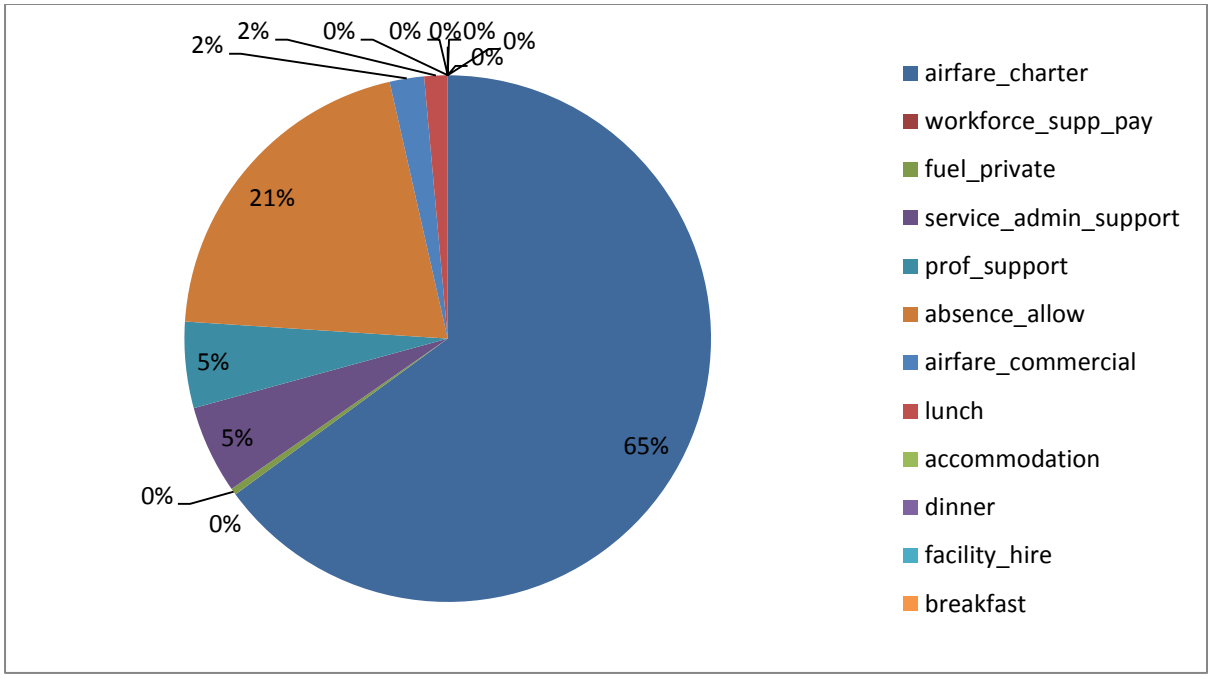
Actual costs by expenditure type - Physician (Psychiatry – adult)



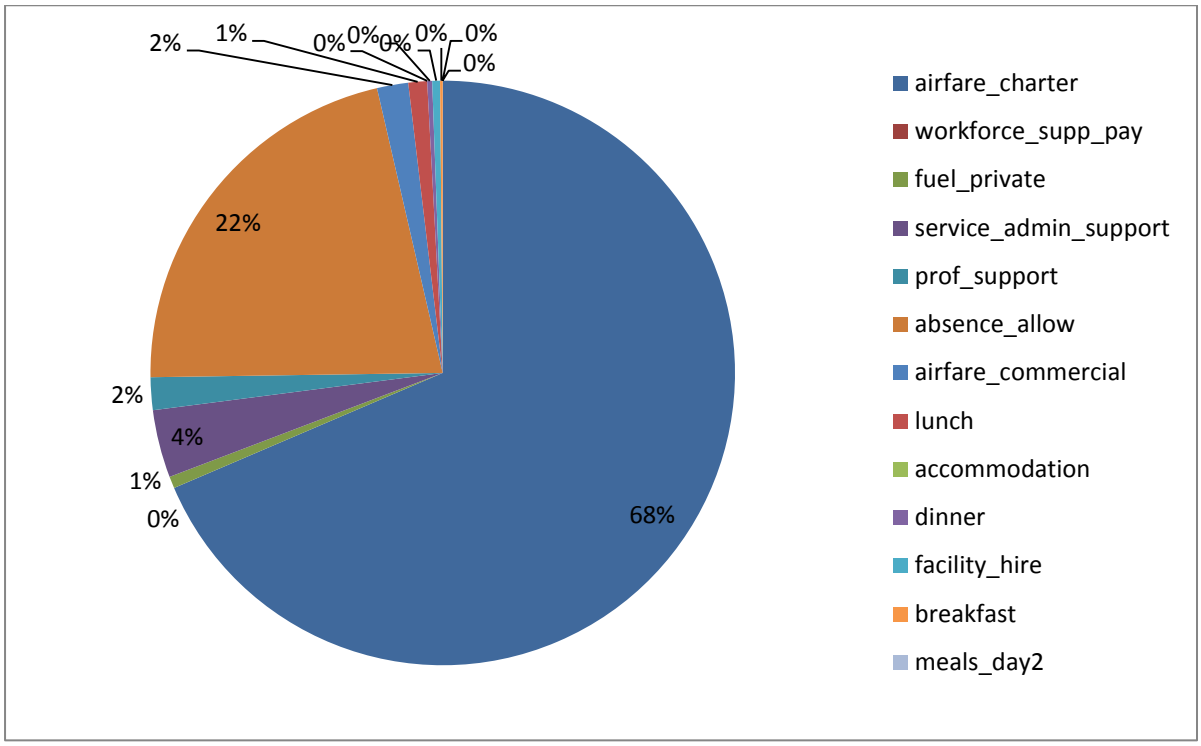
Actual costs by expenditure type - Physiotherapy



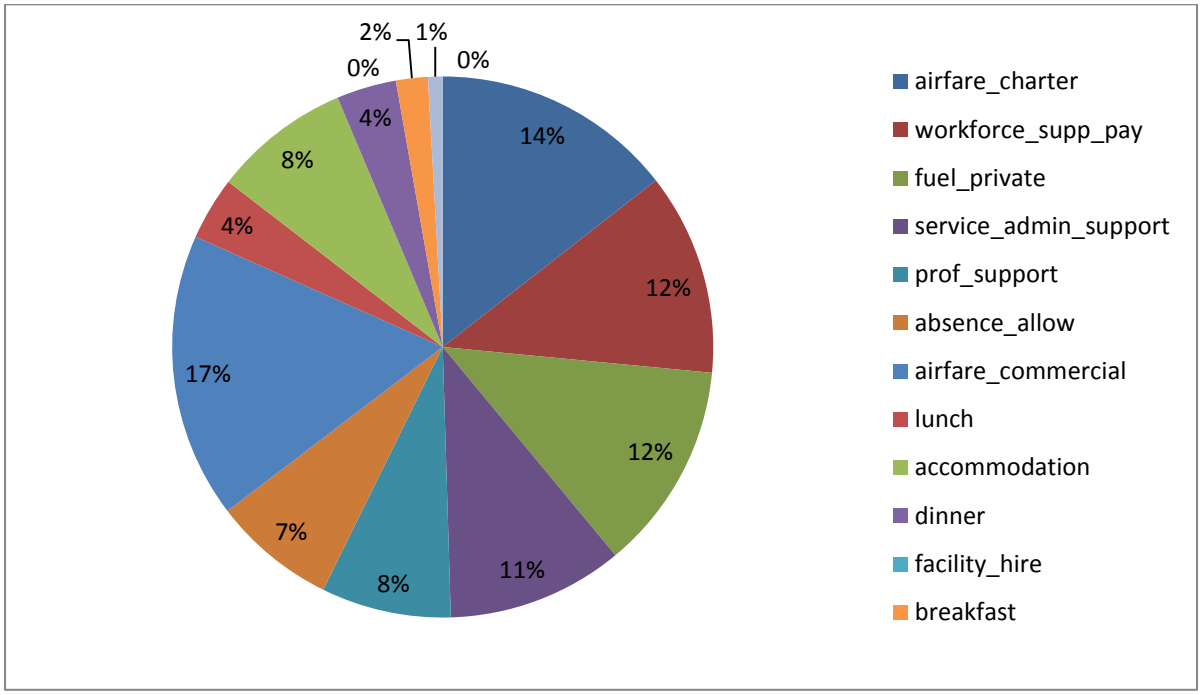
Actual costs by expenditure type – Psychology



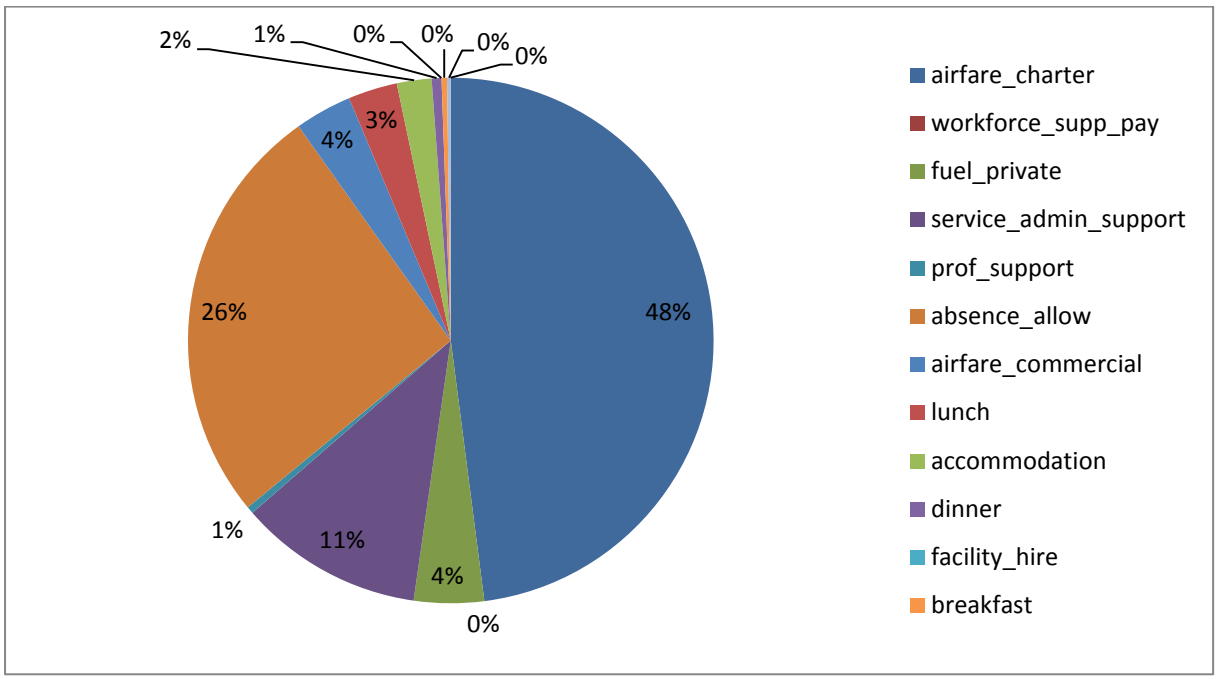
Actual costs by expenditure type - Physician (general)



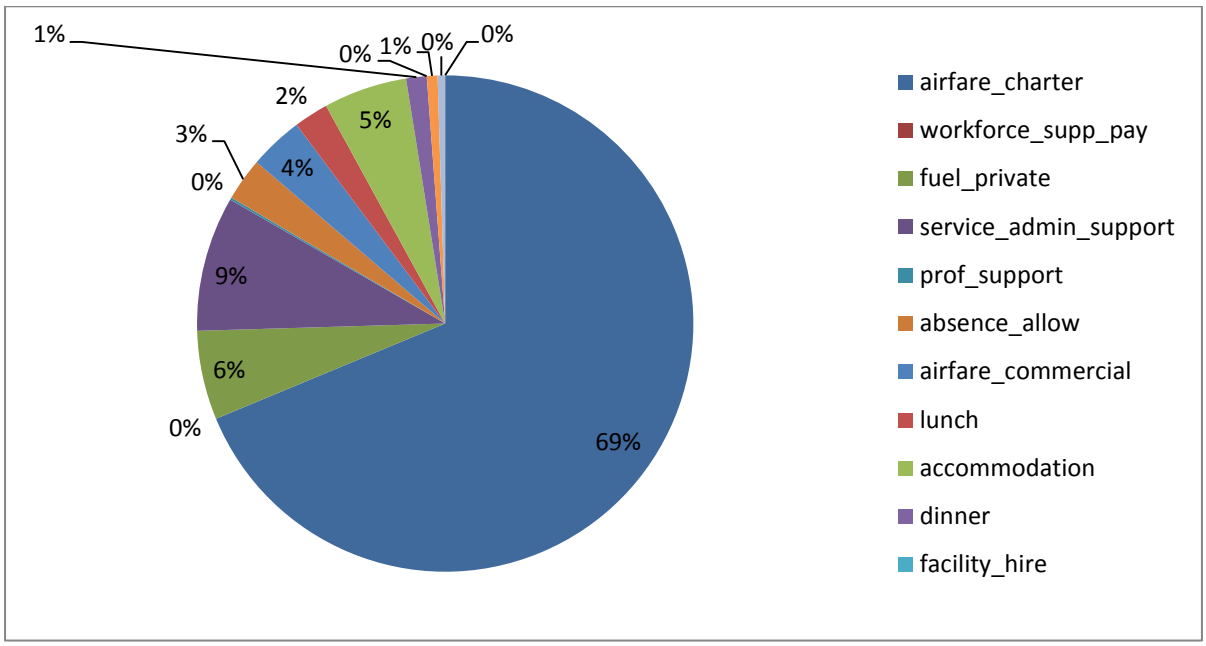
Actual costs by expenditure type - Physician (dermatology)



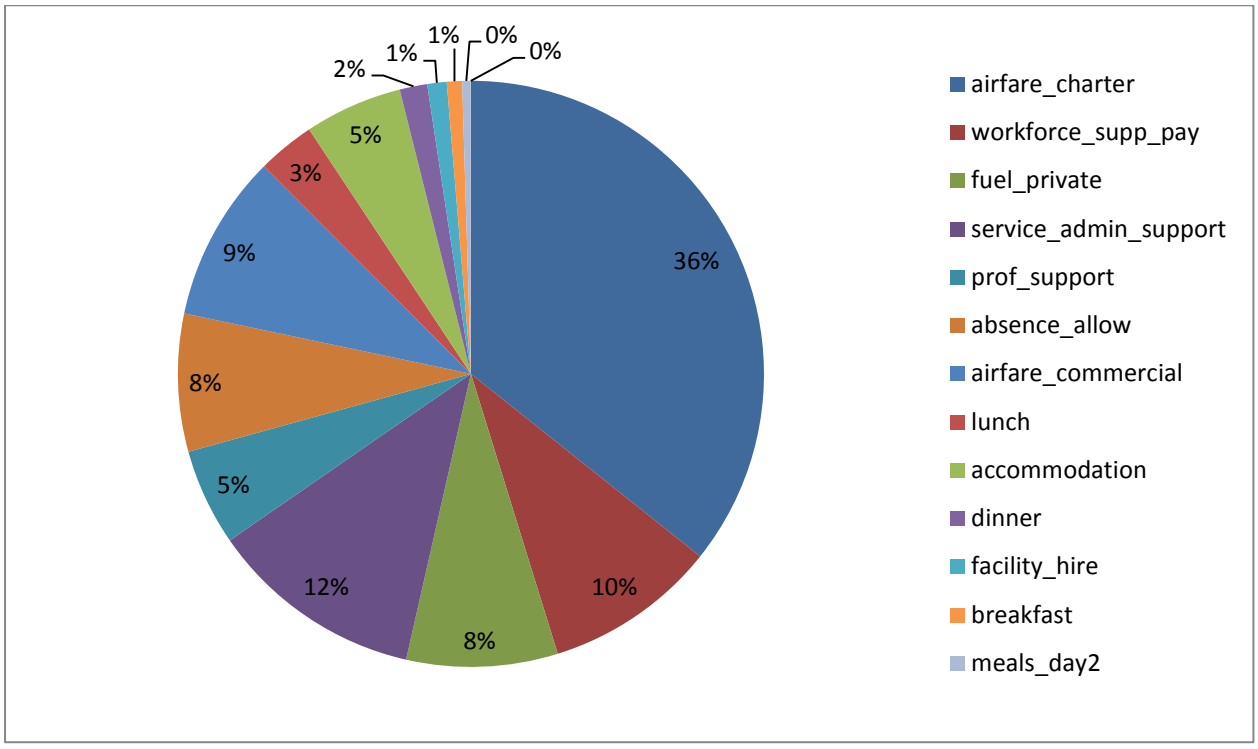
Actual costs by expenditure type - Health worker



Actual costs by expenditure type - Physician (paediatrics)



Actual costs by expenditure type - Speech pathology



Actual costs by expenditure type - All combined (top 50% of overall cost)

Appendix D: Modelled Costs By Health Professional (top 50% based on frequency of visits)

***Note**: Net cost reduction ($) = (Outreach total cost – Predicted total cost)*

A positive 'net cost reduction' value implies that there are monetary gains from using and combining telehealth services.

A negative 'net cost reduction' value implies that there are a monetary losses from using and combining telehealth services.

Podiatry (2014/2015 outreach total cost $893,648)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$714,104	$179,544	$534,560	$359,088	$355,016	$538,632
2a	$828,475	$65,173	$763,301	$130,347	$698,128	$195,520
2b	$749,355	$144,293	$605,063	$288,585	$460,770	$432,878
3a	$828,475	$65,173	$763,301	$130,347	$698,128	$195,520
3b	$749,355	$144,293	$605,063	$288,585	$460,770	$432,878

Dietetics (2014/2015 outreach total cost $622,293)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$706,907	-$84,614	$520,167	$102,127	$333,426	$288,867
2a	$802,514	-$180,221	$711,381	-$89,088	$620,247	$2,046
2b	$736,375	-$114,082	$579,102	$43,191	$421,830	$200,463
3a	$802,514	-$180,221	$711,381	-$89,088	$620,247	$2,046
3b	$736,375	-$114,082	$579,102	$43,191	$421,830	$200,463

Exercise Physiologist (2014/2015 outreach total cost $521,628)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$701,071	-$179,443	$508,494	$13,134	$315,917	$205,711
2a	$781,462	-$259,834	$669,277	-$147,649	$557,091	-$35,463
2b	$725,849	-$204,221	$558,050	-$36,422	$390,251	$131,377
3a	$781,462	-$259,834	$669,277	-$147,649	$557,091	-$35,463
3b	$725,849	-$204,221	$558,050	-$36,422	$390,251	$131,377

Diabetes education (2014/2015 outreach cost $675,123)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$700,634	-$25,511	$507,619	$167,504	$314,605	$360,519
2a	$779,884	-$104,761	$666,120	$9,003	$552,356	$122,767
2b	$725,060	-$49,937	$556,472	$118,651	$387,884	$287,239
3a	$779,884	-$104,761	$666,120	$9,003	$552,356	$122,767
3b	$725,060	-$49,937	$556,472	$118,651	$387,884	$287,239

General Practitioner (2014/2015 outreach cost $1,430,749)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted	Net cost	Predicted	Net cost	Predicted	Net cost

	total cost	reduction	total cost	reduction	total cost	reduction
1	$698,984	$731,765	$504,319	$926,430	$309,655	$1,121,094
2a	$847,856	$582,893	$802,064	$628,685	$756,272	$674,477
2b	$759,046	$671,703	$624,444	$806,305	$489,842	$940,907
3a	$847,856	$582,893	$802,064	$628,685	$756,272	$674,477
3b	$759,046	$671,703	$624,444	$806,305	$489,842	$940,907

Psychology (2014/2015 outreach cost $404,750)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$699,053	-$294,303	$504,457	-$99,707	$309,862	$94,888
2a	$774,182	-$369,432	$654,716	-$249,966	$535,250	-$130,500
2b	$722,209	-$317,459	$550,770	-$146,020	$379,331	$25,419
3a	$774,182	-$369,432	$654,716	-$249,966	$535,250	-$130,500
3b	$722,209	-$317,459	$550,770	-$146,020	$379,331	$25,419

Occupational therapy - paediatrics (2014/2015 outreach cost $230,705)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$691,674	-$460,969	$489,699	-$258,994	$287,725	-$57,020
2a	$747,564	-$516,859	$601,480	-$370,775	$455,396	-$224,691
2b	$708,900	-$478,195	$524,152	-$293,447	$339,404	-$108,699

3a	$747,564	-$516,859	$601,480	-$370,775	$455,396	-$224,691
3b	$708,900	-$478,195	$524,152	-$293,447	$339,404	-$108,699

Speech therapy – paediatrics (2014/2015 outreach costs $204,425)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$689,591	-$485,166	$485,534	-$281,109	$281,477	-$77,052
2a	$740,052	-$535,627	$586,457	-$382,032	$432,861	-$228,436
2b	$705,144	-$500,719	$516,640	-$312,215	$328,136	-$123,711
3a	$740,052	-$535,627	$586,457	-$382,032	$432,861	-$228,436
3b	$705,144	-$500,719	$516,640	-$312,215	$328,136	-$123,711

Physiotherapy (2014/2015 outreach costs $458,275)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$687,996	-$229,721	$482,344	-$24,069	$276,692	$181,583
2a	$734,299	-$276,024	$574,950	-$116,675	$415,601	$42,674

2b	$702,267	-$243,992	$510,887	-$52,612	$319,506	$138,769
3a	$734,299	-$276,024	$574,950	-$116,675	$415,601	$42,674
3b	$702,267	-$243,992	$510,887	-$52,612	$319,506	$138,769

Nurse (2014/2015 outreach costs $692,459)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$678,215	$14,244	$462,781	$229,678	$247,348	$445,111
2a	$699,016	-$6,557	$504,384	$188,075	$309,752	$382,707
2b	$684,626	$7,833	$475,604	$216,855	$266,582	$425,877
3a	$699,016	-$6,557	$504,384	$188,075	$309,752	$382,707
3b	$684,626	$7,833	$475,604	$216,855	$266,582	$425,877

Summary of modelled cost reductions by professional type (top 50% based on frequency of visits)

Modelled cost reductions by telehealth scenario and professional type (substitution rate, r=0.25)

	Practitioner type										
Telehealth Scenario	**Podiatry**	**Dietetics**	**Exercise Physiologist**	**Diabetes Education**	**General Practitioner**	**Psychology**	**Occupational Therapy-Paediatrics**	**Speech Therapy-Paediatrics**	**Physiotherapy**	**Nurse**	**Total cost reduction**
1	$179,544	-$84,614	-$179,443	-$25,511	$731,765	-$294,303	-$460,969	-$485,166	-$229,721	$14,244	**-$834,174**
2a	$65,173	-$180,221	-$259,834	-$104,761	$582,893	-$369,432	-$516,859	-$535,627	-$276,024	-$6,557	**-$1,601,249**
2b	$144,293	-$114,082	-$204,221	-$49,937	$671,703	-$317,459	-$478,195	-$500,719	-$243,992	$7,833	**-$1,084,776**
3a	$65,173	-$180,221	-$259,834	-$104,761	$582,893	-$369,432	-$516,859	-$535,627	-$276,024	-$6,557	**-$1,601,249**
3b	$144,293	-$114,082	-$204,221	-$49,937	$671,703	-$317,459	-$478,195	-$500,719	-$243,992	$7,833	**-$1,084,776**
4a	$73,007	-$173,673	-$254,328	-$99,333	$588,027	-$364,286	-$513,031	-$532,171	-$272,852	-$5,132	**-$1,553,773**
4b	$148,210	-$110,808	-$201,468	-$47,223	$674,270	-$314,886	-$476,281	-$498,991	-$242,407	$8,545	**-$1,061,039**

Modelled cost reductions by telehealth scenario and professional type (substitution rate, r=0.50)

	Practitioner type										Total cost reduction
Telehealth Scenario	**Podiatry**	**Dietetics**	**Exercise Physiologist**	**Diabetes Education**	**General Practitioner**	**Psychology**	**Occupational Therapy-Paediatrics**	**Speech Therapy-Paediatrics**	**Physiotherapy**	**Nurse**	
1	$359,088	$102,127	$13,134	$167,504	$926,430	-$99,707	-$258,994	-$281,109	-$24,069	$229,678	**$1,134,082**
2a	$130,347	-$89,088	-$147,649	$9,003	$628,685	-$249,966	-$370,775	-$382,032	-$116,675	$188,075	**-$400,075**
2b	$288,585	$43,191	-$36,422	$118,651	$806,305	-$146,020	-$293,447	-$312,215	-$52,612	$216,855	**$632,871**
3a	$130,347	-$89,088	-$147,649	$9,003	$628,685	-$249,966	-$370,775	-$382,032	-$116,675	$188,075	**-$400,075**
3b	$288,585	$43,191	-$36,422	$118,651	$806,305	-$146,020	-$293,447	-$312,215	-$52,612	$216,855	**$632,871**
4a	$146,014	-$75,991	-$136,636	$19,859	$638,952	-$239,674	-$363,119	-$375,119	-$110,332	$190,924	**-$305,121**
4b	$296,419	$49,739	-$30,916	$124,079	$811,439	-$140,874	-$289,619	-$308,759	-$49,440	$218,280	**$680,347**

Modelled cost reductions by telehealth scenario and professional type (substitution rate, r=0.75)

	Practitioner type										
Telehealth Scenario	**Podiatry**	**Dietetics**	**Exercise Physiologist**	**Diabetes Education**	**General Practitioner**	**Psychology**	**Occupational Therapy-Paediatrics**	**Speech Therapy-Paediatrics**	**Physiotherapy**	**Nurse**	**Total cost reduction**
1	$538,632	$288,867	$205,711	$360,519	$1,121,094	$94,888	-$57,020	-$77,052	$181,583	$445,111	**$3,102,333**
2a	$195,520	$2,046	-$35,463	$122,767	$674,477	-$130,500	-$224,691	-$228,436	$42,674	$382,707	**$801,101**
2b	$432,878	$200,463	$131,377	$287,239	$940,907	$25,419	-$108,699	-$123,711	$138,769	$425,877	**$2,350,519**
3a	$195,520	$2,046	-$35,463	$122,767	$674,477	-$130,500	-$224,691	-$228,436	$42,674	$382,707	**$801,101**
3b	$432,878	$200,463	$131,377	$287,239	$940,907	$25,419	-$108,699	-$123,711	$138,769	$425,877	**$2,350,519**
4a	$219,021	$21,691	-$18,944	$139,051	$689,878	-$115,062	-$213,207	-$218,067	$52,189	$386,981	**$943,530**
4b	$444,629	$210,286	$139,636	$295,381	$948,607	$33,138	-$102,957	-$118,527	$143,526	$428,014	**$2,421,733**

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Appendix E: Modelled costs by health practitioner (top 50% based on current cost)

General Practitioner (2014 outreach cost $1,430,749)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$698,984	$731,765	$504,319	$926,430	$309,655	$1,121,094
2a	$847,856	$582,893	$802,064	$628,685	$756,272	$674,477
2b	$759,046	$671,703	$624,444	$806,305	$489,842	$940,907
3a	$847,856	$582,893	$802,064	$628,685	$756,272	$674,477
3b	$759,046	$671,703	$624,444	$806,305	$489,842	$940,907

Podiatry (2014 outreach costs $893,648)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$714,104	$179,544	$534,560	$359,088	$355,016	$538,632
2a	$828,475	$65,173	$763,301	$130,347	$698,128	$195,520
2b	$749,355	$144,293	$605,063	$288,585	$460,770	$432,878
3a	$828,475	$65,173	$763,301	$130,347	$698,128	$195,520
3b	$749,355	$144,293	$605,063	$288,585	$460,770	$432,878

Nurse (2014 outreach costs $692,459)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$678,215	$14,244	$462,781	$229,678	$247,348	$445,111
2a	$699,016	-$6,557	$504,384	$188,075	$309,752	$382,707
2b	$684,626	$7,833	$475,604	$216,855	$266,582	$425,877
3a	$699,016	-$6,557	$504,384	$188,075	$309,752	$382,707
3b	$684,626	$7,833	$475,604	$216,855	$266,582	$425,877

Diabetes education (2014 outreach cost $675,123)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$700,634	-$25,511	$507,619	$167,504	$314,605	$360,519
2a	$779,884	-$104,761	$666,120	$9,003	$552,356	$122,767
2b	$725,060	-$49,937	$556,472	$118,651	$387,884	$287,239
3a	$779,884	-$104,761	$666,120	$9,003	$552,356	$122,767
3b	$725,060	-$49,937	$556,472	$118,651	$387,884	$287,239

Dietetics (2014 outreach total cost $622,293)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$706,907	-$84,614	$520,167	$102,127	$333,426	$288,867
2a	$802,514	-$180,221	$711,381	-$89,088	$620,247	$2,046
2b	$736,375	-$114,082	$579,102	$43,191	$421,830	$200,463
3a	$802,514	-$180,221	$711,381	-$89,088	$620,247	$2,046
3b	$736,375	-$114,082	$579,102	$43,191	$421,830	$200,463

Exercise Physiologist (2014 outreach total cost $521,628)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$701,071	-$179,443	$508,494	$13,134	$315,917	$205,711
2a	$781,462	-$259,834	$669,277	-$147,649	$557,091	-$35,463
2b	$725,849	-$204,221	$558,050	-$36,422	$390,251	$131,377
3a	$781,462	-$259,834	$669,277	-$147,649	$557,091	-$35,463
3b	$725,849	-$204,221	$558,050	-$36,422	$390,251	$131,377

Physician - adult psychiatry (2014 outreach costs $73,218)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$674,952	-$601,734	$456,257	-$383,039	$237,561	-$164,343
2a	$703,957	-$630,739	$514,266	-$441,048	$324,576	-$251,358
2b	$687,097	-$613,879	$480,545	-$407,327	$273,994	-$200,776
3a	$703,957	-$630,739	$514,266	-$441,048	$324,576	-$251,358
3b	$687,097	-$613,879	$480,545	-$407,327	$273,994	-$200,776

Physiotherapy (2014 outreach costs $458,275)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$687,996	-$229,721	$482,344	-$24,069	$276,692	$181,583
2a	$734,299	-$276,024	$574,950	-$116,675	$415,601	$42,674
2b	$702,267	-$243,992	$510,887	-$52,612	$319,506	$138,769
3a	$734,299	-$276,024	$574,950	-$116,675	$415,601	$42,674
3b	$702,267	-$243,992	$510,887	-$52,612	$319,506	$138,769

Psychology (2014 outreach cost $404,750)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$699,053	-$294,303	$504,457	-$99,707	$309,862	$94,888
2a	$774,182	-$369,432	$654,716	-$249,966	$535,250	-$130,500
2b	$722,209	-$317,459	$550,770	-$146,020	$379,331	$25,419
3a	$774,182	-$369,432	$654,716	-$249,966	$535,250	-$130,500
3b	$722,209	-$317,459	$550,770	-$146,020	$379,331	$25,419

Physician – general (2014 outreach costs $397,041)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$678,574	-$280,633	$463,500	-$65,559	$248,425	$149,516
2a	$729,851	-$331,910	$566,054	-$168,113	$402,257	-$4,316
2b	$700,044	-$302,103	$506,439	-$108,498	$312,835	$85,106
3a	$729,851	-$331,910	$566,054	-$168,113	$402,257	-$4,316
3b	$700,044	-$302,103	$506,439	-$108,498	$312,835	$85,106

Physician – dermatology (2014 outreach costs $328,407)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$679,313	-$350,906	$464,977	-$136,570	$250,642	$77,765
2a	$735,134	-$406,727	$576,620	-$248,213	$418,107	-$89,699
2b	$702,685	-$374,278	$511,722	-$183,315	$320,759	$7,648
3a	$735,134	-$406,727	$576,620	-$248,213	$418,107	-$89,699
3b	$702,685	-$374,278	$511,722	-$183,315	$320,759	$7,648

Health worker (2014 outreach costs $351,674)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$686,476	-$334,802	$479,304	-$127,630	$272,132	$79,542
2a	$728,816	-$377,142	$563,984	-$212,310	$399,152	-$47,478
2b	$699,526	-$347,852	$505,404	-$153,730	$311,282	$40,392
3a	$728,816	-$377,142	$563,984	-$212,310	$399,152	-$47,478
3b	$699,526	-$347,852	$505,404	-$153,730	$311,282	$40,392

Physician – paediatrics (2014 outreach costs $365,229)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$684,353	-$319,124	$475,057	-$109,828	$265,762	$99,467
2a	$771,170	-$405,941	$648,692	-$283,463	$526,215	-$160,986
2b	$720,703	-$355,474	$547,758	-$182,529	$374,813	-$9,584
3a	$771,170	-$405,941	$648,692	-$283,463	$526,215	-$160,986
3b	$720,703	-$355,474	$547,758	-$182,529	$374,813	-$9,584

Speech pathology (2014 outreach costs $314,114)

	Telehealth substitution rate					
	25%		50%		75%	
Model	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction	Predicted total cost	Net cost reduction
1	$681,702	-$367,588	$469,756	-$155,642	$257,810	$56,304
2a	$711,596	-$397,482	$529,543	-$215,429	$347,491	-$33,377
2b	$690,916	-$376,802	$488,184	-$174,070	$285,451	$28,663
3a	$711,596	-$397,482	$529,543	-$215,429	$347,491	-$33,377
3b	$690,916	-$376,802	$488,184	-$174,070	$285,451	$28,663

Summary of modelled cost reductions by professional type (top 50% based on current cost)

Modelled cost reductions by telehealth scenario and professional type (substitution rate, r=0.25)

	Practitioner type														
Telehealth Scenario	**General Practitioner**	**Podiatry**	**Nurse**	**Diabetes Education**	**Dietetics**	**Exercise Physiologist**	**Physician - Psychiatry**	**Physiotherapy**	**Psychology**	**Physician - General**	**Physician - Dermatology**	**Health Worker**	**Physician - Paediatrics**	**Speech Pathology**	**Total cost reduction**
1	$731,765	$179,544	$14,244	-$25,511	-$84,614	-$179,443	-$601,734	-$229,721	-$294,303	-$280,633	-$350,906	-$334,802	-$319,124	-$367,588	**-$2,142,826**
2a	$582,893	$65,173	-$6,557	-$104,761	-$180,221	-$259,834	-$630,739	-$276,024	-$369,432	-$331,910	-$406,727	-$377,142	-$405,941	-$397,482	**-$3,098,704**
2b	$671,703	$144,293	$7,833	-$49,937	-$114,082	-$204,221	-$613,879	-$243,992	-$317,459	-$302,103	-$374,278	-$347,852	-$355,474	-$376,802	**-$2,476,250**
3a	$582,893	$65,173	-$6,557	-$104,761	-$180,221	-$259,834	-$630,739	-$276,024	-$369,432	-$331,910	-$406,727	-$377,142	-$405,941	-$397,482	**-$3,098,704**
3b	$671,703	$144,293	$7,833	-$49,937	-$114,082	-$204,221	-$613,879	-$243,992	-$317,459	-$302,103	-$374,278	-$347,852	-$355,474	-$376,802	**-$2,476,250**
4a	$588,027	$73,007	-$5,132	-$99,333	-$173,673	-$254,328	-$629,897	-$272,852	-$364,286	-$330,421	-$405,106	-$374,242	-$395,434	$221,954	**-$2,421,718**
4b	$674,270	$148,210	$8,545	-$47,223	-$110,808	-$201,468	-$613,458	-$242,407	-$314,886	-$301,358	-$373,468	-$346,402	-$375,778	$244,994	**-$1,851,236**

Modelled cost reductions by telehealth scenario and professional type (substitution rate, r=0.50)

	Professional type														
Telehealth Scenario	**General Practitioner**	**Podiatry**	**Nurse**	**Diabetes Education**	**Dietetics**	**Exercise Physiologist**	**Physician - Psychiatry**	**Physiotherapy**	**Psychology**	**Physician - General**	**Physician - Dermatology**	**Health Worker**	**Physician - Paediatrics**	**Speech Pathology**	**Total cost reduction**
1	$926,430	$359,088	$229,678	$167,504	$102,127	$13,134	-$383,039	-$24,069	-$99,707	-$65,559	-$136,570	-$127,630	-$109,828	-$155,642	**$695,917**
2a	$628,685	$130,347	$188,075	$9,003	-$89,088	-$147,649	-$441,048	-$116,675	-$249,966	-$168,113	-$248,213	-$212,310	-$283,463	-$215,429	**-$1,215,844**
2b	$806,305	$288,585	$216,855	$118,651	$43,191	-$36,422	-$407,327	-$52,612	-$146,020	-$108,498	-$183,315	-$153,730	-$182,529	-$174,070	**$29,064**
3a	$628,685	$130,347	$188,075	$9,003	-$89,088	-$147,649	-$441,048	-$116,675	-$249,966	-$168,113	-$248,213	-$212,310	-$283,463	-$215,429	**-$1,215,844**
3b	$806,305	$288,585	$216,855	$118,651	$43,191	-$36,422	-$407,327	-$52,612	-$146,020	-$108,498	-$183,315	-$153,730	-$182,529	-$174,070	**$29,064**
4a	$638,952	$146,014	$190,924	$19,859	-$75,991	-$136,636	-$439,364	-$110,332	-$239,674	-$165,135	-$244,972	-$206,510	-$278,422	-$211,334	**-$1,112,620**
4b	$811,439	$296,419	$218,280	$124,079	$49,739	-$30,916	-$406,485	-$49,440	-$140,874	-$107,009	-$181,694	-$150,830	-$180,008	-$172,022	**$80,676**

Modelled cost reductions by telehealth scenario and professional type (substitution rate, r=0.75)

	Practitioner type														
Telehealth Scenario	**General Practitioner**	**Podiatry**	**Nurse**	**Diabetes Education**	**Dietetics**	**Exercise Physiologist**	**Physician - Psychiatry**	**Physiotherapy**	**Psychology**	**Physician - General**	**Physician - Dermatology**	**Health Worker**	**Physician - Paediatrics**	**Speech Pathology**	**Total cost reduction**
1	$1,121,094	$538,632	$445,111	$360,519	$288,867	$205,711	-$164,343	$181,583	$94,888	$149,516	$77,765	$79,542	$99,467	$56,304	**$3,534,656**
2a	$674,477	$195,520	$382,707	$122,767	$2,046	-$35,463	-$251,358	$42,674	-$130,500	-$4,316	-$89,699	-$47,478	-$160,986	-$33,377	**$667,014**
2b	$940,907	$432,878	$425,877	$287,239	$200,463	$131,377	-$200,776	$138,769	$25,419	$85,106	$7,648	$40,392	-$9,584	$28,663	**$2,534,378**
3a	$674,477	$195,520	$382,707	$122,767	$2,046	-$35,463	-$251,358	$42,674	-$130,500	-$4,316	-$89,699	-$47,478	-$160,986	-$33,377	**$667,014**
3b	$940,907	$432,878	$425,877	$287,239	$200,463	$131,377	-$200,776	$138,769	$25,419	$85,106	$7,648	$40,392	-$9,584	$28,663	**$2,534,378**
4a	$689,878	$219,021	$386,981	$139,051	$21,691	-$18,944	-$248,831	$52,189	-$115,062	$150	-$84,837	-$38,778	-$153,423	-$27,234	**$821,852**
4b	$948,607	$444,629	$428,014	$295,381	$210,286	$139,636	-$199,513	$143,526	$33,138	$87,340	$10,079	$44,742	-$5,803	$31,734	**$2,611,796**

Appendix F: Additional statistics and model parameters, by health profession

Podiatry

Total cost of visits (actual)	$893,648
Total number of patients seen	10,027
Average cost per patient	$89
Average number of patients per visit	16
Average duration of visit	1 day
Average cost per visit	$1,424

Dietetics

Total cost of visits (actual)	$622,293
Total number of patients seen	6,520
Average cost per patient	$95
Average number of patients per visit	8
Average duration of visit	1 day
Average cost per visit	$764

Exercise Physiologist

Total cost of visits (actual)	$521,628
Total number of patients seen	8,940
Average cost per patient	$58
Average number of patients per visit	12

Average duration of visit	1 day
Average cost per visit	$700

Diabetes Education

Total cost of visits (actual)	$675,123
Total number of patients seen	5,504
Average cost per patient	$122
Average number of patients per visit	8
Average duration of visit	1 day
Average cost per visit	$981

General Practitioner

Total cost of visits (actual)	$1,430,749
Total number of patients seen	13,904
Average cost per patient	$103
Average number of patients per visit	22
Average duration of visit	1 day
Average cost per visit	$2,264

Psychology

Total cost of visits (actual)	$404,750
Total number of patients seen	3,702
Average cost per patient	$109

Average number of patients per visit	6
Average duration of visit	1 day
Average cost per visit	$656

Occupational Therapy - Paediatrics

Total cost of visits (actual)	$230,705
Total number of patients seen	4,496
Average cost per patient	$51
Average number of patients per visit	8
Average duration of visit	1 day
Average cost per visit	$410

Speech Therapy - Paediatrics

Total cost of visits (actual)	$204,425
Total number of patients seen	3,792
Average cost per patient	$54
Average number of patients per visit	8
Average duration of visit	1 day
Average cost per visit	$431

Physiotherapy

Total cost of visits (actual)	$458,275
Total number of patients seen	6,244

Average cost per patient	$74
Average number of patients per visit	14
Average duration of visit	1 day
Average cost per visit	$1,028

Nurse

Total cost of visits (actual)	$692,459
Total number of patients seen	20,904
Average cost per patient	$33
Average number of patients per visit	52
Average duration of visit	2 days
Average cost per visit	$1,723

Physician - Psychiatry - Adult

Total cost of visits (actual)	$73,218
Total number of patients seen	448
Average cost per patient	$163
Average number of patients per visit	8
Average duration of visit	1 days
Average cost per visit	$1,308

Physician - General

Total cost of visits (actual)	$397,941
Total number of patients seen	3,744
Average cost per patient	$106
Average number of patients per visit	18
Average duration of visit	1 days
Average cost per visit	$1,913

Physician - Dermatology

Total cost of visits (actual)	$328,407
Total number of patients seen	1,476
Average cost per patient	$223
Average number of patients per visit	12
Average duration of visit	1 days
Average cost per visit	$2,670

Health Worker

Total cost of visits (actual)	$351,674
Total number of patients seen	7,512
Average cost per patient	$47
Average number of patients per visit	24
Average duration of visit	1 days
Average cost per visit	$1,124

Physician – Paediatrics

Total cost of visits (actual)	$365,229
Total number of patients seen	4,284
Average cost per patient	$85
Average number of patients per visit	12
Average duration of visit	1 days
Average cost per visit	$1,023

Speech Pathology

Total cost of visits (actual)	$314,114
Total number of patients seen	1,920
Average cost per patient	$164
Average number of patients per visit	10
Average duration of visit	1 days
Average cost per visit	$1,636