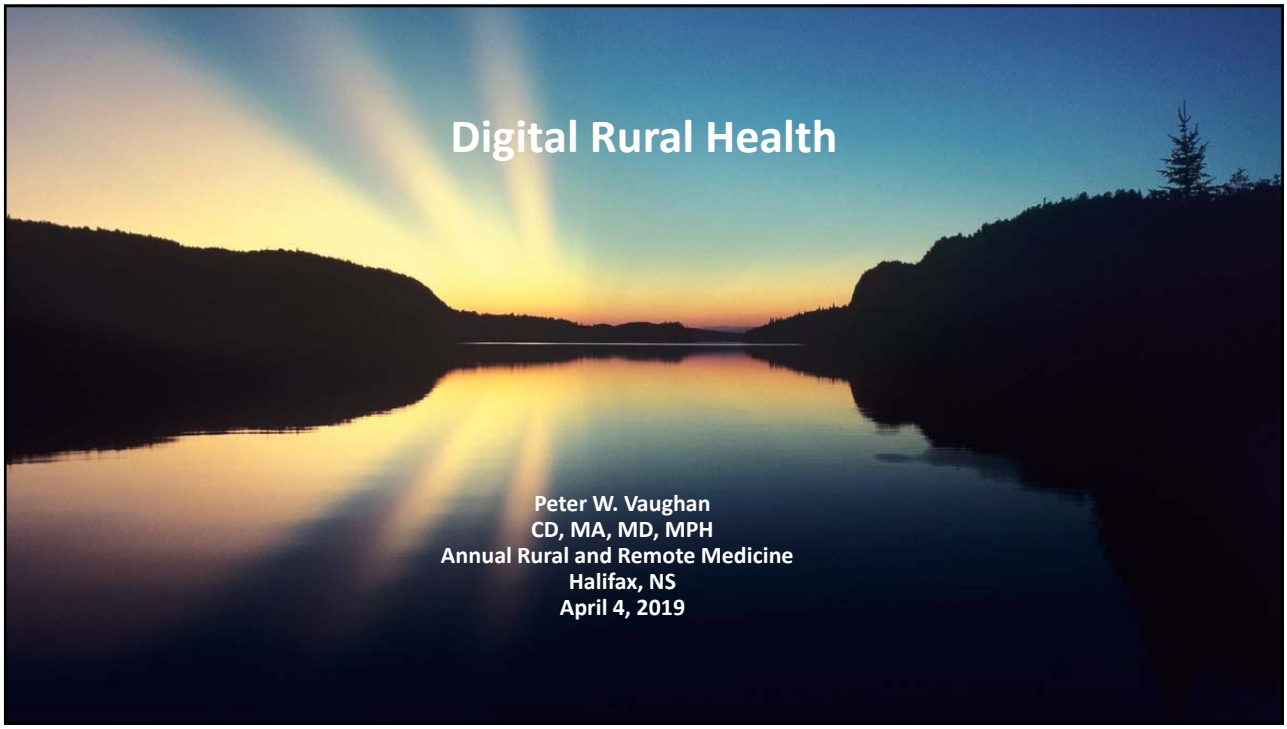
Digital Rural Health
Peter W. Vaughan
CD, MA, MD, MPH
Annual Rural and Remote Medicine
Halifax, NS
April 4, 2019

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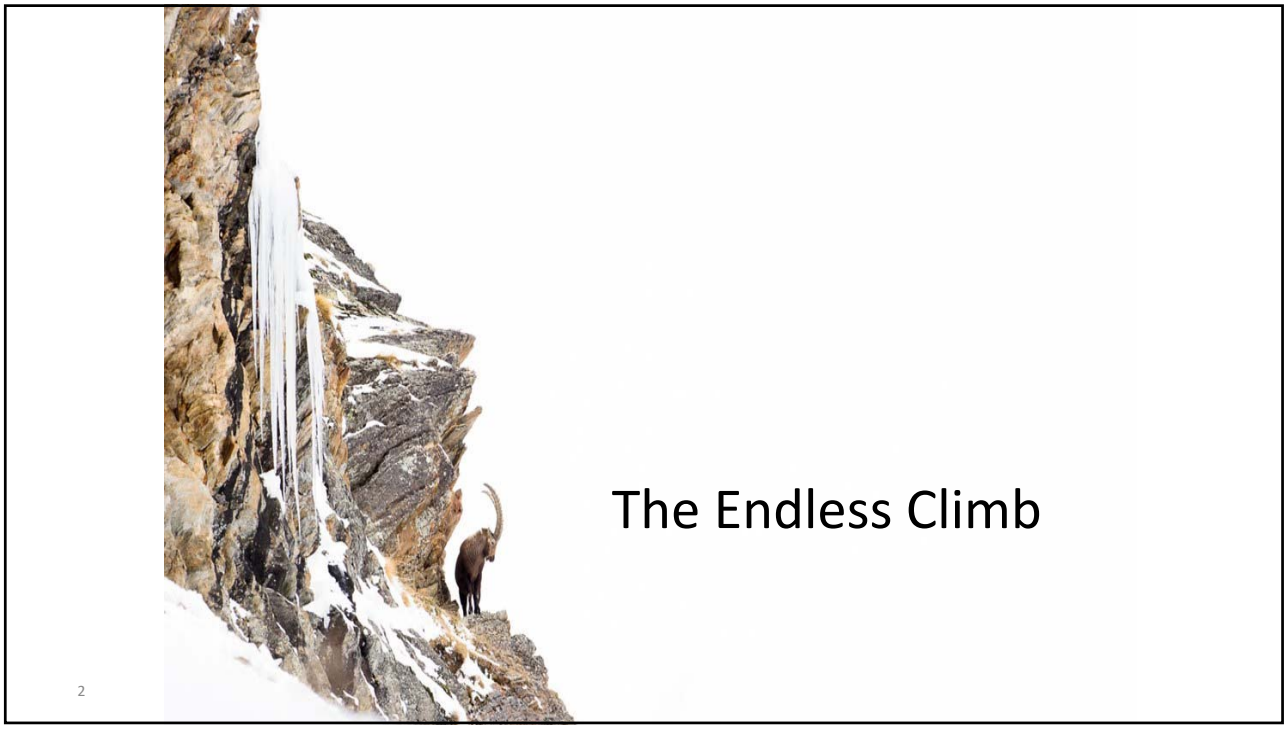
The Endless Climb
2

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Dr. Doug Friars, family physician

Operation Barefoot, Wellington County, ON, 1993

100 doctors walk a mile (1.6K) barefoot to protest rural health care cuts

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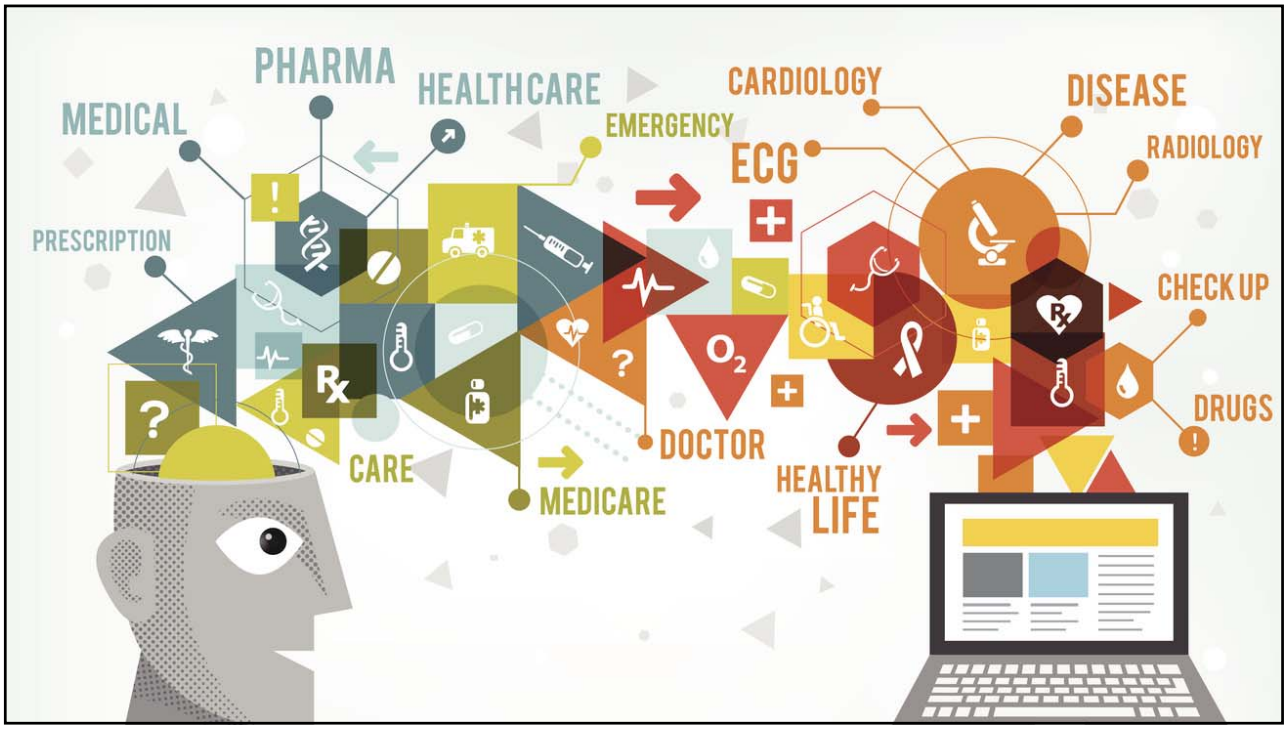

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What Canadians Want

e-view	e-visit	virtual visit	e-Rx renew
Citizen access to their health information	**Secure e-mail with health provider/ place of care**	**Secure face-to-face video visit with health provider**	**Request for Rx-renewal**
A PHR includes the primary function of viewing health information	An **E-Visit** is a patient e-service that allows patients and/or their caregivers the ability to communicate with their healthcare team through secure e-mail or SMS messaging	A **Virtual Visit** is a patient e-service that allows patients and/or their caregivers the ability to meet with their health care provider via a face-to-face virtual encounter, through functions such as video calls	**E-Rx Renew** is a patient e-service that allows patients and/or their caregivers to renew prescriptions

8

8

9

IoT, Robotics and Blockchain: Towards the Rise of a Human Independent Ecosystem

- With the accelerated development of industrial IoT (IIoT) technologies, a wide range of smart and autonomous devices will be deployed in a variety of digital automation applications including healthcare.
- Gartner estimated that more than 11 billion IoT devices will be installed world-wide by the end of 2018, setting the stage for more than 20 billion IoT devices to be deployed by 2020 .

https://www.comsoc.org/publications/ctn/iot-robotics-and-blockchain-towards-rise-human-independent-ecosystem cited Feb 2019

IEEE ComSoc
IEEE Communications Society

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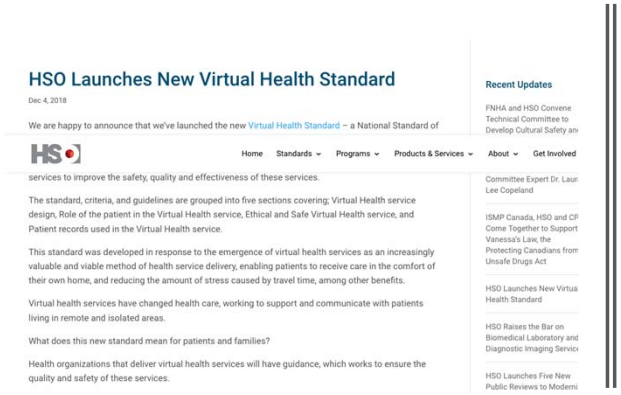
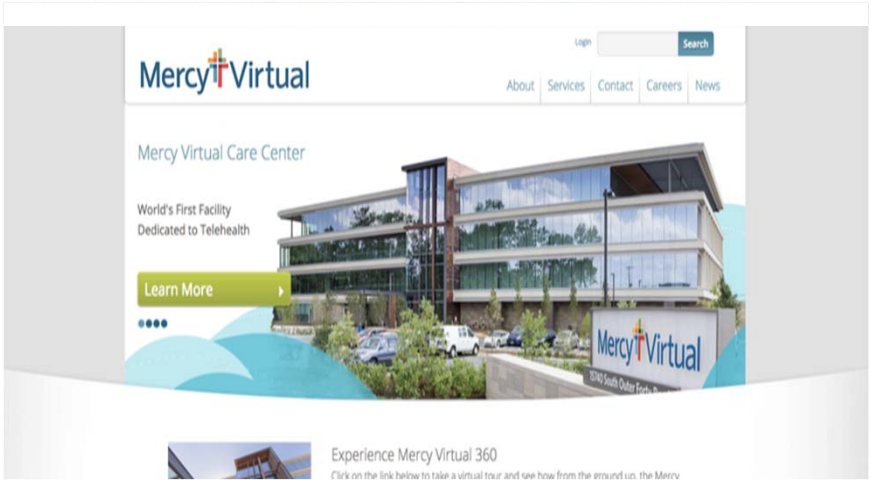


Virtual Care Standards

11

Virtually Everywhere



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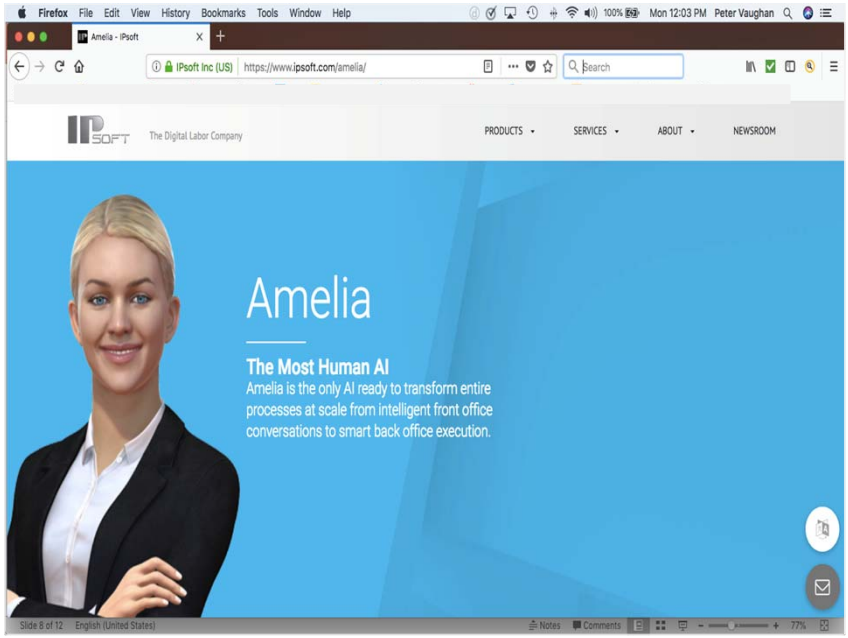

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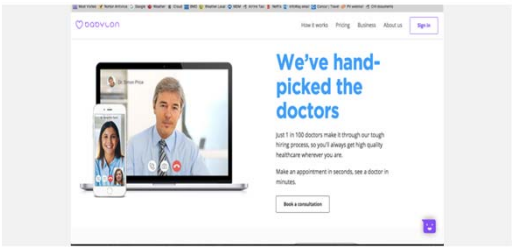
REUTERS World Business Markets Politics TV

TELUS Health picks Babylon to bring virtual healthcare to Canada

Paul Sandle 3 MIN READ

LONDON (Reuters) - Canada's TELUS Health is joining forces with London-based AI company Babylon to bring virtual medical services, including video consultations, to Canadians who do not have a family doctor or are in rural locations far from a surgery.

The Netflix of Healthcare?



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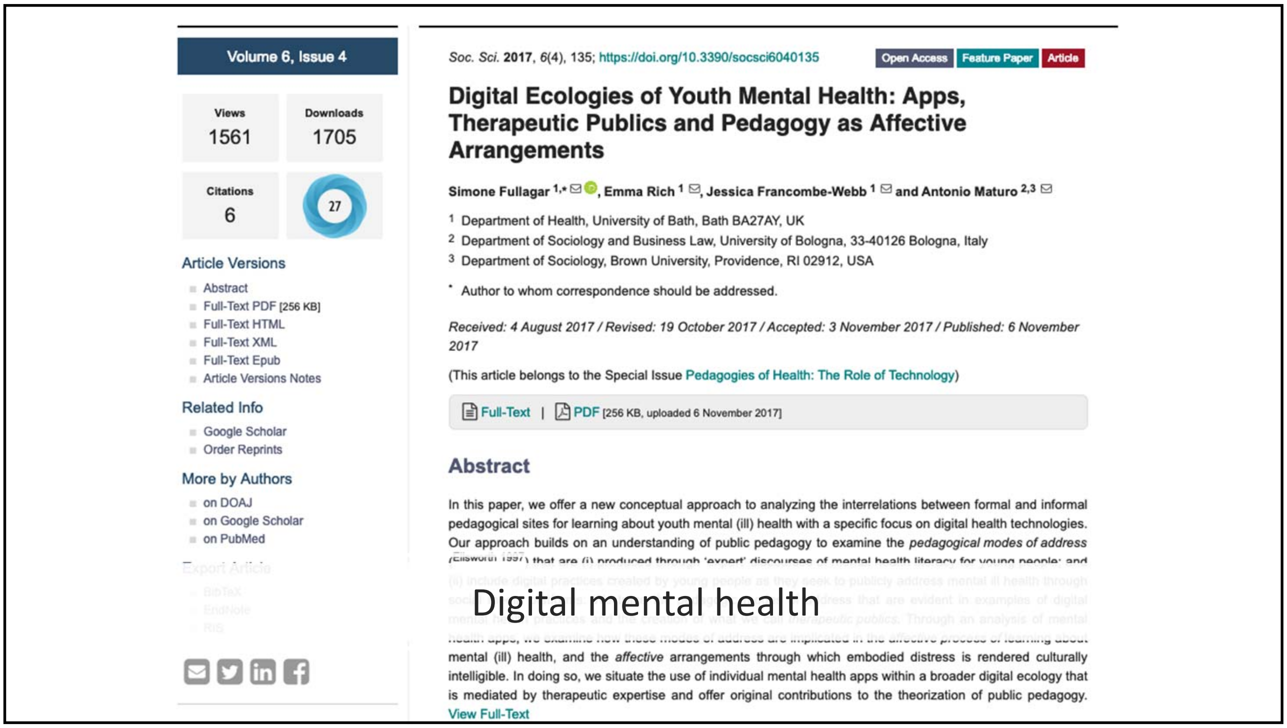

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Soc. Sci. **2017**, *6*(4), 135; https://doi.org/10.3390/socsci6040135
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Digital Ecologies of Youth Mental Health: Apps, Therapeutic Publics and Pedagogy as Affective Arrangements

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2 Department of Sociology and Business Law, University of Bologna, 33-40126 Bologna, Italy
3 Department of Sociology, Brown University, Providence, RI 02912, USA

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(This article belongs to the Special Issue Pedagogies of Health: The Role of Technology)

Full-Text | PDF [256 KB, uploaded 6 November 2017]

Abstract

In this paper, we offer a new conceptual approach to analyzing the interrelations between formal and informal pedagogical sites for learning about youth mental (ill) health with a specific focus on digital health technologies. Our approach builds on an understanding of public pedagogy to examine the *pedagogical modes of address* (Ellsworth 1997) that are (i) produced through 'expert' discourses of mental health literacy for young people; and (ii) include digital practices created by young people as they seek to publicly address mental ill health through ... that are evident in examples of digital mental health practices and the creation of what we call *therapeutic publics*. Through an analysis of mental health apps, we examine how these modes of address are implicated in the *affective process of learning* about mental (ill) health, and the *affective* arrangements through which embodied distress is rendered culturally intelligible. In doing so, we situate the use of individual mental health apps within a broader digital ecology that is mediated by therapeutic expertise and offer original contributions to the theorization of public pedagogy.
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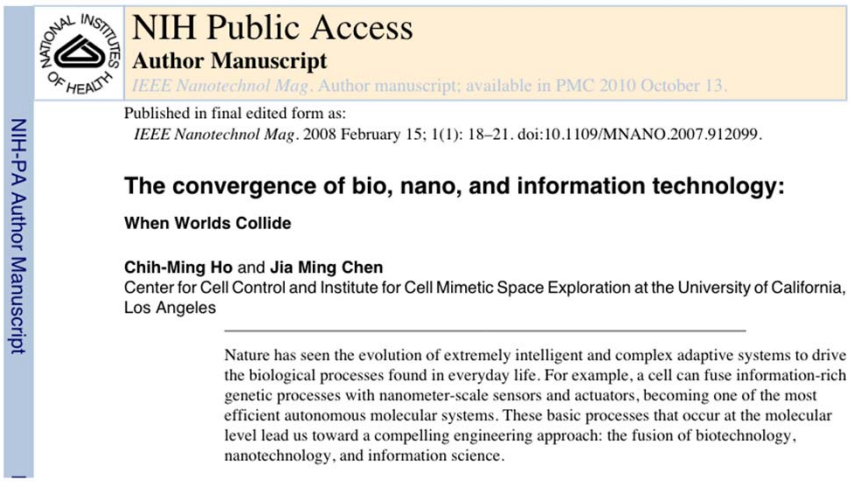

Published in final edited form as:
IEEE Nanotechnol Mag. 2008 February 15; 1(1): 18–21. doi:10.1109/MNANO.2007.912099.

The convergence of bio, nano, and information technology:

When Worlds Collide

Chih-Ming Ho and **Jia Ming Chen**
Center for Cell Control and Institute for Cell Mimetic Space Exploration at the University of California, Los Angeles

Nature has seen the evolution of extremely intelligent and complex adaptive systems to drive the biological processes found in everyday life. For example, a cell can fuse information-rich genetic processes with nanometer-scale sensors and actuators, becoming one of the most efficient autonomous molecular systems. These basic processes that occur at the molecular level lead us toward a compelling engineering approach: the fusion of biotechnology, nanotechnology, and information science.

"Singularity"

17

Rurality

Statistics Canada

The population living outside the commuting zone of centres with populations of 10,000 or more.

18

Rural Development in the Digital Age

- A systematic review of 157 papers on digital developments and rural development in advanced countries.
- two major themes: connectivity and inclusion
- In the connectivity theme, the conclusion is that there are persistent and growing differences in data infrastructure quality between urban and rural areas. Public policies to promote the availability or improvement of data infrastructure are essentially responsive, and rapidly outdated by market developments.
- For inclusion, the hampered diffusion of technologies, and the lower average levels of education and skills in rural areas have a negative impact on adoption and use. Generic policies in this field neglect specific local needs.
- The paradox is that rural communities are most in need of improved digital connectivity to compensate for their remoteness, but they are least connected and included.
- One size doesn't fit all: 'customized policies' for poorly connected and digitally excluded rural communities.

Strijker D. and Bosworth G. Rural development in the digital age: A systematic literature review on unequal ICT availability, adoption, and use in rural areas, *Journal of Rural Studies*, Vol. 54, August 2017, pp 360-371

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Historical Analogies

- Railroad, highways, telephone
- Cost differential
- Economic implications
- Widening gap between urban and rural

20

Closing the Chasm

- No `magic bullet'
- No single top-down solution is going to work in all rural locations.
- Local community solutions?
- Support from FPT?
- What can local communities do?

EB Parker, Closing the digital divide in rural America, *Telecommunications Policy*, 2000

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Bringing 5G into Rural and Low-Income Areas: Is It Feasible?

12 Author(s) Luca Chiaraviglio ; Nicola Blefari-Melazzi ; William Liu ; Jairo A. Gutierrez ; Jaap van de Beek ; Robert Bir... View All Authors

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Abstract

Document Sections

1. Introduction
2. 5G Technology Challenges
3. Our Vision
4. Economic Analysis
5. Conclusions and Future Work

Authors

Abstract:
Nowadays, at least two billion people are experiencing a complete lack of wireless cellular network coverage. These users live in rural areas and low-income regions, where network operators are not keen to invest, mainly due to high capital expenditure and operational expenditure costs, as well as the scarcity of electricity from the grid. We tackle this challenge by proposing a 5G network explicitly designed to serve rural and low-income areas. Our solution investigates the possibility of mounting remote radio heads on top of unmanned aerial vehicles, as well as large cells (LCs) to increase the coverage range. In addition, 5G nodes are powered by solar panels and batteries. Preliminary results, obtained over three representative case studies located in Italy, Cook Islands, and Zimbabwe, show that providing connectivity in rural and low-income areas by means of the proposed 5G architecture is feasible. At the same time, we also show that the monthly subscription fee paid by the users can be kept sufficiently low, that is, less than €1/month in low-income areas, and around €11/month in rural regions.

Published in: IEEE Communications Standards Magazine (Volume: 1 , Issue: 3 , SEPTEMBER 2017)

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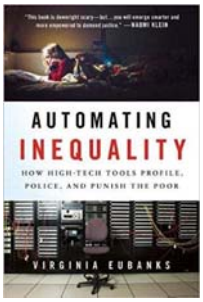


Opinion

A.I. Could Worsen Health Disparities

In a health system riddled with inequity, we risk making dangerous biases automated and invisible.

By Dhruv Khullar

The New York Times

https://www.nytimes.com/2019/01/31/opinion/ai-bias-healthcare.html

Unintended Consequences

- Poverty
- Disparity
- Literacy
- Equity

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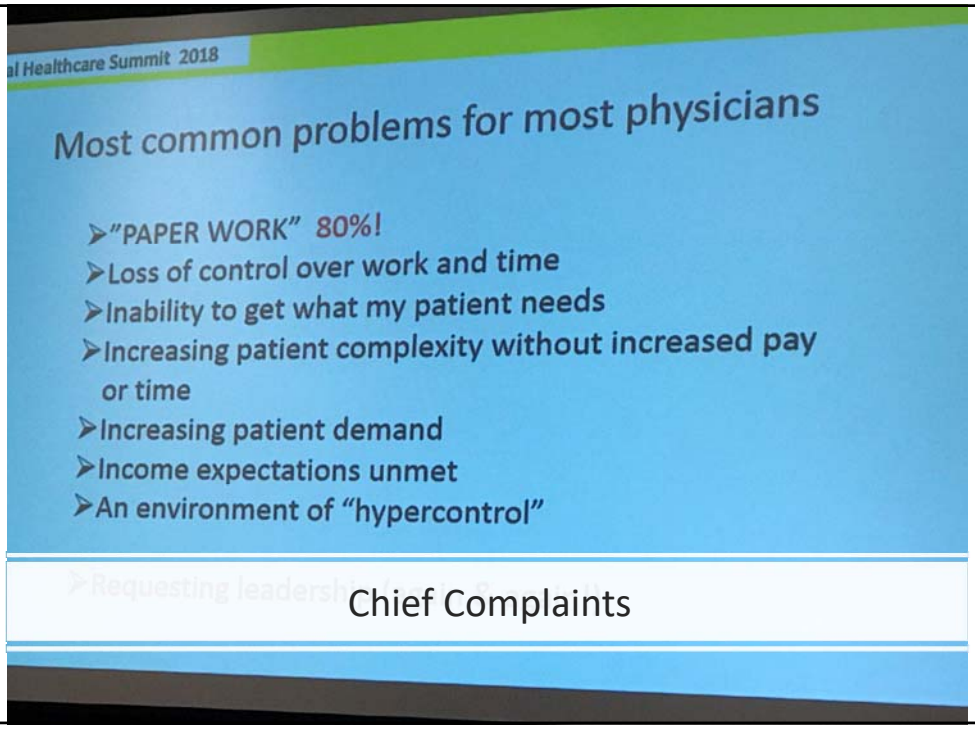

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MDtalk.ca

Canadian Health Information and Communication Technology Journal Club (CHICTJC)

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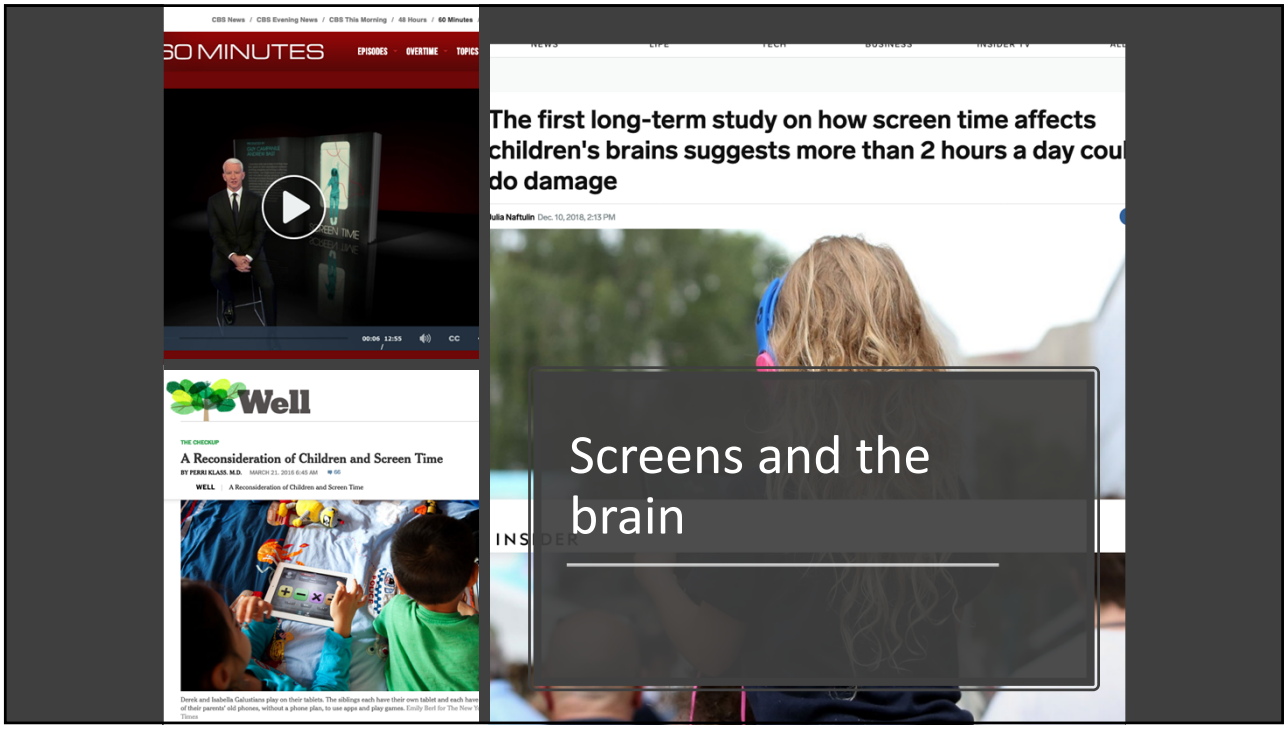

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As little as two hours of TV a day can increase the risk of weight gain, diabetes, and heart disease in **adults**. There are likely several factors to blame, including a sedentary lifestyle, less sleep, and generally **bad** eating habits when engrossed into a **screen**. Jul 19, 2018

The Effects too Much Screen Time has on Your Health | CareWell ...
https://www.carewellurgentcare.com/.../the-effects-too-much-screen-time-has-on-your-h...

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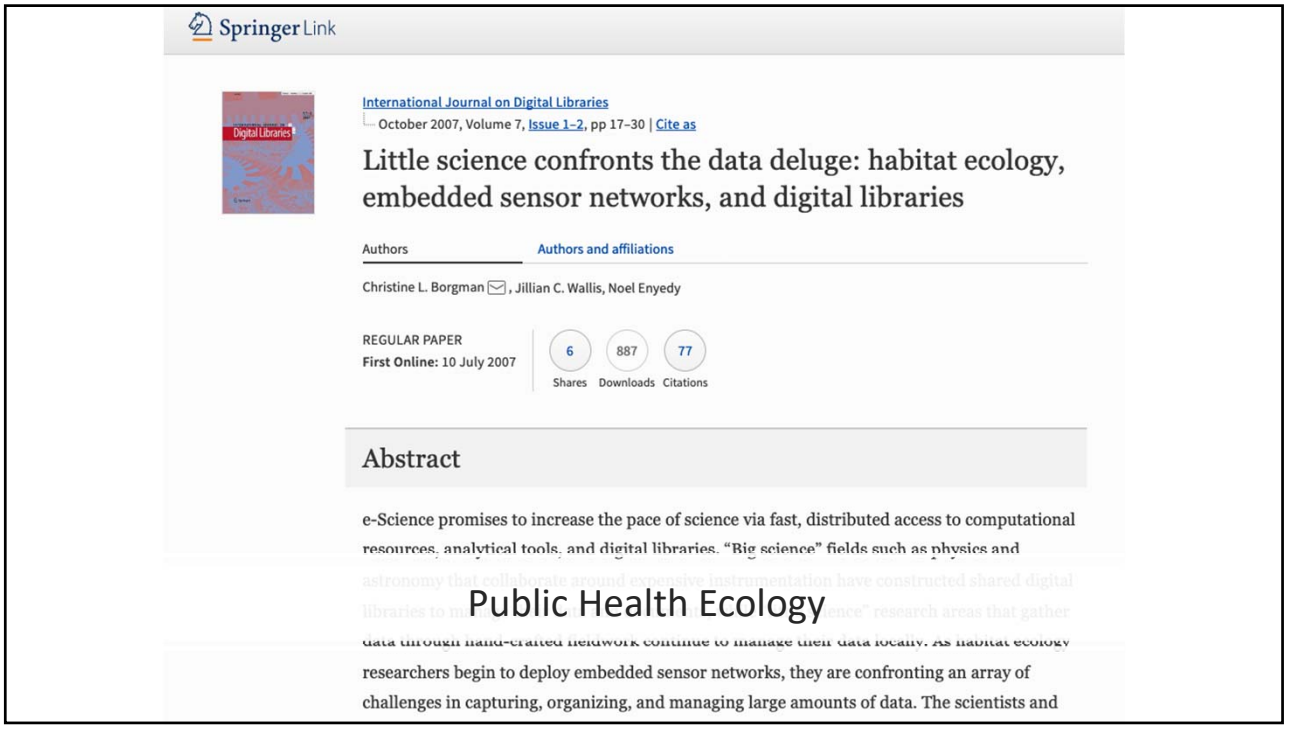

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Medicare 2.0

The Challenges & Opportunities

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CBC | MENU

news Federal budget to target Canada-wide high speed internet by 2030

Broadband investments will focus on narrowing urban-rural divide, source says

David Cochrane · CBC News · Posted: Mar 18, 2019 4:00 AM ET | Last Updated: March 18

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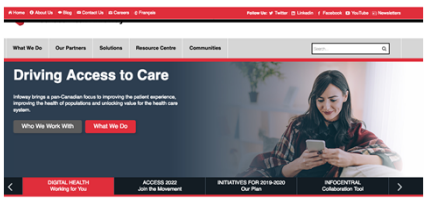
Canada Health Infoway



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