# Bridging the Digital Divide in Wound Care: Health Literacy and Access to Care 

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Recent global events have increased virtual health-care use from $19 \%$ in 2019 to more than $56 \%$ in the first half of $2020 .{ }^{1}$ This fundamental, pandemic-driven shift is changing health care and wound management. Kickbusch called using digital health technologies, including virtual care, "health 4.0." ${ }^{2}$ With digital health literacy (DHL), we can anticipate improved health-care quality, wider accessibility and reduced costs. ${ }^{3}$
Virtual care, while beneficial, also limits equitable, fair and timely access to health care. The risk is that digital technology will drive practice rather than practice informing technology. Virtual care enthusiasts usually have the literacy levels to use it effectively. Although health literacy (HL)

## Digital health literacy

is the ability to seek, find, understand and appraise health information using information and communication technologies (ICTs) to address or solve a health-care problem. ${ }^{25,26}$
is critical for successfully adopting digital health care, literacy has garnered only limited mentions. Digital health literacy is fundamental to equitable health care. This article looks at the current state of Canadian HL, identifies DHL components that impede or support adoption of digital health care and explores future policy opportunities for patients and health-care professionals (HCPs).

## Canada's Health Literacy

Literacy impacts our daily lives. It is "the ability to identify, understand, interpret, create, communicate and compute printed and written materials associated with varying contexts. ${ }^{\prime 4}$ Measuring on a 5-level scale, the Government of Canada sets Level 3 as the minimum for employability and coping with society's increasing information demands. ${ }^{5}$ A 2012 literacy survey showed 48.5\% of Canadians (all ages) at $\leq$ Level 2 for overall literacy and $54.7 \%$ at $\leq$ Level 2 for numeracy (see Table 1). Canadian adults' average score in prose and document literacy is $\leq$ Level $3 .{ }^{6}$ This means two in five adults (approximately 9 million people) cannot read well enough for daily activities.


Table 1: Literacy Skills ${ }^{6}$

| Prose | Knowledge and skills needed to under- <br> stand and use information from written <br> texts |
| :--- | :--- |
| Document | Knowledge and skills needed to find <br> and use information in various formats, <br> e.g., schedules, maps, tables and charts |
| Numeracy | Knowledge and skills needed to do <br> arithmetic and understand numbers in <br> printed materials |
| Problem- <br> solving | Process of solving problems by using <br> goal-directed thinking and action, with- <br> out having a routine to follow |

The International Adult Literacy and Skills Survey (IALSS), a Canadian component of the Adult Literacy and Life Skills Survey (ALL), assesses Canadians' literacy performance in using health information (health literacy [HL]).' Recently the IALSS predicted that approximately $55 \%$ of all Canadians, age 16 to 65 , will score below Level 3 on the HL scale. Also, only $12 \%$ of adults age 65 and over exhibit $\geq$ Level 3 health literacy. ${ }^{8}$
In addition to the literacy skills identified in Table 1, health literacy includes "the ability to access, comprehend, evaluate and communicate information to promote, maintain and improve health in a variety of settings across the lifecourse."9 Social determinants of health-specifically language barriers, cultural, physical and environmental factors, education, and income-
all directly impact health literacy. ${ }^{10}$ Health literacy has three main pillars: capacity to obtain health information (where to find help), ability to understand the information gathered and ability to apply health information. ${ }^{9}$ All three pillars are essential to achieve health literacy goals. ${ }^{11}$

## Digital Health Literacy

Digital health literacy is the ability to seek, find, understand and appraise health information using information and communication technologies (ICTs) to address or solve a health-care problem. ${ }^{12,8}$ The ICTs include telemedicine, mobile health, Internet-based services, patient forums, electronic records, patient wearable applications (e.g., health and fitness monitors) and other online-based consumer applications. ${ }^{13}$ In today's world, health literacy is foundational for a person's digital health literacy.
Canada's exponential increase in virtual care-health-care visits conducted by phone, telehealth, video, text or email ${ }^{1,2}$-highlights the importance of adjusting existing practice and governance structures to meet digital health-care challenges. The inability of some Canadians to use e-health services, including virtual care, contributes to health inequality. ${ }^{14}$
The e-health sector is growing exponentially, and health-care providers and patients need DHL skills to access or use health technology, especially patient self-management apps. Such

services enable individuals' resource development, especially patient-specific ones, so measuring health literacy from the user's perspective remains a high priority. ${ }^{15}$ Assessing health literacy over time is challenging, because it improves or deteriorates depending on a person's circumstances. ${ }^{16}$
At greatest risk of exclusion from digital health solutions are low-income adults and lower-income older adults. Having in many cases experienced lifelong economic insecurity and limited education, these populations are more likely to have low DHL. ${ }^{13}$ Their lack of health-care skills, resources and experiences may limit their participation in virtual care or e-health initiatives. Illness also affects literacy level, especially when it comes to patient decision-making abilities. ${ }^{11}$ Effective digital health strategies, education and access alternatives must all be accessible and engaging at a wide range of health literacy levels. ${ }^{17}$
Health literacy goes beyond the individual patient or care partner's correct use of digital health solutions. ${ }^{10,14}$ Health-care professionals are responsible for their patients' health literacyto assess current level and support further skill development. The clinicians' ability to use digital environments effectively directly correlates with a patient building confidence and skill in finding and applying health-care solutions. ${ }^{17}$ To assess DHL, a clinician requires competency in
evaluating quality and validity of information, sourcing credible and valid content, revising or creating materials for specific health literacy levels, and knowing each patient's health literacy level so their information documents are adapted appropriately. ${ }^{18}$
Patients benefit from improved access to information: specifically, for informed decision-making, ${ }^{19}$ effective mobile device application use, and access to recommendations regarding health applications, test results and follow-up forms. The literacy bar rises when learning is applied, but assuming patients "know" risks results in poor patient outcomes. For health literacy, information must be understood and used to make good health decisions. How many clinicians have had a patient with non-healing wounds present their "findings" from a "Dr. Google" or social media search? Being able to discriminate accurate from inaccurate information requires the ability to retrieve information from digital sources and apply critical thinking skills to evaluate the information. The wound care clinician can increase the patient's DHL in several ways (see facing page).
Recent research suggests a number of healthcare providers may lack the digital literacy needed to effectively guide patients in using tech-nology-based supports. ${ }^{3,14,19}$ At the same time, a number of providers have confirmed a reluctance to use digital technologies, resulting in barriers to broad-scale implementation. ${ }^{14}$ Despite growth in virtual care options, most clinicians, especially doctors, are reluctant to see patients in formats other than face-to-face visits, furthering health access inequities. To maximize virtual care's benefits, the following policies may help bridge the digital divide.

## Policy Strategies for Health-care Providers

1. Develop and provide digital literacy programs for health-care professionals within school curricula and ongoing professional development in current practice. ${ }^{20}$
2. Assess a patient's health literacy before providing digital solutions, using a validated, efficient literacy scale (e.g., eHEALS) ${ }^{21}$ to recommend and leverage appropriate interventions.
3. Train HCPs in cultural competency to determine patient and care partner needs. Cultural norms and values affect one's ability to leverage digital health solutions, especially completion of required forms, numeracy skills and decision-making. ${ }^{22}$
4. Build a repository using currently developed content to share with patients that includes credible websites, online community directories and tools to assess the reliability and accuracy of online information: e.g., McMaster Optimal Aging Portal ${ }^{22}$ and IMAGINE - Citizens Collaborating for Health. ${ }^{23}$
5. Build and support digital health interdisciplinary teams. Digital health technologies connect professions for patient care, policy and research, specifically to build knowledge and skill for self-care strategies. Improved self-care mitigates the impact of low health literacy. ${ }^{13}$
6. Develop patient-specific tools to leverage virtual care, e.g., how to prepare for a virtual visit; what questions to ask your HCP; how to communicate signs and symptoms.
7. Work with e-health developers to identify and fill gaps for digital health wound care management solutions. ${ }^{10}$

## Patient-focused Strategies

1. Provide access to technology and technol-ogy-based supports, such as reliable Internet, computers and mobile devices. These technologies improve patients' information access (including exclusive online offerings [e.g., iKNOWHEALTH, Medical ID, COVID self-screening apps]) and increase independence (self-management) and socialization.
2. Offer local community support programs and services (e.g., digital literacy training in local community environments) geared to specific needs (e.g., new immigrants' language needs, numeracy training). Education and training remove socioeconomic barriers that interfere with skill development. ${ }^{16}$
3. Reduce financial barriers for basic technol-ogy-based supports for all populations who need it.
4. Provide supplemental funding for affordable

Internet, free computers and maintenance costs (replacement, repairs). The high costs of Internet access and replacement or repair of equipment create barriers to access. ${ }^{16}$
5. Reduce regional and jurisdictional inequities for access to assistive devices for the visually impaired, hearing impaired, those with compromised dexterity and others who require such devices to operate a computer. Monies must be allocated for persons requiring computer access for health care. It is unconscionable for the government to introduce cost-saving technologies that disadvantage those who need it the most.

## Conclusion

Relevant, accurate and useful health information can close health literacy gaps-and not just in wound care. Despite evidence that proficient health literacy improves health outcomes, it is often an afterthought or addressed in isolation. ${ }^{24}$ Health literacy must inform all health communication and public health research. The response to the current COVID-19 pandemic clearly illustrates how inequities sharpen and deepen when some population segments cannot "shelter in place," simply because they lack access to resources that can help them make positive health-care choices. Wound care continues to be fragmented, under-serviced and under-supported. Virtual care and other digital health technologies (e.g., mobile health, patient forums, electronic records, patient wearable applications) that are becoming ubiqui-

tous in health-care provision have the potential to address the current gaps. To ensure that access to these technologies does not increase health inequity but rather closes the digital divide, policy makers must not place the burden of ensuring success on the backs of those who are economically, culturally, physically or mentally disadvantaged. The responsibility for ensuring that health literacy improves and the digital health literacy gaps close rests with health-care providers and policy makers. We, as a society, should support only health-care advancement cost efficiencies that promote equitable health care-something that is achievable through digital health literacy.

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