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Telehealth in the Context of COVID-19: Changing Perspectives in Australia, the United Kingdom and the United States.

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Abstract

Background: On the 12th March 2020, the World Health Organization (WHO) announced the COVID-19 virus outbreak as a pandemic. On that date there were 134,576 reported cases and 4,981 deaths worldwide. By 26th March, just two weeks later, reported cases had increased fourfold to 531,865 and deaths fivefold to 24,073. Older people are both major users of telehealth services and are more likely to die as a result of COVID-19.

Objective: This paper examines the extent to which Australia, the United Kingdom (UK) and the United States (US) during the two weeks following the pandemic announcement, implemented telehealth as a tool that may help in identifying COVID-19 among older people who may live alone, be frail and/or be self-isolating; and give support or facilitate the treatment of people who are or maybe infected.

Methods: The paper reports, for the two-week period or immediately prior, on activities and initiatives in the three countries taken by governments or their agencies (at national or state levels); together with publications of or guidance issue by professional, trade and charitable bodies. Different sources of information are drawn upon that point to the perceived likely benefits of telehealth in fighting the pandemic. It is not the purpose of this paper to draw together or analyse information that reflects growing knowledge about COVID-19, except where telehealth is seen as a component element.

Results: The picture that emerges for the three countries, based on the sources identified, shows a number of differences. These differences centre on the nature of their health services; the extent of attention given to older people (and the circumstances that can relate to them); the different geographies (notably concerned with rurality) and the changes to funding frameworks that impact on these. Common to all three countries is the value attributed to maintaining quality safeguards in the wider context of their health services but where such services are noted as sometimes having precluded telehealth use.

Conclusions: Whilst it is clear that the COVID-19 pandemic is forcing changes and may help establish telehealth more firmly in its aftermath, some of the changes may not be long-lasting. However, the momentum is such that telehealth will almost certainly find a stronger place within health service frameworks for each of the three countries and is likely to have increased acceptance among both patients and healthcare providers.

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Original paper

Telehealth in the Context of COVID-19: Changing Perspectives in Australia, the United Kingdom and the United States.

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Abstract

Background: On the 12th March 2020, the World Health Organization (WHO) announced the COVID-19 virus outbreak as a pandemic. On that date there were 134,576 reported cases and 4,981 deaths worldwide. By 26th March, just two weeks later, reported cases had increased fourfold to 531,865 and deaths fivefold to 24,073. Older people are both major users of telehealth services and are more likely to die as a result of COVID-19.
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Results: The picture that emerges for the three countries, based on the sources identified, shows a number of differences. These differences centre on the nature of their health services; the extent of attention given to older people (and the circumstances that can relate to them); the different geographies (notably concerned with rurality) and the changes to funding frameworks that impact on these. Common to all three countries is the value attributed to maintaining quality safeguards in the wider context of their health services but where such services are noted as sometimes having precluded significant telehealth use.
Conclusion: The COVID-19 pandemic is forcing changes and may help to establish telehealth more firmly in its aftermath. Some of the changes may not be long-lasting. However, the momentum is such that telehealth will almost certainly find a stronger place within health service frameworks for each of the three countries and is likely to have increased acceptance among both patients and healthcare providers.
Keywords: telehealth; covid-19; SARS-CoV-2; public health; older people; resource allocation; aged care; innovation

Introduction

Context

At March 2020, the nature and virulence of the COVID-19 virus became a matter of urgent debate. This brought telehealth into focus as a potential tool to help provide services without the need for direct face to face contact. Older people, as major users of telehealth services, and as the age group most likely to die as a result of a COVID-19 infection, were positioned to become beneficiaries of any expanded range of such services. This may be especially the case in view of the fact that older people in isolation may be at risk of depression and anxiety [1,2].

The focus of this paper is on the two-week period from the 12th March when the World Health Organization announced that the COVID-10 outbreak was a pandemic. Notable, on this date, was the high and/or accelerating number of cases and related deaths in China (where the disease was first reported), South Korea, Iran, Italy and Spain. Worldwide there were 134,576 reported cases and 4,981 deaths. By 26th March, just two weeks later, there were 397,289 reported cases and 24,073 deaths, these both reflecting increases of over 300% [3]. The global increases noted above were reflected in increases for each of the three countries (see Table 1).

Table 1. COVID-19 Cases and deaths globally: Australia, the UK and US: 12th to 26th March 2020

	12th March 2020		*26th March 2020*		*Increase*	
	Cases	Deaths	Cases	Deaths	Cases n (%)	Deaths n (%)
Australia	156	3	3,050	13	2,894 (1955)	10 (433)
United Kingdom	590	10	11,658	578	11,068 (1976)	568 (5780)
United States	1,697	41	85,435	1,295	83,737 (5034)	1,254 (3159)
World	134,576	4,981	531,865	24,073	397,289 (395)	19,092 (483)

Older people have the highest risk of mortality from COVID-19. The risk may vary per country or per region depending on various factors such as screening strategies and population distributions. The Chinese Center for Disease Control and Prevention reported that, from 72,314 cases, there was a case-fatality rate (CFR) of 8.0% for those aged 70 to 79, and 14.8% for those aged 80 years or more [4]. The highest CFR was for people with cardiovascular disease, diabetes, chronic respiratory disease, hypertension and cancer. Men had a higher risk of death than women (2.8% versus 1.7%). Italy has shown higher CFRs for people aged 70-79 (19.1%) when compared to China (8.0%) [5]. Gender differences for cases and/or deaths were indicated for Italy and also Germany - where men were, according to initial statistics, over 30% more likely to have the disease and/or die from it [6,7]. Such differences were noted as coming with provisos that relate e.g. to lifestyles and the extent of people's employment in relevant caring tasks [8,9]; and overall (i.e. for all projections at this early stage of the disease) there is further statistical uncertainty in view of data relating solely to 'confirmed' cases and the omission of an 'unknown' number of people who are asymptomatic [10].

Definition of Telehealth

A note on the definition of telehealth is necessary in view of it's uneasy position in relation to telemedicine, telecare, technology enabled health and digital health – terms that may overlap and are sometimes used interchangeably. mHealth (and the use of apps) also are included. Differences in understanding are indicated in the country profiles below.

The definition of telehealth offered here is encompassed by the term digital health. Its origin lies in

the European Code of Practice for Telehealth Services [11]. Telehealth, it affirms, is 'the means by which technologies and related services concerned with health and well-being are accessed by people or provided for them irrespective of location'. This definition fits with Wootton's [12] description of telemedicine as 'health care carried out at a distance' - with both reflecting a person (or patient) centred as opposed to technology-driven approach. Either can be viewed as suitable to underpin potentially new norms for health services provision, in part forced by the COVID-19 pandemic.

Benefits and Barriers of Telehealth

The reported benefits of telehealth have focused on cost, choice and convenience. In respect of cost, much debate has taken place on the extent of financial savings that might be realised. The most substantial study of telehealth interventions, that of the 'Whole System Demonstrators' (WSDs), started in 2010 and involved 3000 patients in England. It was reported that, although there was a reduction in hospital admissions, telehealth did not 'seem to be a cost-effective addition to standard support and treatment' [11,13]. An ensuing study in Northern Ireland, with just under 4000 patients, noted 'no evidence within the dataset of any marked impact of telehealth services on hospitalisations and hospital-based service usage' [14]. Both these studies related to interventions involving the use of devices such as vital signs monitors linked to home hubs characteristic of 'telecare' services that operate throughout the UK.

In contrast, an Australian study, in 2013-14 that involved nearly 300 telehealth patients, explored the benefits of both vital signs monitors and technologies that included participant video-conferencing capabilities and messaging features. It, like the WSDs in the UK, found a reduction in hospital admissions but, importantly also found a significant improvement in participants' health literacy and health behaviours; together with reported improvements in anxiety, depression and quality of life' [15,16]. The Australian study, by taking a more person-focused approach, at least 'touched' on some of the potential benefits of telehealth that are not concerned with cost-effectiveness (as seen by provider organisations and funding bodies).

Other small-scale studies have taken this further – emphasising the convenience of such services, especially when accessed by people in rural areas and, therefore, obviating the need to travel [17]. And though personal contact in the form of 'presence' and 'touch' is beyond telehealth, at least there is some help towards addressing the twin scourges of loneliness and social isolation that can afflict some older people. Linked with this is a real ability to make links that give comfort and companionship to (older) people when they are dying, to access interpreters and signers where necessary, and even provide cognitive behavioural therapy (CBT).

Prominent among telehealth technologies are health apps - with their ubiquity increasing in the context of smartphone usage, including messaging for mindfulness-based therapy for cancer patients [18] or providing 'digital therapy' for people with mental health needs [2]. There is an immense range of health-related apps, in 2017 - totalling over 300,000 in iTunes and Google Play, though the quality of most apps was considered as leaving much to be desired [19].

Known barriers to uptake of telehealth, aside from cost-effectiveness, centre around the lack of (suitable) information technology and the security of communications links (with regard to personal, including health) data [2,20]. Also, in play are concerns regarding the impact on patient rapport, workforce, liability/legal issues and time constraints [21]. Other barriers include the need to rethink business models, and to overcome financial barriers including incentives, billing and both initial and longer-term funding. Lastly, some are concerned that telehealth is of lower efficacy, this clearly being the case where 'face-to-face' contact with patients in necessary, for example, to undertake clinical examinations [17]. And of concern would be any deferring (by older people in the context of COVID-19) of making contact with health services that could assist them in relation to e.g. pain, weight loss, diminution of strength; or of circumstances being overlooked that could relate e.g. to

isolation and its consequences (such as lack of food intake, depression and even suicidal thoughts). Additionally, the COVID-19 outbreak could lead to a 'mental health spike' [2].

Finally, there are the twin technological barriers that relate to the limitations or unreliability of Internet connections (a matter that relates, in part, to the geographies of each country but also to capacity and, therefore, the efficacy of remote connections) and the interoperability of the technologies concerned.

In relation to the positive aspects of telehealth, the need for future research has been called for by Dinesen et al [22] who affirmed the need to 'identify … factors that *promote* [our emphasis] telehealth acceptance, such as human-technology interaction, organization of the health care system and social factors'.

COVID-19 and Telehealth

The COVID-19 pandemic casts telehealth in a new light because it is accessed by people directly from their homes. The use of telehealth 'may reduce the likelihood of viral transmission by limiting person-to-person contact, while enabling people with the virus to be treated for viral symptoms and their normal medical conditions' [23]. Health professionals meanwhile (as is already the case for extant telehealth services) are able to undertaken more work from home. And telehealth can be seen as safeguarding both health and social care workers and (older) people who access such services *at least for those tasks which do not require physical contact*.

Hollander and Carr [24] pointed to merits of telehealth enabling the diversion of people, where appropriate, from centres that deal with 'emergencies' to 'nurse triage lines' or for scheduled video-consultations. They affirmed that remote screening and diagnosis (or referrals) can potentially reduce exposure for healthcare workers and other patients because it will allow [patients] 'to bypass the ED (Emergency Department) and be placed directly in a hospital bed'. Technologies (whether via tele- or video-consultations) can, they argued, inform and motivate people in relation to their lifestyles or the (self-) management of different conditions.

We can envisage, furthermore, the increased use of self-test kits – with these and other vital-sign measurement devices (e.g. for blood pressure and respiratory function) contributing to a devolution of much traditional healthcare to the home. At least some of the matters that tie us, therefore, to 'the delivery of services in bricks-and-mortar campuses and clinics' where infection transmission is too easily facilitated, could be loosened and even make such institutions 'largely unusable' [25].

It is only a small additional step to recognise the potential of telehealth through the use of Artificial Intelligence (AI) with e.g. remote screening via video being able, for assessment and diagnostic purposes, to recognise and record voice, facial expressions, attention, skin pallor, movement and other signs. But published work in English on the use or potential use of Artificial Intelligence (AI) in the context of both telehealth and COVID-19 is currently absent - excepting for identifying disease outbreaks and learning from patterns of spread [26].

Particular barriers in relation to telehealth development in response to COVID-19 for the three countries are noted below. Some are being addressed by changes to legislation and regulation, finance and support programmes. Protocols to guide at least video-consultations were either already in place or under review. Most health and social care professionals, faced with the new demands of COVID-19, are therefore on a steep learning curve relating to the virus itself and necessary operational changes.

This paper examines the extent to which Australia, the United Kingdom (UK - consisting of England , Scotland, Wales and Northern Ireland) and the United States (US) have, as a consequence of the pandemic, implemented telehealth as a tool to (a) help older people who may live alone, are frail and/or be self-isolating; (b) identify those who may have a COVID-19 infection; and/or (c) give support and facilitate treatment where necessary.

Methods

Three Countries are explored: Australia, United Kingdom and the United States. The focus is on the two-week period from the 12th March when the World Health Organization announced the COVID-19 pandemic. The paper reports on activities and initiatives taken by governments or their agencies (at national or state levels) in the three countries; together with publications of or guidance issued by professional, trade and charitable bodies. Different sources of information are drawn upon that point to the perceived likely benefits of telehealth in fighting the pandemic.

Accessing the relevant sources of information for each of the countries was facilitated in large part by the knowledge and networks of the co-authors. It involved internet searches, close scrutiny of media reports and the utilisation of contacts who work in practice and/or are involved in consultancy (including those who are acknowledged at the end of this paper). The focus of attention was on national (or federal) policy initiatives that would impact, through changes in funding frameworks or other strategic measures, on practice within regional, state or territory jurisdictions.

During the period of study the co-authors explored the burgeoning range of publications online (in the form of newsletters and blogs) some of which bore testimony to the escalation in use of tele- and video-consultations and of reactions (mainly of service providers) to the funding and policy changes that were being enacted or signalled. In the wake of these a smaller but important number of academic articles were accessed – these, in general, revisited earlier work around and beginning to re-evaluate the potential of telehealth in the new context.

The different governmental structures of the three countries, and the fragmented nature of telehealth services therein, means that they cannot be taken as representative of any wider range of countries. This must be a matter for future study.

Results

Australia

On 11th March the Australian government announced an AUS$2.4 billion health package to combat COVID-19. AUS$100 million was promised to fund a ‘new Medicare service’, at no cost for patients, concerned with telehealth consultations via phone or video (e.g. Skype) by GPs, specialists, nurses and mental health allied health workers. The service would be available for COVID-19 related consultations and more widely to people at greater risk of COVID-19 infection, including those aged over 70 (or over 50 for Aboriginal or Torres Strait Islanders); people with chronic conditions or who are immunosuppressed; women who are pregnant and parents with new babies. A free 24/7 national triage phone line was also to benefit from additional funding of AUS$50.7 million. In addition, AUS$25 million was earmarked to fund Australians in isolation and at-risk groups to file their medication prescriptions online and have medicines home-delivered free-of-charge [27].

This urgent initiative followed a call from the Royal Australian College of General Practitioners (RACGP) on the 6th March for the government to ‘relax current restrictions around telehealth services by removing geographical constraints and permitting GPs to interact with their patients irrespective of location’ [23]. Other bodies such as the Australian Medical Association (AMA), Australian College of Rural and Remote Medicine (ACCRM) and the Rural Doctors Association of Australia (RDAA) added their voice. Snoswell et al [23] noted that previous government telehealth funding had been made in response to drought and bushfires. And on the 23rd March, the Australian Government also allowed vulnerable healthcare professionals who were authorised to use telehealth ‘item numbers’ (i.e. reimbursable) for all consultations with all their patients [28].

Australia already had relatively well-established telehealth services with some 150,000 ‘visits’ having, by this means, taken place from ‘rural and remote communities’ in 2018 [23]. This is despite that fact that medical students are not much exposed to telehealth in their training, despite a

realisation of its potential benefits. In a 2018 survey, in fact, they expressed preference for face-to-face consultations [17].

The ACRRM had published a standards framework (in 2016) that promoted the use of telehealth services for remote communities [29]. Guidelines for operating video-conference calls were already in place, such as from the Royal Australasian College of Physicians [30] although these required a GP, practice nurse or Aboriginal health worker to be present with the patient during consultations. There remain barriers, however, to service operation in view of people having to have 'access to a videoconferencing platform and internet connection' albeit that, as noted by Snoswell et al [23], these could be freely or cheaply done via a 'tablet or PC'. The broader context for Australia had been set in the nation's digital health strategy that called for 'widening access to telehealth services' [31].

Finally, on the 30th March, the Australian government announced funding of AUS$669 million for the role out of a universal telehealth model for all Australians to enable health care access through tele- or video-consultations from home until 30 September 2020 [32].The benefits pointed to were multiple - the new model enabling a reduction to COVID-19 exposure for both patients and healthcare providers; a maintaining of the primary healthcare frontline; and a reduction on the demand for personal protective equipment and emergency departments. It was also pointed to as assisting people to stay at home, therefore supporting compliance with self-isolation and quarantine requirements. Providers were expected to adopt either a 100% remote business model or a hybrid model of service provision. Face-to-face consultations were recognised as still being needed where physical examination was required or where technology could not be used (e.g. for a confused patient without support). Practices would need to create new workflows and some local primary health networks were guided in these tasks [33].

Also, on the 30th March, further funding (AUS$74 million) was provided to support telehealth consultations for those with mental health needs, including the development of a digital mental health portal, and a 'coronavirus hotline' for wellbeing and online support for health workers. Specifically for older people, AUS$10 million was assigned to the existing community visitors scheme (and to train volunteer visitors) to combat social isolation caused by COVID-19 imposed visiting restrictions. Such volunteer visitors will connect with older people both online and by phone.

Elsewhere the growth in usage of apps was noted by Scott et al [19] – who recognised their usefulness in relation to certain health conditions. They set out a comprehensive framework by which their merits could be assessed. An 'App Evaluation Model' for mental health apps is available from the American Psychiatric Association [34]. Apps were already being trialled within some local primary health networks in Australia [35] and in the UK [36]. And by 27th March a European Commission funded project had pointed to 19 mHealth 'solutions' to help with the COVID-19 outbreak [37].

Given the role of apps as a means by which people can self-manage and at the same time share information (e.g. on heart rate and respiration) with health services, their *potential* importance as a tool of telehealth in the context of the COVID-19 pandemic is clear. Research has demonstrated that, if healthcare providers discuss the use of health-apps with their patients, they are generally willing to use them to manage their chronic conditions [38] - but such use in Australia is still in its infancy. COVID-19 might accelerate their uptake and use.

Important, furthermore, are the well developed 'aged care' services throughout Australia. These include the usual range of services in care homes and the wider community (home care) and have often been underpinned by 'social alarms' (personal response systems)' or telecare. In this sector, while not clinician-led, there is rapidly growing awareness of the potential of telehealth in supporting older people at home and of the tools that are available to help with this. The Aged Care Industry IT Council (ACIITC that draws together Aged Care Services Australia and Leading Age Services Australia) mapped and documented recent technology changes [16]. This helped multiple aged care services to re-evaluate their roles in the context of such technologies and, where they hadn't already done so, to look at service cultures, operational procedures and related training. A good example of

an Australian service is that offered by Feros Care (see Box 1).

Box 1: Feros Care
A leading Australian example of an 'aged care' service that crosses over from the social to healthcare sectors is provided by Feros Care. This 'aged care' service provider has partnered, for its home care services, with Google in order to facilitate older people's use of Google Assist, this giving them (and carers) access to a the organisation's portal and a widening range of information and other services. Information gathered regarding service usage is envisaged as a prelude to using AI to monitor well-being.[16]

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Assist, Amazon's Alexa and Apple's Siri) to falls detection devices and socially assistive robots – with consideration also being given to related developments around smart homes and the Internet of Things. Importantly the report recognised 'touch points' with clinicians. This is because of the extent to which such technologies are now able to provide lifestyle and physiological data that can both help people to remain in good health and safely manage any health conditions – a matter that carries greater importance when self-isolating. It is only a small step thereafter to consider (as noted above) how AI can be used [39] to facilitate not just monitoring (with necessary safeguards around privacy) but also diagnosis and treatment.

In the meantime, levels of awareness of the role of telehealth in relation to COVID-19 are rapidly rising. Helping this was the Digital Health Cooperative Research Centre (DHCRC) webinar on 18th March that addressed 'COVID-19 and Digital Technology: The Roles, Relevance and Risks of Using Telehealth in a Crisis' [40].

The resources, guidelines, training, online forums, and directory of telehealth care specialist and generalists maintained by the ACCRM may, in this context, assist healthcare organisations in setting up and re-shaping their services and support their workforces through the transitions [41]. The RACGP, furthermore, was poised to release a checklist on how to set up good clinical care in the age of telemedicine. And, more broadly the Australian Digital Health Agency, having consulted on the issue of interoperability in 2019, aimed to publish a 'National Health Interoperability Roadmap' [42]

But, as for all three countries, the 'reach' of new telehealth initiatives to older people in Australia, despite the urgency around COVID-19, is uncertain. Many people, disproportionately those with the greatest needs, may not have (or not able to afford) smart-phones or computers. Some, depending on location, have poor (or no) connectivity – albeit alleviated by the fact that many can use a landline to consult with their healthcare provider. Others, maybe many, may find it hard to consult over the phone and could forgo their health care 'visits' until the pandemic is finished – with this potentially leading to other healthcare complications, the implications of which have not yet been adequately considered.

In summary, there is a good range of operational telehealth services in Australia (that offer tele- and video-consultations), notably in rural areas, and such services may be able to further develop their wares as a consequence of the government's investment promise. Significant, furthermore, is the existing range of aged care services and extent of their recognition of the role of new technologies. This makes Australia relatively well positioned to respond to the COVID-19 challenge and to develop telehealth services in ways that respond to both health and social care needs.

United Kingdom

On 12th March, the UK was moving to a 'containment' phase in its response to the COVID-19 pandemic. The Prime Minister affirmed that, in this phase, 'many more families will lose loved ones before their time' [43]. Telehealth did not to have a place in the UK government's plans at this point

– though Scotland had announced on 10th March that they were 'accelerating' an investment of £1.24 million plus £8 million 'implementation' costs to support video-consultations, already used in rural areas, more widely - including for GP consultations [44].

Impetus for the UK action was added to through a publication from the Imperial College London. On 16th March, Ferguson et al [45] modelled, for the UK and the US, the potential of non-pharmaceutical interventions aimed at reducing contact rates and hence disease transmission. It pointed to the possibility that 81% of both populations would catch the disease if control measures were not put in place. Those control measures included in the modelling were 'case isolation in the home'; 'voluntary home quarantine' of *all* household members'; and 'social distancing'. These, of course, severely impact on older people.

On 17th March, NHS England issued a notice to health trusts, health service commissioners (procurers) and providers, including GP services. This called for the agencies in question to 'support the provision of telephone-based or digital/video based consultations and advice for outpatients' and for general patient consultations undertake in the community by GPs and other healthcare staff. For the latter the 'roll out' of such practices would, it was considered, be accompanied by increased use of email and text messaging. 'Face to face appointments' the notice stated 'should only take place when absolutely necessary'.

The limited promotion of telehealth on a UK-wide basis in response to COVID-19 is considered likely to be because of the general lack of developed services (the exception being Scotland). This is despite what has been recognised as a sizeable market for such services – a major part of which was seen as relating to mHealth and the use in the UK of apps and smart phones [46]. There are, however, many established social alarm (personal response systems) and telecare services. A good example of a telehealth service in the UK, in this instance, England, is that of the Airedale NHS Foundation Trust (see Box 2). The Digital Health and Care Institute, based in Scotland and financially supported by the Scottish Government, reported that some 1.8 million (mainly older) people in the UK use such services with some also benefiting from vital signs monitoring. Most such services are, it can be noted, have their origins in housing and social care services. The TSA (formerly the Telecare Services Association) meanwhile called for their service provider members to 'engage with health and social care partners' to plan for the COVID-19 response and be ready 'for increased demand from vulnerable service users' [47]. It follows that many telecare services in the UK have quickly reshaped their offerings to enable staff, normally located at their monitoring and control centres, to work from home; are implementing new practices for visiting staff (e.g. to undertake assessments or respond to urgent circumstances); and are adopting, where possible, self-installation procedures (where home 'hubs' are delivered for simple connection to a telephone line or internet connection).

Box 2: Airedale Digital Care Hub

A leading UK example (in the north of England) of a telehealth service that crosses over from the healthcare to the social care sector is that provided by the Airedale NHS Foundation Trust. The 'hub' provides varied services including telemonitoring, telecoaching, the provision of advice, home visit scheduling and (where appropriate) clinical assessments – enabled through video-consultations. Furthermore, is the 'Gold Line' service that provides video contact for people 'approaching or in the last year of life'. [48,49]

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of telehealth viz. 'home and mobile health monitoring', video conferencing and telecare. It also includes the use of a 'bespoke' video-conferencing system for people at home (with internet linked computers) or who are 'on the move' (via smart phones). These services are not just concerned with health-related consultations but also links, at least for Scotland's most rural health service, with dispensing practices to facilitate 'better pharmaceutical management' [50,51].

For the UK overall, therefore, the COVID-19 outbreak was a major 'jolt' to an NHS (the National

Health Service) that had been and remains, in part, reluctant to embrace telehealth. A recent harbinger of necessary change was offered, however, in the Topol Review [39] that called, in the context of technological changes, for dramatic improvements in the UK's health and social care infrastructure (including the workforce) and associated changes in culture. In the review, telemedicine (a subset of telehealth) topped the list of the most relevant and necessary technological advances, followed by smartphone apps and remote monitoring facilitated (in part) through sensors - including those embedded within wearable devices. Relevant also is NHSX, established in 2019 [52] as an NHS 'spin-off', that is intended to lead for England the 'largest digital health and social care transformation programme in the world' with foci that include the interoperability of systems and an intent to guide ways in which benefits for the NHS can be harnessed from 'big data' analytics. Their 'tech plan', including attention to apps, was under development in 2020. NHSX is, according to the NHS England notice of 17th March, leading work relating to telehealth developments in the primary care sector.

In response to the question as to why telehealth had not (to date) been developed further in the UK, Professor Trish Greenhalgh put it succinctly in a webinar on 18th March [40]. She affirmed, referring to clinicians, that they '*didn't have any particular reason to use [telehealth]. They didn't see a clinical need*' adding that '*running a service with video-consultations as a main component involves major changes in workflows and also changes in professional interactions. And it feels a bit weird* [for them] *to be consulting either by telephone or video when you could just bring the patient in and look at them - as you were taught'*. Other work by Greenhalgh is relevant to this in exploring video-consultations [53] and remote assessments [54].

Useful in this context is the release by the (UK) Royal College of General Practitioners of 'top tips' for telephone consultations in the context of COVID-19 [55]; and preliminary 'video-consultation information' for GPs developed by the NHS in collaboration with the University of Oxford and drawing on guidance produced by Scottish Government [56].

In summary, the 'reach' of new telehealth initiatives to older people in the UK is uncertain. Many (older) people do not have smart-phones or computers. Some, depending on location, will have poor (or no) connectivity. In the UK, furthermore, whilst there is good NHS *intent* to reach all those in need (as part of their universal service obligation), the roll out of telehealth services, despite the urgency of COVID-19, may be slow – though lessons will be learnt from both Scotland and outside of the UK.

United States of America

On 17th March the US announced the 'dramatic' expansion of telehealth services via tele- and video-conferencing, with people able to use these services, over the ensuing six months, through such platforms as Skype or Facetime and with the waiving of 'other' normal requirements [57]. The waiving of regulations applied to the state authorised Medicare funded services that operate throughout the US [58]; and followed growing concerns about the COVID-19 outbreak. A further US$2 trillion (of which US$200 million was earmarked for telehealth) was promised through the CARES Act (Coronavirus Aid, Relief, and Economic Security Act) that passed through the Senate on 25th March 2020 [59] and was signed into law on 27th.

Realisation of the need for such urgent action was partly prompted by an article, published on March 11th by Hollander and Carr [24]. This affirmed that, in the context of COVID-19, 'direct to consumer (or on-demand) telemedicine … is both patient-centred and conducive to self-quarantine, and it protects patients, clinicians and the community from exposure'. In place, furthermore, was an infrastructure in the US that would, they envisaged, facilitate telehealth's (telemedicine's) greater use - with programmes already in place for 50 of the country's state health systems.

That initial week (commencing around 11th March) was marked in the US by an 'explosion of

demand' that 'slammed into hospitals [that were] used to delivering telehealth consults for only a handful of patients a day'. Cleveland Clinic and Jefferson Health were respectively reported as having fifteen- and twenty-fold increases in telehealth visits in a week; with Penn Medicine, because of their increased demand, having 'increased the number of practitioners delivering remote consults from six to 60' [25]. Further increases were expected. Additional impetus was added to the moves because of the applicability of the Imperial College London report that point to the equal (though far bigger in population terms) threat of deaths to the US [45].

By the 17th March the American Association of Retired Persons (AARP), the largest representative body of older people globally, had posted an item on their website that explained, in reassuring terms, what to expect in a virtual visit [60]. The author of the item, affirmed that a virtual visit was 'very similar to what would happen in person' advising people to be ready to respond to questions 'to have a pen and paper handy' and to be increasingly equipped in order to take physiological measures at home – notably blood-pressure and temperature. The Centers for Disease Control and Prevention [61] had published interim guidance for community health staff that included the need to 'explore alternatives to face-to-face triage and visits' and 'identify staff to conduct telephonic and telehealth interactions' …with 'protocols so that staff can triage and asses patients quickly'. The American Hospital Association [62] had, a year prior to the COVID-19 pandemic, called for 'widespread elimination of geographical and setting locations requirements' and an expansion of 'types of technology', including remote monitoring, that could be used.

The new Medicare rules kicked-in retrospectively from March 6th. The telehealth services in question were required to consult in 'real-time' (i.e. asynchronous, store and forward, communication was not included) and the prior restriction to beneficiaries in rural and remote areas was removed. Reimbursement rates for service providers were set the same as for face-to-face visits. Importantly, all eligible Americans became able to link to telehealth services 'through video chat and online patient portals' referred to as 'virtual check-ins' [59].

The range of staff engaged by service providers (at 'originating' sites) was widened, overall including doctors, nurse practitioners, licensed clinical social workers and clinical psychologists; with ordinary consultations, as well as health screening and mental health counselling, being able to be undertaken. Health staff (including e.g. nurse practitioners and physician assistants, where necessary, at 'distant' sites) became eligible for payment [63]. And whilst the focus was on Medicare, it can be noted that several of the private insurance service providers were starting to waive costs for remote assessments and consultations, reckoning on the health benefits that would ensue [64].

What superficially may look like a consistent approach in the US (focused in the main in video-conferencing) hides variation between the funding and administrative frameworks that operate in different states. Dinesen et al [22] had reported on a 'fragmented' system in the US where the 'use of technologies can create jurisdictional conflicts, policy conflicts and remain tangential to care practices rather than integrated in [the] health care infrastructure'. In 2019, the Center for Connected Health Policy [65] affirmed that 'no two states are alike in how telehealth is treated, despite some similarities in the language used'.

A useful factsheet for telehealth was, however, provided by the American Hospital Association [62]. This noted that, in 2017, three-quarters of US hospitals connected 'patients and consulting practitioners at a distance' albeit that there were barriers to wider adoption. All states provided reimbursement under Medicaid 'for some form of live video', but less than half reimbursed for 'store and forward' [62]. There are many people, furthermore, who were recognised as 'low-income or uninsured' and who 'may have no choice but to pay out-of-pocket for these services' [66]. Only a minority of American's, in fact, are on Medicare with Cahan arguing that 'telehealth must also reach these 281 million individuals in the under-resourced nooks and crannies of the US' [67].

Perhaps typical of telehealth services is one provided in Idaho (see Box 3) where consolidation is taking place in order to realise the economic advantages of working at scale, combined with the ability to reach out to a larger population in the state and parts of adjoining Oregon [68.]

Box 3: St Luke's Health, Idaho
A US example of a telehealth service is that provided by St Luke's Health – which operates a 'virtual care center' in Boise. The centre and its staff provide video-consultations and remote patient monitoring for people at other linked healthcare facilities, in their homes or (via mHealth) on the move. Importantly the service approach is seen as evolving from one which is more reactive and responding to health needs as they arise; to one that is proactive in supporting people's day to day health [68].

circumstances. Most of these are private sector services and some are seeking to evolve as telehealth services. They echo in their form the social alarm services in Australia and the UK.

As for all three countries, the 'reach' of telehealth initiatives to older people in the US, despite the urgency around COVID-19, is uncertain. Many people do not have smart-phones or computers. Some people, depending on their location, will have poor (or no) connectivity. In the US there are, furthermore, issues around the cost of services where (older) people are not eligible for Medicare.

Discussion

This paper has exposed differences in the way that Australia, the UK and US responded, in the two weeks from 12th March, to the promotion and use of telehealth to combat the COVID-19 pandemic. These differences relate to their prior experiences with telehealth, the different health, and to some extent social care, contexts and cultures; the extent to which specific attention was given to older people; the respective geographies (most notably in relation to rural areas); and the linked funding frameworks. Differences in understandings of definitions or the breadth of telehealth were also indicated – these reflecting the nature of extant services within the countries in question.

With regard to the health context, a strong link to longstanding universal welfare models is signalled for both Australia and the UK. In the UK a major part of telehealth and related service provision is via public and third sector (charitable or non-profit) organisations. In Australia, provision is both from these and the private sector. The welfare element is, however, also there for the US where Medicare and Medicare programmes seek to ensure that the needs of at least some of those who are most vulnerable are met – albeit with most people normally accessing services through private providers.

All three countries give attention to older people. An interesting aspect of this, especially in Australia and the UK, are the moves towards cultural change within services - this being reflected in an increased understanding of the potential of technologies to empower their users. The use of apps (notable in the UK) and voice assistant devices in the home are pointers to this, with indications in all three countries of some moves, within the context of telehealth, towards encouraging greater self-management.

The different geographies of the three countries have been observed as influential. This, in part, reflects the fact that some (often pioneer) telehealth services, were borne of necessity - arising from rurality, remoteness and island locations; and also workforce shortages [69]. This is particularly the case for Australia. It is interesting to note, therefore, the actions by governments in both Australia and the US that waived restrictions on financial support for service provision in non-rural areas. And regardless of the future of telehealth, there can no doubt as to its real, achieved, benefits as perceived by (older) people living in rural and remote regions.

Understandings of the meaning of telehealth in the three countries were clearly influenced by the nature of services that had been established, this then being consolidated by what was determined as eligible for funding. Hence the US 'model' based around video-consultations can be contrasted with the less rigidly framed, but arguably more inclusive, services in Australia and the UK. The US model may, nevertheless, prove to be a useful foundation for extended services that are able to respond to

the COVID-19 pandemic. By contrast, the rapid building or strengthening of telehealth services in Australia and the UK as a response to COVID-19 could prove more problematic - in the sense that greater attention will be necessary to establishing or putting in place adjustments to staffing and operational procedures able to both ensure reasonable quality standards (for technologies and services) and to respond to the certain increase in demand.

As noted in STAT [25] for the US 'The administrative challenges are numerous. They include training doctors to deliver virtual care … there are also technology set up challenges for new users as well as a shortage of bandwidth as the internet groans under the strain of increasing use'. All three countries, meanwhile could consider the extent to which 'nurse-practitioners' and 'physician assistants' could play a greater part together with social care staff (and assisted by the technologies) in the operation of telehealth services. There are, in addition, all kinds of related challenges for information governance and the inevitably time-consuming tasks associated with quality testing of both the technologies and the related services. And even though funding may be provided in this extraordinary time, the questions remain as to whether this will prove adequate to support the running of viable telehealth businesses in the COVID-19 context.

Common to all three countries is their commitment to at least basic service quality safeguards. These are essential and will need to be built on if telehealth is to take its place within established health services. It is the case that the COVID-19 pandemic is forcing the changes and the question of service sustainability will, therefore, remain. We are some way from what Cahan [67] referred to as telehealth becoming 'finally mainstream – overnight(ish)'; and we are some way away from loosening the ties that bind us to 'the delivery of services in bricks-and-mortar campuses and clinics' and face-to-face consultations and care 'where infection transmission is too easily facilitated' [25].

What begins to come through, however, is a sense of an increasing and shared recognition of how the technologies that we associate with telehealth are not simply vehicles for the provision of services, but offer a means of people's empowerment. This empowerment applies to all, including older people - for whom there is an imperative for equal effort to be expended in ensuring both the form of the technologies and services is appropriate to facilitate their usage. And though, with telehealth, the extent of personal contact in the form of 'presence' and 'touch' has been noted as currently out of reach, tele- or video-consultations may offer a route towards helping address the twin scourges of loneliness and social isolation that can afflict some older people. Linked with this is the ability, in the context of COVID-19, of telehealth to make the links that give comfort to (older) people when they are ill, self-isolating or being confined. And for (older) people who are more mobile there is, of course, the oft cited benefits of telehealth through their not needing to travel to health facilities – with the concomitant inconvenience and cost to themselves and, frequently, accompanying persons.

Further than this, the empowerment of older people living with mild dementia and their carers during COVID-19 has been demonstrated in Spain through television-based health and social support interventions, and the provision of telephone-based support [69]. Telehealth in the form of television-based support went, therefore, beyond an initial objective of home support, and is concerned to promote 'active aging' at home. The programme enabled carers to provide remote support, and improved cognitive function followed from online memory exercises.

In summary, the picture that emerges is one of uncertainties and differences for the three countries but with an increasing awareness of the part that can, and probably must, be played by telehealth in the context of COVID-19. That part will potentially have a great benefit for older people who, it has been noted, are disproportionately impacted by the virus.

In whatever way that telehealth services develop in this extraordinary context there is the reassurance, however, of a shared concern in the three countries for at least basic quality standards to be maintained. To do this, and whether or not the immediate impact on telehealth services is sustained after the pandemic, there will be a commensurate need for telehealth (or, rather, the broader realm of digital health) to become integrated within health and social care service frameworks. Telehealth must not, in other words, be seen as some kind of 'alternative' form of health care. It

follows that telehealth, regardless of the impact of COVID-19, must also become integrated within the training curricula for both health and social care professionals and practitioners.

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Conflicts of Interest:

None of the authors has a conflict of interest.

Authors' contributions

MF designed the research, drafted the manuscript and analysed the content. SWP and AL contributed to manuscript drafting and provided critical analyses of the content. All authors reviewed and approved the final version of the manuscript.

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