



Compassion in a Technological World

Advancing AMS' Strategic Aims

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Technology will change healthcare over the next decade in ways that we can only begin to imagine today. What it means to care for patients is being transformed, along with expectations about how, where and from whom people access the services that they need. As the pace of change accelerates the opportunities will be tremendous, but the journey ahead will be complex and no part of the healthcare sector will be left untouched.

Our readiness to embrace this transformation – and our ability to translate technology opportunities into sustainable solutions to our most pressing issues in healthcare – will be the central challenge for practitioners, providers and policymakers alike. As patients put new demands on the system, institutions will need to reinvent themselves and clinicians will need to adapt to changing roles in how they care for their patients. And with much of the momentum coming from outside traditional healthcare players, the system will need to learn to work alongside a new wave of health technology and consumer organizations that are emerging to help people manage their care.

As AMS considers its own role amidst these changes, it is redoubling its commitment to sustain the learning and practice of compassionate care, and to champion the transformative impact of technology on the 'human side' of healthcare.

With its 2018-21 Strategic Aims, AMS took the first step toward this goal, narrowing its strategic focus squarely on compassion in a technological world with three interrelated directions: promoting the *education and practice* of compassionate care, fostering *new models of compassionate care delivery*, and facilitating the *leadership* needed to realize the promise of technology while safeguarding humanistic care in fast-evolving sectors. Now AMS is embarking on a plan to bring these directions to life, setting an ambitious agenda for the coming year that will shape its investment decisions and introduce new tactics to advance innovation and enable new compassionate health systems and care models.

This paper is intended to provide an overview of some of the most transformative technologies on the horizon and briefly explore the potential impacts and issues ahead. The paper considers some of the key questions that will shape AMS' role as a catalyst for innovation, and sketches out a roadmap for AMS over the coming year to maximize its influence on transformation in the sector.

THE PROMISE OF TECHNOLOGY

Everywhere you look today there are predictions about the impact of technology on health and healthcare. Many of these predictions take on near-utopian dimensions, with the promise of moving from a 'sick care' to a 'health care' system and enabling better, faster, more accessible services at a lower cost. Governments are mobilizing to attract research and investment in the sector, while technology companies are looking to capitalize on the enormous potential wealth of new consumer applications. A new industry of innovation experts and designers are weighing in on start-up opportunities and positioning to help healthcare organizations reimagine and redesign their services.

The healthcare sector itself, at least in Canada, has been slower to respond. Although there have been significant technology advances over the past decade in medical research, patient data and workflow management, the sector has lagged other industries when it comes to innovation in how people experience healthcare services. The fundamental 'contract' between patient and provider has remained largely a 20th century construct¹, characterized by episodic interactions, where patients

visit traditional care settings when they get sick and providers are positioned as gatekeepers to information and services.

But healthcare will not miss the next wave of 'intelligent technology' that is now upon us. With the convergence of big data, machine learning and ubiquitous mobile communications², it is people and patients – not providers – that will drive transformation in the future. And in a system where patients are demanding new things from their providers, it will redefine how we think about compassionate care.

Why AI is a Game Changer in Healthcare (and everywhere else)

Although artificial Intelligence (AI) will impact every aspect of our lives, its potential in human health cannot be understated. AI gets to the very backbone of healthcare³ because it introduces the computing power to sort through enormous amounts of research, medical evidence, service and patient data to find patterns and predict outcomes – and ultimately to discover new meaning⁴. Machine learning will use algorithms to understand past experience and generalize to new situations⁵, with the capacity to continuously learn as new data becomes available⁶.

AI is a game changer in healthcare in part because of the sheer number and variety of applications that now seem on the horizon. Intelligent technologies will **accelerate medical innovation, speed to market new treatment options**, and **equip patients and providers with better information** than has ever before been available. Coupled with the power of visual and language interpretation technologies⁷, AI will help patients and providers make informed decisions about care⁸ and enable a whole suite of consumer products to help people make sense of, learn from, and take action based on data.

Faster, More Accurate Diagnosis and Personalized Treatment Options

Learning from large volumes of patient histories and medical images, AI will lead to more accurate diagnosis⁹. Computers already outperform medical professionals in diagnosis of some skin cancers¹⁰ and can read tuberculosis results with near 100 percent accuracy¹¹. Organizations like the UK's National Health Service (NHS) are now partnering with Google's DeepMind, analyzing CT and MRI scans with hopes of developing an algorithm that can accurately distinguish cancerous from healthy tissue. As these tools mature, they will lead to faster, less invasive and more personalized interventions tailored around a person's full medical history and individual needs¹².

Population Health Analytics and Management

Ubiquitous collection of data will transform how we look at population health, allowing policymakers to predict health risks¹³ and more effectively monitor everything from disease prevalence to cost management. Population-level forecasting will lead to new solutions in preventative medicine and speed our response to the spread of infection and disease¹⁴. At the provider level, next generation EMRs will learn from the vast amount of patient information collected and reduce time spent on clinical documentation. Cleveland Clinic is currently working with IBM's Watson to evolve its own EMR system to improve its diagnostic and risk analysis and has plans to pilot an AI assistant that can quickly summarize and gather insights from patient data at the bedside¹⁵.

RETHINKING WHAT IT MEANTS TO BE A PATIENT

When we think about the patient of the future we often focus on changes to existing health services, forgetting that technology is rapidly evolving social norms and values related to illness and care itself. As consumers, our interactions with healthcare providers will no longer be constrained by episodic, visit based models or bricks and mortar institutions. Our expectations about compassionate care will evolve, as patients seek out understanding and empathy, but also connectedness, responsiveness, and empowerment to take action together to improve health and address illness.



My health...

NEW & BETTER INFORMATION SOURCES



Knowing about my health and risk factors

My genome is mapped and I have access to a wealth of information about my predispositions to disease and how to mitigate my risks

PERVASIVE MONITORING & EARLY DETECTION



Continuous feedback through my devices

A host of apps passively monitor my sleep, exercise, stress, and risk factors, providing helpful 'nudges' to adjust my behaviours

PEER COMMUNITIES & AVATARS



Wellbeing through connected living

Mindfulness apps help me manage my stress and a chat-bot checks in on me regularly about my mental health; peer communities help me feel connected and up to date

CLINICIANS AS COACHES AND PARTNERS



Care everywhere

Consumer companies and online communities provide the first points of contact if I have a health issue or question; my doctor is no longer the gatekeeper to information and services

If I get sick...

DIAGNOSIS & TREATMENT OPTIONS

Better, faster, more accessible treatment options

Computers diagnose my condition and recommend treatment options based on my individual history and diagnosis



HOSPITAL 2.0, UNTETHERED

My healthcare, my home

I use my tablet to connect regularly with a clinician and have a daily check in about my care plan with a virtual nurse



CONNECTED COMMUNITIES

Advocates and coaches

I have a variety of self care options to manage my chronic conditions and get support from a community that understands what I'm going through



MAINTAINING INDEPENDENCE AS I GET OLDER

Robot assistants and the augmented home

I have a virtual companion to help me stay safe at home and I am connected to a caregiver network in my community



Your Fitbit is Just the Beginning

If 20th century healthcare was about institutions, 21st century healthcare will be about information and people. People will seek out guidance from new sources of authority and **healthcare professionals will compete with the 'wisdom of the crowd'** as a source for advice and direction.

People will have **readily available, easy, less expensive access** to healthcare solutions and services, using simple apps on their devices to routinely monitor everything from their blood pressure to their mental health. With this ease of access will come **new norms around health information and communication**, fundamentally changing the relationship between patient and provider.

Many of the biggest players in healthcare of the future will come from outside of the sector, bringing with them new ideas about person-centred care models and service delivery. These are not the IT giants which already have a foothold in healthcare, but the major consumer players – Google, Amazon, or Apple – with a depth of consumer knowledge, access to big data, and formidable infrastructure capabilities¹⁶.

Consumer-led Services

A new wellness industry is fast emerging to capitalize on opportunities in remote monitoring, health information and chronic disease management that have been made possible by ubiquitous devices. One of the biggest impacts of these personalized tools will be on how we think about primary care. Organizations like Babylon Health and Canadian-based Maple.ca already allow patients to access advice from a physician in minutes on their smartphone, offering a viable alternative to in-person visits for many routine needs. The NHS recently launched a trial of Babylon's 'GP at Hand' service to more than a million Londoners as an alternative to their non-emergency phone service.

Avatars, Advocates and Social Networks

The future of healthcare is social, but your healthcare interactions in the future may not be just with humans. Robots will help seniors live more independently¹⁷ and virtual care coaches will assist those living with chronic disease to manage their conditions. Chatbots will be deployed to do everything from triaging patients in the ER¹⁸ to offering Cognitive Behavior Therapy to those with mild to moderate depression. But this is only the beginning. Algorithms are being developed to detect emotions and cognitive states¹⁹ with the potential to introduce much more sophisticated tools for those suffering from mental health conditions or requiring social supports.

The Human Side of Healthcare Takes on a Whole New Meaning

The tremendous promise of these technologies will come with a new landscape of risks and challenges. We will have the power to dramatically improve access, but also create the risk that new populations are excluded as a result of **digital or health literacy gaps**²⁰. Connectivity and digital access will become an increasing factor among the social determinants of health²¹, and uneven adoption of technology may amplify traditional determinants with an impact on economic opportunity, community and social cohesion.

For deep-rooted health inequities that have seemed unshakable in the past, digital health will offer both great opportunity and great risk. Patients will have **more control over their care in the face of personal or systemic biases**. But if machines offer the potential to remove human bias from decision-making²², they also run the risk of **perpetuating or 'hard wiring' existing bias**. AI is only as good as the data that informs it, and a system that draws from clinical trial data heavily skewed to white males, for example, may perpetuate inequities and lead to poor patient outcomes in certain populations.

Ethical issues related to personalized medicine and machine-aided clinical decision-making²³ will raise a **myriad of new policy and regulatory considerations**²⁴, from data quality to privacy. How will consumer-driven services evolve alongside a universal healthcare model? Where will costs shift in the system, and who will assume them? Who will take responsibility for quality and oversight, or respond to issues of patient dissatisfaction, medical errors, or unintended consequences? An early bellwether may come from a recent move by Amazon in the US, which is partnering to establish a new not-for-profit company aimed at overhauling the healthcare of their workers, 'reducing healthcare's burden on the economy' while improving outcomes for employees and their families²⁵.

A systematic and rigorous commitment to transparency²⁶ offers an important safeguard to prevent AI from becoming a black box of decision-making²⁷ or proliferating misinformation or power imbalances. In an age of crowdsourcing and open-source learning, ensuring visibility into the parameters which underlie AI will enable broad assessment of machine-learning models and trace back the decisions informing an algorithm²⁸. New frameworks will be needed to address equity and ethical questions, and policy makers will need to continue to encourage debate on both the opportunities and the perils.

Our expectations about compassionate care will evolve, as patients to seek out connectedness, responsiveness, and empathy in their care services and demand greater involvement in strategies to improve health and address illness. As healthcare professionals increasingly work alongside machines, technology will give providers better options to develop their empathy skills²⁹ and offset administrative work to free up time to care.

TRANSFORMING OUR DELIVERY SYSTEM

Enabling Compassionate Care Models

The magnitude of these technology advancements, and the speed at which they are arriving, will challenge every organization in healthcare to rethink its role and redefine its services to meet the needs of tomorrow's patients. Providers and **healthcare professionals will need to learn to work alongside digital services**³⁰ and adapt to new roles. As a system we will need to learn to **harness AI and related technologies to address the profound challenges facing healthcare** today³¹ in access, equity and sustainability.

A steady stream of technology-enabled innovations in service delivery and care model design³² will be critical to ensure that both patients and health professionals realize the benefits of technology-enabled, human-centred care. Compassionate care is not just about relationships and behaviours, but also about how we *deliver* care and the system that we put in place to support it.

A New Relationship between Patients and their Care Teams

Visit-based, episodic care models are likely to give way to more continuous, geographically accessible and proactive³³ services that connect people with health professionals over multiple devices and in multiple care settings. Sensors and monitoring devices will collect information about a patient's physiology, environment and activities, connecting remotely to providers that are looking for warning signs and anomalies³⁴. Patients will have more knowledge and more control over their information, with access to more consistent care where informal caregivers are actively involved³⁵.

New scopes of practice will follow new care models. While machines may increasingly augment or take the place of providers in traditional areas of healthcare like diagnosis and treatment, physicians and clinical professionals will continue to play a central role for patients to manage their illness. The 'art of caring' will remain a critical function³⁶, regardless of where that care is delivered – at home, or through a remote device.

Your Hospital Your Home

If care settings of the future are more likely to be virtual, dispersed and localized³⁷, what function will hospitals play in this technological future? Just as the roles and practice of healthcare will be transformed, so too will its physical infrastructure. Hospitals will no longer be associated with institutions or buildings, but with the services that they provide. Some hospitals and health systems may reinvent themselves as emergency response or critical care centres catering to those with the most complex needs, while others may evolve into community hubs or 'clinical decision units'³⁸ offering diverse outpatient services in the convenience of a single location.

Patients and caregivers will have more say in how tomorrow's health services are delivered – as consumers making choices about how they get care, through social media, and through peer and advocacy groups. Peer-based communities like #WeAreNotWaiting, a diabetes advocacy movement, has already begun to generate their own apps and platforms to help people effectively use devices and health data to improve outcomes³⁹.

New Care Models for Chronic Disease Management

As we move away from visit-based, episodic care, we also have the potential to deliver significant improvements in how we manage chronic disease⁴⁰. Chronic disease accounts for one of the greatest costs in healthcare and contributes to burn out and workload issues for clinicians that are often ill equipped to support people with prevention strategies or address the complexity of the broader determinants of health⁴¹. Assisted by machine learning, clinicians have better access to the latest practice guidelines⁴², contributing to higher rates of adherence to evidence-based care pathways for those with chronic or complex conditions.

Better information and self-care tools, together with the support of an integrated and informed care team, will foster more holistic care models that put a greater emphasis on prevention and upstream interventions. More easily factoring in a range of lifestyle and environmental factors, we have the potential to increase medication compliance and adherence to self-care routines. Even simple prompts, monitors and alerts can be powerful supports when coupled with remote telemedicine access to clinical professionals.

EDUCATION

Enabling Tomorrow's Healthcare Professionals

AI will have an impact on the labour force in every industry, and healthcare will be no exception⁴³. As in other industries where machines and robots will compete for jobs, humans are likely to continue to lead in roles that require more creativity, relationship building or emotional response⁴⁴. New delivery models will redefine our understanding of the role of health professionals and introduce new 'ground

rules¹ for medical or clinical practice: serving patients in many locations; working with an expanded and more diverse care team and making sense of large amounts of data from multiple sources⁴⁵.

What will it look like to be a healthcare professional in 2030? What roles and skills will we need? The changing nature of work, and the introduction of new roles and scopes of practice, will challenge leaders and educators to ready our healthcare professionals for tomorrow's patients.

Selecting and Educating Health Professionals of the Future

Educators will need to leave behind 20th century medical models and institution-based delivery systems⁴⁶ and train for a technology landscape that is only now emerging. Today's students were raised in a connected world and will **demand a new level of digital sophistication** – in their schooling as well as in the workplace. Substantial changes will also be needed to how we support continuous learning of healthcare professionals⁴⁷ already in the system. Promoting digital literacy and awareness will only be the first step on the road to transformation.

Advocates for reform in medical education⁴⁸ are calling for a new emphasis on **communication, teamwork**, and the ability to more effectively integrate and use information from diverse sources. Education will need to build **competencies to synthesize and interpret data with a focus on holistic care**, prevention and managing chronic disease. **Empathy** and the **ability to communicate meaning from data** will become essential skills for those that work in healthcare⁴⁹, raising new challenges for educators in how to teach and assess it⁵⁰, and how to leverage these capabilities to redefine the roles that health professionals will play in the system.

The need for physicians and clinicians to embrace a new culture of caring will also have significant implications for continuing education and reskilling workers. Traditional norms and biases of medical practice toward autonomous and hierarchical systems will need to be broken down and existing healthcare professionals will need extensive support to master digital technologies and build their competence in effectively integrating, using and communicating information⁵¹.

Converging Disciplines and Perspectives

Interdisciplinary collaboration will be an important driver to fuel innovation. Tomorrow's healthcare students and professionals will work alongside technologists, designers, engineers, and business professionals⁵². In a bold move toward integration, Jefferson University and Philadelphia University recently negotiated a merger that will bring together a distinguished medical school with a leading design and arts centre. Their goal: to shake up medical education and infuse it with much needed influencers of creativity and design⁵³.

Rethinking How We Teach and Learn

Technology will also transform how we teach medicine and clinical care, and can be an important lever to meet the challenges of medical education⁵⁴. Technology will make possible new learning environments that are more immersive and personalized to a student's individual learning needs. Simulation and integrated learning tools will supplant classroom-based lectures and students will have access to a range of supports including chatbot teaching assistants, personalized digital tutors.

Innovation in education will also come from students and patients themselves. One indication of how medical education is self-organizing is Human Dx (Human Diagnosis Project), an online community that is crowdsourcing collective medical knowledge. More than 7000 clinicians are now using Human Dx to share clinical insights and intelligence. The Project has huge education implications, publishing

a daily collection of teaching scenarios based on real life situations that is subscribed to by approximately 40% of internal medicine residency programs in the US⁵⁵.

LEADERSHIP

Compassionate Leadership to Enable Innovation

In an environment of radically changing needs and expectations, bold leadership has never been so critical. Digital technology will be destabilizing, breaking down old, familiar models and institutions, requiring new relationships and fundamentally changing the nature of our institutions and our work. Innovation will be essential in all parts of the system to **redesign patient care, transform care settings, build new partnerships and rethink how we *incent and facilitate new behaviours***⁵⁶. Governors will play an important role, setting the vision for transformation and ensuring continued vigilance on issues of privacy, access and equity⁵⁷.

Leaders will need to quickly **demonstrate benefits for both healthcare professionals and their patients**, enabling early adopters while at the same time supporting others to **build their digital competence**. Previous experience with slow and cumbersome technology implementation has created many skeptics and resisters, and the poor user experience of existing technologies will raise questions about labour and workload issues if new systems are seen as an additional layer of administration.

Creating a Culture of Innovation

Empowering teams to innovate, achieving clinical ownership and fostering a continuous learning culture will require new styles of leadership that puts a premium on action and solutions, and champions 'the art of caring'. The Kings Fund and the NHS point to the critical importance of 'compassionate leadership' as essential to create the conditions for innovation – positive inclusion and participation, cross boundary working, support and autonomy, and an inspiring vision and strategy⁵⁸. Compassion and empathy motivate staff and create the 'psychological safety' needed to share and test new ideas and take risks within a supportive environment⁵⁹.

Culture change starts at the top, and leaders too will need new networks of collaboration that promote creativity and innovation. Recent AMS leadership discussions have highlighted the importance of developing a community of leaders, creating connections across traditional silos, and sharing valuable insights on innovations that are proving effective, and how organizations are implementing change.

Inviting Newcomers to the Table

The scope and diversity of new technologies will touch every aspect of health, blurring the boundaries between healthcare and social care and encouraging a new generation of public-private partnerships to redesign care models and bring to market new products, procedures and treatment options. Scale is an important factor in AI because of its dependence on large stores of data, making these partnerships all the more critical⁶⁰ – no one organization or sector holds the key to transformation.

New partnerships will be struck between the research institutions, consumer companies and public sector providers to prototype and test solutions and accelerate adoption of those that demonstrate the most promise. We have seen the NHS team up with DeepMind and the Cleveland Clinic enlist IBM's Watson to develop new care models and diagnostics. Closer to home, we are also seeing

hospitals engaging research partners as a way to advance practical applications of technology, with organizations like the Machine Intelligence in Medicine Lab (St. Michael's Hospital), Waterloo's Artificial Intelligence Institute, and Hamilton's new Centre for Applied Artificial Intelligence in Health Care. Across Canada, the Pan-Canadian AI strategy is funding three centres of excellence in AI research and innovation— in Edmonton, Montreal and in Toronto⁶¹ with the Vector Institute.

BRIDGING THE FUTURE

Reconciling the Vision with our Current Reality

Amidst all the optimism and enthusiasm about AI and digital health, our daily experience of working in healthcare can feel like a sharp reality check. An aging population is straining an already taxed system, and providers have struggled to meet changing demands on their services in the face of growing resource constraints. This surge in technology advancements comes at a time when dissatisfaction and frustration with current models of healthcare delivery are high, both among the public and with many healthcare professionals, who have often seen the complexity and pressures of their roles continue to grow.

AMS' recent consultations in the sector have highlighted frustrations with the pace of change. Transformation efforts over the past decade have primarily focused on efficiency – reducing error rates and variability, while improving workflow and patient hand offs. Technology investments have largely been in aid of efficiency and fiscal management, rather than new digital services that might more directly benefit patients or practitioners. Technology adoption has been slow and arduous, further complicated by a lack of interoperability across our many legacy data systems. In a risk-averse culture, old norms often get in the way of even modest innovation⁶² and our policy environment and funding models have not supported or incited modernization⁶³.

By changing the economics of service delivery, AI and digital health may help to erode old barriers and friction points⁶⁴, with the potential to deliver significant cost savings in both productivity gains and preventative care⁶⁵. The coming wave of technology will allow us to focus more on empowering patients and freeing time to care, and new non-traditional players in the system will bring a new outlook and energy to tackle longstanding challenges in the sector.

Dissatisfaction with the current healthcare system among both patients and practitioners has led to a new openness to technology⁶⁶ and early surveys suggest that Canadians will be receptive to AI and machine learning and welcome new innovations that prevent illness and lead to better care⁶⁷. While transformation will be complex and often difficult, healthcare leaders will have an opportunity to capitalize on the current excitement about technology, learning from innovations in other sectors and opening the door for faster, more iterative and more creative approaches.

AMS AS A CATALYST FOR CHANGE

Proposed Activities for 2019

In a world where humans will routinely work alongside machines, the role of compassionate care in a technological world has become a growing area of focus for healthcare innovators. Our notions of compassion in healthcare have largely been shaped by existing delivery models and have often been constrained by those realities. But perspectives are changing: the shift in healthcare roles toward creative, caring work, and the proliferation of new care models and delivery systems will open up whole new ways of thinking about compassionate care.

AMS' role as a catalyst for this transformation has never been more important. As a healthcare system we will need to expand and adapt our understanding of compassionate care to include not only humanistic behaviours in healthcare practice, but also more human-centred technology and services. We will need to foster culture change in the sector and support a new generation of innovators and leaders to steward the changes ahead.

2019 Objectives

In developing the organization's strategic directions, AMS heard clearly from health leaders and partners about the need to better understand current views and perspectives on innovation and develop a new 'frame' for thinking about compassionate care in a technological world. This work, along with the ongoing Leadership Salon series, is shedding light on the need for a new aspirational point of view with a greater focus on enabling health system solutions that goes beyond healthcare professionals in their capacity to deliver compassionate care.

In 2019, AMS will lead a series of collaborative initiatives to put a spotlight on the impact of emerging technologies, and engage dialogue across a diverse network of research, healthcare and business partners about the opportunities to innovate human-centred care delivery. Our focus in 2019 will be to raise awareness and build momentum for compassionate care in a technological world, setting in motion a new mindset and culture shift that embraces and enables innovation.

AMS plays a unique role in the system, acting as a 'neutral broker' between diverse interests in healthcare and creating opportunities for frank dialogue about where the system is headed, and how to manage the challenges and roadblocks along the way. With a focus on collaboration and network building we have the opportunity to stimulate discussion, create opportunities for debate about where the system is going; hear from leaders and diverse perspectives across sectors.

KEY ACTIONS FOR 2019

AMS will continue to raise awareness, motivate and build commitment for the delivery of compassionate care in a technological world among clinicians, healthcare leaders, political leaders and the public. AMS will champion a new vision for technology-enabled, compassionate healthcare and harness the resources of its partners to build momentum around transformation.

1 EDUCATING TOMORROW'S HEALTHCARE PROFESSIONALS

Objectives:

To explore the impacts and opportunities afforded by new technologies in clinical education and lifelong learning, and to propose recommendations for further collaboration to ensure that healthcare professionals are ready to meet the needs of tomorrow's patients.

Symposium Series: Building Momentum through Dialogue

A Symposium Series will take a deeper look at key topics in healthcare education, practice and delivery systems to identify themes, shared goals and opportunities for joint action. Each will be co-sponsored by AMS and a partner organization(s), inviting leading thinkers and 'disrupters' to participate in panel discussions with as many as 100 participants from a cross-section of stakeholders.

Papers will be commissioned from leading thinkers in their fields to raise awareness and inform discussions with key stakeholders for prior to each Symposium. Proceedings will be published to summarize the issues discussed and propose recommendations for AMS and its sector partners. Focus will be on practical opportunities for joint leadership that cut across sectors and perspectives and creating a shared roadmap for collaboration.

2 ENABLING COMPASSIONATE CARE DELIVERY MODELS

Objectives:

To improve our understanding of how technology will transform care and explore partnerships to develop and demonstrate new and innovative delivery models.

Enabling Compassionate Delivery Systems:

With a greater focus on applying technology innovations to solve clinical service and health related problems, AMS will explore new collaborations with community health, research and private sector partners. AMS will explore opportunities to demonstrate new and innovative delivery models that will enable compassionate care.

3 LEADERSHIP TO DELIVER ON THE PROMISE OF TECHNOLOGY

Objectives:

To foster collaborative leadership to promote and enable new mindsets and new care models. Championing innovation and supporting pathways for the next generation of healthcare leaders.

Enabling Collaborative Leadership for Transformation

AMS and Health Quality Ontario (HQP) partnered to host a series of Leadership Salons throughout 2018 to explore leadership challenges and opportunities in a fast-changing technology landscape and create a supportive network for emerging and existing healthcare leaders to draw upon. As the Symposium Series proposes recommendations and next steps, AMS will work with its partners to establish an ongoing table with a goal to cultivate a network of innovative healthcare leaders, set joint priorities and support them through implementation.

¹ The Future of Growth: AI Comes of Age, J Wallis, D. Santiago, Harvard Business Review, 2018

² Ibid.

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- 3 The Future of Growth: AI Comes of Age, J Wallis, D. Santiago, Harvard Business Review, 2018
 - 4 Artificial Intelligence Transforms the Future of Medicine, K. Krisberg, AAMC News, 2017
 - 5 The Future of Artificial Intelligence, MaRS, 2018
 - 6 Pan-Canadian AI Strategy, Canadian Institute for Advanced Research (CIFAR), E. Strome, 2017
 - 7 Ibid.
 - 8 Digital Diagnosis, The Future of Artificial Intelligence, MaRS, 2018
 - 9 Artificial Intelligence: The Next Digital Frontier? McKinsey Global Institute, 2017
 - 10 Digital Diagnosis, The Future of Artificial Intelligence, MaRS, 2017
 - 11 The Promise of Health Tech, How Digital Innovators are Transforming the NHS, N. Blackwood, PUBLIC, 2018
 - 12 Ibid.
 - 13 Why the evolving healthcare services and technology market matters, McKinsey & Company, 2018
 - 14 Artificial Intelligence: The Next Digital Frontier? McKinsey Global Institute, 2017
 - 15 Cleveland Clinic Explores Personalized Patient Care, Medium, 2017
 - 16 Top 10 Disruptive Companies to watch in the Health Space, Health IT Analytics, April 2018
 - 17 Seven visions of the future of healthcare, Telegraph, www.telegraph.co.uk/wellbeing/future-health/healthcare-predictions/
 - 18 Artificial Intelligence: The Next Digital Frontier? McKinsey Global Institute, 2017
 - 19 We Need Computers with Empathy, MIT Technology Review, R. el Kaliouby, 2017
 - 20 Ethics and AI for Good Health (Symposium Background), Joint Centre for Bioethics/CIHR, 2018
 - 21 Social Health IT, Jane Sarasohn-Kahn, HIMSS Conference, 2017
 - 22 AI will improve healthcare and cut costs – if we get these 4 things right, F. Leibert, World Economic Forum, 2018
 - 23 AI will improve healthcare and cut costs – if we get these 4 things right, F. Leibert, World Economic Forum, 2018
 - 24 How far should we let AI go? J. Lorinc, The Future of Artificial Intelligence, MaRS, 2017
 - 25 Amazon, Berkshire Hathaway and JPMorgan Name C.E.O. for Health Initiative, New York Times, 2018
 - 26 AI Now 2017 Report, A. Campolo, M. Sanfilippo, M. Whittaker, K. Crawford, 2017
 - 27 A Revolution in healthcare is coming, Economist, 2018
 - 28 The Future of Artificial Intelligence, MaRS, 2018
 - 29 Made Not Born: Technology Can Teach Healthcare Professionals Empathy, J. Thew, Health Standards, 2012
 - 30 The Future of Medicine, Technology and the Human Touch, B. Mesko, 2014
 - 31 How Technology-enabled Care Models Can Help Fix Healthcare's Greatest Challenges, J. Haughom, Health Catalyst, 2018
 - 32 Ibid.
 - 33 Ibid.
 - 34 The Promise of Health Tech, How Digital Innovators are Transforming the NHS, N. Blackwood, PUBLIC, 2018
 - 35 How Technology-enabled Care Models Can Help Fix Healthcare's Greatest Challenges, J. Haughom, Health Catalyst, 2018
 - 36 Anticipating and Training the Physician of the Future: The Importance of Caring in an Age of Artificial Intelligence, J. Clairborne, Academic Medicine, 2018
 - 37 The Future of Health Care, Economist, 2018
 - 38 Ibid.
 - 39 Diabetics are Hacking their Health, Tech Republic, 2018
 - 40 The Future of Population Health Management: Artificial Intelligence as a Cost-Effective Behavior Change and Chronic Disease Prevention and Management Solution, N. Stein, MedCrave, 2017
 - 41 Artificial Intelligence Promises a New Paradigm for Healthcare, HealthIT Analytics, J. Bresnick, 2018
 - 42 How AI Can Help Health Plans Manage Chronic Conditions, L. Reisman, Managed Healthcare Executive, 2018
 - 43 The Future of Medicine, Technology and the Human Touch, B. Mesko, 2014
 - 44 The Future of Growth: AI Comes of Age, J Wallis, D. Santiago, Harvard Business Review, 2018
 - 45 Medical Education Must Move from the Information Age to the Age of Artificial Intelligence, S. Wartman, Academic Medicine, 2016
 - 46 Medical Education Must Move from the Information Age to the Age of AI, S. Wartman, Academic Medicine, 2016
 - 47 Artificial Intelligence: Healthcare's New Nervous System, Accenture, 2017
 - 48 Ibid.
 - 49 Culturing the Empathetic Health Professional: Challenges and Opportunities, D. Cundell, Healthcare Transformation, 2017
 - 50 Ibid.
 - 51 Medical Education Must Move from the Information Age to the Age of AI, S. Wartman, Academic Medicine, 2016
 - 52 This is Not Your Typical Merger: Medicine Meets the Arts, Design and Business, B. Lee, Forbes, 2017
 - 53 Fixing Healthcare: Understanding the (Big) Job We Have to Do, S. Klasko, Healthcare Transformation, 2017
 - 54 Framework for Educating Health Professionals to Address the Social Determinants of Health, NCBI, www.ncbi.nlm.nih.gov/books/NBK395983/

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- ⁵⁵ Artificial Intelligence Transforms the Future of Medicine, K. Krisberg, AAMC News, 2017
- ⁵⁶ The Importance of Leadership to Organizational Success, C. Rihal, New England Journal of Medicine, 2017
- ⁵⁷ Ethics and AI for Good Health (Symposium Backgrounder), Joint Centre for Bioethics/CIHR, 2018
- ⁵⁸ Caring to Change, M. West, R. Eckert, B. Collins, R. Chowla, Kings Fund, 2017
- ⁵⁹ Ibid.
- ⁶⁰ Artificial Intelligence: The Next Digital Frontier? McKinsey Global Institute, 2017
- ⁶¹ Pan-Canadian AI Strategy, Canadian Institute for Advanced Research (CIFAR), E. Strome, 2017
- ⁶² The Promise of Health Tech, How Digital Innovators are Transforming the NHS, N. Blackwood, PUBLIC, 2018
- ⁶³ Modernizing Canada's Healthcare System through the Virtualization of Services, S. Bhatia, W. Falk, C.D. Howe Institute E-Brief, 2018
- ⁶⁴ Artificial Intelligence: Healthcare's New Nervous System, Accenture, 2017
- ⁶⁵ Artificial Intelligence: The Next Digital Frontier? McKinsey Global Institute, 2017
- ⁶⁶ AI for Health and Healthcare, Agency for Healthcare Research and Quality (AHRQ)/ JASON Report, 2017
- ⁶⁷ Shaping the Future of Health and Medicine, Canadian Medical Association, 2018