

Telepharmacy—Enabling Technology to Provide Quality Pharmacy Services in Rural and Remote Communities

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ABSTRACT

The provision of quality pharmacy services to rural and remote communities is influenced by the National Strategy for the Quality Use of Medicines. The implementation of this strategy is challenged by the shortage of pharmacists in rural areas. Australia compares unfavourably with both the UK and US in this regard. The Fourth Community Pharmacy Agreement between the Commonwealth of Australia and the Pharmacy Guild commits the parties to 13 key objectives and makes provision for funding initiatives for professional pharmacy programs. Two of these programs are medication reviews and e-health initiatives. Telepharmacy, as an enabling technology, represents a unique and innovative way to deliver quality pharmacy services to rural areas. Telepharmacy operations are in place in other countries. In the US, two principal models are in Washington State and North Dakota, although other states such as Texas, Nebraska and Alaska also have telepharmacy models in place. Studies in Australia have had mixed results and have not been as successful. However, there are some promising models that have been employed in telemedicine, including for the delivery of physiotherapy and other allied health services. It is of key importance to involve pharmacists in telepharmacy services and a key initiative to be studied soon in Far North Queensland will involve home medication reviews being conducted via telepharmacy.

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PHARMACY SERVICES AND QUALITY USE OF MEDICINES

Australia's rural areas are characterised by small communities and towns spread over vast distances. The people of these communities and those who travel through them do not have ready access to quality pharmaceutical services that people living in urban areas take for granted. Quality pharmaceutical services have been described as: dispensing, supply and distribution of medicines; provision of knowledge and information about drugs, with the primary objective being the promotion and assurance of quality use of medicines (QUM); and provision of pharmaceutical care, which involves pharmacists responding to patients' drug-related needs to assist them achieve their desired health outcomes.¹

The Fourth Community Pharmacy Agreement between the Commonwealth of Australia and the Pharmacy Guild, commits the parties to achieving 13 key objectives.² Of interest are the funding initiatives for professional pharmacy programs (including a Better Community Health program), which will provide:

- medication reviews;

- rural allowances and support;
- improved Indigenous access to community pharmacy services;
- dose administration aids for people at risk;
- pilot programs to develop pharmacy's role in the care of asthma and diabetes; and
- e-health initiatives.

Other countries, stimulated by the World Health Organization, are implementing national medicinal drug policies to ensure that essential, affordable drugs of acceptable quality, safety and efficacy are available for their population. The Commonwealth of Australia established the Australian Pharmaceutical Advisory Council (APAC) and the Pharmaceutical Health and Rational Use of Medicines Committee (PHARM) in 1991 in an effort to improve the use of medicines and further develop a national medicines policy. The activities of the government, based on advice from APAC and PHARM, together with representative groups from all interested parties in health care, resulted in the establishment of the National Prescribing Service in 1998 and the National Medicines Policy in 2000.³

The National Medicines Policy is based on four central objectives within a framework of active and respectful partnerships, taking into account elements of social and economic policy.⁴ These objectives are described as timely access to medicines, which meet appropriate standards of quality, safety and efficacy, at a cost that individuals and the community can afford and that embody QUM principles, while maintaining a responsible and viable medicines industry.

The key focus of the National Strategy for Quality Use of Medicines is to ensure that medicines are used judiciously, appropriately, safely and efficaciously.⁵ APAC, the coordinating body for the implementation of the QUM strategy, comprises interested parties representing the major partners identified in the National Medicines Policy. APAC's strategic plan is detailed under the four arms of the National Medicines Policy.⁶

The progression and cascading of the National Medicines Policy and strategies down to the provision of quality pharmaceutical services is partly embedded in the Fourth Community Pharmacy Agreement.⁷

RURAL PHARMACY AND WORKFORCE CHALLENGES

Rural communities have always had difficulty recruiting health professionals. These difficulties are now being compounded by a nationwide pharmacist shortage. The first of the recent workforce reports, Pharmacy Labour Force 1998, identified that the number of pharmacists per 100 000 population declined by 13.8% between 1990 and 1996.⁸ This compared unfavourably with the US and the UK, where increases in the number of pharmacists per 100 000 population were recorded for the same period. Australia was also in the lower third of countries surveyed in the number of pharmacists per

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100 000 population and this did not take into account Australia's vast geographical area.

A study by the Department of Employment and Workplace Relations in December 2002, found that there were national shortages of community and hospital pharmacists in all states and territories.⁹ There were severe shortages of hospital pharmacists in New South Wales and acute shortages of community pharmacists in Queensland's regional areas. This indicated that the position had become more acute since the study by the Department of Employment and Workplace Relations and Small Business in December 1999, which found that there were national shortages of community and hospital pharmacists in all states except NSW.¹⁰

A study by Health Care Intelligence Pty Ltd (HCI) in 1999, reported that the market for hospital pharmacists may be nearly balanced by 2010, but there may be a shortage of community pharmacists.¹¹ The pharmacy workforce study (2001), 'A demand model for hospital pharmacists', by O'Leary et al. reported that three of the main drivers for the demand for hospital pharmacists are: the National Medicines Policy, implementation of the APAC guidelines which follow on from the National Medicines Policy; increased patient safety; and the introduction of Pharmaceutical Benefits Scheme dispensing in public hospitals.¹² These drivers were the reason for the HCI 1999 report coming to a set of different workforce conclusions to the O'Leary report.

The O'Leary report estimated that approximately 310 qualified pharmacists were required immediately to fill positions currently vacant in hospitals across Australia. An additional 395 to 515 hospital pharmacists were required in the period 2001–2006, and an additional 715 to 1330 hospital pharmacists will be required in the period 2006–2010. This equates to at least 860 additional qualified pharmacists.

Parts of the O'Leary report were incorporated into the updated HCI pharmacy workforce report, 'A study of the demand and supply of pharmacists, 2000–2010'.¹³ This report identified workforce requirements for both community and hospital pharmacists. In Appendix 5 of this report, the Pharmacy Guild detailed a vision statement for the future, where it is envisaged that the role of the pharmacist would become increasingly focused on providing service, rather than just supply of

product. The Pharmacy Guild claims that the Quality Care Pharmacy Program will result in all dispensing and supply of scheduled products being services. The provision of medication management reviews by pharmacists is the first example of this.¹⁴ It is envisaged that there will be many more such services provided which relate to the management of specific chronic illnesses or ongoing conditions, such as diabetes and asthma, as identified in the Fourth Community Pharmacy Agreement.

It will be difficult to introduce these professional activities into rural and remote Australia, given the shortage of pharmacists. Indeed, the shortage in these areas has often resulted in the role of providing pharmacy services to rural and remote communities being shifted to doctors, nurses, aboriginal and other healthcare workers.¹⁵

TELEPHARMACY

The US Health Resources and Services Administration has defined telepharmacy as the use of electronic information and communication technology to provide and support comprehensive pharmacy services when distance separates the participants.¹⁶ Telepharmacy represents a unique and innovative way to deliver pharmacy services to rural areas incorporating all the safe practices offered by the traditional mode of delivery. Potential benefits to the rural communities include restoring access to health care, pharmacy services and pharmacists, and improving the chances of recruiting or retaining pharmacists in rural communities, as well as providing new clinical training sites for pharmacy students for teaching them how to deliver pharmacy services to rural communities in a unique way.¹⁷

Telepharmacy Models

There are a number of telepharmacy initiatives in full operation in the US, using a variety of models (Table 1). In North Dakota, the telepharmacy sites are full-service pharmacies that have complete drug inventories including over-the-counter and prescription drugs, health and beauty aids, as well as other general merchandise.¹⁷ The telepharmacy sites provide the same services as traditional pharmacies including filling prescriptions and performing both medication reviews and patient counselling. The telepharmacy sites satisfy North

Table 1. Examples of rural dispensing models

Dispensing stages	US rural telepharmacy model examples		
	Washington State	North Dakota	Australian rural clinic model
Prescription	Electronically sent to pharmacist from rural clinic by technician	Prescription from rural pharmacy viewed by pharmacist via document camera or telefax	Prescription read by nurse/health care worker and stored locally
Prescription entry and verification	Pharmacist enters details into dispensary system from electronic copy or prescription	Technician enters details into dispensary system and pharmacist verifies entry via dispensary system	Nurse/healthcare worker enters details into dispensary system or completes manual record
Dispensing process	Technician activates automatic dispensing system to dispense prescription	Technician prepares prescription for dispensing by pharmacist under pharmacist's supervision via video link	Nurse/healthcare worker dispenses prescription
Dispensing verification	Product bar code read and dispensed product verified by pharmacist via video link	Dispensed product is verified by pharmacist via document camera	Prescriber verifies dispensed product (various procedures)
Patient counselling	Patient counselling conducted by pharmacist via video link (as required)	Patient counselling conducted by pharmacist via video link (as required)	Patient counselling conducted by pharmacist via telephone or by prescriber/nurse/healthcare worker (as required)

Dakota Board of Pharmacy regulations for pharmacy practice in the state. The processes used for filling a prescription at the remote sites are the same as traditional pharmacy services except that the pharmacist, technician, and patient are not present at the same site. Telepharmacy uses state-of-the-art technology allowing a licensed pharmacist at a central location to supervise a pharmacy technician in the dispensing of pharmaceuticals at a remote site through audio and video computer links (Figure 1).

Pharmacies are allowed to use pharmacy technicians to assist in the process of filling prescriptions as long as they are directly supervised by a licensed pharmacist. North Dakota pharmacists felt there was no reason that this supervision could not occur at a distance using modern technology links. They took action on this premise, resulting in North Dakota being one of the first US states to pass administrative rules that allow pharmacies to operate in certain remote areas without requiring a pharmacist to be present. The North Dakota State Board of Pharmacy has established 'Telepharmacy Rules' to define guidelines for practitioners on how telepharmacy can be safely practised.¹⁸ In this model, a patient takes their prescription to the remote pharmacy site and gives it to the registered pharmacy technician, who prepares the prescription for dispensing by the pharmacist. The pharmacist reviews the patient's medication profile for drug interactions and other potential problems before examining digital pictures of the completed prescription for accuracy via video conferencing equipment. Once the pharmacist has

approved the prepared prescription, the pharmacy technician brings the patient to a private consultation room for counselling by the pharmacist on the proper use of their medication. Patient education counselling is required by the North Dakota Board of Pharmacy for all patients receiving telepharmacy services and also takes place via video conferencing. Patient confidentiality is assured throughout the processing of their prescription. The pharmacist is ultimately responsible for proper preparing and dispensing of medications.

Washington State has a rule allowing remote dispensing devices.¹⁹ In this model the remote medication dispensing and patient-education process involves several steps. From the remote clinics the prescription is electronically transmitted to the base pharmacy. The pharmacist at the base site processes the prescription and, once satisfied with the data, transmits an electronic command to the remote site, readying the remote automatic dispensing (ADDS) machine to release the specific medication and print the label. An authorised person at the remote site logs into the system and then instructs the ADDS machine to dispense the medication and scan the bar code. The package bar code is verified and a label is printed. The label's bar code is also scanned and the label is attached to the package. Visual verification of the medication and label and counselling of the patient is accomplished via a two-way video conferencing system. The pharmacy technician escorts the patient to the counselling room containing the communication equipment. At remote sites, where

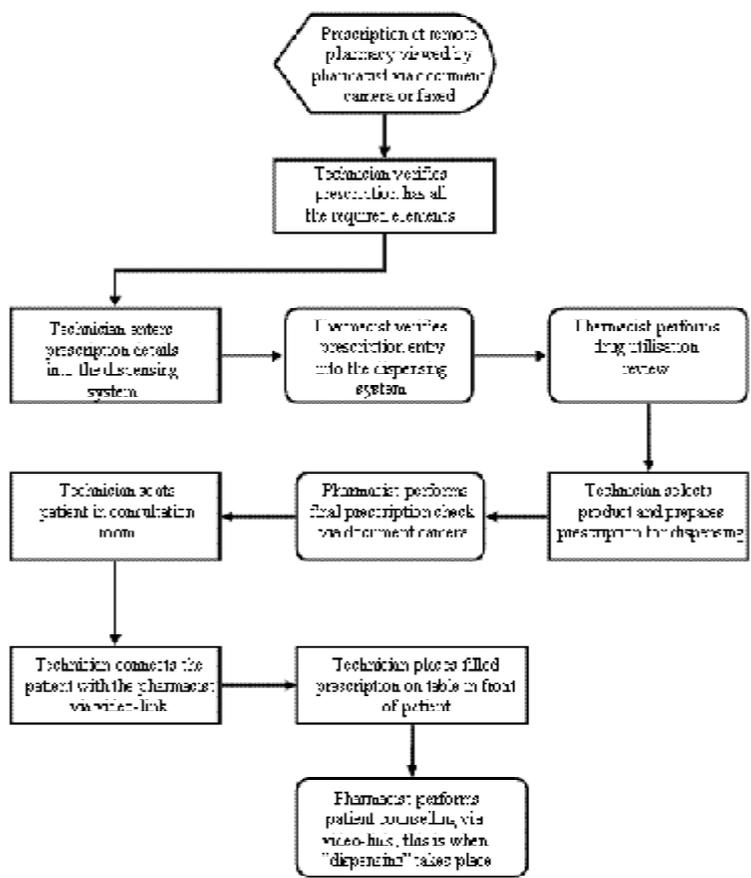


Figure 1. Protocol for processing new prescriptions at a remote telepharmacy site (North Dakota Telepharmacy Project)

physicians or nurse practitioners dispense the medication, label verification and counselling are performed locally by that individual or via the two-way video conferencing system by the pharmacist. In these situations, the decision to have the pharmacist counsel the patient is generally at the discretion of the physicians or nurse practitioners.¹⁹

Nebraska has a dispensing model that delegates prescription processing to non-pharmacist health professionals.²⁰ Arizona has approved off-site verification of prescriptions, and in other states, such as Minnesota and Iowa, telepharmacy requests are approved on a case-by-case basis.¹⁷ Texas Tech University Health Sciences Center is conducting a telepharmacy pilot program providing pharmacy services to the western portion of the state.²¹ Alaska is conducting a demonstration project that uses remote drug dispensing machines to provide medications to patients in nine rural areas and helps healthcare workers better track inventory. Participating rural clinics fax prescriptions to the Alaska Native Medical Center in Anchorage, where a pharmacist sends a command via computer to secure drug dispensing machines at the clinics. The system uses bar codes to track which drugs are dispensed, allowing the Alaska Native Medical Center to monitor who takes what drug and when. The bar coding technology is also claimed to reduce the chance of prescription errors and drug interactions. Each dispensing machine's contents differ.²²

Telepharmacy in Australia

There have been several studies conducted in Australia. An evaluation was undertaken in 2002 to assess the effectiveness of a pilot video phone service in Victoria between a private pharmacy practice in Bairnsdale and a registered pharmacy depot in Omeo. This pilot project was undertaken by the Pharmaceutical Society of Australia with the assistance of the Monash University School of Rural Health, from a grant provided by the Victorian Department of Human Services.²³ The overall finding of the evaluation was that the project was successful in demonstrating that pharmacy advice and consultations can be delivered effectively by video phone.

A second study where video phones were again used as a communication tool, carried out by Nissen and Tett in Queensland, was less successful. Significant technical and logistical difficulties were encountered. However, pharmacists and other health professionals taking part in the study all felt that telepharmacy had a potential role in activities such as case conferencing, patient counselling, support for new graduates working in rural locations, providing recommendations on over-the-counter medication and distance dispensing.¹⁵

These conclusions were further confirmed by a survey of pharmacists on telepharmacy conducted by Wai Yan Lee in 2005.²⁴ The community pharmacists servicing rural and remote areas around Australia were generally in favour of using telepharmacy to improve the delivery of health care, patient counselling, medication reviews and allowing pharmacies to function as hub sites to service surrounding outlying communities without access to physical pharmacies. Most of the respondents openly expressed their views about telepharmacy and were obviously enthusiastic about the prospect of providing pharmaceutical care to remote localities from a distance.

The majority of remote community pharmacists who responded to the survey and who were providing health services to surrounding remote areas without access to physical pharmacies strongly supported the potential of telepharmacy to improve healthcare delivery to these remote areas. Pharmacists who were not servicing outlying areas, compared to those who were providing health services to remote zones, were unsure if telepharmacy could improve provision of health services in rural and remote areas. Rural community pharmacists who had been servicing neighbouring remote communities agreed that telepharmacy would be able to provide pharmaceutical services to remote areas more effectively and efficiently. Despite positive support expressed in the survey on telepharmacy, many respondents were conservative towards the system and either preferred to use existing systems to deliver healthcare services or would only consider using telepharmacy if certain issues were handled prior to implementation of the system.

Legitimate issues and concerns were presented about this new approach to pharmacy practice. These included the need for regulations and legislation, technology limitations and the costs of implementing and maintaining the system. Other concerns were the time taken for a telepharmacy event, location issues and education and training for pharmacists and other personnel taking part in telepharmacy activities.

These concerns are not unique to telepharmacy as other professions, such as physiotherapy, have raised similar concerns. However, there have also been some considerable successes, for example a prospective randomised controlled trial conducted in Queensland to assess the treatment efficacy of a physiotherapy telemedicine system.²⁵ The study investigated the rehabilitation of 65 subjects who had undergone total knee replacement surgery. Participants were randomised to either a traditional face-to-face therapy group or a telemedicine rehabilitation group for treatment over six weeks. The results demonstrated that the rehabilitation outcomes produced via the telemedicine system were similar to those achieved in the traditional manner. The telemedicine therapy was found to produce greater improvements in a number of functional outcome measurements and a high level of satisfaction was expressed by participants who received this treatment.

IMPORTANCE OF PHARMACIST INVOLVEMENT

In Lee's 2005 survey, about 50% of pharmacists currently servicing rural and remote communities indicated that they were interested in using telepharmacy to conduct home medication reviews (HMRs).²⁴ Since HMRs are a key priority in the Fourth Community Pharmacy Agreement, this has the potential to provide a significant and important service to rural and remote communities, which would normally require such reviews to be conducted by visiting pharmacists (Figure 2). Accordingly, a trial will be conducted in Far North Queensland in mid-2006 to evaluate the use of telepharmacy in conducting HMRs.

Whatever model is implemented it is important that it includes and retains the active role of the pharmacist in the delivery of pharmacy services to achieve the highest quality of care and for the protection, safety, and welfare of the public in the use of pharmaceuticals.¹⁷ Pharmacist involvement is essential for patient

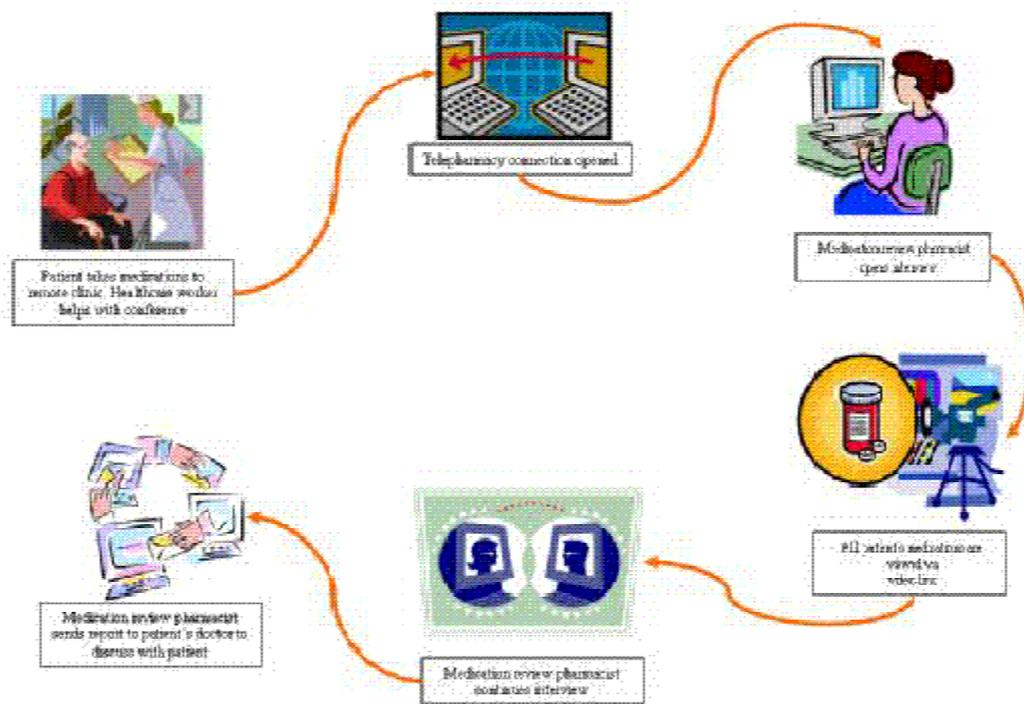


Figure 2. Possible telepharmacy applications: medication reviews via video-link

counselling and medication reviews. Exclusion of the pharmacist could potentially increase risks to patients, leading to a higher incidence of medication errors, adverse events, excessive drug costs, and treatment failure. Examples of models that often exclude pharmacists, particularly in providing patient counselling, include Internet pharmacies and models that delegate the pharmacist's duties to other health professionals such as nurses. Such models are commonly found in rural and remote Australia at present.

An analysis of PhARIA data shows that there are more than 2000 clinics and medical centres in Australia currently supplying medicines without the involvement of a pharmacist.²⁶ The shortage of pharmacists in rural and remote areas has often resulted in the role of providing pharmacy services being shifted to doctors, nurses, aboriginal and other healthcare workers. This has potentially created a system that does not meet the National Medicines Policy in the provision of quality pharmaceutical services to all Australians. Telepharmacy has the potential to address this deficiency. The pharmacy profession should become actively involved in trials of telepharmacy in rural Australia.

Competing interests: None declared.

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SHPA Research and Development Grants

DBL Young Pharmacist Award

This is a new award for the SHPA Grants and Awards Program which offers a young hospital pharmacist with less than 10 years experience to be granted a preceptorship to visit a facility of their choice. The first recipient of this award is Lisa Ho from Austin Health, Melbourne, and she will be visiting the University of Pittsburgh Medical Centre for one month to observe the practice and learn from critical care pharmacists at this facility. Congratulations Lisa, and thanks to DBL Mayne Pharma for making it possible.

Attention Rural Pharmacists

Did you know that you could apply to the DBL Professional Development Fund for support for your attendance at SHPA seminars and/or workshops? For more information please check the SHPA web site for the conditions <www.shpa.org.au/docs/grants>. The closing dates for applications are at the end of March, June, September and December each year. Hurry, don't miss out on this opportunity—there is \$5000 put aside for you to access.

2005 Breakfast Session Report

Thank you again for all those that attended and contributed to the Grants and Awards breakfast session that was held at the 27th Federal Conference in Brisbane last year. A report on the proceedings has been developed and a copy can be accessed on the SHPA web site <www.shpa.org.au>. The report outlines a summary of the comments received on the day, some 'what happens now' statements that were considered to address some of the issues raised by participants, plus some potential ideas/solutions that the RDGAC could progress on behalf of the membership. Let us know if there are any other ways that we can improve the Grants and Awards Program for you by contacting the secretariat—ntoon@shpa.org.au.

MSD Postgraduate Study Grants—Change to Award Conditions

Please note that the conditions for this award have been changed to align with recent changes to the Commonwealth Government support for pharmacists who wish to become accredited to perform medicines reviews (for more information refer to <www.shpa.org.au/docs/news>). Pharmacists who use credentials to become accredited for medication reviews under the SHPA system will be eligible to receive government incentive payments. As a result, this grant now excludes the Geriatric Certification and BPS in Pharmacotherapy.

Changes to the Application Forms – Budget Proforma

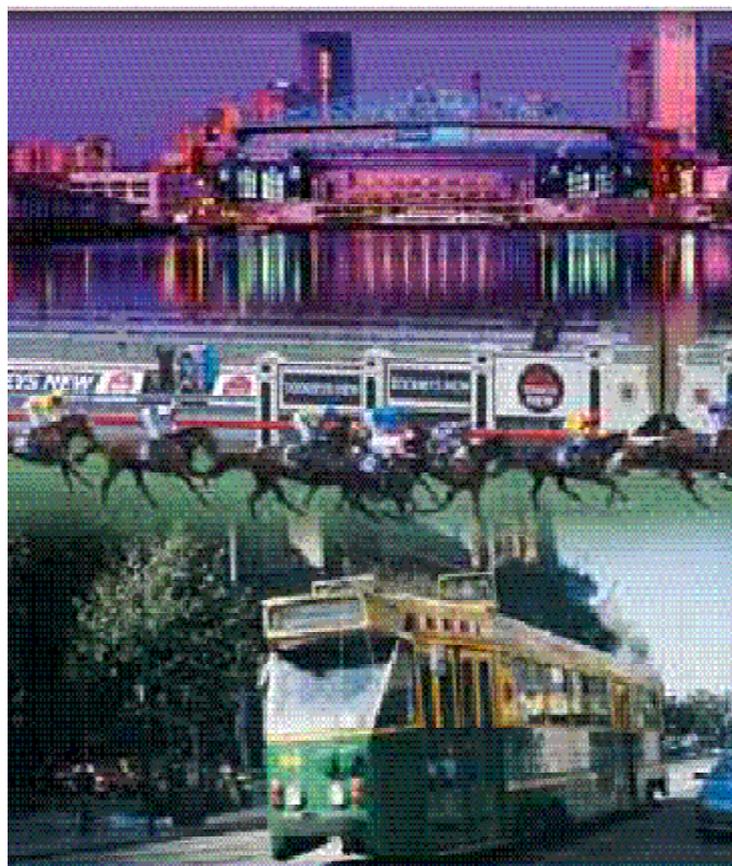
In order to assist or guide you in compiling a detailed budget for your project, RDGAC has recently included a proforma within all the application forms. In making your next application, please ensure you have the latest version by downloading the application form directly from the web site <www.shpa.org.au/docs/grants>.



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