



Clever Health

Evaluation Report 1

**Centre for Regional Innovation and Competitiveness
(CRIC)**

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Executive Summary

This report forms the first of a series of evaluation reports intended to provide ongoing monitoring of Clever Health. Clever Health is the result of funding received by the Grampians Rural Health Alliance Network (GRHANet) in mid 2007 under the Clever Networks program. The Clever Networks project is managed by the Department of Communications, Information Technology and the Arts (DCITA) which provided a grant of \$3.385 million.

Clever Health is a regional initiative aiming to use information and communication technologies (ICT) such as video-conferencing (VC) to provide more effective patient treatment, better peer support for health professionals, and the continued development of high quality health services in the region.

The evaluation program for Clever Health investigates the progress of the project in five key areas: (1) High Quality Mobile Video Conference Units, associated specialist equipment and Primary health care service delivery; (2) eLearning; (3) NextG IP technology; (4) Ballarat Health Services (BHS) Operating Room VC; and (5) the GRHANet and the University of Ballarat link. The qualitative data collection method utilised for this report involved telephone interviews with 20 stakeholder representatives, using a standard interview schedule.

Interview outcomes pertaining to the five main components of the evaluation plan are summarised below. Accompanying each summary are suggested indicators that were derived from stakeholder feedback, which will provide appropriate metrics on Clever Health's progress with respect to its expected outputs, outcomes and potential impact.

High quality mobile VC equipment and associated PHC service delivery is perceived by stakeholders as providing significant benefits to practitioners in terms of improved competency, practitioner confidence and peer support, which in turn has the potential to result in more effective patient treatment and better peer support, in particular in the emergency/urgent care and maternity departments in the region. The provision of specialist care, especially in the area of early intervention in mental



health and supporting allied health workers, has also emerged as a key area for the use of VC equipment. The level of usage of mobile devices and mobile VC is, however, closely related to location and availability of health care practitioners. Suggested indicators pertaining to mobile VC to monitor for future evaluation reports include:

- Mapping the current provision of specialist support services to agencies;
- Recording of travelling time to access specialist support services;
- Recording of change in patient transfer rates between hubs and spokes,
- Use of, satisfaction with and efficacy of mobile devices, VC access and protocols.

eLearning is seen by stakeholders as an exciting project component with wide ranging benefits for healthcare providers and their staff in terms of improved competency and compliance, reduction in isolation and travel, improvement in sense of support and morale, and improved recruitment and retention rates. Benefits are also expected to extend to the community and ultimately to patient care through a more skilled workforce. Suggested indicators in the eLearning arena to monitor for future evaluation reports include:

- Recording of staff satisfaction with eLearning opportunities based on prior reports and available data;
- Use of, satisfaction with and efficacy of eLearning modules via eLearning providers, and
- Changes in perceptions of isolation and support attributed to eLearning.

NextG IP technology has yet to be rolled out across the region. Stakeholder comments on NextG IP technology were hence limited and tended to pertain to issues outside the Clever Health terms of reference, such as health services' internal IT infrastructure, access to appropriate computer hardware, ICT skills of health staff and availability of suitably qualified IT staff. Staff engagement with ICT was also identified by stakeholders as a potential influence on the uptake of both current and NextG technologies. Suggested indicators for future evaluation reports pertaining to this component include:



- Availability and uptake of NextG technologies;
- Efficacy of the infrastructure used to access NextG-based Clever Health initiatives, and
- Perceptions of change in skills, engagement and confidence of staff in the use of NextG-based Clever Health initiatives.

The **Ballarat Health Services (BHS) Operating Room VC** was perceived by stakeholders as having great potential to improve practitioner competency and confidence. Stakeholders indicated the installation would enhance the training of doctors and future medical students both in Ballarat and other regional centres. The impact on work practices was thought to be the greatest in agencies at the centre of the hub and spoke agency model. Suggested indicators to monitor in this area for future evaluation reports include:

- Use of, satisfaction with and efficacy of BHS Operating Room VC, and
- Changes in perceptions of usefulness of BHS Operating Room VC.

At the time of writing of this report, the **GRHANet and the University of Ballarat link** was yet to be finalised. This link is expected to add significantly to eLearning options and become highly relevant in the future for both practitioners and community members to participate in a range of education options. The link is also expected to add to eLearning benefits such as reduced isolation, travel and backfill. Suggested indicators to monitor for future evaluation reports include:

- Use of, satisfaction with and efficacy of eLearning modules by agency staff and the wider community delivered via the GRHANet-University of Ballarat link; and
- Changes in perceptions of isolation and support attributed to eLearning via the GRHANet-University of Ballarat link.



In summary, initial perceptions of the Clever Health initiative are positive. Stakeholders are excited to be involved in what they perceive to be a cutting edge program for their region, which has the potential to deliver innovative PHC services, change work practices, reduce isolation, enhance peer support and improve relationships between urban, regional and rural health services. Initial perceptions also reflect the potential for new ways of learning and teaching, as well as for the setting of new patient care standards and generation of best practice examples in the Grampians region and beyond. To achieve these outcomes, the need for staff engagement in the process of change was clearly identified.

The unique network structures and collaborative goodwill across the region bode well for successful outcomes of the Clever Health project and the generation of valuable measures for this and future projects. As the project and its evaluation proceed, it will be important to distinguish between the progress and outcomes of the activities initiated under the Clever Health project and exogenous factors that may influence the progress and outcomes of the Clever Health initiative, but fall outside the terms of reference for the project.



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1 Project Overview

1.1 Background

In late 2006, the Grampians Rural Health Alliance Network (GRHANet) led a consortium of agencies in applying for funds under the Clever Networks program managed by the Department of Communications, Information Technology and the Arts (DCITA). The application was successful with a grant of \$3.385 million to use information and communication technologies (ICT) such as video-conferencing (VC) to provide more effective patient treatment, better peer support for health professionals, and the continued development of high quality health services in the region. The project, known as Clever Health is being evaluated via an exploration of stakeholder perceptions of the extent to which outputs and outcomes were achieved, timelines were met, and how efficiently resources were allocated and distributed to the project and its activities

GRHANet commissioned the University of Ballarat to conduct the evaluation program for the Clever Health project. The evaluation data to be generated from the evaluation program are intended to monitor the course of the Clever Health program and assist to optimise the efficacy of this and future telehealth programs.

The future of health in Australia's regions is dependent on reducing risk and workforce shortages. There is potential for a wide range of new technology initiatives such as Clever Health to increase the knowledge base of health professionals in general thus leading to improvements in community health. It is expected that this project will improve health services for communities across the Grampians region.

1.2 Project Context

The GRHANet network encompasses all the Health Services and many of the Community Health agencies in the Grampians region of Victoria. The Grampians region stretches from the urban fringe of Melbourne to the South Australian border. The major regional centre of Ballarat is included in this region, as are some of the most sparsely populated areas of Victoria.



GRHANet, in implementing the National Communications Fund (NCF) project, adopted a model that involved working with Telstra Country Wide, Neighbourhood Cable and Powercor for carriage and Dimension Data for the development and continued maintenance and monitoring of the network. A combination of GWIP, BDSL and ADSL is used for connectivity to sites, according to the location and needs of individual sites. The ability for GRHANet to provide services according to the needs of the individual organisation is a feature of this model.

The establishment of these services through GRHANet's investment with the telecommunications carriers has resulted in major community benefit with the vast majority of towns in the region now having access to broadband. The additional economic benefit is that many other businesses are also connected to broadband as a result of the work undertaken by GRHANet.

There has been a relatively slow uptake of usage of the GRHANet network for clinical purposes. The slowness is due to a number of factors, including limitations in the availability of appropriate equipment and resources for training, driving that usage and for change management activities. Clever Health aims to accelerate the usage of the GRHANet network for clinical purposes through the delivery of a coordinated program to overcome the above factors.

The region has an ageing workforce and attraction of younger health professionals to the area can be problematic. By providing effective peer support and up-to-date professional development, this project should have a positive impact on attracting and retaining health professionals. In performing a coordinating role for the development and implementation of both clinical and non-clinical information and blended learning programs, this project aims to improve the quality of health care in the region as well as augment the retention and attraction of health professionals to the region. Increased capability means decreased patient risk. Thus this project is designed to promote up-to-date standardised practices throughout the region, thereby improving patient care and reducing the risks faced by both patients and health care providers.



An important program outcome will be the engagement of health practitioners through changing work practices. To that end Clever Health aims to develop standardised and transferable work practice models that will be available to other health alliances and agencies as a template for similar activities.

As such, Clever Health is designed to:

1. Develop innovative delivery of Primary Health Care (PHC) services to the region and ways of providing: peer support and advice mechanisms, decision making pathways and development of evidence based practice and case analysis by linking the Emergency/Urgent Care and Maternity Departments in the region with high quality video conference and associated specialist equipment. These are expected to deliver increased levels of patient care and are crucial in attracting and retaining skilled professionals;
2. Increase skills for health professionals in the region by working with providers to develop and deliver blended learning professional development programs via the network;
3. Trial innovation using wireless technologies in the delivery of better patient care;
4. Improve the high availability characteristics of the network to a level that complements the mission critical nature of the network by redundant connections to crucial sites through the alternative telecommunications path provided by the NextG network;
5. Distribute surgical expertise by establishing high quality video conference facilities in the new Operating Theatre at Ballarat Health Services linked to their Education Resource Centre and the rest of the GRHANet network. This will enable doctors to view new surgical techniques and interact with surgeons;
6. Link the GRHANet and University of Ballarat networks thus facilitating the delivery of first level training and professional development to the region from within the region; and



7. Enable broader community education and access through the more effective use of broadband technologies.

1.3 Outputs and Outcomes of Clever Health

In pursuing the objectives outlined above, the Clever Health project will undertake activities in five main categories that aim to result in the following outputs and outcomes:

1.3.1 High Quality Mobile Video Conference Units

Output

High quality and mobile videoconference units and relevant specialist attachments will be installed in 12 health service campuses in the emergency/urgent care departments. The mobile nature of these units will enable them to be utilised in maternity departments at 11 of the Regional Health Service sites. There will be a staged installation process with Regional Health Service sites being connected by the second quarter of 2009 (e.g., by 31 March 2009).

Outcome

The provision of this equipment will result in more effective patient treatment, better peer support and advice mechanisms, decision making pathways, the continued development of evidence based practice and case analysis by linking the emergency/urgent care and maternity departments in the region. It will also reduce risk in the provision of high quality clinical services in the region.

1.3.2 eLearning rollout

Output

Two initial blended learning modules will be delivered in the 2008 calendar year to health sector staff through establishing a link to the University of Ballarat, installation of content servers and the border controller. Wider delivery and no less than 5 modules will be delivered on the second half of 2008 (e.g., between 1 July 2008 and 31 December 2008).



Outcome

In working with health training providers this will enable the development and delivery of blended learning professional development programs, increasing skills of health professionals in the region and improving attraction and retention of skilled staff and reducing risk to patients.

1.3.3 Installation of NextG IP gateway

Output

- (a) Installation of a NextG IP gateway into the GRHANet network and the purchase of 5 mobile devices to be used by specialists in the area of trauma and acute chronic disease presentation.
- (b) Next G wireless redundancy will be installed in the 12 main centres involved in the emergency and maternity department videoconferencing program. These will provide critical links in the event of GWIP failure of the GRHANet network.

Outcome

- (a) This trial of mobile technologies will result in the delivery of more timely and better patient care.
- (b) The NextG network will be utilised to develop better redundancy as the network starts to be used for more mission critical patient care. It will lead to resolution of critical points of failure in the GRHANet network and therefore ensure continuity of network services.

1.3.4 Establishment of high quality VC facilities at BHS

Output

The establishment of high quality videoconferencing facilities in the new operating theatre at Ballarat Health Services linked to their education resource centre and the rest of the GRHANet network.

Outcome

This installation will enable doctors, both in Ballarat and other centres to view new surgical techniques and interact with the surgeons.



1.3.5 Linking GRHANet and University of Ballarat.

Output

Linking the GRHANet and University of Ballarat networks through the development of a fibre link (from 1 to 99 Drummond St North, Ballarat to University of Ballarat, SMB Campus, Lydiard St South, Ballarat) and installation of a border controller for security purposes.

Outcome

This will:

- Facilitate the delivery of first level training and professional development to the GRHANet sites within the region;
- Enable access to AARNET for education and research purposes; and
- Enable greater access to community education programs and demonstrating more effective use of broadband technologies.

1.4 Objectives

The evaluation program is designed to investigate the progress of Clever Health in the five categories of activities outlined above. The five components have been incorporated into an evaluation plan (see Appendix 1), which in summary are:

1. High Quality Mobile Video Conference Units, associated specialist equipment and Primary health care service delivery.
2. eLearning rollout
3. Installation of NextG IP gateway
4. Establishment of high quality video facilities in new Operating theatre at BHS
5. Linking GRHANet and University of Ballarat.

The Clever Health evaluation will take a formative and summative approach to these five main project components. Formative evaluation will include regular stakeholder feedback during the course of the project to ensure that it remains on track.



Both formative and summative program evaluation will focus on the extent to which the project achieves its specific goals and objectives. Evaluation will focus on the extent to which project goals are realised (awareness, effectiveness), and at what perceived cost (outcomes, impact, efficiency).

Specifically, the evaluation will seek to examine stakeholders' perceptions of:

- The extent to which outputs and outcomes were achieved;
- The timeliness of project milestone achievement; and
- The awareness, use and benefits of the program.

The evaluation will produce a total of five (5) reports with 6-monthly intervals. Reports will be delivered to the Program Director in line with Clever Health program reporting. This report is the first in a series of five reports, which will be delivered according to the following schedule:

- November 2007
- May 2008
- November 2008
- May 2009
- November 2009 (Final Report).

1.5 Project Team

The University of Ballarat (UB) Project Team comprises individuals from the Centre for Regional Innovation and Competitiveness (CRIC). Participants include:

- Dr Patrice Braun (Clever Health Steering Committee Member)
- Tunde Meikle (Project Officer)
- Sue Tomkinson (Administrative Assistant)
- Kate Knox (Project Officer June to August 2007)



2 Methodology

2.1 Study Design

The evaluation project is largely qualitative intending, where possible, to capture participants' perceptions as the Clever Health project progresses. The methods used reflect this overall approach and include appropriate techniques such as structured interviews, focus groups, and open ended surveys.

This formative evaluation is designed to gather data that will provide baseline information and indicators for use in future evaluations and the project as a whole.

2.2 Evaluation Methods

The Clever Health formative evaluation interventions are designed to:

1. Set the baseline indicators;
2. Provide status reports for potential adjustment of project course; and
3. Provide longitudinal data for summative evaluation.

2.2.1 Baseline Intervention (Report 1) – Timeline: August – October 2007

To set up baseline indicators, the following interventions were planned to provide an overview of the situation at the start of the Clever Health program and to capture the expectations of stakeholders in the early stage of the project rollout.

- (a) At the outset of the program individual stakeholder interviews were conducted with key stakeholders (see Appendix 2). Key stakeholders and the interview schedule items were determined in collaboration with the Clever Health Project Director. Most interviews were conducted by telephone using a structured set of questions (see Appendix 3). These interviews were then transcribed and the content analysed using NVivo qualitative analysis software for the main themes related to each question area.
- (b) Focus group sessions were also planned across the region with a panel representative of regional stakeholders that interact with the Clever Health program. For example panel members may include a MD, a DON, an



education officer, an allied health staff member, an IT technical staff member, an eLearning participant, or a community member. These focus groups have been held over to the next evaluation cycle due to a delay in the ability of the Clever Health evaluation to commence and a change in the evaluation program project officer. Focus groups are expected to be a useful strategy to capture an additional layer of detail during the next project stage.

2.3 Interview Questions

The interviews with stakeholders utilised a structured schedule (see Appendix 3), which was designed to elicit perceptions about the five key components of the Clever Health project evaluation plan (see Appendix 1). There were a total of 20 individuals interviewed for this initial evaluation stage (see Appendix 2). The interview schedule also included questions to gather data on stakeholder demographics, organisational role and general characteristics of the organisations they represented. Open ended questions were included that allowed for stakeholder perceptions to be freely expressed on the key areas of interest at this early Clever Health evaluation stage. Such stakeholder perceptions were deemed highly relevant as they have the potential to reveal factors that may influence uptake and speed of adoption of the various telehealth initiatives in their respective organisations. All interviews were transcribed, collated and analysed for recurring themes.



3 Interview Findings

Participants' responses are summarised below and include representative quotes from stakeholders to illustrate the perceptions that were captured in the interviews.

3.1 Demographics

3.1.1 Organisational Role

The key stakeholder members interviewed were in executive decision making roles in their organisations. Although the actual areas of responsibility varied considerably (e.g., information technology, finance, recruitment, clinical services), all members were in positions of responsibility with regard to the implementation of various aspects of the Clever Health project. The level of role they occupied were CEO (6), CIO (2), Director (7), Deputy Director (2) and Manager (3). Three participants did not work in a health care facility. These three participants were, however, relevant to the Clever Health project by virtue of their employment in another stakeholder organisation such as GRHAnet and the University of Ballarat.

3.1.2 Organisation Characteristics

Most participants worked in medium sized health facilities. For four interviewees the size of organisation in terms of staff employed was not reported; four organisations had staff numbers below 100; two were between 100 and 200 employees; six were between 200 and 500; while the remaining four worked in organisations with over 500 employees. Two participants in this latter category worked in the largest organisations in the region with over 3000 employees.

Health care agency participants reported employing nurses, allied health staff and other support staff. In seven of these health care facilities, doctors were also employed. Several other participants reported utilising the services of doctors and allied health staff on a contract basis rather than by employment.

The age of staff reported by participants ranged from 18 to the 74. Three interviewees did not report staff ages, and the remaining 17 most commonly reported an average age range in the 40s. In most cases respondents estimated allied health



staff to have a lower average age than nursing, medical or executive administrative staff.

For this evaluation cycle, Quality of Care Reports were unavailable for all health care facilities and will be accessed for relevant data in the next evaluation cycle.

3.2 General Perceptions

3.2.1 Understanding of the Clever Health Project

All participants interviewed reported a sound understanding of the general aims of the Clever Health project. However, the specifics of what the project aimed to achieve varied with the context of the stakeholder. For example one stakeholder was quite definite that educational support was their *“greatest need.”* The reported understandings of all stakeholders successfully reflected the intentions of the project as disseminated by GRHANet in July 2007 (Ziebell, 2007). In a “nutshell” as one stakeholder put it, the project aim is *“about improving the use of IT to get better outcomes for health professionals, clients, [and] patients.”*

3.2.2 Project Expectations

General expectations of the introduction of Clever Health components to their agency were positive. Some stakeholders were excited about the potential that the introduction of telehealth would make to their service delivery. *“I think it is a great thing,”* said one stakeholder when considering the potential for their agency especially in terms of the *“huge potential there to save lots of people a lot of travelling time.”* The potential in the technical area was generally recognised, especially by stakeholders closely involved in this aspect of the project implementation as reflected in this comment, *“So it has huge potential equipment wise, but also from the point of view of communications and professional development, it has big implications.”*

Several stakeholders were cautious in their expectations at this stage. They mentioned the need for protocols to regulate practice. Stakeholders expressed some concern over ongoing support and funding to maintain the momentum of the initiative. As one stakeholder put it, they were worried, *“...that it promises a lot but doesn't deliver.”*



3.2.3 Work Practice Expectations

Few stakeholders could report, with any certainty, what they expected the impact Clever Health would have on work practices. The project is still in its early stages and there has not yet been sufficient experience with its operations to make targeted estimates.

Although stakeholders were generally unable to anticipate whether the Clever Health initiative would result in more or less work, the likelihood that work practices will at least be different was well illustrated in this comment: *“I think it is going to make people work a little bit differently in terms of the way that they assess and communicate issues about patients in terms of their work practices..”*. Another stakeholder showed optimism in their comment about the impact of Clever Health technology on work practices and ways of thinking when they said, *“I think this will sort of force people to think outside the square a little bit, which I think is a good thing. And you know, it takes distance out of the equation.”*

The need for staff engagement in the process of change was clearly recognised as important to the success of Clever Health. One stakeholder emphasised the potential organisational impact of Clever Health and recognised that it may raise important issues for managing changes to the way people work, describing it as *“...if we are changing work processes, then we need to manage that change. If we don’t manage that change, that is going to be the biggest problem that we will face.”*

3.2.4 Identification of Priority Health Needs and Problems

The main themes raised in this area were recruitment and retention of staff; educational opportunities; elimination of unnecessary patient transfers; access to expert medical opinion in emergencies, especially in remote areas; the development of a fully mobile community health workforce; and the provision of specialist care, especially in the area of early intervention in mental health and supporting allied health workers.

“There is no dermatologist here, but with the equipment there is no...sorry ophthalmology is another big one...there is no reason you can’t have a dermatology



clinic that is live [via VC] if you like...going down to a dermatologist sitting somewhere else in Ballarat or Melbourne.” As another stakeholder illustrated, “With mental health it could be very handy, because getting mental health workers and consultants out here is near impossible and we might be able to get quicker referrals and quicker consultations for those sort of people.”

3.3 The Five Project Components

3.3.1 High Quality Mobile Devices and associated PHC Service Delivery

All stakeholders currently use VC for meetings, eight reported using VC for education as well, and three agencies used VC for case conferences in addition to the other two main uses. Some stakeholders mentioned wanting to use VC facilities more, particularly *“for clinical conferences...but there are some happening.”* Another stakeholder expressed interest but no implementation of case conferencing at this stage, *“We have talked about it but we haven’t actually done it.”*

The theme of the tyranny of distance was evident in many stakeholder comments pertaining to the anticipated uses and benefits of VC facilities in emergency and maternity care, as illustrated by one stakeholder, *“Better support for our nursing and allied health colleagues professionally because of the remoteness of where we are and increased learning opportunities that don’t currently exist.”*

Emergency and maternity departments are the main sites where transfer decisions are likely to be made to ensure patients’ welfare. They are never made lightly, for a transfer can take considerable time and put a critically ill patient at great risk due to delays in effective medical care. Hope for good outcomes in this area were expressed by various stakeholders in agencies with emergency and maternity facilities, *“I guess for a lot of the region, trauma is going to be critical but it is a minor part of our overall care basically, but where we do have retrieval teams coming in, I think it would be fantastic if we could actually link into those tertiary centres and be getting that interim advice constantly until the retrievals can get here.”*

All health care facilities face occasional obstetric emergencies, and from time to time agencies are faced with caring for women with special needs. The use of VC for



accessing medical advice was seen as an important anticipated tool in the emergency area: *“...I can listen to a patient’s heart and pick up an abnormality, but a cardiologist will be able to tell me exactly what that abnormality is and what’s causing it and what sort of dangers it heralds or flags.”*

Overall stakeholders commented positively on the likely benefits of VC for nursing staff, medical staff and patients, some stakeholders also recognised the wider impact on families as well as in this story. *“We had a child with burns from the children’s a few years ago and we didn’t use ours [Video-conferencing facility], but we used some in [town mentioned]. So instead of the parents going to the Royal Children’s every week the district nurse accompanied the parents and the child into [town mentioned] to where the unit was and video conferenced with the specialist at the Royal Children’s. That was really successful and it was around the management of those dressings. It was fantastic – a very positive experience.”*

The aforementioned example shows that the use of VC clearly saved more than money. It also benefited the rural family and the patient directly by reducing the stress of travel and limiting time away from support networks and communities.

Other perceptions of benefit accruing to nursing and medical staff are in terms of their sense of support from their organisation and increased confidence in their own clinical decision making. One stakeholder was certain that VC facilities would enhance, *“worker confidence because they can be reassured that what they are doing is right and they have taken the right diagnostic steps.”*

The sense of peer support and increased confidence was particularly relevant for isolated nurses and allied health staff. As one stakeholder noted, *“on a lot of campuses you will have just an RN as the only nurse on duty and she has an emergency come in, she is there by herself trying to look after all the patients plus the emergency, and that can be extremely daunting. So I think the ability to be able to support them morally as well as physically has high potential.”*

Further benefits from using VC cited by stakeholders were improved relationships between urban and rural agencies and departments. As one stakeholder put it, *“Essentially I believe this Clever Health initiative will enable us to make the best use*



of the limited resources we have within the Grampians region.” The opportunity to engage in the use of VC may also have an impact on work practices when skill or knowledge shortfalls become obvious. “The other side of this of course is it will provide an opportunity for us to showcase what our knowledge and skills base really is. If it comes up short then it is an opportunity to train.”

The larger agencies expected to experience the greatest increase in workload from greater use of VC in emergency and maternity departments, as they anticipate acting as the hub and main resource for smaller rural health care agencies in the region, as shown in this comment, *“because we are a bigger player rather than a smaller player as far as the more rural and remote hospitals are concerned, it may create a bit of resource work for our accident and emergency department in the short term.”*

3.3.2 eLearning

Stakeholder agencies varied considerably in their capacity and resources to provide education to staff. Some agencies reported having staff specifically responsible for education, while others used extended human resources functionality, e.g., a human resource person also being responsible for staff education. A few did not report having any staff employed to carry out this role, although the need was recognised. In the case of one agency, the reason for this was difficulty with recruiting suitable staff.

All stakeholders recognised the increasing requirement for training in core competencies. Some agencies carry out this training on a face-to-face basis, sometimes even one-to-one. Others have used video-conferencing, while others have used what they called a *“highway”* model of provision of learning opportunities that encourages sharing between agencies located along transport routes.

The sources to provide eLearning reported by stakeholders revealed an array of interests and possibilities. Some stakeholders mentioned they would be using the core competency modules currently under development through the Grampians eLearning Working Party (GREWP). However, a number of other eLearning providers were also mentioned, along with other kinds of eLearning materials, ranging from single issue video packages to higher degree studies.



The benefits of participating in eLearning and blended learning were perceived as saving time and having a better educated workforce. In addition, stakeholders recognised the capability of agencies to achieve 100% compliance from staff to complete core competency modules through eLearning would probably become easier. Other direct benefits to the organisation were reported in monetary terms, as travel costs should be reduced if staff can have learning delivered to their location, as well as an easing of tight rostering schedules, as fewer staff would have to be away as long on study leave. These were also perceived as direct benefits to all staff.

Benefits to patients and the community tended to be perceived as indirect consequences of a better educated workforce as reflected in this comment, *“I guess you could say that consumers could be given more appropriate and up to date information if your workforce is more qualified and confident in accessing that information electronically.”*

Some stakeholders indicated that the idea of having eLearning facilities available to their communities was also a useful option, provided the infrastructure was appropriately distributed. For example at one agency the video-conferencing equipment is currently in a board room, which is neither suited to being occupied by staff for long sessions, nor is it suited to being accessed by members of the public.

The ability to standardise educational offerings, save time by reducing duplication, relieve the stress of travel and availability of educational opportunities were all seen as exciting potential outcomes of eLearning initiative in the Clever health project. As one stakeholder put it, *“I think they have found that the amount of work is absolutely phenomenal, so I guess basically with the eLearning, it really is about trying to standardise those competencies across the region.”* While the enthusiasm was summed up in this apt comment by another stakeholder, *“I think it is fantastic, it is ambitious, I think it is a huge project myself. I just wonder if we have got adequate resources. It is a huge project.”*

3.3.3 NextG IP Gateway

While there was general satisfaction with the GRHANet infrastructure, the NextG technology has yet to be rolled out across the region. Comments by stakeholders on



NextG technology are hence limited and tended to pertain to exogenous factors outside the parameters of the Clever Health initiative, such as health services' IT infrastructure, access to appropriate computer hardware and suitably qualified IT staff. Staff engagement with ICT was also identified by stakeholders as a potential influence pertaining to the uptake of both current and NextG technologies.

3.3.4 Video-conferencing Facilities in BHS Operating Room

The setup of the Ballarat Health Services (BHS) Operating Room VC was seen as having good potential to improve practitioner competency and confidence. Stakeholders' understanding of the main purpose of the BHS OR VC was that it serves as an educational tool for both nursing and medical staff. The opportunity to observe procedures that are seldom performed, to witness new techniques and to learn more efficient methods were some benefits that stakeholders mentioned as potential gains from this facility. Benefits were perceived as being mainly for staff as they grew in expertise and knowledge, with patients and the community benefiting secondarily, as this stakeholder explained, *"I think that the consumers in the region should have access to a better service if our people are more highly educated."* As another stakeholder illustrated, *"Anything that raises awareness and promotes questions is going to promote greater understanding."*

3.3.5 GRHANet University of Ballarat Link

At the time of writing of this report, the GRHANet and the University of Ballarat was not yet finalised. The link is likely to give stakeholders access to a wide range of eLearning options. Stakeholder interviews reflect that this link will become relevant in the future. Ongoing discussions with stakeholders around the best format and content for UB to roll out in terms of health professionals' staff development include individual modules which could lead to advanced diploma or graduate certificate level. Possible learning directions identified that could benefit the health community as well as the community at large, include IT training and a mental health program for both practitioners and community members to assist in the treatment of depression in drought, and alcohol and drug abuse.



4 Implications

This report has provided a summary of stakeholders' perceptions of efficacy with regard to the Clever Health program in its early stage. The sections below highlight the salient themes that have emerged from the interview findings and the specific indicators that will be useful in future evaluation stages of Clever Health.

4.1 High Quality Mobile Devices & PHC Service Delivery

High quality mobile VC is perceived as providing potential benefits to practitioners in terms of improved competency and practitioner confidence, which in turn has the potential to result in more effective patient treatment and better peer support, in particular in the emergency/urgent care and maternity departments in the region. The provision of specialist care, especially in the area of early intervention in mental health and supporting allied health workers, has also emerged as a key area for the use of VC equipment.

Uptake of mobile devices and mobile VC appears to vary considerably in terms of where the health service is located, e.g., whether they are regional or rural. Uptake is also closely related to employment and/or availability of all kinds of health care practitioners, e.g., some rural health services do not have expert health practitioners on staff, while other agencies have enormous geographical distances to cover. Emerging from this are several suggested indicators to monitor for future evaluation reports.

- Mapping the current provision of specialist support services to agencies;
- Recording of travelling time to access specialist support services;
- Recording of change in patient transfer rates between hubs and spokes,
- Use of, satisfaction with and efficacy of mobile devices, VC access and protocols.



4.2 eLearning

eLearning is perceived as an exciting project component with wide ranging benefits for healthcare providers and their staff in terms of improved competency and compliance, reduction in isolation and travel, improvement in sense of support and morale, and improved recruitment and retention rates. Benefits were also expected to extend to the community and ultimately to patient care through a more skilled workforce.

The relevance of eLearning to all stakeholders was recognised as of key importance to organisational compliance and the ongoing development of a skilled workforce for ultimate patient benefit.

Emerging from this are several suggested indicators to monitor for future evaluation reports.

- Recording of staff satisfaction with eLearning opportunities based on prior reports and available data;
- Use of, satisfaction with and efficacy of eLearning modules via eLearning providers, and
- Changes in perceptions of isolation and support attributed to eLearning.

4.3 NextG IP Gateway

While there was general satisfaction with the GHRANet infrastructure, the NextG technology has yet to be rolled out across the region and comments on NextG technology are hence limited to the current infrastructure.

With health services varying considerably in size and availability of IT resources, the uptake of NextG technologies will vary across the region, which is likely reflected in staggered adoption of NextG technologies. While issues brought to the fore by stakeholders are exogenous factors that fall outside of the terms of reference for Clever Health, ongoing monitoring of infrastructure, IT hardware, skills, support and other IT related issues for stakeholders will be useful to gauge potential influences pertaining to the uptake of both current and NextG technologies.



Emerging from this are the following suggested indicators to monitor for future evaluation reports.

- Availability and uptake of NextG technologies;
- Efficacy of the infrastructure used to access NextG-based Clever Health initiatives; and
- Perceptions of change in skills, engagement and confidence of staff in the use of NextG-based Clever Health initiatives.

4.4 Video-conferencing in BHS Operating Room

The interviews demonstrate that health services anticipate significant benefit from accessing VC content from the BHS Operating Room. This service is perceived by stakeholders to have great potential to improve practitioner competency and confidence, ultimately benefiting the patient population. Stakeholders indicated the installation would enhance the training of doctors and future medical students both in Ballarat and other regional centres.

The impact on work practices was thought to be the greatest in agencies at the centre of the hub and spoke agency model, with hubs likely to experience an increase in workload pertaining to the new technology as they fill a new service provision role for their spokes. Regardless of the impact on work practices, stakeholders demonstrated enthusiasm to explore the potential of accessing VC content and expertise from the BHS Operating Room.

Emerging from this are several important indicators to monitor for future evaluation reports.

- Use of, satisfaction with and efficacy of BHS Operating Room VC;
- Changes in perceptions of usefulness of BHS Operating Room VC.



4.5 GRHANet–University of Ballarat Link

Although at the time of writing of this report the GRHANet and the University of Ballarat was not yet finalised, the potential identified for this link is considerable. Stakeholders see the potential for a wide range of topics for delivery in eLearning and blended format that will greatly benefit the health community and contribute towards enhancement of skills and competencies of health professionals, including allied and other staff. The link is also expected, through the use of eLearning, to contribute to reduction of isolation, travel time and backfill for health professionals, who currently spend considerable time travelling to access training. eLearning offerings are also likely to benefit the community at large. Emerging from this are several suggested indicators to monitor for future evaluation reports.

- Use of, satisfaction and efficacy of eLearning modules by agency staff and the wider community via GRHANet-University of Ballarat link; and
- Record changes in perceptions of isolation and support attributed to eLearning via GRHANet-University of Ballarat link.

The indicators identified in this section under each of the five components will be measured using monitoring, online survey participation and other qualitative data collection techniques. To obtain comprehensive measures, close collaboration with Clever Health stakeholders will be sought across all components.



5 Summary

In summary, initial perceptions of the Clever Health initiative are positive. Stakeholders are excited to be involved in what they perceive to be a cutting edge program for their region, which has the potential to provide innovative PHC services; change work practices, reduce isolation, enhance peer support and improve relationships between urban, regional and rural health services. Initial perceptions also reflect the potential for new ways of learning and teaching, as well as for the setting of new patient care standards and generation of best practice examples in the Grampians region and beyond. To achieve these outcomes, the need for staff engagement in the process of change was clearly identified.

The unique network structures and collaborative goodwill across the region bode well for successful outcomes of the Clever Health project and the generation of valuable measures for this and future projects. As the project and its evaluation proceed, it will be important to distinguish between the progress and outcomes of the activities initiated under the Clever Health project and exogenous factors that may influence the progress and outcomes of the Clever Health initiative, but fall outside the terms of reference for the project.



6 Glossary

ADSL	Asymmetric Digital Subscriber Line
BDSL	Business Digital Subscriber Line
BHS	Ballarat Health Services
CRIC	Centre for Regional Innovation & Competitiveness
DCITA	Department of Communications, Information Technology and the Arts
DON	Director of Nursing
GREWP	Grampians Region eLearning Working Party
GRHANet	Grampians Regional Health Alliance Network
GWIP	Government Wideband Internet Protocol
ICT	Information and Communication Technologies
MD	Medical Doctor
NCF	National Communications Fund
NextG IP	Next Generation Internet Protocol (third generation wireless)
PHC	Primary Health Care
UB	University of Ballarat
VC	Video-conferencing



References

Braun, P. (2006). *Grampians health region eLearning feasibility study*. CRIC, University of Ballarat.

Ziebell, P. (2007). *Clever Health: What is Clever Health?* GRHANet, Department of Communications, Information Technology and the Arts.



Appendix 1 – Evaluation Plan

Program Features	Objectives/Expected Outcomes	Evaluation Measure	Evaluation Method	Actual/Unintended Outcomes/Effects	Longer Terms Issues/Change
1. High Quality Mobile Video Conference Units and associated specialist equipment.	<p>Patient treatment in emergency/ urgent care</p> <p>Peer support and advice mechanisms</p> <p>Development of evidence based practice and case analysis</p>	<p>Equipment procured, installed, tested and operational</p> <p>Number of patients receiving treatment/urgent care</p> <p>Number of Peer support received</p>	<p>Baseline Interviews</p> <p>Survey Panels – online questionnaire</p> <p>Data from sub-committee</p>	<p>Awareness, Use & Efficiency of equipment</p>	<p>Leading Indicators for shifts in program progression</p>
2. eLearning rollout	<p>Increase skills of health professionals in the region</p> <p>Attraction and retention of skilled professionals</p>	<p>2 blended units in 2008</p> <p>Number of units rolled out 2008-2009</p> <p>Number of people took up modules; effectiveness of delivery</p>	<p>Baseline Interviews</p> <p>Assessment attached to eLearning rollout</p> <p>Survey Panels – online questionnaire</p> <p>eLearning data from</p>	<p>Awareness, Uptake & perceived benefits of eLearning</p>	<p>Leading Indicators for shifts in program progression</p>



Program Features	Objectives/Expected Outcomes	Evaluation Measure	Evaluation Method	Actual/Unintended Outcomes/Effects	Longer Terms Issues/Change
		Attraction and retention of skilled professionals	sub-committee Secondary data		
3. Installation of NextG IP gateway	More rapid patient treatment in emergency / urgent care Improved network redundancy	Equipment procured, installed, tested and operational Usefulness of NextG – used by whom	Baseline Interviews Use & Efficiency of equipment Redundancy data from sub-committee	Awareness, Use & Efficiency of equipment	Leading Indicators for shifts in program progression
4. Establishment of high quality video facilities in new Operating theatre at BHS	Watch operations in real time or through video streaming methods	Equipment procured, installed, tested and operational Number of theatre operations watched Number of evidence-based cases	Baseline Interviews Survey Panels – online questionnaire Data from peer sub-committee	Awareness, Use & benefits of equipment	Leading Indicators for shifts in program progression
5. Linking GRHAnet and University of Ballarat	Facilitate delivery of first level training and professional		Baseline Interviews Survey Panels – online questionnaire	Community awareness, Use & benefits of link	Leading Indicators for shifts in program progression



Program Features	Objectives/Expected Outcomes	Evaluation Measure	Evaluation Method	Actual/Unintended Outcomes/Effects	Longer Terms Issues/Change
	development Access to AARNET for education and training Community access to education		Data from Uni sub-committee		



Appendix 2 – Stakeholders interviewed for this report

Name	Organisation
Paul Mannix	GHICTA
Paul Jurman	BHS
Chris Scott	Wimmera Health
Shaun Eldridge	Wimmera Health
Darren Welsh	West Wimmera Health
Enid Smith	Stawell Regional Health
Claire Letts	Stawell Regional Health
Patrice Braun	UB
Allan Donnelly	DHS
Mandy Cullen	Djerriwarrh Health Services
David Lenehan	Hepburn Health Services
Peter Ziebel	GRHANet
Peter Appledore	Beaufort & Skipton Health Service
Bob Cartledge	East Grampians Health Service
Brian Hansen and Cheryl Watson	East Wimmera Health Service
Tracey Chenoweyth	Dunmunkle Health Services
Lee Vause	Rural Northwest Health
Kathy Huett	Edenhope & District Memorial Hospital
Carolyn Barrie	Ballarat District Nursing & Healthcare



Appendix 3 – Question Guide for Clever Health

1. Demographics

- 1.1. What is your current role in your (health) organisation?
- 1.2. About how many staff in total does your organisation employ?
Do you employ doctors? (Y/N)
Do you employ nurses? (Y/N)
Do you employ other allied health staff? (Y/N)
- 1.3. What other staff do you employ?
- 1.4. What is the average age of doctors in your organisation?
- 1.5. What is the average age of nurses in your organisation?
- 1.6. What is the average age of allied health staff in your organisation?
- 1.7. What is the average age of other staff in your organisation?
- 1.8. Do you have an online version of a Quality of Care report? (Y/N)

Y: May I send you an email to invite you to send us a copy for our baseline analyses please?

N: Is it possible to post a copy to us for our baseline analyses please?

[Stats- inpatients, outpatients, transfer rates, etc.]

2. General Questions

- 2.1. What is your understanding of the aims of the Clever Health project?
- 2.2. What do you expect you will be able to do as a result of the Clever Health project in your organisation?
What are your expectations for the region?
What are your expectations for other health professionals?
What are your expectations for the community?
- 2.3. Which particular outputs (activities) of Clever Health will your organisation be involved with? You can nominate Y/N to more than one:
Videoconference units with specialist attachments in emergency/maternity departments;
Mobile devices with improved technologies for hospital/community health workers' use



Video-conference facilities in BHS operating theatre for education of medical procedures

Blended learning modules for health sector staff including the UB links;

- 2.4. How do you anticipate the Clever Health project will impact on work practices within your organisation?
- 2.5. What priority health need or problem in your organisation's region does the Clever Health project target? How were these needs been identified?

3. Infrastructure/Computer

- 3.1. Is your current level of computer and Internet infrastructure satisfactory, do they meet your organisation's needs?
- 3.2. What do you think your organisation sees as the main challenges with regard to IT infrastructure and computers when it comes to implementing Clever Health?
- 3.3. What type of new support do you think your organisation will need in order to effectively implement Clever Health?

4. Mobile Devices and improved technologies for hospital and community health workers' use

- 4.1. What is your current use of mobile devices? What seems to be the current use of these devices by the health staff in your organisation? [e.g., Phones (normal/3G); Blackberries; PDA (Palm Pilot); GPS; Phone/PDA; Pagers; Laptop computers (Wireless)]
- 4.2. What do you see as the main drawbacks to the current use of mobile devices?
- 4.3. How might an expanded use of mobile devices benefit your organization and/or the region?

5. Video-Conferencing with specialist equipment (Emergency and Maternity departments)

- 5.1. For what purposes do you currently use video-conferencing facilities? [e.g.,: for meetings; education; clinical case conferences, etc]
- 5.2. What clinical use do you anticipate you will be able to make of video-conferencing with new specialist equipment in your emergency and/or maternity departments?
- 5.3. Who in your organisation may benefit from this new clinical VC service? In the region?
- 5.4. What impact (of clinical VC) on your organisation's work practices can you foresee?



- 5.5. What outcomes do you anticipate will flow from clinical VC for your organization? What about anticipated outcomes for health consumers?

6. Video-Conferencing facilities in BHS Operating Room

- 6.1. What are your current thoughts about the Operating Room Video Conferencing facilities at Ballarat Health Service?
- 6.2. What do you expect will be the impact of these OR VC Facilities for your organisation? For the region?
- 6.3. Who in your organisation may benefit from this new service (OR VC)? In the region?
- 6.4. What impact (of OR VC) on your organisation's work practices can you foresee?
- 6.5. What outcomes do you anticipate will flow from OR VC for your organization? What about anticipated outcomes for health consumers?

7. eLearning

- 7.1. How does your organisation currently assist in the maintenance of the professional competence required of its health practitioners?
- 7.2. Is some form of peer support or mentoring provided? Is it formal or informal?
- 7.3. Can you identify any educational deficits that currently exist in your organization?
- 7.4. What use is your organisation intending to make of the core competency modules to be available through GREWP (Grampians Regional E-learning Working Party)?
- 7.5. How could eLearning and/or blended learning benefit your organization?
- 7.6. What outcomes do you anticipate will flow from eLearning for your organization? For the region? For health consumers?

8. Further participation

- 8.1. Would you be interested in participating in a focus group (face-to-face, usually about an hour in duration) as part of the evaluation process?
- 8.2. Would you be able to suggest any other individuals from your organization who may be appropriate and interested in focus group participation?