

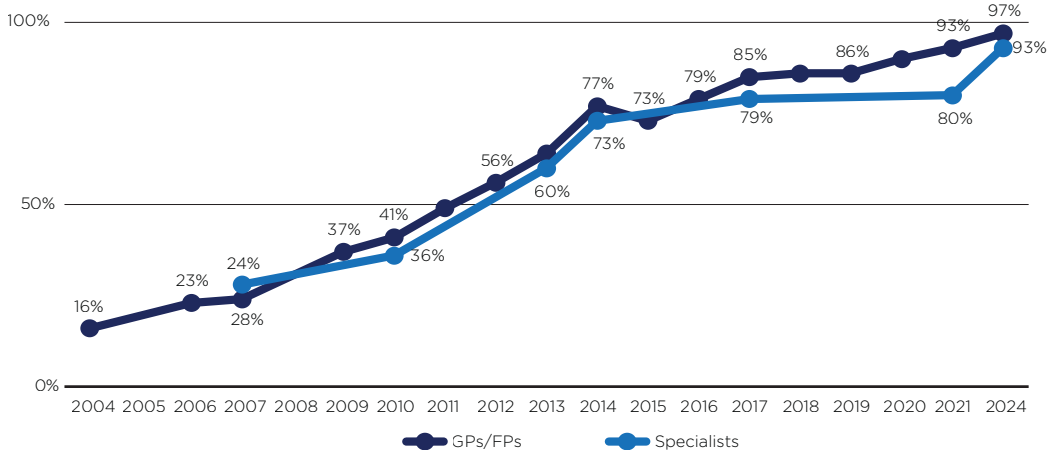
Electronic Access to and Exchange of Patient Information Among Physicians Practising in Canada

Accès électronique aux renseignements sur les patients et échange de ces renseignements entre médecins exerçant au Canada

WALDO BEAUSÉJOUR, BOBBY GHEORGHU, OWEN ADAMS, RASHAAD BHYAT AND SIMON HAGENS

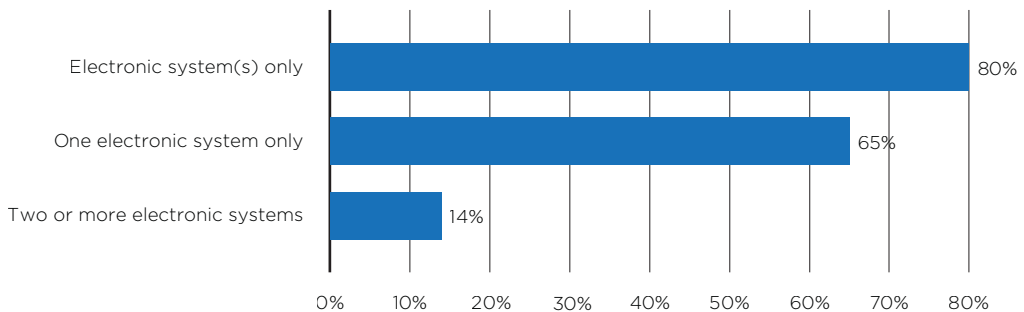
Appendix 1

FIGURE 1. Additional results from the 2024 National Survey of Canadian Physicians



Source: Canada Health Infoway n.d.

FIGURE 2. Electronic patient documentation used by Canadian physicians, % of physicians



Source: Canada Health Infoway 2024.

FIGURE 3. Physicians' current barriers/challenges preventing access, use or getting full value from digital health technology, % of physicians

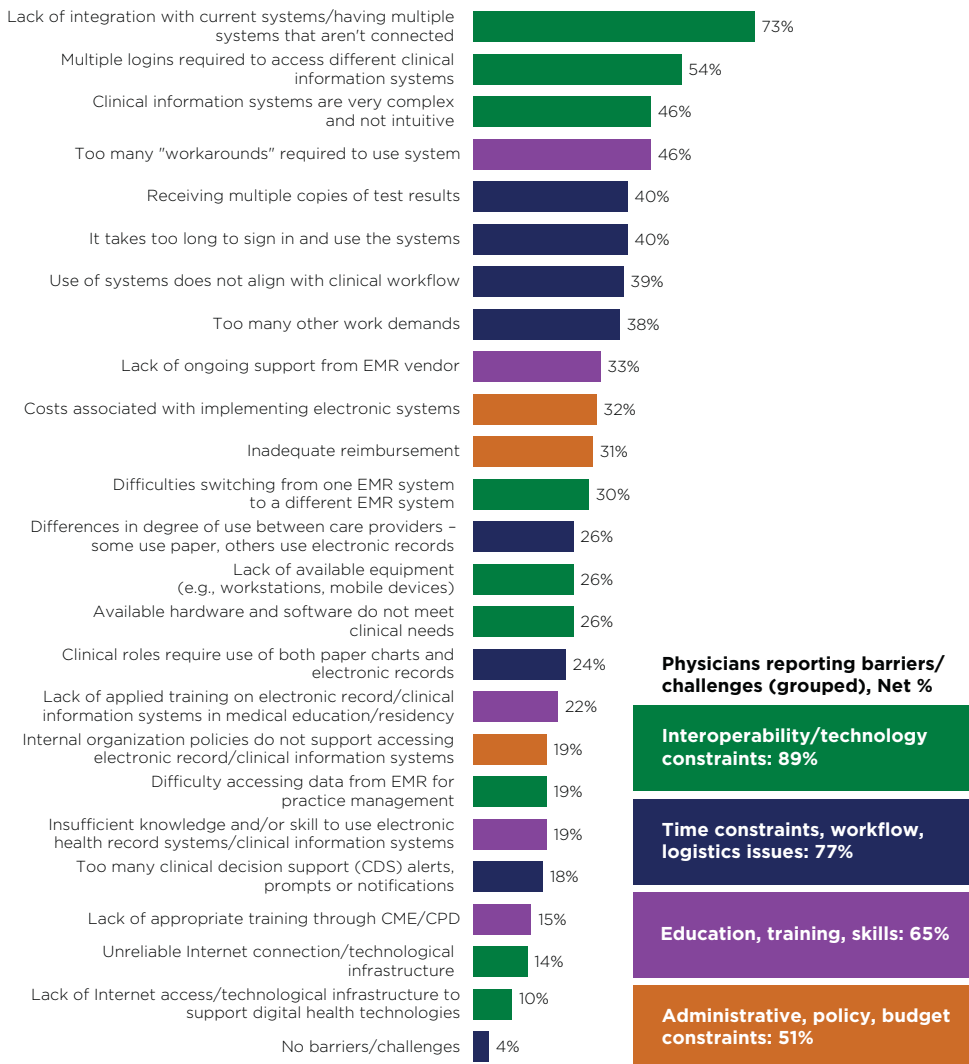
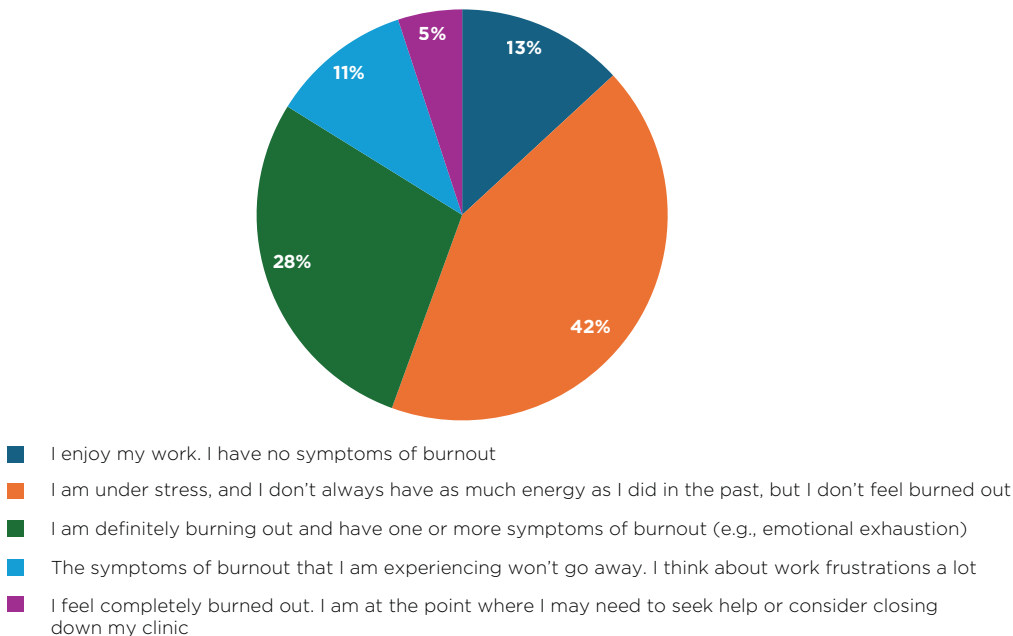


FIGURE 4. Physicians' reported current level of burnout in 2024 (based on their definition of burnout), % of physicians



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Appendix 2

Survey Questionnaire

2024 NATIONAL SURVEY OF CANADIAN PHYSICIANS: DIGITAL HEALTH TECHNOLOGIES IN PRACTICE

SCREENER

1. Are you:

- A licensed physician in full or part-time practice, a locum or on a leave of absence?
- A resident physician (trainee) in an accredited Canadian medical residency program?
- A medical student enrolled in an accredited Canadian medical school (If selected, then disqualified: "Thank you for your interest in our research, however, this survey was intended for licensed physicians or residents in practice. Questions may not be appropriate for medical students or physicians who are completely retired.")?
- Completely retired physician (If selected, then disqualified: "Thank you for your interest in our research, however, this survey was intended for licensed physicians or residents in practice. Questions may not be appropriate for medical students or physicians who are completely retired.")?

Please note: Select one only.

2. Do you provide direct patient care?

- Yes
- No (*If selected, then disqualified: "Thank you for your interest in our research, however, this survey was intended for physicians or residents currently providing patient care."*)

3. Select the category which best describes the MAIN setting where you work (where you spend the most time with patients). Please select only one.

- Community (e.g., office-based, walk-in, long-term care/personal care home, hospice/palliative, other)
- Hospital (e.g., emergency department/emergency room, intensive care unit, in-patient/outpatient setting)
- Virtual (e.g., home-based, not serving a specific geographic community)

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4. Gender:

- Woman
- Man
- I do not identify within the binary system. I identify as (please specify if you wish): _____
(Please note: Optional to type in text)
- I prefer not to specify

Please note: Select one only.

5. Year of birth: _____ (RANGE: 1935–2000)

or

- I prefer not to answer

6. Would you describe yourself as a:

- Family physician or family resident
- Medical specialist or medical specialty resident
- Surgical specialist or surgical specialty resident

Please note: Select one only.

7. In which Canadian jurisdiction do you primarily practice?

Select only one.

- British Columbia
- Alberta
- Saskatchewan
- Manitoba
- Ontario
- Quebec
- New Brunswick
- Nova Scotia
- Prince Edward Island
- Newfoundland & Labrador
- Northwest Territories
- Yukon
- Nunavut

8. In which other Canadian jurisdiction(s) do you practice?

Select all that apply.

- British Columbia
- Alberta
- Saskatchewan
- Manitoba
- Ontario
- Quebec
- New Brunswick
- Nova Scotia
- Prince Edward Island
- Newfoundland & Labrador
- Northwest Territories
- Yukon
- Nunavut
- I do not practice in any other Canadian jurisdictions (mutually exclusive)

9. Which of the following best describes the community served by your MAIN area of practice? Select only one.

- Rural (less than 1,000 people)
- Small population centre (1,000–29,999 people)
- Medium population centre (30,000–99,999 people)
- Large population centre (100,000–999,999 people)
- Urban centre (1 million people and over)
- I don't know/unsure

USE OF DIGITAL HEALTH TECHNOLOGIES (DO NOT SHOW TITLE)

Please estimate what proportion of your patient visits are currently delivered through the following means (if you do not provide care by a given means, enter 0)

(Please note: Must add up to 100%. Keep running total. If code 99 = 0, do not force text)

1	In-person visits	_____ %
2	Telephone	_____ %
3	Secure email/secure messaging	_____ %
4	Videoconferencing/video visit	_____ %
96	Other virtual care method – please specify: _____	_____ %
		= 100%

Do you use electronic medical records (EMRs) or electronic health records (EHRs) to enter and retrieve clinical patient notes in the care of your patients?

- Yes
- No (SKIP to Q14)

Which of the following EMR/EHR systems are you using to enter, view or retrieve patient information in your MAIN practice setting?

(Please note: Q3 SELECTION)? Please select ONLY ONE.

1	Accuro – QHR
2	AllScripts – Veradigm
3	AVA EMR – AVA Industries
4	Avaros EMR – AVAROS
5	Cerebrum – Well
6	Citrex – Secure EHR
7	Collaborative Health Record (CHR) – Telus Health
8	Community EMR (cEMR) – Mustimuhw Information Systems
9	CUS EMR – P&P Data Systems
10	EHR Viewer – Government of Saskatchewan
11	EMR Advantage – Canadian Health Systems
12	Epic (Connect Care) – Epic Systems
13	Globemed – Alpha Global IT Inc.
14	Harris Flex EHR – Harris Healthcare
15	Healthquest – Microquest
16	iClinic – iClinic healthcare

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17	Indivicare - Well
18	Juno EMR - Well
19	Kinlogix - Telus Health
20	LibreMD
21	Logibec - Logibec Inc.
22	Max-Gold9 - Max Systems Inc.
23	MedAccess - Telus Health
24	Medesync - Telus Health
25	Meditech Expanse - Meditech
26	Mobilemed
27	MOIS (Medical Office Information System) - Bright Health
28	Momentum EHR - Civica
29	Myle - MedFar Solutions
30	Netcare - Government of Alberta
31	Nightingale - Nightingale Informatix
32	Oacis - Telus Health
33	Ofys - Logiciels Info-data
34	Omnimed
35	ORACLE Cerner - Oracle
36	Oscar Pro (Kai) - Well
37	Oscar specialized plug-ins/Expedius - Colcamex
38	Civica Care Records - Civica
39	Plexia - MedFar Solutions
40	PointClickCare
41	Practice Solutions (PS Suite) - Telus Health
42	Profile EMR - Well
43	Purkinje - MedFar Solutions
44	QHR Accuro - Accuro
45	QuadraMed - QuadraMed Affinity
46	Sunrise - Altera Digital Health
47	Toubib
48	Wolf - Telus Health
49	YES Medical System
50	YMS EMR - YMS Specialized Solutions
96	Other - please specify_____

How long have you been using electronic record/clinical information systems to enter orders and documentation on patient encounters in your MAIN practice setting?

- Less than a year
- 1-2 years
- 3-4 years
- 5-6 years
- Over 6 years
- Prefer not to answer

When documenting patient information in your MAIN practice setting, how many electronic and/or paper systems do you typically use for a patient encounter? Electronic systems may include an EMR, health information system, clinical information system, provincial/territorial EHR, practice management system, lab viewer, drug profile viewer or others.

Please select only one.

- I document all patient encounter information electronically in one system
- I document patient encounter information across two or more electronic systems
- I document patient information in one electronic system as well as on a paper chart
- I document patient information in two or more electronic systems as well as on a paper chart
- I document all patient information using paper chart only
- I don't know

Please indicate which of the following electronic tools and functionalities you use in your MAIN practice setting to support patient care.

Select all that apply.

- Electronic ordering of lab and diagnostic tests
- Electronic clinical decision support tool (e.g., alerts for drug interactions/allergies, body mass index calculator)
- Electronic medication reconciliation (includes best possible medication history)
- Generate complete lists of patients to monitor their health, such as for population health screening and chronic disease management
- Artificial intelligence (AI)/machine learning (e.g., automated transcribing/transcription, inbox automation, chatbot/virtual assistant)
- Online platform for patients to schedule appointments
- Secure email/messaging for patient communication
- Online option for patients to request prescription renewals
- None of the above (mutually exclusive)
- Not applicable (mutually exclusive)

Please indicate which of the following aspects of clinical care communication between providers occurs electronically directly from/to your practice system? (not via fax/e-fax)

Select all that apply.

- Lab test/diagnostic results
- All medications taken by an individual patient (including those prescribed outside my organization)
- Information related to allergies and intolerances
- Information related to immunizations
- Information related to history of illness/medical problems
- Information related to the problems list/active medical problems
- Information related to procedures/surgical care
- Sending/receipt of hospital visit and discharge information
- Exchange of patient clinical summaries with care providers outside of your practice
- E-referrals to request/receive care from specialists for your patients
- E-referrals to request/receive care from other care providers for your patients (e.g., home care)
- Send electronic prescription or prescription renewal directly to community pharmacy

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- Send and receive electronic messages/clinical notes from a community pharmacy
- E-consult to seek/provide advice from specialists or other care providers
- Electronically access patient information from care settings external to my main work setting
- Extract patient data from your EMR for quality improvement/research/secondary use/health system evaluation
- Extract patient data from your EMR for population health management
- Extract patient data from your EMR to facilitate external transfer of record requests (e.g., patient moving to another clinic; third party medico-legal/insurance requests; forms)
- Extract CPP (cumulative patient profile)/history data from your EMR to share with other providers as a standardized patient summary (PS)
- None of the above (mutually exclusive)
- Not applicable (mutually exclusive)

In the past 12 months, for approximately what proportion of patients to whom you provided care did you need to access health information that was collected outside of your practice setting?

_____ %

In the past 12 months, approximately what proportion of referrals in your main practice setting have been managed electronically?

_____ %

How much more time do you typically spend during a workday (beyond what you feel should be spent) looking for patient information that you need to provide care for your patients (i.e., contacting healthcare providers outside of your organization for diagnostic results, medication information or clinical notes)?

_____ hours

_____ minutes

Please note: Max sum = 24 hours. Can enter hours and/or minutes.

What barriers and challenges currently exist that prevent you from accessing, using or getting full value from your digital health technologies (including EHR/clinical information systems) in your MAIN practice setting (Please note: Q8 selection)? Please select all that apply. Please note: Randomize within groupings (codes 1-6, 7-13, 14-16, 17-24). Anchor 98 and 99.

Education/training/skills	
1	Lack of applied training on electronic record/clinical information systems in my medical education/residency
2	Clinical information systems are very complex and not intuitive
3	Lack of appropriate training through Continuing Medical Education (CME) /Continuing Professional Development (CPD)
4	Lack of ongoing support from EMR vendor
5	Insufficient knowledge and/or skill to use EHR systems/clinical information systems
6	Too many "workarounds" required to use system
Equipment/technological constraints	
7	Lack of integration with current systems/having multiple systems that are not connected
8	Lack of available equipment (e.g., workstations, mobile devices)
9	Available hardware and software do not meet clinical needs
10	Lack of internet access/technological infrastructure to support digital health technologies
11	Unreliable internet connection/technological infrastructure

12	Difficulties switching from one EMR system to a different EMR system
13	Difficulty accessing data from EMR for practice management
Administrative/policy/budget constraints	
14	Costs associated with implementing electronic systems
15	Internal organization policies do not support accessing electronic record/clinical information systems
16	Inadequate reimbursement
Time constraints/logistics issues	
17	It takes too long to sign in and use the systems
18	Clinical roles require the use of both paper charts and electronic records
19	Differences in the degree of use between care providers - some professionals use paper and others use electronic records
20	Multiple logins are required to access different clinical information systems
21	Use of systems does not align with clinical workflow
22	Too many other work demands
23	Too many clinical decision support (CDS) alerts, prompts or notifications
24	Receiving multiple copies of test results
98	Other barrier - please specify _____
99	No barriers/challenges preventing access, use or getting full value from digital health technologies

Using your own definition of “burnout,” please select one of the following statements below:

- I enjoy my work. I have no symptoms of burnout.
- I am under stress, and I don't always have as much energy as I did in the past, but I don't feel burned out.
- I am definitely burning out and have one or more symptoms of burnout (e.g., emotional exhaustion).
- The symptoms of burnout that I am experiencing won't go away. I think about work frustrations a lot.
- I feel completely burned out. I am at the point where I may need to seek help or consider closing down my clinic.

SKIP IF CODE 2 (NO) AT Q11

How much time do you spend on the EMR at home/after hours after a typical workday?

_____hours

_____minutes

Please note: MAX SUM = 24 hours. CAN ENTER HOURS AND/OR MINUTES.

SKIP IF CODE 2 (NO) AT Q11

Please complete the following statement: The amount of time I spend on the EMR at home/after hours is...

- Excessive
- Moderately high
- Satisfactory
- Modest
- Minimal/none

How frequently do you collect feedback from your patients on the following?

		Always	Often	Sometimes	Rarely	Never
1	Overall patient experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Preference for care modality (e.g., in-person, video or telephone)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Patient education/health literacy (e.g., patient portal feedback forms and brief health literacy screening tool)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In general, how concerned are you with the privacy and security of your patient data?

- Very concerned
- Somewhat concerned
- Not very concerned
- Not at all concerned

Section D: Use of Artificial Intelligence (AI)-powered technologies in physician practice

Show on separate screen: "AI refers to any current or future machine learning approach to predictive analytics, decision-support systems and/or automated decision-making" (as cited by Infoway in Toolkit for Implementers of Artificial Intelligence in Health Care: Module 1 - An introduction to AI in Healthcare)

To what extent do you perceive the following as priorities to support the use of AI in physician practice? (Please note: Randomize. anchor code 99 last)

		Very high priority	Somewhat high priority	Somewhat low priority	Very low priority	Not sure
1	Policies and guidelines from governments/clinical bodies for the integration of AI technologies in physician care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Appropriate regulatory and accreditation systems regarding the use of AI-based technologies/solutions and devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Digital transformation of the Canadian healthcare system (e.g., standardized, structured data) to allow for the use of AI technologies in practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Appropriate training and education for the physician workforce on the use of AI in practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Physician leadership to champion and guide the appropriate use of AI in healthcare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Organizational readiness (i.e., practical processes, policies) to effectively incorporate AI into practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99	Other - please specify_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>