Title: No need to worry about virtual teaching

Short title: No worries

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19 Today most of us use mobile phones, tablets, computer and laptops, both at work and at
20 home. Children start using technological solutions at an early age, and are familiar with
21 different usable software almost from their first day at school, if not prior to school entry. We
22 use applications (apps) to get information about school and leisure activities. There are a
23 growing number of apps to keep you in touch with family and friends. There are apps to use
24 as financial payment solutions, for shopping and also different digital platforms where we can
25 meet socially, exercise or get access to maps if travelling or mountain tracking. There are also
26 an increasing number of apps that can be used to answer questionnaires, access or provide
27 educational lectures, give or take exams, defend a PhD thesis, and participate in courses and
28 conferences. So why are we so afraid to use digital teaching solutions in the health care
29 service? Digital transformation is at the top of the political agenda as a strategy to achieve
30 United Nations (UN) Sustainable Development Goals and to provide equal and high quality
31 health services for all citizens. Increased use of digital technologies in healthcare services
32 improve healthcare outcomes, increase efficiency, reduce response times, and allow for
33 delivery of quality services, no matter the geographical location [1-4]. Electronic medical
34 records (EMR) are nearly ubiquitous in global healthcare. However, relatively few healthcare
35 providers are formally trained to deliver rehabilitation services using digital devices or
36 programs, and few healthcare providers have received specific education or training in
37 communication skills using digital technologies. Traditionally, this may cause reduced use of
38 well-suited technical solutions in the healthcare. However, amidst the current global
39 pandemic, healthcare providers were asked to quickly turn to telehealth platforms in order to
40 provide continuity of care to as many patients in need as possible. Healthcare educators were
41 asked to incorporate online platforms into didactic learning programs in a matter of days. For
42 individuals with physical challenges, offering digital healthcare services may actually provide
43 more, and not less, access to needed services [5]. Going forward, it is important to give and to

get information on how digital or telehealth healthcare service can be organized, and to whom the services should be offered. These issues are important in the facilitation of a digital health care service. Here, we will give an overview of some of the many digital communication possibilities and give reasons for why we should use them in healthcare and healthcare education.

Digital solutions must be set up to meet privacy and confidentiality requirements. Once done, there is no shortage of possibilities for the use of digital solutions. Voice only solutions, like telephone or mechanical voice, e.g. Apple's Siri voice [6], is a good example of a mechanical voice solution. Siri is a virtual assistant that uses advanced machine learning technologies to function. The assistant uses voice queries and a natural-language user interface to answer questions, make recommendations, and perform actions by delegating requests to a set of Internet services. The software adapts to users' individual language usages, searches, and preferences, with continuing use. Returned results are individualized [6]. Siri is well-known solution, used by billions of people globally, and users don't seem to be afraid of the use, because it simplifies everyday life [6]. Similar solutions can be integrated into computers, robots, or stand-alone devices in the home, such as Amazon's Alexa [7]. For a person with cervical spinal cord injury (SCI), such technical solutions can promote independence in their daily living, as well as facilitate communication with healthcare providers. These devices and strategies can also be integrated into digital and technological teaching, like store and forward solutions (transmission of information to health care receivers or users, not active live communication) and web-based treatments (online education). There is also the growing application of artificial intelligence, which will likely have important impacts on the health care in the future [8]. In addition, virtual reality is being increasingly tested in SCI and other rehabilitation contexts [9]. Using digital or online platforms, teaching can also be performed as provider-to-provider (health care workers to health care workers or to other caregivers),

69 education direct to consumer (health care providers to patients/ care receivers), using different
70 technical solutions like webcams, and encrypted software. Thus, as care providers, we can
71 offer teaching to our stakeholders in many different ways, using technological and digital
72 solutions, which increases knowledge and collaboration. However, to manage this, it is
73 important that the providers know the solutions themselves and are comfortable with the
74 usage. For example, the American Spinal Injury Association (ASIA) [10], in collaboration
75 with the International Spinal Cord Society (ISCoS) [11], offers an online e-learning platform
76 that includes instruction on and learning certification for gold-standard clinical exams like the
77 International Standards for the Neurological Classification of Spinal Cord Injury (ISNCSCI)
78 exam, as well as others [12]. This platform offers the ability of a clinician, who cannot travel
79 to an in-person instructional course, the opportunity to be trained in a highly complex exam
80 that yields the gold standard clinical determination of injury level and severity, as and such, is
81 essential for anyone serving the SCI community. There is also the possibility to share digital
82 content for collective, coordinated use that may help to standardize training and reduce costs
83 of developing training for individual institutions. For example, the Collaborative Institutional
84 Training Initiative (CITI) [13] is a platform used widely among academic medical institutions
85 in the US to deliver required training on ethical conduct in research. The Norwegian Health
86 Network (NHN) [14] is a secure digital arena to interact for all participants in the health care
87 sector. Caregivers can communicate synchronously or asynchronously and exchange personal
88 patient information in a safe and secure way. Synchronous communication via encrypted
89 videoconference channels provides treatment, guidance, education and training for recipients
90 at home. In more didactic settings Zoom or other digital platforms can be used easily to
91 facilitate journal clubs, seminars or other interactive types of classes for trainees, with
92 whiteboard options that mimic those used in traditional in-person settings. Since the pandemic
93 hit in March 2020, a number of medical and scientific conferences have been offered online.

Some of these may have expanded their audiences, as online costs are lower and it obviates the need for travel approvals or for clinicians to find substitutes for their clinical responsibilities. An example in SCI research is the International Online SCI Research Series [15], which has been offering online seminars that are free and open, with a chat function where attendees can pose questions that are then relayed by moderators (often PhD trainees or postdoctoral fellows) to the speaker. This series is attended by a highly diverse array of international researchers, with new trainees given the same opportunity to post questions as established leaders in the field, providing truly democratic scientific exchange. Another example is the YouTube based best practices courses offered by Sustain Our Abilities [16], which offer free courses to professionals and consumers related to specific SCI topics such as bladder management, pressure injury, telerehabilitation and sexuality. Societies, including ISCOS, also held international online meetings using different digital platforms [10, 17]. There are many benefits of online education. These include safety, saving time in travel, money and saving the impact on the environment of excessive travel. Changes in 2020 have been abrupt and thus, have been difficult for us to incorporate into our lives. Moreover, some of us may find this difficult and have not realized that the meetings and travel of “the olden days” for professional education was a means of relaxation. Still, as digitalization is increasingly implemented in everyday health care, it is paramount it is also increasingly integrated into teaching across healthcare professions.

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