

# ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

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Patron: H.R.H. The Prince of Wales

## Queensland State Committee

5 May 2014

The Research Director  
Health and Community Services Committee  
Parliament House  
George Street  
BRISBANE QLD 4000  
Via email: [hcsc@parliament.qld.gov.au](mailto:hcsc@parliament.qld.gov.au)

Dear Research Director

### **Inquiry into Telehealth Services in Queensland**

Please find attached submission from the Royal Australasian College of Surgeons for the inquiry into telehealth services in Queensland. Please feel free to contact the College via the details below.

#### **Contact details:**

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Yours sincerely

[REDACTED]

**Dr Bernard Whitfield**  
**Chair, Queensland Regional State Committee**  
**Royal Australasian College of Surgeons**

## **HEALTH AND COMMUNITY SERVICES COMMITTEE**

### **INQUIRY IN TO TELEHEALTH SERVICES**



#### **ROYAL AUSTRALASIAN COLLEGE OF SURGEONS**

Submission from the Queensland Regional Committee

#### **Introduction**

The Royal Australasian College of Surgeons, established in 1927, is a not-for-profit organisation training surgeons and maintaining surgical standards in Australia and New Zealand. Approximately 95 per cent of all surgeons practising in Australia and New Zealand are Fellows of the College (FRACS).

The College commits to ensuring the highest standard of safe and comprehensive surgical care for the community we serve through excellence in surgical education, training, professional development and support.

This commitment requires the College to take informed and principled positions on matters of public health. The College appreciates the opportunity to make a submission on Telehealth Services in Queensland or more appropriately the increasing potential for the integration of Telehealth services into clinical practice.

It is important that as stated by Dr Michael Cleary at the Committees meeting on 5 March 2014 that – *“It is also evident that the historical service delivery models may need to be changed – these are the models that are in place in rural and remote communities – and that there is an opportunity for us to look at new models of service delivery given now that we have Telehealth infrastructure that is able to provide a considerable amount of support in terms of rural and remote health service provision.”* It should also be noted that Telehealth services whilst it presents opportunities to improve access to services for the rural and remote population it is a useful medium for the provision of education to the general practitioner and allied health sectors working in those remote locations. The initial impediments to the widespread application and usage of the services have been technology based. Dr Cleary’s submission highlights that the Health Department has made significant improvements in this area in recent years.

#### **Surgical involvement in Telehealth Services**

This submission will reference work being undertaken by two College Fellows that highlights the opportunities that this medium presents in addressing medical care in rural and remote communities and also how its application has the potential to improve services and at the same time reduce overall costs to the health service. Both of these services were referenced by Dr Cleary and Mr Andrew Bryett in their submissions on 5 March 2014. Both Fellows indicate the non-

measurable advantages that this system provides in terms of patient and clinical satisfaction in addition to the educational opportunities available.

#### **Dr Christina Steffen - Cairns to surrounding communities**

Firstly we reference the work being undertaken by Dr Christina Steffen in Cairns. Dr Steffen is a qualified general and vascular surgeon who is based at Cairns Hospital. Dr Steffen uses Telehealth as a means of post care in the communities of Aurukun, Bamaga, Kowanayama, Napranum, Yam, Yorke, Thursday and other Torres Strait Islands, Cardwell, Karumba, Mt Isa and Weipa. These services are not exclusive to these communities but are where those opportunities have been taken.

The consultations are predominantly follow-ups for diabetic foot disease, but save the patients having to fly down to Cairns – a significant cost which previously was by and large not agreed to by the patient. The patients generally could not meet the costs nor could get organised enough to arrange the follow up visit. Therefore previously these patients were lost to follow up and then relapsed and required a further inpatient admission etc. It has allowed us to follow these patients up closely and intervene at an earlier stage as well as be reassured all on track.

The patients are very compliant regarding attendance and pleased with this form of consultation. In fact they request it now! The staff at various clinics also appreciate the encounters as they can check their assessment and management is appropriate and it is a way of putting faces to names. Also has considerable educational value. We back the encounters up with e-mailed photos to track progress of wounds etc. For new patients with relatively minor problems it saves a trip to Cairns and treatment can be commenced and completed at their place of residence.

With respect to private uptake of the modality this is relatively poor and this probably relates to the logistics of setting it up and so I think a lot of GPs find it not particularly cost-effective. I have done a couple of consultations with GPs in Port Douglas and Atherton, but by far the best set-up is within the public sector for me.

I think it's a modality which has fairly specific applications and is not appropriate for others. For example in surgery it is really important to actually see and examine a patient in many cases, however Telehealth can be used for an initial interview and subsequent face-to face visit can be organised along with any required imaging or tests which would save the patient making multiple trips. e.g. a vascular patient with claudication can be interviewed and angiogram organised for a later date.

In summary Dr Steffen highlights some key advantages to Telehealth services. She advises that the patients and therefore the health service generally get some satisfaction from not being required to travel as frequently for care and post care and that as a consequence the return rate for major interventions is reduced. Dr Steffen also indicates a high level of satisfaction from the clinical staff in the remote communities in that they can offer a greater level of care locally. There also appears to be a major cost benefit to all involved however the information supplied by Dr Steffen does not look at this particular aspect of the patient interaction. Dr Steffen also highlights the careful requirements where clinicians need to be selective as to how they apply this modality to their clinical practice.

#### **Dr John North – Brisbane to Mount Isa**

Dr John North operates a significant Telehealth presence in the provision of orthopaedic services to Mount Isa. Dr North advances on the work advised by Dr Steffen in two key areas. The cost benefit of the service provision is outlined in a published paper on the pilot study and also utilises a greater array of medical imaging at the initial consultation service to determine the requirements for further patient intervention.

Dr North is an experience Orthopaedic Surgeon and former President of the Australian Orthopaedic Association. Dr North is also currently the Clinical Director for the Queensland and Northern Territory

Audit of Surgical Mortality (QASM and NTASM) projects run by the College with the financial support of QHealth and NT Health. In this role Dr North exams all surgical deaths in Queensland and THE Northern Territory and publishes data from the project which leads to system changes in the profession of surgery. Dr North is very cognisant of ethics and standards applying to surgery and patient care and would not place a patient at clinical risk from a misdiagnosis or unclear image in the consultation process.

Dr North has two published papers which cover the benefits to patients and clinicians and also carry an interesting cost benefit analysis. The summary of the second paper is below and details well the potential for savings. Both papers have been attached an appendix to this submission for consideration by the Committee. This report however would like to highlight two areas from the second paper produced by Dr North – the summary and the discussion components of those papers.

### **Summary**

Since January 2011, videoconference fracture clinics have been held between the rural Mt Isa Hospital (MIH) and the tertiary referral centre, the Princess Alexandra Hospital in Brisbane, approximately 900 km away. We have examined the activity and costs of the videoconferencing clinics over a 17-month period. During the study period, 27 clinics were held and 21 patient transfers (four of whom were children) were saved. The cost of a transfer was estimated to be \$1269 for an adult and \$2134 for a child with an accompanying adult. The cost of holding a videoconference fracture clinic was estimated to be \$1285 per clinic. During the first 12 months of the study, the savings in avoided transfers were outweighed by the cost of running the clinics. However, in the final 5 months, there were overall savings of \$11,334 for the health service. Improvements in the areas of administration and radiology were identified, which could enhance the application of telemedicine in multiple locations in rural and remote areas.

### **Discussion**

During the study, a number of difficulties concerning rural medicine became clear, as did various advantages of telemedicine. Most patients transferred to Townsville hospital required operative treatment, as surgical procedures could not be performed at MIH. However, the videoconference fracture clinics allowed management of many postoperative outpatients at MIH, thus significantly decreasing the cost of transferring patients for operative management.

Distance from medical facilities is a well-known problem in health service delivery in rural areas. This was highlighted in the second phase of the study. A large number of patients had travelled to Mt Isa from smaller towns to attend the fracture clinics. If the hospitals in the smaller towns which were equipped for radiography had had access to videoconference fracture clinics, then many teleconsultations could have been performed without the patient needing to travel long distances, often with painful and functionally limiting injuries. For example, there was a 63-year-old man who sustained a left middle finger distal phalanx crush injury while working on a farm approximately 800 km from Mt Isa. This man drove to Bedourie (incurring the personal expense of petrol) and then flew to Mt Isa (at a cost of \$712 return, paid for by Winton Hospital) to be seen in the videoconference fracture clinic. He then stayed in Mt Isa for another four days until the next return flight to Bedourie. The cost of this patient's clinic visit was over \$2700 due to the distance travelled.

Advantages for patients in having access to a consultant surgeon via videoconference included earlier return to work, earlier diagnosis of sinister pathology, and the ability to discuss treatment options and coordinate treatment plans with other hospitals, all of which reduced patient transfers. In one case, a patient was saved a transfer for

management of a left rotator cuff injury when, following a discussion with the surgeon in the videoconference fracture clinic, she declined surgical treatment.

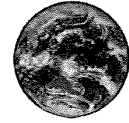
It should be noted that a potential obstacle in providing Telehealth services is that of access to patients' previous x-rays. This is possible via the Picture Archive Communication Systems (PACS) via the Queensland Health ICT network; however approval for access to the network is managed by each individual Health and Hospital Service and is often difficult to obtain. Dr North clearly highlights that with better coordination of the Telehealth modality with other services that cost effectiveness can be greatly increased. It is also clear that patient timeliness of care and patient experience that better fits their lifestyle challenges in rural and remote areas can be obtained through the use of Telehealth services. Dr North advises that the advantages are:

- Consultant care for the bush as opposed to Registrar or International Medical Graduate provided care.
- A potential for enormous cost savings for HHS budgets.
- This is as well supported in literature outside Australia.

The primary disadvantage to the Hospital and Health Services has been the take up rate for surgeons and other specialists has been slow but with better coordinated access to the complimentary services and other modalities this may improve.

Please find attached the two papers produced by Dr John North's fracture clinics for Mount Isa Hospital.

## PERSPECTIVES



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## Teleconference fracture clinics: a trial for rural hospitals

Most experience in telemedicine in orthopaedics has been in teleradiology, where a specialist provides advice based only on the radiograph of a patient's injury.<sup>1-4</sup> There have been few trials of full teleconsultations, involving history, examination and imaging analysis of the patient by a specialist in another centre communicating with a doctor and patient in a remote location, via video link in real time. However, such studies have shown that teleconsultations reduced unnecessary patient transfers by 69 to 75%, and are a reliable alternative to live consultations.<sup>5-8</sup>

For 5 months in 2011, 12 trial teleconsultation fracture clinics were conducted between the large city centre, the Princess Alexandra Hospital (PAH), and the rurally located Mt Isa Hospital (MIH). Fracture clinics at MIH are ordinarily conducted twice weekly by an unaccredited orthopaedic registrar. To obtain a specialist opinion or further management, the patient needs to be transferred to the nearest referral centre (Townsville Hospital, located 883 km away). The trial teleconsultation fracture clinic replaced the usual Friday fracture clinic at MIH. The satellite link between the clinics allowed the orthopaedic surgeon to conduct a teleconsultation with the registrar and patient (Fig. 1).

The total cost of holding each teleconsultation fracture clinic was \$1285. This comprised of \$1060 in staff wages for a total of 17 extra

work hours each week, and \$225 for the production of patient charts at the PAH for clinical records.

The cost of transferring a patient from MIH for assessment at Townsville Hospital totals approximately \$1269 per adult patient and \$2134 per child patient, as a child patient requires an accompanying adult. This includes \$550 for the airfare (paid by the health system), accommodation, transport and food, and an average loss of \$404 income for 2 days per adult.<sup>9-12</sup>

Five patient transfers were saved in 6 months, comprising three adults and one child with one accompanying adult. This is a total cost saved of \$5941, and an average saving of \$495 per clinic. Overall, there was a cost-deficit of \$790 per clinic, and for every 24 patients treated in the teleconsultation clinics, one patient transfer to Townsville was saved.

The alternative arrangement for obtaining specialist review is for a specialist to travel to MIH for a fracture clinic. Overall, the cost of sending a specialist to MIH would be \$3064 per clinic, comprising \$1150 in airfares, accommodation and transport; \$552 wages for the duration of the clinic; and \$1392 in lost income for the duration of travel.<sup>9,10,13</sup> This is \$1779 more than the amount spent on each teleconsultation fracture clinic, and \$2569 more than the amount spent on average in patient transfers.



Fig. 1. Real-time interaction between the patient and registrar at Mt Isa Hospital (top right) and the surgeon at Princess Alexandra Hospital (bottom right), with radiographic support.



Even though there is a cost deficit shown in this trial, there is an obvious benefit to the patients' social and financial situations due to the significantly easier access to specialist opinion. The other benefits of the teleconsultation fracture clinic include support for the orthopaedic registrar and a unique opportunity for education in a rural clinical setting.

The main difficulty in running the teleconsultation fracture clinic was the organization of transfer of radiographic imaging onto the PAH radiology system. At least 1 day was required to allow transfer of images, meaning patients could not be seen on the same day, and repeat imaging could not be performed during the clinic.

Some improvements could make the teleconsultation fracture clinic more efficient and less expensive. First, the creation of an electronic appointment book would allow easier management of appointments, and could contain clinical notes, avoiding the expensive duplication of charts at the PAH. Second, the synchronization of imaging systems across all health services to a central radiology service would reduce the time taken to transfer radiographs between hospitals, and allow radiographers to confirm that relevant and recent radiographs exist on the imaging system in advance.

To make the clinic cost-effective, each clinic needs to prevent one patient transfer. An average of 15 patients was booked into the clinic each week, with an average attendance rate of 69% (10 patients). To be cost-effective, either 35 patients would need to be booked into each clinic, or attendance rates would need to be significantly improved. Attendance could be improved by informing patients in advance that the teleconsultation involves contact with a specialist without having to travel to the distant referral centre. In the trial clinics, patients were not told in advance that they would be involved in the teleconference fracture clinic.

Teleconsultation fracture clinics result in fewer patient transfers to referral centres, due to the real time availability of specialist opinion. While teleconsultation fracture clinics have increased running costs, they are still more cost-effective than transferring a specialist to the rural centre to conduct a clinic. The limitations of this study were the small number of clinics held in 6 months and the high failure-to-attend rate. This trial of teleconsultation fracture clinics shows that telemedicine could be effective in reducing costs to the health system, improve patient care and provide additional support for rurally located medical practitioners.

### Acknowledgement

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## **An analysis of an ongoing trial of rural videoconference fracture clinics**

Alison McGill and John North  
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# ► An analysis of an ongoing trial of rural videoconference fracture clinics

Alison McGill and John North

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## Summary

Since January 2011, videoconference fracture clinics have been held between the rural Mt Isa Hospital (MIH) and the tertiary referral centre, the Princess Alexandra Hospital in Brisbane, approximately 900 km away. We have examined the activity and costs of the videoconferencing clinics over a 17 month period. During the study period, 27 clinics were held and 21 patient transfers (four of whom were children) were saved. The cost of a transfer was estimated to be \$1269 for an adult and \$2134 for a child with an accompanying adult. The cost of holding a videoconference fracture clinic was estimated to be \$1285 per clinic. During the first 12 months of the study, the savings in avoided transfers were outweighed by the cost of running the clinics. However, in the final 5 months, there were overall savings of \$11,334 for the health service. Improvements in the areas of administration and radiology were identified, which could enhance the application of telemedicine in multiple locations in rural and remote areas.

## Introduction

Since January 2011, weekly videoconference fracture clinics have been held between the rural Mt Isa Hospital (MIH) and a tertiary referral centre, the Princess Alexandra Hospital (PAH) in Brisbane, 880 km away. Fracture clinics at MIH are usually held by an unaccredited orthopaedic registrar twice each week. If patients require further management, the referral centre is Townsville Hospital, which is 900 km away. The videoconference fracture clinics have replaced one fracture clinic at MIH per week, taking half of the weekly fracture clinic patients. Similar studies of videoconferencing in orthopaedics have shown that teleconsultations reduce unnecessary patient transfers.<sup>2-5</sup>

Videoconference fracture clinics are being trialled at MIH to establish whether they reduce the costs of transferring patients for further management and to assess the quality of care provided by telemedicine. A cost benefit analysis of the first phase of the trial has been published elsewhere.<sup>1</sup> This showed that the first six months of the trial were not cost effective, with only a few patient transfers saved.

After six months of operation, the second phase of the trial began. Certain improvements identified in the first phase were implemented. To improve attendance, patients were advised that their participation in the videoconference fracture clinic would be with a consultant orthopaedic surgeon. More efficient transfer of X ray images was

achieved by uploading the MIH radiology software onto the PAH telemedicine system, and allowing secure remote access. This allowed X rays to be taken on the day of the clinic rather than the previous day.

We have examined the activity and costs of the videoconferencing clinics in orthopaedics.

## Methods

Ethics approval for the present study was not required. Information about numbers of patients attending the clinics was collected by nursing staff at PAH. The definition of a saved transfer was a patient who was able to be managed at MIH through the videoconference fracture clinic who otherwise would have been transferred to Townsville Hospital for management (the decision was made by the doctor running the clinic).

The cost of a transfer was the expense of a referral to Townsville based on airfares, food, accommodation, ground transport and time off work for the patient. The cost of holding the videoconference fracture clinic was calculated from the time spent by clinical staff in organizing and holding the clinic, and the cost of duplicate patient charts. The cost of the videoconferencing was assumed to be negligible as the service is provided to Queensland public hospitals as part of their IT support. For a patient who was saved a transfer to Townsville, the medical cost of treating the patient in Townsville was assumed to be the same as treating the patient at Mt Isa, and was therefore ignored for the cost analysis.

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**Table 1** Attendance rates and patient transfers saved

	Clinics held	Attended	Did not attend	Attendance (%)	Transfers to Townsville saved
Jan 2011	3	27	9	75	0
Feb	2	30	4	88	1
Mar	3	23	12	66	1
Apr*	0	0	0	0	0
May	2	21	18	54	3 (1 child)
Jun 2011	2	17	11	61	0
<i>Subtotal phase 1</i>	<i>12</i>	<i>118</i>	<i>54</i>	<i>69</i>	<i>5 (1 child)</i>
Jul 2011	2	8	10	44	0
Aug	1	11	7	61	0
Sep*	0	0	0	0	0
Oct	1	7	7	50	0
Nov	1	15	5	75	0
Dec 2011	1	0	9	0	0
<i>Subtotal phase 2</i>	<i>6</i>	<i>41</i>	<i>38</i>	<i>52</i>	<i>0</i>
Jan 2012*	0	0	0	0	0
Feb	1	11	5	69	3 (1 child)
Mar	4	48	18	73	9 (2 children)
Apr	1	18	4	82	0
May 2012	3	35	18	66	4
<i>Subtotal phase 3</i>	<i>9</i>	<i>112</i>	<i>45</i>	<i>72</i>	<i>16 (3 children)</i>

\*no clinics were held

## Results

The present study covered a 17 month period, from January 2011 to May 2012. A total of 27 clinics were held, with an average of about 10 patients seen in each clinic and an average of 5 patients failing to attend. Thus for the 17 month period, the average attendance rate was 66% (see Table 1). The rates of attendance were slightly higher in 2012 than in 2011 (71% vs 63%).

The cost of a transfer was estimated to be \$1269 for an adult and \$2134 for a child with an accompanying adult. The cost of holding a videoconference fracture clinic was estimated to be \$1285 per clinic.

During the 17 month study period, 27 clinics were held and 21 patient transfers (four of whom were children) were saved. Over the 9 clinics held in 2012, a total of 16 patient transfers (three of whom were children) were saved. This corresponds to a saving of \$11,334, based on an average calculated cost of \$1269 per adult transfer, \$2134 per child transfer and \$1285 cost per clinic. Therefore, the videoconference fracture clinics were cost saving for 2012, with an average saving of \$1259 per clinic (see Table 2).

Presentations that were commonly seen and well managed at MIH through the videoconference fracture clinics included undisplaced fractures, crush injuries to distal phalanges, postoperative and wound reviews, and

reviews with changing of plaster casts. Cases that had to be referred to Townsville included pathological and intra articular fractures, and referrals for operative management.

## Discussion

During the study, a number of difficulties concerning rural medicine became clear, as did various advantages of telemedicine. Most patients transferred to Townsville hospital required operative treatment, as surgical procedures could not be performed at MIH. However, the videoconference fracture clinics allowed management of many postoperative outpatients at MIH, thus significantly decreasing the cost of transferring patients for operative management.

Distance from medical facilities is a well known problem in health service delivery in rural areas. This was highlighted in the second phase of the study. A large number of patients had travelled to Mt Isa from smaller towns to attend the fracture clinics. If the hospitals in the smaller towns which were equipped for radiography had had access to videoconference fracture clinics, then many teleconsultations could have been performed without the patient needing to travel long distances, often with painful and functionally limiting injuries. For example, there was a 63 year old man who sustained a left middle finger distal phalanx crush injury while working on a farm approximately 800 km from Mt Isa. This man drove to Bedourie (incurring the personal expense of petrol) and then flew to Mt Isa (at a cost of \$712 return, paid for by Winton Hospital) to be seen in the videoconference fracture clinic. He then stayed in Mt Isa for another four days until the next return flight to Bedourie. The cost of this patient's clinic visit was over \$2700 due to the distance travelled.

Advantages for patients in having access to a consultant surgeon via videoconference included earlier return to work, earlier diagnosis of sinister pathology, and the ability to discuss treatment options and coordinate treatment plans with other hospitals, all of which reduced patient transfers. In one case, a patient was saved a transfer for management of a left rotator cuff injury when, following a discussion with the surgeon in the videoconference fracture clinic, she declined surgical treatment.

Another example that illustrates the advantages of videoconferencing was a 50 year old woman who attended

**Table 2** Cost analysis

	No of clinics	Cost of clinics (\$)	Adult transfers avoided	Paediatric transfers avoided	Savings (\$)	Balance (\$)
Phase 1, Jan–Jun 2011	12	15,420	4	1	7210	8210
Phase 2, Jul–Dec 2011	6	7710	0	0	0	7710
Phase 3, Jan–May 2012	9	11,565	13	3	22,899	11,334

## A McGill and J North Fracture clinics

the clinic having been placed in a short leg cast 5 weeks previously for a left distal fibula fracture. She presented in a wheelchair complaining of severe, constant pain in her left leg. The surgeon conducting the videoconference fracture clinic discovered her history of breast cancer and diagnosed the pathological nature of the fracture. The consultant was then able to refer her to an oncologist and to coordinate the clinic and imaging appointments so that they could occur in a single trip to Townsville. The other benefit of specialist knowledge is that it provides support and a unique educational opportunity for rural doctors.

The first phase of the study emphasised the additional cost of transferring a child with an accompanying adult. This has been documented in previous work in Queensland.<sup>6</sup> In the second phase of the study it was observed that accompanying people were also required for elderly and incapacitated patients, or were needed due to the nature of the orthopaedic injury. Significant costs could be saved by preventing the transfer of such patients.

Changes in attendance and radiology services improved the efficiency of the clinics during the trial. Other improvements that could make the videoconference fracture clinics more efficient and less expensive were identified. For example, an Internet based electronic appointment book would allow multiple centres to allocate appointments for the clinics, and could also provide a suitable storage location for patient notes, saving the cost of expensive duplicate charts.

The first phase of the study identified difficulties with transfer of radiographic images due to the variety of radiological imaging systems used in Queensland hospitals, which prevent images from being automatically available on other systems. Previously, radiographs had to be taken the day before the appointment, and if views were inadequate or incorrect, management would be delayed until further imaging could be performed. Transferring

images the same day between the imaging systems at MIH and PAH streamlined the consultation process and saved patients' time. However, difficulties with transfer of images between other hospitals remain. A state wide radiology system would allow immediate access to all images, which would facilitate consultations and discussion of cases with other hospitals. A central radiology system would be particularly beneficial in expanding the videoconference service to multiple locations.

In conclusion, the present study shows that improvements in the areas of administration and radiology could be made to enhance the application of telemedicine in multiple locations in rural and remote areas. While the videoconference fracture clinics between MIH and PAH were not shown to be cost effective in 2011, changes in 2012 showed that there were cost savings because of avoided patient transfers. The trial also demonstrated the advantages of the service and the benefits to patients of providing remote access to an orthopaedic specialist.

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