The NBN Futures Forum

Social and Economic Benefits of Broadband for Digital Inclusion and Telehealth

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Abstract: On 18 August 2020, TelSoc hosted the fourth NBN Futures Forum, held online, on the theme of social and economic benefits of broadband. Three speakers discussed various aspects of the topic, including the need for universal digital inclusion, the benefits of healthcare delivery via telehealth, and the actions required of government to support telehealth availability. Discussion following the speeches emphasised the need for universal access to broadband and telehealth services to improve access to health providers and, through education, reduce social inequities and overcome some social determinants of poor health outcomes.

Keywords: NBN, public policy, digital inclusion, telehealth

Introduction

The NBN Futures Project (Holmes & Campbell, 2019) has been organizing a series of public forums under the title NBN Futures to encourage debate, and potentially to build consensus, about the future of Australia's National Broadband Network (NBN) now that the initial rollout is nearing completion. The forums are hosted by TelSoc (the Telecommunications Association Inc, publisher of this *Journal*). The first forum was held in July 2019 (Campbell & Milner,

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2019), the second in October 2019 (Campbell, 2019) and the third in February 2020 (Campbell, 2020).

The fourth forum, held online on 18 August 2020, was on the general theme of "Social and Economic Benefits of Broadband" and included speakers on digital inclusion and telehealth. Three main speakers addressed various aspects of this theme in short presentations. A moderated question-and-answer session online followed.

The NBN Futures Forum

Dr Jim Holmes, who chaired the event, invited John Burke and three subject-matter experts to address the theme of the "social and economic benefits of broadband".

John Burke: Context for the Forum

Mr John Burke, the convenor of the NBN Futures Group, sketched the interests of the Group to provide some context for the Forum. From its beginning, the Group had been concerned with the social and economic benefits of broadband access. There is a discussion paper available on the TelSoc website particularly addressing two relevant issues: realising the value of online activities *at scale*; and promoting digital inclusion.

Mr Burke welcomed the recent formation by the Minister of Communications of an Australian Broadband Advisory Council. It had a brief to advise on broadband applications for agriculture, health, tourism and other areas, but appeared to have no explicit focus on digital inclusion.

The NBN Futures Group aims to promote wider knowledge about online applications (such as telehealth) and digital inclusion: hence this Forum.

By the end of this year, it is hoped, the NBN Futures Group will outline proposals for a long-term, bipartisan, broadband strategy for Australia. As a step in this direction, the Group, via TelSoc, has made a submission, which is available on the TelSoc website, to the Joint Parliamentary Standing Committee on the National Broadband Network.

Ishtar Vij: Digital inclusion

Ms Ishtar Vij is convenor of the Australian Digital Inclusion Alliance (ADIA), founded in 2017 and now a grouping of more than 500 organizations. Its purpose is to accelerate digital inclusion in Australia. The COVID crisis has in many cases expedited digital transformation but it has also highlighted deficiencies in digital inclusion. Many Australian households do not have the technology or the ability to fully participate in online activities. This makes it difficult

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to use digital services, stay socially connected in a time of social distancing, and pivot their daily tasks to an online world.

It is a core tenet of the ADIA, according to Ms Vij, that all Australians should be digitally capable and able to participate in the digital economy. In addition to an Internet connection and a suitable device, people need the abilities to navigate and use digital services – and these abilities will require life-long learning to be kept up to date with new technologies and applications.

The Australian Digital Inclusion Index (Wilson, Thomas & Barraket, 2019) has been tracking digital inclusion. The 2019 index showed that the lowest levels of digital inclusion were found in households with low income or that were mobile only, and for those over 65. Further, Indigenous groups and those in rural and regional areas showed lower levels of digital inclusion.

The ADIA has identified about 50 programs, spanning government, business and community groups, that are addressing issues of digital inclusion. They are not well coordinated and are not necessarily targeting the most disadvantaged groups, with each program having its own goals and objectives. At the government level, there is no whole-of-government coordination. This leads to confusion for potential beneficiaries of these programs.

National Digital Inclusion Roadmap		
Affordability *Addressing access and affordability of Internet services* ~ Incorporating NBN rollout and wireless plans to demonstrate progress towards 100% connection across Australia ~ Assessing which COVID-19 affordability measures can be retained going forward ~ Support low income and vulnerable populations to access devices ~ Funding free public Wi-Fi access points	**Ability** *Ensuring everyone has the capabilities and confidence to benefit from and complete activities on the Internet* ~ Creating a Digital Capabilities Framework to provide a common understanding of what it means to be a digitally capable individual ~ Collating a central index of the programs available to support digital skills development in a searchable database ~ Conducting a gap and overlap analysis of the current digital skills development programs	**Accessibility** *Allowing everyone to use the internet including those living with disability, from culturally or linguistically diverse backgrounds, or with other needs* ~ Working towards all government websites being compliant with accessibility standards ~ Ensuring government adherence to accessibility requirements suitable for public procurement of ICT products and services ~ Incentivising the adult learning sector to incorporate inclusion and accessibility in ICT and design courses by 2022.

Figure 1. Proposed National Digital Inclusion Roadmap (Source: ADIA)

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The solution, according to the ADIA, is for government to develop a roadmap for digital inclusion and identify immediate action items. Early actions should include creating a digital capabilities framework, tackling affordability measures for broadband, and implementing the latest accessibility standards on all government websites.

The roadmap to digital inclusion should have three main areas.

- *Affordability*. Cost is a barrier to uptake of digital services and access is out of reach for some households. An NBN service priced at $20 per month for low-income households, as promoted by ACCAN (Corbin, 2019), would be beneficial. In addition, the cost of devices is a barrier to availability. It was noted that free public Wi-Fi is critical for many of those being excluded.
- *Ability* – capability and confidence – to use digital services. The government could undertake a gap and overlap analysis of current initiatives to identify who and what are not being covered. It could collate and maintain an index of initiatives, so that consumers could more easily find support. A national Digital Capabilities Framework, to promote a common understanding of digital capability, is required. The Commonwealth Department of Employment promotes a core skills framework that includes information technology skills, but it is only at a basic level and only for a limited purpose.
- *Accessibility*. Digital services should be accessible by everyone, including those with a disability or from linguistically diverse backgrounds. The government should lead by ensuring that all government websites meet the latest accessibility standards. Government acquisition should include accessibility as a criterion. Accessibility should be included in all ICT and design courses.

In summing up, Ms Vij suggested that the world would be different after the COVID crisis. The current, uncoordinated initiatives to promote digital inclusion urgently need coordination and strengthening.

Anthony Smith: Telehealth in Australia's health system

Professor Anthony Smith is the Director of the Centre for Online Health (COH) at the University of Queensland. The Centre was established more than two decades ago to pioneer and evaluate the use of telehealth and other online applications in the health system. This work is achieved through four highly successful pillars of work involving telehealth research, service delivery, teaching and consultancy. Whilst telehealth has been in existence for some time, the overall uptake of telehealth in mainstream practice has been slow and fragmented. The COH have a very practical focus in their research portfolio, working in close partnership with health services and helping to resolve problems associated with implementation, service

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transformation and sustainability. The COVID crisis had resulted in a massive surge in telehealth activity, mainly due to necessity (i.e. social distancing requirements and reducing risk of transmission for clinicians and vulnerable groups); and this itself introduces a range of important challenges, including the need for policy changes, new funding models, public awareness campaigns and health service provider training (Smith *et al.*, 2020).

Professor Smith described some telehealth success stories. In Queensland, a centralised telehealth coordination service was established in November 2000, for the coordination of telehealth referrals for a broad range of paediatric sub-specialities (Smith, 2007). The original Queensland Telepaediatric Service (QTS) resulted in larger numbers of patients being seen by videoconference instead of travelling to Brisbane for a specialist appointment. In 15 years, over 23,000 consultations were conducted for 37 different paediatric specialties. In the case of children with burn injuries, acute treatment was provided by the specialist burns unit in Brisbane, and follow-up appointments for post-acute burns care typically required return trips back and forth to Brisbane (Smith *et al.*, 2007a). The QTS scheduled follow-up appointments by videoconference with the support of local clinicians, such as nurses and occupational therapists. The success of this service was dependent on a dynamic burns team willing to change the way they provided outpatient burns care, a network of nursing and allied health staff in regional areas to provide support to patients during the telehealth appointment, and regular training sessions (online) to support staff in these areas with the delivery of specialist paediatric burns care. Whilst there was some initial reluctance within the department to do telehealth, the specialist burns centre have led the way in making this modality a routine part of their clinical service.

A second successful example of telehealth relates to the establishment of a community-based ear screening service for Indigenous children at risk of ear disease. A van was converted into a mobile clinic where a local Aboriginal health worker could travel to nearby schools and screen children for hearing-related health conditions. Clinical information was uploaded from the van to a secure database and made available to specialists based in Brisbane. Ear, Nose and Throat specialists were able to assist with diagnosis and treatment plans. Results demonstrated improvements in the overall proportion of children being screened from 35% to over 80% of children in the supported communities (Smith *et al.*, 2015; Nguyen *et al.*, 2015). This is an example where telehealth has enabled a more responsive service and demonstrated the importance of community leadership.

In 2012, the COH had a unique opportunity to help design and establish a new centralised telehealth centre at the Princess Alexandra Hospital (PAH) in Brisbane. Based on a similar model to the QTS, routine telehealth clinics were planned for a range of clinical specialities at the PAH for mainly adult patients (Martin-Khan *et al.*, 2015). Within the first eight years, the

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total number of telehealth consultations reported per year in this health service increased from around 400 in 2012 to over 15,000 in 2020. In addition, the service has expanded into a hybrid model where activity is either conducted in the telehealth centre (centralised) or in other locations (satellite sites) – such as outpatient clinics or consultant treatment rooms. The effort at the PAH reflects significant changes in referral procedures, staff training, infrastructure support and the development of new clinical service models.

Professor Smith wanted to dispel some common "myths" about telehealth:

- *It is not just about remote communities*: telehealth consultations are now being used with patients only 2 km away from the specialist hospital in Brisbane. Barriers to face-to-face consultations, such as physical or mental health disability, affordability or cultural factors, can be overcome with telehealth.
- *It is appropriate for older people*. While Professor Smith has found that many older people already embrace telehealth (in the form of videoconferencing with family and friends), a successful telehealth service needs to be well designed and cater for specific requirements of potential users – such as audio and visual capacity. Provided that the systems being used are appropriate and that the necessary support and training is in place, telehealth should not be a problem.
- *It is never going to replace all face-to-face consultations*. Telehealth supplements interactions with patients and an appropriate balance between in-person and virtual consultations needs to be found. If a specific physical assessment is required, then a face-to-face appointment may be required. If no physical assessment or specialised procedure is required, then telehealth ought to be considered.
- *It does not necessarily provide cost savings*. It is easy to assume that, because telehealth can reduce the need for travel, this also implies massive savings overall. Sometimes this is the case, but one must be mindful of the true cost of providing telehealth (infrastructure, staffing etc.) to articulate these savings and the actual beneficiaries. Patients are more likely to realise savings, rather than the health service. Rather than focus on telehealth as a cost-saving exercise, it is more appropriate to invest in telehealth as a method of enabling more timely access to health services and improving healthcare overall.
- *It is not necessarily quick and easy to do*. It does take time and effort to properly plan, implement and operate a telehealth service. Telehealth is a disruptive process, which can result in major changes in the way healthcare is delivered.

What makes telehealth successful? It is certainly more than just implementing a technology. Professor Smith suggested the following organizational components are important:

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- The clinical requirements must be clearly identified. This determines the most appropriate modality, technology, setting, and patient groups where telehealth may be safely and effectively used.
- There must be organizational support, not just from management but also "bottom up": that is, clinicians must be trained and supported to take up the new way of working. Clinicians who are unwilling to practice telehealth can certainly have a negative influence on acceptance and uptake of telehealth.
- There is an important role for "clinical champions" who are enthusiastic supporters of telehealth and can encourage colleagues to participate.
- There must be sustained funding, not only to support ongoing training and service development, but also to ensure that people who have key roles in the planning and delivery of the telehealth service are remunerated appropriately.
- There is an ongoing role for change management to ensure that the new models of service are sustained and treated as business as usual.

Telehealth adoption is certainly not restricted just to hospitals, Professor Smith emphasised. We are seeing excellent examples of telehealth being used in general practice, in nursing homes, in community health clinics, in the home and in schools. For example, a Health-e-Regions project in the Western Downs is helping to deliver telerehabilitation services into schools for children who need speech and language or occupational therapy (Langbecker *et al.*, 2019).

The widespread possibilities for telehealth have been shown in the COVID crisis (Smith *et al.*, 2020). After the Australian Government relaxed the funding rules associated with the Medicare telehealth items, the number of consultations reported nationally has increased substantially. Before the COVID crisis, around 250,000 telehealth consultations were being funded by Medicare each year. Between March 2020 and June 2020 (four months), the total number of telehealth consultations reported was over 17 million. Over 90% of these consultations have been by telephone. Temporary relaxations to MBS funding for telehealth has broadened the types of services available by telehealth, and enabled easier access, irrespective of physical location.

The Medicare funding changes have been approved until September 2020, but Professor Smith argued that they should be maintained for the longer term with some modification. Telehealth can help to address continuing social distance requirements, can provide a safe space for patients, and can be safer for healthcare workers. While the tragedy of COVID is still being felt around the world, the pandemic has created the impetus for clinicians to rethink the way they provide services, and for the general public to increase their understandings and awareness of telehealth.

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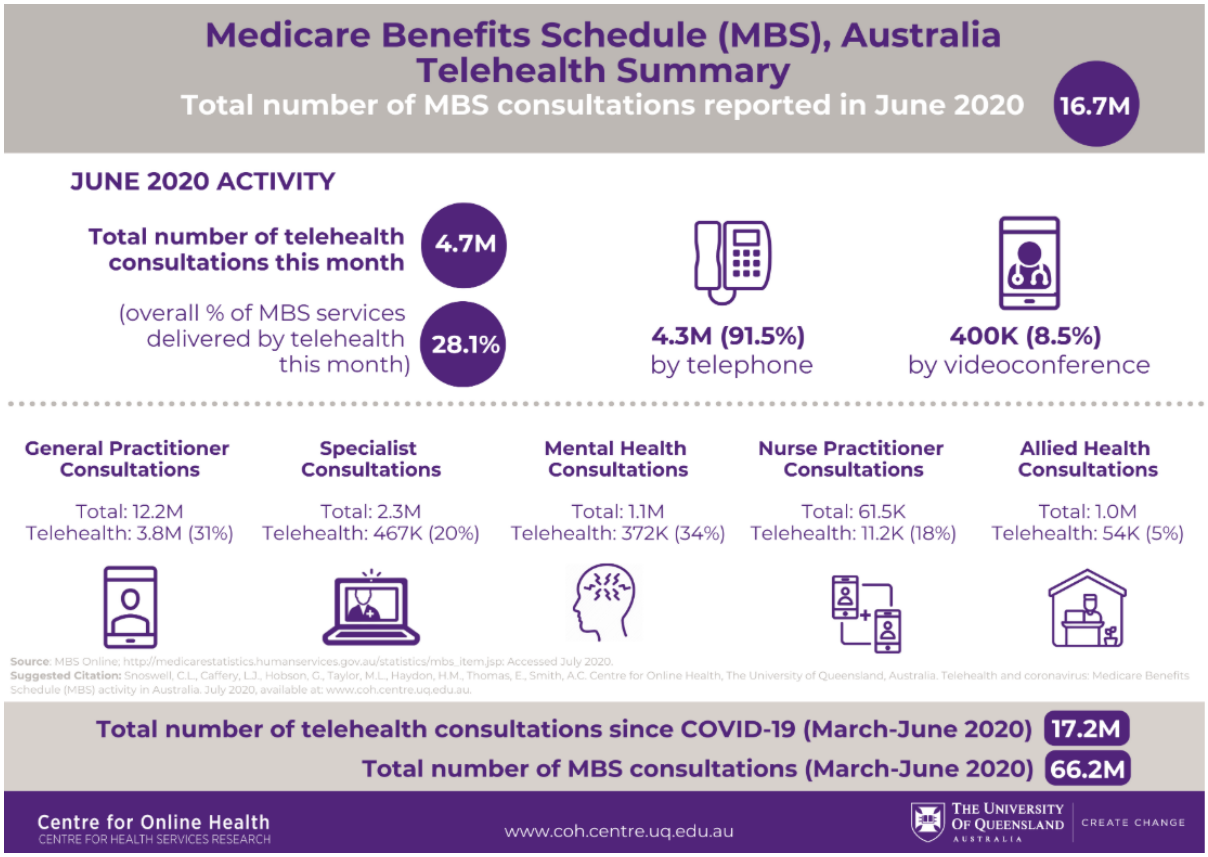

Figure 2. Telehealth consultations reported in June 2020 during the coronavirus pandemic
(Source: Centre for Online Health)

Professor Smith wished to emphasise three points in summary: telehealth is complex but achievable in the right circumstances; it generally improves efficiency in the health system (coordination and access to services); and it also encourages the development of new models of care that are much more patient-centric and equitable.

Peter Brooks: Telehealth and social inclusion

Professor Peter Brooks is with the Melbourne School of Population and Global Health at the University of Melbourne. He addressed the systemic issues around healthcare and telehealth and the actions needed to promote change.

He suggested that the current system is not particularly patient friendly and is often too complex for patients to navigate. It can be inefficient and wasteful and produces significant inequities in outcomes. Telehealth can help to enhance patient engagement, presenting patients with options and often producing better outcomes. Telehealth technology can be an enhancer but the underlying need is to upskill the healthcare workforce and the community.

Professor Brooks noted that implementation is not only about technology but is primarily a change in culture. He cited the example of the US Veterans Affairs Department, a generally conservative organization with 10 million patients and over 1,200 healthcare facilities. Two

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years ago, it reported that 75% of its consultations were via telehealth. This was the result of a management drive over a three-year period to change the culture of the organization to achieve better healthcare outcomes.

Professor Brooks suggested that telehealth can address the social determinants of successful health outcomes. There was evidence for this from the examples provided by Professor Smith and other clinical trials. He feared that overcoming detrimental social determinants would only become more important in the near future with higher unemployment levels, poorer economic growth and education challenges.

Professor Brooks believed that there were three sets of actions that are required:

- Funding is important – it is necessary to lobby politicians about keeping the telehealth changes after September, while being mindful that public money should be carefully used. Professor Brooks suggested that all health professionals should have access to telehealth funding arrangements.
- A new workforce – digital health "navigators" – may be important to help people find and connect to telehealth facilities.
- There is a need for conversations with patients to strike the right balance between face-to-face and online consultations.

Questions and discussion

Questions and discussion online followed.

What could be expected in telehealth developments if the government did not lead?

> Professor Brooks believed that the government must provide leadership and have a continuing role in telehealth developments, to protect the most vulnerable members of society. The private sector can also play a part.
>
> Professor Smith noted that there were many private companies already providing a range of telehealth services. This could potentially pose a risk in terms of generating services that lack continuity of care with primary care providers. Recent changes to MBS telehealth funding rules now stipulate that patients must have seen their GP in person within the last 12 months to qualify for the bulk-billed payment.
>
> Professor Smith also noted that there was currently no gap fee permitted for telehealth services provided by GPs. In the current arrangements, GPs can only bulk-bill telephone and video consultations. If a gap fee was permitted, he believed that most people would be willing to make a reasonable payment, because of the convenience of the appointment (such as avoided time off work, travel and parking costs). However,

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it is also important that bulk-billing options still exist, for specific circumstances where patients cannot afford the gap payment.

Is it the case that low-income groups are harder or more expensive to engage to promote digital inclusion?

Ms Vij reported on the outcomes of focus groups on low-income communities. There were expressed concerns about access to suitable Internet plans. On affordability, even if a plan was affordable now, would it continue to be affordable in the future? Credit checks that are required for post-paid plans may not always be available, restricting users to prepaid, mobile-only plans. Identity verification is also required, but relevant documents may not always be available and some groups may lack confidence in sharing them. These barriers can lead to social and digital exclusion.

For a whole-of-government strategy, where should the leadership and coordination be located?

Ms Vij reported that the ADIA had no fixed view on this matter. She cited examples of coordinating bodies as a committee of government, or at Ministerial level, or at the level of Department Heads, or even as a unit in the Department of Prime Minister and Cabinet. All of these could be successful. To coordinate efforts at the State level, she suggested that a lesser version of the National Cabinet method could be set up.

Post-COVID, should telehealth by telephone be continued? How will the potential loss of income by GPs be addressed?

Professor Smith suggested that over 90% of consultations were being done by phone because it was easy and convenient. A telephone consultation is certainly appropriate for many routine services: it depends on clinical requirements. Anecdotally, some GPs have been reporting a loss of income because the current funding guidelines do not permit a gap payment to be charged for telehealth consultations.

He suggested that there is a need to explore ways of encouraging more video consultations. For example, an integrated system, which permitted easy access to documentation, video connections, billing processes, and scheduling procedures, might be attractive. For government policy, remuneration should be based on effort and outcome: video consultations might attract a higher remuneration value than telephone services, depending on patient needs.

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Physicians have said that colour is important in assessing patients. Can suitable colour be provided on video in variable lighting conditions?

Professor Smith described the case of burns surgeons who originally expressed the importance of interpreting the colour of a scar. An efficacy study revealed that colour interpretation was less important than specific observation of texture, range of motion and contractures (Smith *et al.*, 2004). To calibrate colour impressions between different viewing devices, a common technique is to place a colour chart next to the area to be assessed, so that a comparison can be made. This technique is often used in dermatology and wound care.

Is there data available on costs and benefits of telehealth in Australia?

Professor Smith noted that there is a growing number of economic evaluations being done in telehealth. Some of these studies have been in the form of a cost minimization analysis (Smith *et al.*, 2007b; Smith, Scuffham & Wootton, 2007; Xu *et al.*, 2008). Assuming the same clinical outcome, the costs and potential savings are compared for different service models – such as telehealth, visiting outreach service, or patient travel. Professor Smith's studies have shown that at certain workloads (volume of activity) telehealth is less expensive. Given that there are upfront costs for implementing a telehealth service, the studies have also shown that, if a workload is very low (small number of consultations), then it may be cheaper to provide an outreach service or continue to have the patients travel for in-person appointments.

Given the widespread availability and capability of modern smart phones, could all telehealth be delivered via smart phones?

Professor Smith agreed that smart phones were generally suitable, but, as well as access to a phone, there was also the need for connectivity and a sufficient data plan. In some Indigenous communities, there was a practice of sharing phones. This was not the ideal arrangement for providing mental-health consultations, for example. There were also examples of patients who experience difficulty accessing reliable Internet connections close to where they live. Some patients report using the free Wi-Fi in the local library or at the McDonalds, but these are often limited in the amount of time available, network quality and privacy. These examples highlighted some of the disparities which exist throughout Australia.

Professor Smith noted that telehealth need not be high tech. He described a telemedicine service (Swinfen Charitable Trust) which uses email to support doctors, nurses and health workers in developing countries — all around the world, including Nepal, Iraq and the Solomon Islands. A clinical question would be sent to a single email

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address. A panel of volunteer specialists provide expert clinical advice regarding diagnosis and treatment, and this information is returned by email back to the original referrer. This service is provided at no cost. He also described one orthopaedic case example from Bangladesh, which was raised at a conference attended by orthopaedic surgeons. Collectively, these experts discussed the case and helped formulate a response back to the referring doctor. These types of 'low cost' telehealth services could be just as valuable throughout Australia, he believed.

Can telehealth be used for allied healthcare, such as nursing or physiotherapy?

Professor Smith replied that telehealth was relevant for nursing and other allied services. The Medicare data showed that, after the COVID-induced changes, there have been 54,000 consultations for allied services, of which 11,000 were for nursing. There are many excellent examples of allied health services being delivered by telehealth. For physiotherapy, rehabilitation services can be delivered to patients through laptops or iPads. Australia's health service could benefit from an expansion of nursing and allied health services, and less reliance on purely medical models of care.

What regulation is required to avoid rorting of telehealth systems?

Professor Brooks indicated that having one's normal GP involved was important. It would be beneficial to have all patients registered with a GP, as in the UK NHS. He suggested that bundled payments to manage a patient may be appropriate. He regretted that, nevertheless, some overservicing would still occur.

Professor Smith noted that there were standard auditing processes to identify potential issues with clinicians' incomes. The COVID crisis had provided an opportunity to open up Medicare payments for telehealth. There had not been a budget blowout; there had been some increase in expenditure but perhaps this was an indication that fewer people were missing out on appropriate healthcare.

Given future online growth, what broadband capabilities should be provided?

Ms Vij reiterated the ADIA's position that all Australians should have options for affordability, ability and accessibility.

Professor Brooks concurred that all Australians should have broadband access.

Professor Smith saw developments for telehealth in three areas. On equity, there were still areas without reliable or affordable Internet. He believed Internet access for telehealth should be available everywhere and at no cost to the patient. For the healthcare workforce, there was a need to train up health professionals in the planning and delivery of telehealth. Telehealth should be a standard part of the training

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curriculum. For patients, they should be well informed and capable of accessing telehealth services as close to home as possible.

Conclusion

This was the fourth of a planned series of forums related to the topic of the future of the NBN. The theme of this Forum, social and economic benefits of broadband, has been a central concern of the NBN Futures Group since its formation. The Australian Digital Inclusion Index has been tracking digital inclusion and continues to show that there are significant groups, including low-income households and older Australians, who have high levels of digital exclusion. The COVID crisis has exposed the difficulties with poor online access, with many pupils struggling to access online classes and resources, and workers unable to access the resources needed to work from home or improve their employment prospects.

Digital exclusion is a known problem. There is an urgent need for government leadership to provide a roadmap for improving digital inclusion. In addition to ensuring affordable Internet access and accessible services, the government should enhance the opportunities for people to become digitally capable, so that they can participate fully in the digital economy.

Telehealth is a major application in the digital economy and for digital transformation. There have already been many success stories, as Anthony Smith described. Changes due to the COVID crisis have uncovered a pent-up demand from patients for online medical consultations, mostly conducted by telephone. This is a start but there is clearly the potential to use more advanced features of the online world, such as video, for more detailed consultations. New systems integrating medical records, video access and billing may encourage such usage.

One issue demonstrated by the changes to the Medicare Benefits Scheme is that clinicians must be appropriately compensated for their activities. The changes have not led so far to a major cost increase for healthcare, but several Forum participants were worried that they opened up opportunities for overuse or fraud. Continual monitoring and regulation will be required to ensure that telehealth is used appropriately and does not compromise continuity of care. Both Anthony Smith and Peter Brooks expressed the hope that the new vogue for online consultations is leading to improved healthcare outcomes. Both also believed that the changes should be continued beyond September.

Anthony Smith made the point that a telehealth service is not always cost effective: given the upfront costs, it may not be worthwhile for low levels of activity. Combinations of remote access, onsite visits and other new ways of working will be appropriate, depending on clinical requirements. As Peter Brooks noted, the introduction of telehealth processes is primarily a

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culture change for the healthcare system and, as such, it requires careful and continual change management. A willingness to change is as important as the underlying technological capability to support change.

The prominence of telehealth in the COVID crisis is exposing current weaknesses in Australia's access to broadband and inequities in participation in the digital society. The lessons learnt from the telehealth example will be important in reshaping the digital economy and delivering to everyone the social and economic benefits of broadband.

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