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CONNECTING HEALTH SERVICES WITH THE FUTURE: MODERNISING MEDICARE BY PROVIDING REBATES FOR ONLINE CONSULTATIONS

The National Stroke Foundation in consultation with the Australian Stroke Coalition provides the following response to the Australian Government's Discussion Paper. We welcome the Discussion Paper and the opportunity to provide the following submission.

This submission addresses:

- evidence for the use of telehealth services in stroke care;
- use of telestroke services in Australia; and
- the specific issues listed for consideration in the Discussion Paper.

BACKGROUND

In Australia, there are approximately 60,000 new or recurrent strokes per year. Around half of these occur in people over the age of 75 and as the population ages the number of strokes occurring each year is expected to increase. The impact on individuals, families and the workforce is substantial. Approximately 89% of people who have a stroke are admitted to hospital, one in five of those who have a first-ever stroke will die within a month, one in three will die within the first 12 months¹ and about 88% of those who survive live at home, most with a disability.¹ The burden of stroke for Australia is significant, with one study estimating the total lifetime costs for all first-ever strokes in 2004 at \$2 billion.²

National Stroke Foundation

The National Stroke Foundation (NSF) is the peak national not-for-profit organisation that focuses on reducing the impact of stroke by preventing stroke, improving treatment and support for those with stroke. The NSF promotes evidence based practice by developing and coordinating *the National Clinical Guidelines for Stroke Management 2010*.³ Significant advances in treatment over the last 20 years now mean the provision of evidence-based stroke care, as outlined in the guidelines, can significantly reduce death and disability. It is also cost effective.

Australian Stroke Coalition (ASC)

The Australian Stroke Coalition was established by the National Stroke Foundation and Stroke Society of Australasia on 11 July, 2008. The Coalition brings together representatives from groups and organisations working in the stroke field including the following:

Stroke Society of Australasia, National Stroke Foundation, Stroke Services NSW, QLD Stroke Clinical Network, Victorian Stroke Care Network, SA Stroke Network (SASUN), WA Stroke Network (WASN)

, Tasmania Stroke Network (TASSUN), Northern Territory, Australian Capital Territory, Australian Physiotherapy Association, Australasian College for Emergency Medicine, Dieticians Association of Australia, Occupational Therapy Australia, Royal College of Nursing Australia, Royal Australasian College of Physicians, Australian and New Zealand Association of Neurologists, Australasian Faculty of Rehabilitation Medicine, Speech Pathology Australia, the Council of Ambulance Authorities, and Stroke Consumers.

This group works together to tackle agreed priorities to improve stroke care, reduce duplication amongst groups and strengthen the voice for stroke care at a national and state level.

EVIDENCE FOR THE USE OF TELEHEALTH IN STROKE CARE

The development of online technologies such as video conferencing provides significant opportunities to address medical access issues across rural, remote and outer metropolitan areas. However, it should also be noted that traditional telecommunication technologies such as phone calls also provide significant potential to assist in addressing access issues. For example, a telephone call by a health professional to another health professional, consumer or carer may also be suitable to address many aspects of stroke care. The Discussion Paper highlights 'online' technologies as the focus of current consideration. However, telehealth and telemedicine definitions highlight broader communication networks for delivery of healthcare services and medical education. Phone calls therefore should also be considered as an appropriate tool for medical consultation and rebate when shown to be effective.

For acute stroke prevention and acute stroke treatment, 'time is brain'. The time critical nature of treatment places rural/regional stroke patients at significant disadvantage as specialist stroke services are not locally available through a dedicated stroke unit with staff expertise. Access to more specialised medical or allied health expertise may be facilitated through the use of telemedicine or 'telestroke' as it is known when applied to stroke care.⁴ Specialist telestroke services are in many aspects an ideal model for telehealth.

Telestroke has been used widely internationally and in a limited manner within Australia for both acute and rehabilitation stroke care. The application of telestroke for thrombolysis, when used as part of an organised system of care linked with stroke experts or units, has been found to improve thrombolysis rates without increasing complication rates.^{4,5} In fact, with respect to assessing suitability for treatment with thrombolytics, one RCT demonstrated that the accuracy of decision making by a stroke neurologist via telestroke, assisted by the local referring physician, is superior to that by telephone alone.⁶

The TEMPiS project, a notable example of an organised system of care in Bavaria, established high-quality video-teleconferencing services in a 'hub and spoke' network that linked twelve regional hospitals that had no stroke units to two comprehensive stroke centres. A high rate (38%) of telestroke consultations⁷ led to a significantly greater number of patients treated by thrombolysis as well as improved outcomes.^{8,9} Patients in telestroke network hospitals had a 38% lower probability of a poor outcome (defined as severe disability, institutional care or death at 3, 12 and 30 months).^{5,8} Telestroke is also widely practiced in North America and studies have been replicated in multiple states to demonstrate that whether by telemedicine or telephone consultative modalities, there were appropriate treatment decisions, high rates of thrombolysis use, improved data collection, low rates of intracerebral hemorrhage, and equally favorable time requirements.¹⁴

In addition to improved access to thrombolysis and the subsequent improved patient outcomes, the application of telemedicine for stroke care and the networked stroke services may reduce length of stay, improve decisions regarding patient transfers for other urgent investigations or interventions (e.g. surgery) and lead to general improvement of stroke care in non-specialist hospitals.¹⁰

Many stroke survivors who complete inpatient rehabilitation have restricted access to outpatient rehabilitation services, especially those who reside in rural locations. Telerehabilitation has the potential to provide timely and efficient post acute care for stroke patients beyond the hospital and into an individual's home. It enables clinicians to monitor the patient's health status and to identify conditions that need improvement before complications or adverse complications ensue, eventually improving patient function while reducing long-term disability and costs.¹¹ The use of telemedicine for allied health assessments has been reported to be feasible and valid in several trials and is also feasible and useful for providing therapy.^{4, 5, 12}

Videoconferencing applications have also been found to be feasible in community-based stroke rehabilitation and for delivering in-home rehabilitation interventions for adults living in the community.¹¹

The Australian Clinical Guidelines for Stroke Management 2010 make the following recommendations in relation to the use of telemedicine and networks for stroke care:

- a) All health services which include regional or rural centres caring for stroke patients should use networks which link large stroke specialist centres with smaller regional and rural centres. (Grade C^{4,5})
- b) These networks should be used to help establish appropriate stroke services along with protocols governing rapid assessment, telestroke services and rapid transfers. (Grade C^{4, 5, 13})
- c) Where no on-site stroke medical specialists are available, telestroke consultation should be used to assess eligibility for acute stroke therapies and/or transfer to specialist stroke centres. (Grade B^{4, 5, 6})
- d) Telestroke can be used to improve assessment and management of rehabilitation where there is limited access to on-site stroke rehabilitation expertise. (Grade C^{4,5})

USE OF TELEMEDICINE FOR STROKE CARE IN AUSTRALIA

Telemedicine services are available to some extent in 60% of Australian acute stroke hospitals and used in 77% of these sites to facilitate staff education.¹⁴ The extent to which they are used to provide clinical support is largely unknown. However, telemedicine services are being provided to Wangaratta Hospital in Victoria by Royal Melbourne Hospital, Bendigo Health in Victoria (through the Victorian Stroke Telemedicine (VST) project) and phone and video-conference links are also being used in outreach clinics for stroke rehabilitation case conferences (Steven Faux, Stroke Rehabilitation Specialist). There are a number of acute and rehabilitation research projects currently in progress using this technology.

Telecommunication services teamed with online resources have also been found to be highly effective in the provision of follow-up to stroke survivors. Phone support for survivors in the community is used in a limited manner through the National Stroke Foundation's StrokeConnect program, and by some health services. The StrokeConnect program:

- Establishes a central referral process for every stroke survivor discharged home;
- Provides phone follow-up to determine ongoing needs in the community (when they are most apparent); and
- Links stroke survivors to services they report they are currently unable to access.

Because needs change over the time, the StrokeConnect model proposes several contacts be made at 6, 12 and 20 weeks aimed at early assessment, referral and information provision.

Although telestroke is emerging in Australia as a viable model of care in the acute, rehabilitation and community settings, Australia is significantly behind other developed countries such as North America and Europe. Because of our geography, this means many people who live in rural and regional centres do not receive the same lifesaving and higher order care as those in larger cities.

ISSUES IDENTIFIED IN THE AUSTRALIAN GOVERNMENT'S DISCUSSION PAPER

1. OPTIMAL PRACTICE MODELS

The optimal practice models for stroke care are those that deliver additional services to support:

- (i) urgent stroke prevention, including rapid assessment and treatment of transient ischaemic attack (TIA);
- (ii) acute stroke care, particularly provision of time-critical thrombolytic therapy;
- (iii) post-discharge rehabilitation; and
- (iv) community based follow-up.

(i) Urgent Stroke Prevention

Transient Ischaemic Attack (TIA)

Short-lived events such as TIA, or 'minor' strokes should be urgently assessed by a specialist within a neurovascular clinic within 24-48 hours. The rationale for this is that the rate of subsequent major disabling stroke in the next month is as high as 50%. Early intervention has been shown to prevent major stroke in such patients. These specialist clinics are available only in large tertiary referral centres.

Telehealth lends itself to provision of stroke specialist consultation for rural/regional patients with TIA requiring specialist assessment. A clinic setting would be appropriate, and a local accompanying health care worker (GP or nurse), could undertake appropriate bedside tests (blood pressure) or facilitate examination (helping with neurological examination).

The main purpose of the consultation is diagnosis and early treatment by a specialist, accessed via telehealth, with follow-up then being undertaken by a GP or nurse practitioner following specialist advice. Some patients would be identified by the stroke specialist as needing transfer to a tertiary centre for acute assessment and treatment, including stroke unit management for the short-to-medium term. A hospital setting with a CT brain scanner would be essential for remote diagnosis and early treatment and follow-up.

(ii) Acute stroke care

Thrombolysis

Thrombolytic therapy with the clot-dissolving agent intravenous (IV) recombinant tissue plasminogen activator (rt-PA) is one of the most powerful and cost effective treatments for stroke,

with only seven ischaemic stroke patients needing to be treated to achieve one 'cure' (i.e. no or minimal disability at 3 months).^{15, 16} However, in 2008, only 3% of all ischaemic stroke patients received intravenous rt-PA in Australia.¹⁴ This relates to the fact that a highly trained team of stroke specialists, stroke nurse, emergency doctors and nurse, radiologists and radiographers, plus pre-hospital services, all need to act in concert to provide this treatment within a very short time-frame (less than 4.5 hours after stroke onset). The narrow time frame means that most rural/regional patients are physically too far away from specialist stroke centres if they have a stroke to have access to this treatment.

Telemedicine provides the ideal solution to this problem. As mentioned, many developed countries including USA, Canada, and Germany have broadly adopted tele-thrombolysis services.

The organisation of such services in Australia would require:

- coordination of pre-hospital services so that rural/regional acute stroke patients were transported to local/regional hospitals with 24 hour access to CT scanning;
- availability of a medical officer on-site; and
- links with a specialist stroke telethrombolysis centre.

If thrombolysis was administered in a hospital without a stroke unit, then a decision would also need to be made regarding transfer to the nearest stroke unit for ongoing acute care.

Specialised Stroke Unit Management

Organised stroke unit care is the single most important recommendation for improving stroke management. While numbers of stroke units and stroke unit beds have increased between 2007 and 2009, the percentage of patients receiving stroke unit care has decreased from 50% to 49%.¹⁴

There is overwhelming evidence (31 RCTs) that stroke unit care significantly reduces death and disability after stroke compared with conventional care in general wards for all people with stroke (odds ratio [OR] 0.82, 95% CI 0.73–0.92).¹⁷ There is also evidence that stroke unit care has reduced mortality through prevention and treatment of complications, especially infections and immobility-related complications.¹⁸

Rural and regional Australians who suffer a stroke have limited access to specialised stroke units. In larger rural and regional centres dedicated stroke unit beds could be established for telestroke services and a stroke specialist or stroke teams could perform virtual "ward rounds" for these remote stroke units, leading to better decision making and support for doctors in these locations. This would be particularly important for post-thrombolytic management and early prevention of further stroke. Remote consultations from stroke rehabilitation specialists and allied health stroke specialists should also be part of this model.

(iii) Post-discharge Rehabilitation

Stroke rehabilitation often needs to continue after discharge either as part of an Early Supported Discharge (ESD) program or as general community rehabilitation. Generally there are two models for rehabilitation in the community:

- centre-based therapy, provided in the hospital or in a community facility, including rehabilitation for those attending on a full-day basis or as an out-patient; and
- home-based or domiciliary rehabilitation.

Stroke rehabilitation requires input from a range of specialist staff, therapies and equipment. The NSF National Stroke Audit Rehabilitation Services 2010²⁷ report shows these are not always

available to people with stroke. Access to a full complement of therapeutic disciplines on the multidisciplinary stroke team and access to the facilities necessary for the delivery of evidence-based care should be increased.

The use of telehealth with a supporting Medicare rebate system with financial incentives may provide a greater opportunity for stroke survivors to access specialist reviews and rehabilitation in a local centre, which may also help to address the inequities in the standard of medical care available in metropolitan areas compared with that available in rural and remote areas.

(iv) Community based follow-up and stroke prevention

Long-term stroke prevention

A person with stroke has an accumulated risk of subsequent stroke of 43% over 10 years with an annual rate of approximately 4%.²⁸ Long-term management of risk factors, particularly medication compliance, is the primary role of GPs and good communication between secondary and primary carers is essential. Telestroke services could provide the stroke patient's GP with ongoing advice, eg. annual review by the stroke specialist.

Community and follow-up services

Up to two thirds of stroke survivors and carers will experience depression post-stroke. Access to appropriately trained counselors is an important part of treatment. Telemedicine could be used to link stroke survivors and carers with counselors both in rural areas, where counseling services are particularly sparse, or for consumers who have difficulty leaving their homes.

Phone support for people who are socially isolated in metropolitan areas, and people who live in rural and remote areas (as delivered through the StrokeConnect program) also provides opportunities for the use of simple technologies to provide great benefits to people after stroke.

2. OPTIMAL SPECIALITIES

Stroke is a complex condition and the central aspect of stroke recovery is the provision of a coordinated program by a specialised, multidisciplinary team of health professionals. This team involves integrated use of medical, nursing and allied health skills, along with social, educational and vocational services, to provide individual assessment, treatment, regular review, discharge planning and follow-up. Any on-line health care provision or support should be delivered in this context.

Telehealth is already being used by these specialties in acute and rehabilitation stroke care and there is international evidence that community and follow-up care services also lend themselves to this type of service delivery.⁴ The availability of a wider on-line health care system opens up many opportunities for health care professionals working with stroke to provide a greater level of care to stroke survivors in rural and remote areas.

3. REMUNERATION MODELS

This is a critical issue. The numbers of stroke specialist physicians, nurses and allied health professionals expert in stroke care are very limited in Australia. These groups already carry a large clinical burden. Without adequate remuneration and clinical backfill, any extra workload by providing telestroke services will severely limit provision of the local service. Steps are being addressed to improve the stroke specialist workforce, but this is a 5-10 year plan.

(i) Thrombolysis via Telehealth

Provision of tele-thrombolysis is a good case example of the time-critical nature of the service the stroke specialist physician needs to provide. As well as being time-critical, the process is complex requiring remote interdisciplinary (physician and nursing) medical care, interpretation of multi-faceted investigative tests and supervision of the administration of treatment. The time from the initial call of the stroke specialist and nurse is commonly two to three hours.

Using current specialist consultation Medicare item numbers as a comparison, neither Item Number 110 nor 132 is adequate or appropriate to cover the time, duration, gravity, urgency and complexity of this clinical situation. Furthermore, we believe that the duration of immediate medical involvement will typically to be in the range of 2 to 4 hours. It follows that it would be appropriate for a unique item number for tele-thrombolysis, with reimbursement to be twice to three times the amount of Item Number 132 (currently \$249.40) i.e. \$498.80 to \$748.20. This also does not take into account funding for infrastructure for the centres providing telehealth.

In addition to these considerations, provision must also be made for additional clinician support to back-fill stroke specialist clinicians rolls in tertiary hospitals while they are participating in telehealth consultations.

(ii) Assessment by Telehealth

The provision of acute stroke prevention rapid referral services is also a time critical service that would require notification of the stroke specialist that a TIA patient needs to be assessed. Again, the stroke specialist would need to take a history remotely, observe the local GP or nurse examine the patient, and then discuss the issues with the patient and local GP/nurse. They would have to recommend an investigation and treatment plan, as well as potentially review subsequent brain imaging (CT or MRI remotely) and adjust the treatment plan based upon this review. This would require, at least the MBS equivalent of an extended consultation by a specialist physician (Item Number 132).

Provision of remote acute stroke unit assessment would involve a similar level of time and expertise (Item 132 equivalent).

(iii) Rehabilitation assessment

Rehabilitation assessment is also time critical, requiring assessment on a day-by-day basis during the first 1-2 weeks following a stroke. With clear plans for determining:

- Relevant interventions;
- Prioritized interventions; and
- Intensity.

Whilst this can be done by telemedicine it requires significant time as well as specialist skill for this initial comprehensive assessment and therefore would be more time consuming than a face-to-face consultation, as communication and physical assessment will usually require an intermediary clinician accompanying the patient. Subsequent consultations with the patient may be brief at times, but at other times will require consideration of the outcomes of formalised assessment and their impact on therapeutic process, turning these consultations into extended consultations. There will also need to be regular conferencing with the local team (similar to the case conferencing item numbers that already exist in the Medicare Schedule), but will need weekly or fortnightly meetings throughout the inpatient process, and then possibly monthly meetings through the outpatient rehabilitation phase of care.

Similarly, stroke specialist nurse practitioners and allied health practitioners should also be eligible to be reimbursed by Medicare for specialist assessment and advice. Medicare rebates are already available for allied health services in the GP Chronic Disease Management Plan models and there are opportunities for remuneration on a per case basis as part of a collective 'rehabilitation' model – an extension of the already existing GP models. It is important to again emphasise that these models of care involve many of the disciplines associated with stroke care, not just GPs, and therefore any model would need to be expanded to include these disciplines.

(iv) Money required for infrastructure

In a number of Australian tertiary referral centres, telehealth facilities are available. However, many would need at least one-off payments for infrastructure and ongoing funding. Ongoing costs for a central housing facility would best be funded by a payment for each MBS telehealth service provided.

4. TRAINING AND SUPPORT

Training requirements for telehealth are high initially both in how to use the equipment to facilitate adequate assessment of the patient and in how to communicate effectively with other health care providers using telehealth technology. There are also training requirements for those personnel responsible for keeping the equipment functioning. Consideration also needs to be given to backfilling those positions that are being trained in the use of telehealth to ensure services are not downgraded during this time.

Telehealth can also be used for training of health professionals at regional and remote centres. Live clinical cases can be used to provide clinical support and live professional supervision. These consultations can be recorded, with permission from the patient, for future teaching opportunities.

5. TECHNICAL ISSUES

The evidence for best-practice telestroke suggests that for acute stroke intervention, high-quality video teleconferencing is required, ie. dedicated, interactive, bidirectional audiovisual systems, coupled with the use of teleradiology for remote review of brain images.⁴

Interactive videoconferencing allows the patient and/or family and both the bedside and distant healthcare providers to see and hear each other in full colour, using cameras with various degrees of remote control (e.g. pan, tilt or zoom) connected to a display screen (video graphics array [VGA] or television monitor).

The technological infrastructure required includes broadband fibre optic links, gigabyte routers, high definition cameras, video conferencing systems and software. Broadband is needed to support the high definition video conferencing technology, the transfer of high-resolution ("near broadcast" quality) digital images and real time patient information from the various bedside monitors to the receiving hospital specialist. A shared electronic health record should be accessible providing the clinicians with all the historic patient information, so the best treatment plan can be provided for the stroke patient.

One of the most important considerations is that the telehealth system in each hospital and remote location (clinic etc), whatever the configuration, is compatible within health networks and across health boundaries.

Personal experiences of senior stroke clinicians using videoconferencing are that there is a requirement for 24-hour access to technical help. With videoconferencing, this could be remotely provided through the actual system in addition to the telephone. Even experienced people with reliable equipment will need technical help and these need to be instantly available. In addition, an accompanying person at the remote end, perhaps a nurse, or a person with some medical training (allied health, medical or nursing) and some technical training is nearly always required.

6. LIMITATIONS TO THE UPTAKE OF TELEHEALTH

The main limitations to the uptake of telehealth by the stroke community are:

- (i) the technological resources required;
- (ii) the workforce required;
- (iii) the specific clinical standards needed to be established and maintained;
- (iv) education and training; and
- (v) patient-centred limitations.

(i) Technological resources

As described above, the technology required for stroke care is sophisticated and expensive. While a number of stroke unit hospitals have this equipment, it would not be routinely found in rural and remote clinics or in GP surgeries. Infrastructure set-up costs would need to be heavily subsidised or paid for by the health system.

(ii) Workforce requirements

Consideration needs to be given to ensuring that the 'hub' centres providing clinical support to the remote and regional centres are adequately resourced to manage their existing in-patient load and the additional workload that providing telehealth requires. These resources would need to be available 24/7, using existing systems such as on-call rosters. Remuneration would need to be consistent with this additional workload burden.

Rural and remote areas already suffer from significant workforce shortages particularly in GP numbers and specialised allied health skills. While telehealth is attempting to bridge the gap by enabling access to specialised stroke clinicians, it is important that there are sufficient health care providers available at remote sites to receive the information.

(iii) Clinical Standards

Remote assessment, subsequent diagnosis and then treatment by a different health care provider has the potential to cause confusion, cloud responsibility and broaden liability issues. Clear clinical standards and procedures including documentation need to be established if they are not already in place.

(iv) Education and training

The provision of education and training to meet both workforce and technological requirements will require funding and skilled educators. The availability of sufficient numbers of educators/trainers will need to be addressed.

(v) Patient-centred limitations

The use of telemedicine in health care raises a number of patient-centred issues such as privacy, consent and cultural considerations. As telemedicine involves multiple people, including potentially non-clinicians, there is a need to establish appropriate processes and procedures to protect a patient's privacy. There is also a need to ensure that the patient understands the environment in which they are being examined and/or treated to enable informed consent. There will be occasions when telehealth is not appropriate to individuals for cultural reasons and there will need to be processes in place to readily identify these situations.

CONCLUSION

The extension of telestroke services to rural, remote and outer metropolitan areas has the potential to significantly improve stroke outcomes across the Australian community.

International studies, such as those in North America and Europe, provide strong evidence for the applicability of telestroke services in non-metropolitan areas.

The multi-disciplinary, team-based nature of specialist stroke services requires particular consideration in the development of appropriate technical and remunerative models for telestroke services. In addition, while high-quality video conferencing facilities are required, the application of existing telephone technology and online services should also be included as possible avenues for telehealth consultations, and for training and supervision of health professionals.

We look forward to further discussions with the Department and its external advisory group regarding telestroke services for the Australian community, and to the opportunity to provide further detail on this submission.

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