

Report

2020 National Survey of Canadian Nurses: Use of Digital Health Technology in Practice

QUANTITATIVE MARKET RESEARCH REPORT



DATE April 29, 2020 PROJECT NUMBER 82345-004

Leger



EXECUTIVE SUMMARY



The National Survey of Canadian Nurses constitutes a series of surveys on the use and the impact of digital health technologies on nursing practice commissioned by Canada Health Infoway (Infoway) in partnership with the Canadian Nurses Association (CNA) and the Canadian Nursing Informatics Association (CNIA). This report yields the main results of the third iteration of the survey conducted by Leger through an online questionnaire between January 20 to March 29, 2020 on a sample of 1,642 nurses across Canada, 1,132 of whom are providing direct patient care. These nurses were contacted and recruited through invitation emails using four main channels: AQIISTI Infolettre, CNA newsletter, CNIA Newsblast and Leger's online panel. The sample was weighted by 2018 CIHI workforce data to make it representative of the Canadian nursing population. In addition, ethics approval was obtained prior to starting the survey.

Current state of EMR and EHR use. More than a quarter (27%) of nurses in direct patient care are using fully electronic report keeping systems. This proportion of nurses using EMRs exclusively is trending upward (an increase from 20% in 2014). However, the majority of nurses (59%) continue to report that they still work in hybrid record keeping environment combining paper charts and electronic systems. The proportion of nurses using paper only has shown a downward trend since 2014. When it comes to satisfaction with the type of report keeping system in use, nurses using fully electronic record systems report higher satisfaction than those using hybrid systems (77% vs 54%). Besides, these nurses using exclusively electronic systems believe that access to mobile devices are more highly essential for both documenting patient care (41%) and communicating with other team care members (51%) .

State of virtual care technologies use. There has been significant increase in the proportions of nurses delivering virtual care since 2017. In 2020, over a third (36%) of nurses have used secure email to respond to patient-initiated email, over a quarter (27%) have consulted with a patient via virtual videoconference, 3 in 10 (29%) have facilitated an in-person visit with patient with remote clinical provider and over a third (34%) patients enrolled in remote telemonitoring services under their care. Those with access to electronic systems are more likely to have delivered virtual care.

Benefits and Impacts of EMR/EHR use. Benefits are experienced by the majority of all nurses with access to electronic records systems. These nurses believe that the use of electronic records/clinical information systems has increased their access to complete patient information (75%) and has resulted in ordering of fewer tests (69%). Over half also have seen an increase in continuity of patient care (57%), productivity (56%) and quality of patient care (53%). However, nurses in fully electronic environments are more likely to report they improve quality of patient care and deliver many other benefits.

Barriers preventing nurses from getting full value from electronic systems. Nurses have identified hybrid record systems (38%), multiple log-ins (25%) and system integration (25%) as the top barriers that prevent them from getting full value from electronic record systems. The barriers also include lack of available equipment (24%) and lack of appropriate training (18%). However, the proportion of nurses reporting barriers to accessing or getting full value from electronic systems has decreased significantly since 2017.





A young woman with long brown hair, wearing a light blue short-sleeved uniform top and dark blue pants, is sitting on a light-colored sofa. She is holding a black tablet and looking at it with a smile. An elderly woman with short, wavy white hair, wearing a light beige cable-knit sweater and dark pants, is sitting next to her, also smiling and looking at the tablet. In the background, a man in a light blue shirt is sitting at a table, and another person in a dark blue uniform is partially visible. The setting appears to be a bright, modern indoor space, possibly a library or a community center.

RESEARCH OVERVIEW

STUDY BACKGROUND & METHODOLOGY (1/2)

- In partnership with the Canadian Nurses Association (CNA) and the Canadian Nursing Informatics Association (CNIA), Canada Health Infoway (Infoway) sought to understand the current use of electronic medical record (EMRs) systems by nurses in Canada across clinical practice settings as well as attitudes and perceptions related to access, and the impact of use of digital health technologies in practice. The 2020 survey also explored the impact of EMR systems on quality of care, as well as the use of EHRs, and virtual care and telehealth technologies in nursing practice.
- An online survey in both French (n=839) and English (n=802) was conducted between January 20 to March 29, 2020.
- A pilot test of the online survey in both French and English was conducted a week prior to the official launch of field work. This online pilot test was administered to a convenience sample of nurses (less than 20) recruited from AQIISTI and CNIA networks.
- A multi-method promotion and recruitment strategy was launched in January, 2020:
 - AQIISTI network and recruitment channels in Quebec include the AQIISTI Infolettre contact list of 206 members, directors of nursing, nursing education institutions (college and universities), and nursing associations. The National Director of Nursing also forwarded the invitation to 36 Directors of Nursing.
 - CNA sent out the survey to their member jurisdictions, network of nursing specialties, and through e-newsletters, social media platform. Below is a list of networks and channels used by CNA to distribute the 2020 survey:
 - Canadian Network of Nursing Specialty - a large network of 40,000 nurses
 - CNA nurses sent out the survey to their personal network, reaching over 131 nurses.
 - CNA newsletter, distributed in early February 2020 and CNA CEO newsletter, distributed through email in February 2020 to all Provincial and Territorial Nursing regulatory bodies and national network.
 - CNIA distributed a request to complete the survey in its monthly Newsblast to its CNIA distribution list (N=718) across Canada on February 7th, 2020. An email message was sent to the same distribution list on February 11th with a specific request to complete the survey and forward the request and information to one's networks. At its Executive Board Meeting on February 13th, 2020, CNIA asked board members to distribute to their networks. The Association also used Twitter to send similar requests to CNIA followers regarding the survey.
 - Leger also assisted in recruitment, including:
 - Direct e-mail invitations in English and French with the live survey URL-link to OIIQ members (Ordre des infirmières et des infirmiers du Québec), of whom 377 nurses participated.
 - Leger recruited 73 nurses from online healthcare professional panel to participate to supplement for better regional representation mainly in Ontario, as well as BC and Alberta.
 - Leger also contacted nurses by email who were referred by nurses who had previously completed the survey, leading to 6 additional participants by 'snowball' method.

STUDY BACKGROUND & METHODOLOGY (2/2)

- Representatives of the research ethics review board - Advarra Institutional Review Board (IRB), an independent ethics committee, reviewed the ethical aspects of the survey to help protect the rights and welfare of survey participants. The protocol and methodology of the 2020 National survey of Canadian nurses were successfully approved by the IRB in January 2020.
- The data are statistically weighted by the 2018 Canadian Institute for Health Information (CIHI) workforce data (published in 2019) with regard to nurses in each province to ensure the final sample accurately reflects the nursing population according to this most recent Canadian Census.
- The graphs on the following pages highlight the weighted sample profile of the results presented in this report.
- In this report, results are expressed as percentages unless otherwise noted. Results may not add to 100% due to rounding or multiple responses.
- This report presents the results of a survey conducted with 1,642 nurses from January 20 to March 29, 2020. The majority of results presented in this report focus on Canadian nurses providing direct care to patients (n=1,132).
- Note that differences described in this report are statistically significant. Therefore, where “more likely” or “less likely” are written, these differences are statistically significant at the 95% confidence level.
 - We have highlighted numbers that stand out in the following way:
 -  X = significantly higher (would be significant in probability sample)
 -  X = significantly lower (would be significant in probability sample)
 -  = significantly higher in 2020 vs. 2017 study (would be significant in probability sample)
 -  = significantly lower in 2020 vs. 2017 study (would be significant in probability sample)

METHODOLOGY – SAMPLE SIZE AND COMPOSITION

15 - 30 MINUTE online survey conducted January 20th – March 29th 2020 with **1,642 Canadian nurses**

REGIONAL ACHIEVEMENTS

		ATL	QC	ON	MB/SK	AB	BC	TERRITORIES	TOTAL
DIRECT PATIENT CARE	<i>Unweighted</i>	72	653	149	111	43	85	19	1132
	<i>Weighted</i>	75	289	411	48	113	107	5	1047
NOT DIRECT PATIENT CARE	<i>Unweighted</i>	53	224	74	33	35	80	11	510
	<i>Weighted</i>	68	99	204	28	92	100	4	595
TOTAL	<i>Unweighted</i>	125	877	223	144	78	165	30	1642
	<i>Weighted</i>	143	388	616	76	205	207	8	1642

A young woman with long brown hair, wearing a light blue short-sleeved uniform with a green lanyard, is sitting on a beige couch. She is holding a black tablet and looking at it with a smile. An elderly woman with short white hair, wearing a light beige cable-knit sweater and a dark skirt, is sitting next to her, also smiling and looking at the tablet. In the background, a man in a light blue shirt is sitting at a table, and another person in a dark blue uniform is partially visible. The scene is set in a bright, modern indoor environment.

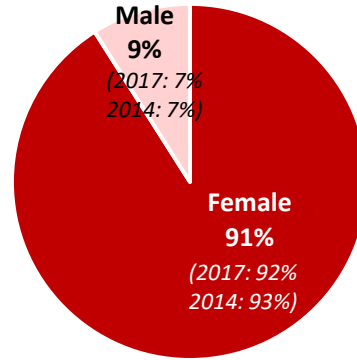
RESPONDENT PROFILE

TOTAL RESPONDENT PROFILE (WEIGHTED)

AGE

	2017	2014
18-24 yrs	3%	5%
25-34 yrs	24%	18%
35-44 yrs	26%	18%
45-54 yrs	22%	34%
55+ yrs	25%	24%

GENDER



PROVINCE

	2017	2014
Ontario	37%	36%
Quebec	24%	19%
British Columbia	13%	12%
Alberta	12%	12%
Saskatchewan	4%	5%
Nova Scotia	3%	5%
New Brunswick	3%	4%
NFLD & Labrador	2%	3%
Manitoba	1%	5%
PEI	1%	1%
Yukon	0%	0%
NWT / Nunavut	0%	1%

COMMUNITY TYPE

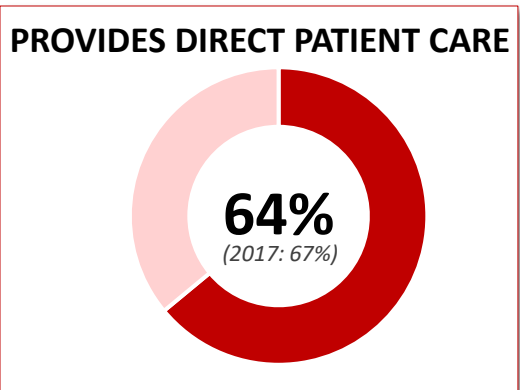
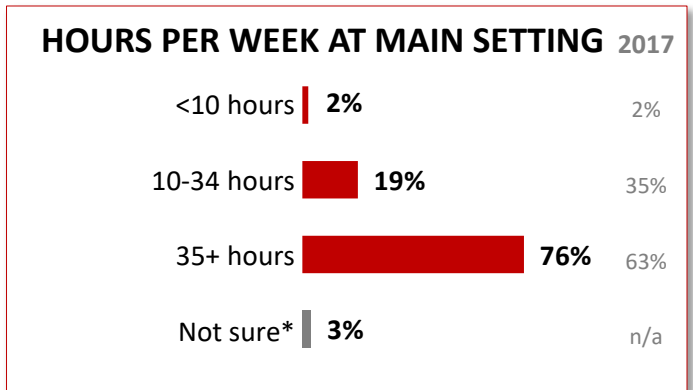
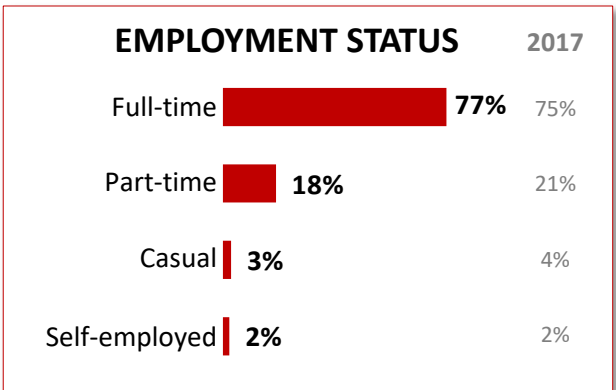
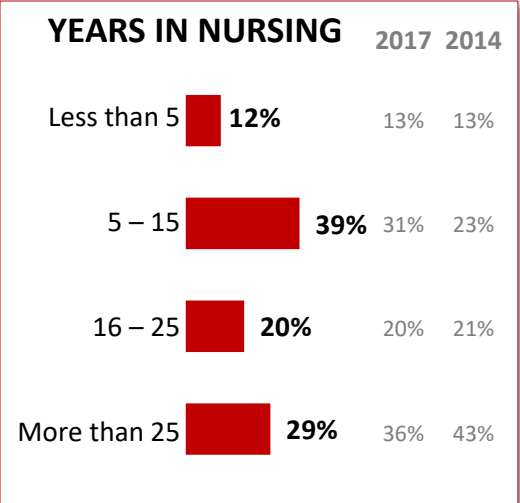
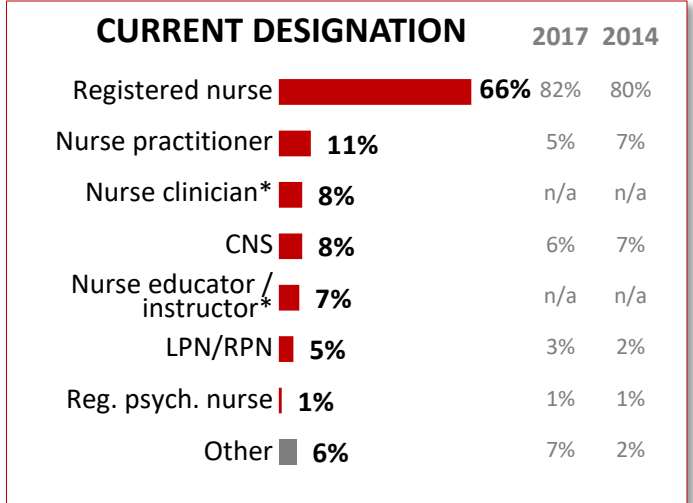
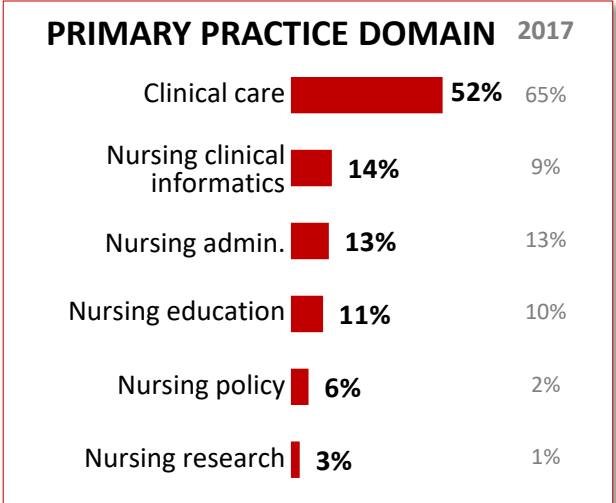
Rural area	10%
Town or City	56%
Urban centre	33%
First Nations, Métis or Inuit communities	1%

NOTE: Separated community type from population this wave – no trending

COMMUNITY POPULATION

	2017	2014
5K or less	6%	7%
5,001 to 10K	8%	6%
10,001 to 100K	25%	25%
100,001 to 500K	25%	20%
Over 500K	32%	41%

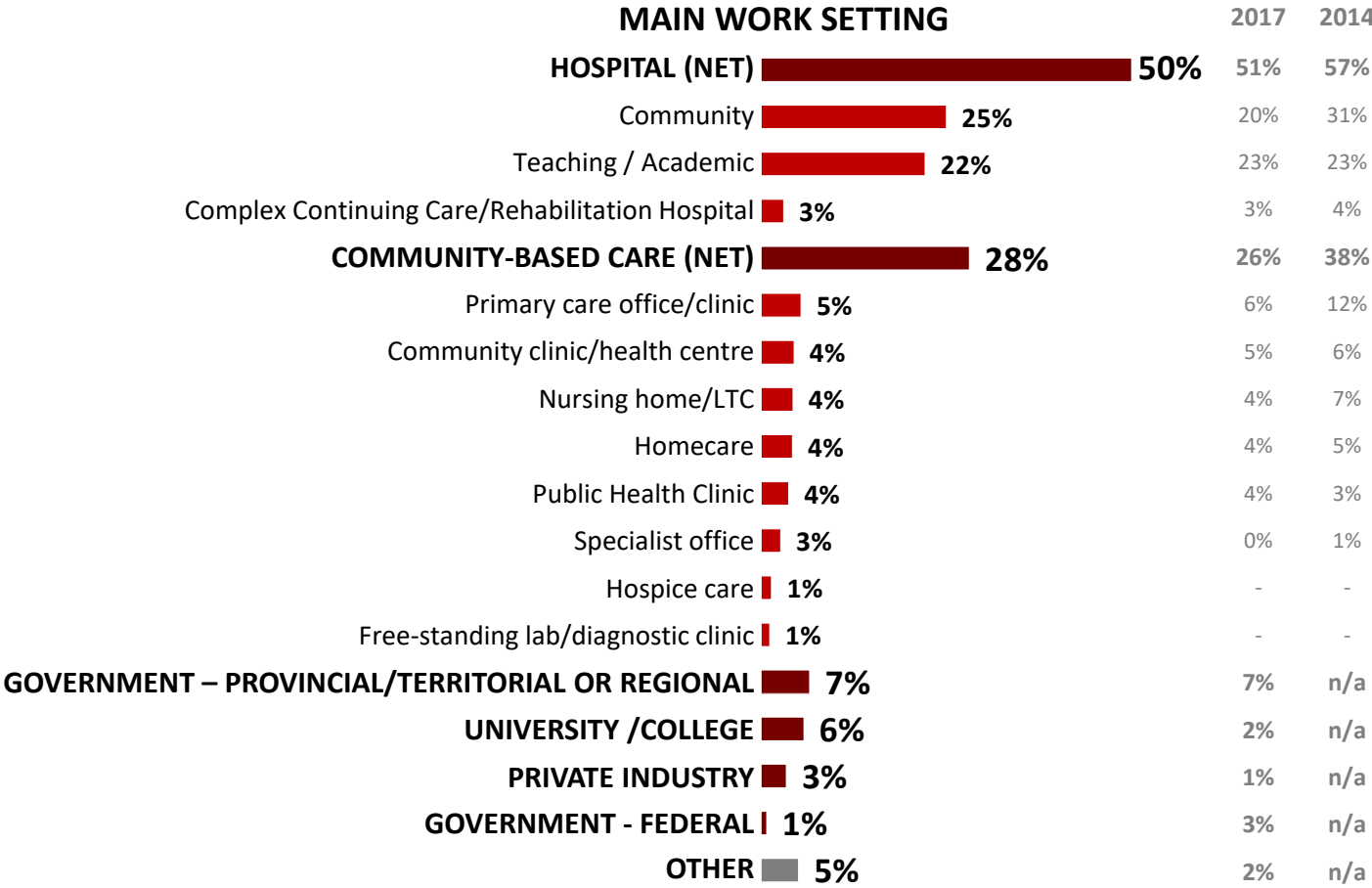
TOTAL RESPONDENT PROFILE (WEIGHTED)



Base: All respondents (n=1,642)

*Added this wave – no trending 9

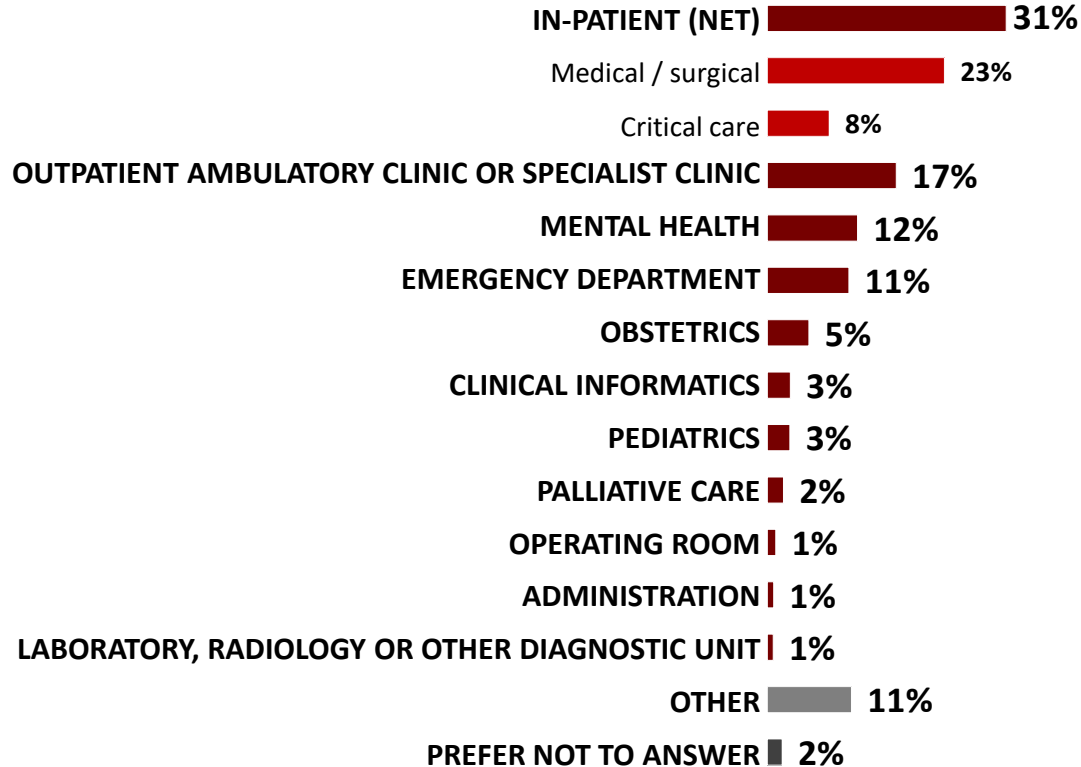
HOSPITAL NURSE SETTING PROFILE *(WEIGHTED)*



Base: All respondents (n=1,642)

TOTAL RESPONDENT PROFILE *(WEIGHTED)*

PRIMARY HOSPITAL SETTING



A young woman with long brown hair, wearing a light blue short-sleeved uniform with a green lanyard, is sitting and smiling while showing a tablet to an elderly woman with short white hair. The elderly woman is wearing a light-colored cable-knit sweater and is also smiling. They are in a bright, modern setting, possibly a clinic or office, with other people blurred in the background.

SUMMARY OF FINDINGS

Current state of electronic system use and impact on practice

KEY FINDINGS: Electronic system types and impact on nurses

- **Most nurses** (86%) surveyed who provide direct patient care **use electronic record / clinical information systems** (an increase from 78% in 2017). However, **a majority** continue to report that the main record keeping system is a **combination of paper and electronic systems**, while over a quarter use exclusively electronic systems.
- While length of time using electronic systems varies greatly among nurses, a majority (54%) adopted it within the past 4 years at their main care setting; though nearly 3 in 10 have been using it for 7 years or longer.
- **A majority** of nurses are **SATISFIED** with the **electronic system they are using** in their main care setting; however, most of these nurses are only **moderately satisfied, suggesting room for improvement**. Nurses do report higher satisfaction with their electronic system compared to 2017.
- Most nurses report electronic record keeping systems they use are **adequate or partially adequate for their role** (82%); however, about half of these nurses say it is only partially adequate.
- 3 in 10 nurses *access* and 2 in 5 *document* patient information from one electronic system only.
- **Nearly all nurses** have a **unique user account** to access / document patient information. While sharing unique user account with colleagues is not common practice (16%), it has increased since 2017 (6%). Among those using multiple electronic systems, a majority require multiple logins.
- **A majority** (three in five) believe it is **essential to have access to mobile devices** to provide and document direct patient care as well as to communicate with care team members to facilitate day-to-day and care communication.

KEY FINDINGS: Electronic system types and impact on nurses

- Nurses with electronic systems use a number of electronic functionalities in their main care setting. **Most report availability of a wide range of electronic functionalities, though some do not have access to the functionalities. A majority report they USE electronic:**
 - Communication to other HCPs within their organization (69%)
 - Clinical documentation (65%)
 - List of all lab results / diagnostic imaging for a patient (including outside their organization) (63%)
 - Ordering / order entry of laboratory tests (57%)
 - List of all medications taken by an individual patient (including outside their organization) (55%)
- In addition, about **half USE electronic:**
 - Receipt of laboratory test results from external laboratory / diagnostic imaging (51%)
 - Access to provincial / territorial patient electronic health record systems (50%)
 - Medication reconciliation (47%)
 - Referral to other health care provider (45%)
 - Patient care plans (45%)
- **Most nurses with access to electronic record systems believe that the use of electronic records / clinical information systems has led to INCREASED access to complete patient information and ordering of fewer tests.**
 - A majority have also seen an increase in continuity of patient care, productivity, quality of patient care, care team communication, coordination of patient care since using electronic systems. Nearly half have seen an increase of nursing documentation, identification of needed lab tests, facilitation of patient education via computer, and clinical decision making.
 - In addition, a third report a decrease in medication errors and a quarter report a decrease in redundant data capture. However, nearly half report an increase in burden of administrative work and redundant data capture.
- 2 in 5 nurses in direct patient care say **their electronic systems** has impacted their nursing care by **increasing redundant data capture.**
- **Use of both paper charts and electronic records (38%)** continues to be the most reported **barrier to accessing or getting full value from electronic systems** in their main practice setting. Other barriers include multiple logins required, integration with current systems / multiple systems, and lack of available equipment, each mentioned by a quarter of nurses. However, **16% of nurses** say there are **no barriers** to accessing or getting full value from electronic systems in their practice (an increase from 9% in 2017). Also to note, there was a **significant decrease in nearly all barriers** since 2017.

KEY FINDINGS: Nurse Practitioners' use of digital health technologies

- **Nurse Practitioners** have **access to a wide range of functionalities** through their electronic record keeping system; however, typically **only half of nurses with access to each functionality actually use each**. About half use EMRs to generate list of complete active medications for a patient, print prescriptions, and get automated alerts that offer information on drug-drug interactions, allergy concerns, or warnings and cautions. About 2 in 5 say they use EMR to select medications from a list, get information related to the availability of lower cost, therapeutically appropriate alternatives (if any), information on potentially inappropriate dose or route of administration of a drug, print out information/education for patients, and electronically transmit prescriptions to pharmacy (not autofax). **Nurses who do not have each functionality available** through their EMR typically say they would **want access to each**.
- **A third** of Nurse Practitioners **prescribe medication** to patients. Nearly half of these nurses prescribe in **primary care setting** and typically **print out from prescribing module within EMR** and either **give to patients** or **manually fax to a pharmacy**.
- In terms of an **electronic prescribing service**, Nurse Practitioners see a **wide range of features as very important**. **Most important features include:**
 - Integrated access to public drug formulary
 - Access to provincial drug profile
 - Alerts related to potential drug-drug, drug-allergy interactions
 - Evidence-based order sets and/or guidelines
 - Secure instant messaging between you and pharmacist to clarify questions they may have
 - Ability to electronically create / transmit a prescription to a patient's pharmacy of choice
 - Ability to change, cancel, and discontinue a prescription

KEY FINDINGS: Virtual Care Services

- **Use of virtual care services** have **INCREASED** among nurses in direct patient care since 2017. In the past three months, **a third** of nurses facilitated an **e-visit using secure email** to respond to patient-initiated email (versus 9% in 2017). **Two in five** nurses say their main care setting has a **policy** in place for **use of e-mail** to securely communicate with patients; however, a quarter are unsure if their practice does.
- **Nearly a third** have consulted directly with a **patient via virtual videoconference** (27% vs 3% in 2017), facilitated a **virtual visit with a remote clinical provider** (29% vs. 6% in 2017) while in-person with patient, and/or **enrolled any patients in remote telemonitoring** services (34% vs 8% in 2017).
- About **three in five** nurses who have **used virtual videoconferencing / telemonitoring** feel they **have the knowledge and skills** to use these services in their practice. Furthermore, **half** feel they provide **more efficient health care** by using these virtual tools; though a quarter are unsure if it improves efficiencies.

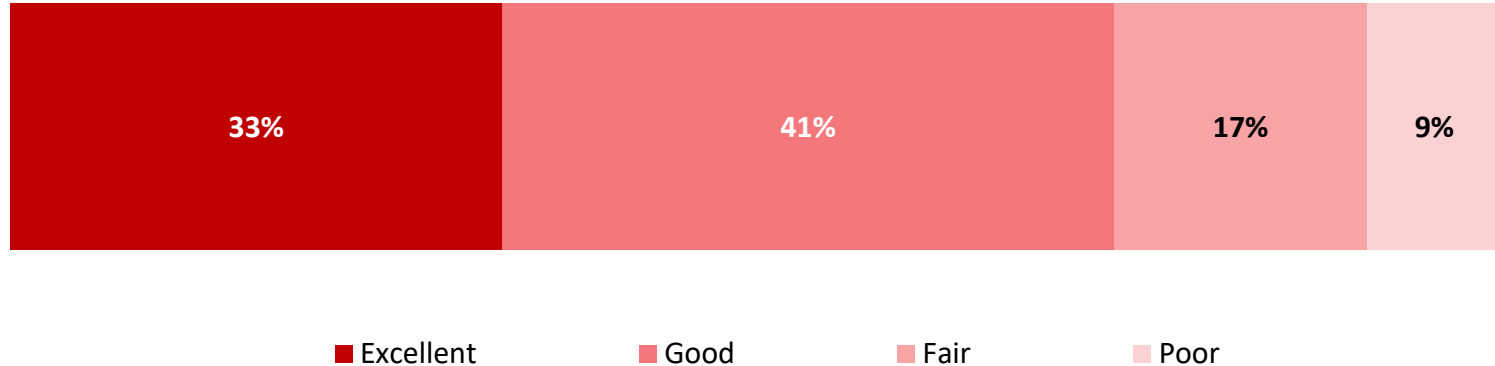
KEY FINDINGS: Nurses in other domains (not direct patient care)

- **Nurses NOT working in direct patient care** see **benefits** in the use of **electronic records / clinical information systems** in their main care setting, with a majority reporting some / great impact on improved communication among clinical providers and inter-professional teams within practice, improved communication to support patient transitions in care, evidence informed practice, and new policy directions for nursing practice. About half have seen an impact on expedited robust clinical research processes, advanced patient/family and care team partnerships, more opportunity for research collaboration, and communication with patients and families.
- **A majority (59%) of nurses in education domains do NOT have a training version of an electronic record systems** to support teaching nursing skills. Among these nurses without, **only 1 in 5 say there are plans to acquire one** (though nearly half are unsure). Among the third of nurses who do have a training version, while EMR vendors do vary, typically either Cerner or Meditech are used.
- Nurses generally **learn the functionalities of electronic systems** in the **practice setting during or prior to clinical placements**. Two in five say the nursing program curriculum includes entry-to-practice informatics competencies, though 2 in 5 are unsure.
- Nearly half of nurses in education, research, and policy domains use electronic system to support education and training in overall system use and quality improvement initiatives. About a third report use electronic systems to support academic research, program development and resource planning, clinical information, and patient flow of health services. A quarter use these systems for learner evaluation and learner assignment.

A photograph of a young nurse in light blue scrubs sitting on a chair, smiling and looking at a tablet. An elderly patient with short white hair is sitting next to her, also smiling and looking at the tablet. In the background, other people are blurred, suggesting a hospital or care facility setting.

Nurses' perception of patient care delivered and extent of burnout

QUALITY OF CARE delivered to patients in their care area



- Overall, three quarters of nurses surveyed feel patients in their area receive good / excellent care.
- Compared to other regions, Quebec nurses report the LOWEST quality of nursing care, with only 6% reporting excellent care, nearly half (47%) reporting fair care and 3 in 10 (29%) reporting poor care.
- Highest quality of care reported among those in urban centres with population of 500K+ (45% excellent).
- Those with access to electronic record keeping / clinical information systems are also more likely to report higher quality of care (35% excellent vs. 21% without access).

Base: Nurses in direct patient care (n=1,132)


Question added this wave – no trending

Q12b. How would you describe the quality of nursing care delivered to patients in your care area?


Based on their definition of burn out, nurses typically do not feel burned out


Nurses' current level of burnout *(based on their definition of burnout)*

I enjoy my work. I have **no symptoms of burnout**.  29%

I am **under stress**, and don't always have as much energy as I did, but I **don't feel burned out**.  44%

I am definitely burning out and have **one or more symptoms of burnout**, e.g. emotional exhaustion.  20%

The symptoms of **burnout I am experiencing won't go away**. I think about work frustrations a lot.  5%

I feel **completely burned out**. I am at the point where I **may need to seek help**.  2%

- Overall, about three quarters of nurses in direct patient care say they do not feel burnt out.
- Nurses working in complex continuing care / rehab hospital (90%), primary care / FM office or clinic (86%), and specialists' office or clinic (92%) are more likely than other settings to say they are not burned out. Whereas those in nursing home / LTC (54%) and critical care inpatient (48%) are less likely to say they are not burned out versus other settings.
- Nurses satisfied with their electronic record keeping systems are more likely to say they are not burned out (84%) vs. those dissatisfied (53%).

Base: Nurses in direct patient care (n=1,132)

Q12c. Overall, based on your definition of burnout, how would you rate your level of burnout?

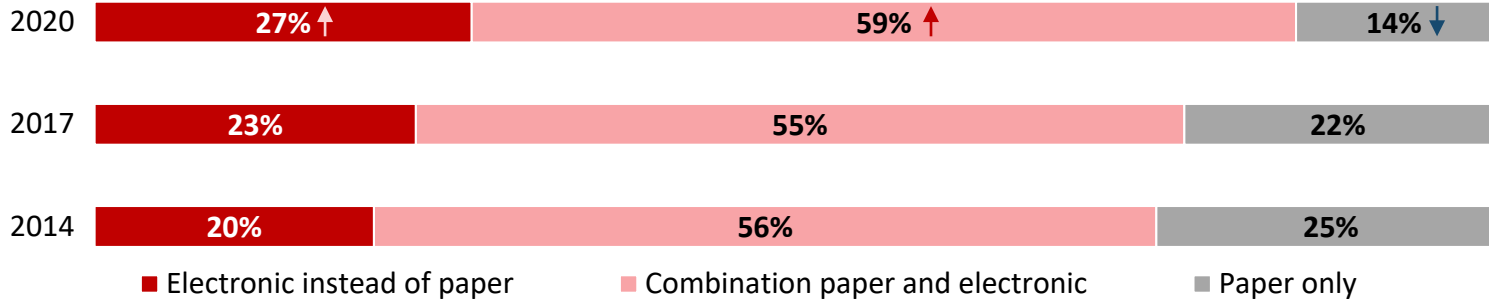
Question added this wave – no trending

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Current state of electronic system use and impact
on practice

A majority of nurses have access to electronic and paper (hybrid) patient recording keeping systems at their main care setting, while about a quarter use fully electronic record keeping

Main record-keeping system used



- Overall, 3 in 5 nurses providing direct patient care in Canada use a hybrid of paper and electronic patient record keeping systems (59%), while a quarter (27%) use fully electronic record keeping systems. Since 2017, nurses using paper only has decreased from 22% to only 14%.
- Nurses in community-based care settings are more likely to report their main record keeping system is electronic (35%) compared to nurses practicing in a hospital setting, who report their main record keeping system is a combination of paper and electronic record keeping systems (65%). Among those in community-based care, those in primacy care / FM office / clinic are most likely to use only electronic systems (66%) versus those working in other settings. Among those in hospital, outpatient ambulatory clinic / specialist clinic (37%) and mental health (40%) are most likely to use electronic records only, while most in emergency department use a combination (79%).
- Nurses practicing in urban communities (population: 500K+) are more likely to be using electronic systems only (39% vs ~22% among other nurse).

Base: Nurses providing direct care to patients (n=1,132)

Q13. Thinking about the MAIN care setting of your nursing practice, which of these describes the patient record keeping system that you use?

Nursing facilitation/participation in virtual care services – PAST 3 MONTHS

Facilitated an E-VISIT USING SECURE EMAIL to respond to patient-initiated e-mail

ANY (NET) 36% ↑

(2017: 9%)

1 – 5 times 9%

6 – 10 times 9%

More than 10 times 4%

Can't recall number of times 14%

Consulted directly with a patient via VIRTUAL VIDEOCONFERENCE

ANY (NET) 27% ↑

(2017: 3%)

1 – 5 times 14%

6 – 10 times 1%

More than 10 times 1%

Can't recall number of times 11%

Virtual visit while in-person with patient with REMOTE CLINICAL PROVIDER

ANY (NET) 29% ↑

(2017: 6%)

1 – 5 times 16%

6 – 10 times 2%

More than 10 times 1%

Can't recall number of times 10%

- In the past 3 months, over a third of nurses have used secure email to respond to patient-initiated email, over a quarter have consulted with a patient via virtual videoconference, and 3 in 10 have facilitated an in-person visit with patient with remote clinical provider. As expected, those with access to electronic systems are more likely to have facilitated each.
- Those practicing in an area with 10K-100K population are most likely to have used all virtual tools listed (~ nearly half using each).
- Those working in community-based settings are more likely to use secure email to respond to patients (45%) and videoconferences visits (34%) versus hospital.

Base: Nurses providing direct care to patients (n=1,132)

Added # of times using each this wave – no trending

Q43. In the past 3 months, how many times have you carried out an e-visit using secure e-mail to respond to a patient-initiated e-mail consultation about a specific health issue or concern?

Q44. In the past 3 months, how many times have you...

Facilitated e-visit using secure email to respond to patient-initiated e-mail in the past 3 months – *By Practice Setting*

	TOTAL	MAIN SETTING		HOSPITAL SETTINGS				COMMUNITY SETTINGS					
		HOSPITAL (NET)	COMMUNITY BASED CARE (NET)	Community hospital	AHSC	Non-AHSC teaching hospital	Complex Continuing Care/ Rehab hospital	Primary Care/ Family Med. office/ clinic	Community clinic/ Community health centre	Nursing home/ LTC	Homecare	Public Health Clinic	Specialists' office/clinic located in community
E-visit using secure email	%	%	%	%	%	%	%	%	%	%	%	%	%
ANY (NET)	36	30	45	24	35	34	47	42	44	29	34	50	66
1 – 5 times	9	6	15	5	9	6	1	16	21	-	13	22	14
6 – 10 times	9	7	12	3	6	10	35	1	12	4	5	12	28
More than 10 times	4	5	4	2	11	7	-	9	1	1	1	-	7
Can't recall number of times	14	12	15	14	8	11	11	16	11	25	15	17	16
Base: Nurses in direct px care	1132	642	396	340	190	77	35	93	68	57	70	39	30

Consulted directly with patient via VIRTUAL VIDEOCONFERENCE in past 3 months – *By Practice Setting*

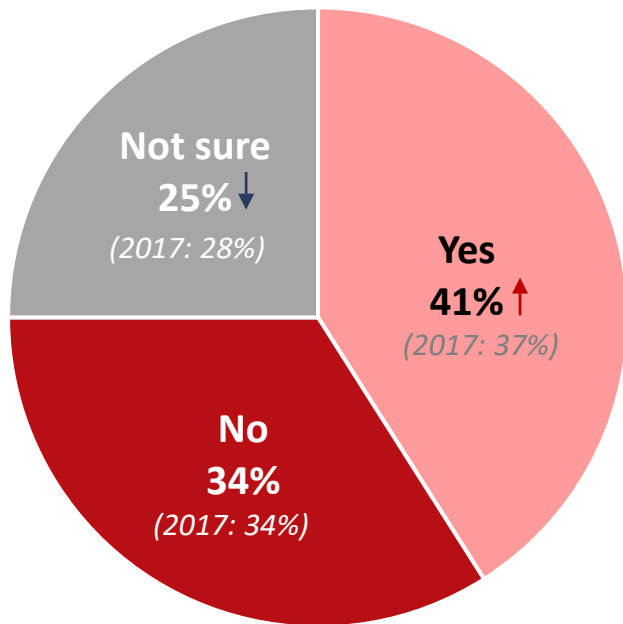
	TOTAL	MAIN SETTING		HOSPITAL SETTINGS				COMMUNITY SETTINGS					
		HOSPITAL (NET)	COMMUNITY BASED CARE (NET)	Community hospital	AHSC	Non-AHSC teaching hospital	Complex Continuing Care/ Rehab hospital	Primary Care/ Family Med. office/ clinic	Community clinic/ Community health centre	Nursing home/ LTC	Homecare	Public Health Clinic	Specialists' office/clinic located in community
Virtual videoconference	%	%	%	%	%	%	%	%	%	%	%	%	%
ANY (NET)	27	20	34	15	22	27	45	12	34	19	18	43	81
1 – 5 times	14	11	21	7	11	20	29	5	20	5	7	32	53
6 – 10 times	1	-	2	-	1	-	-	3	-	-	-	-	-
More than 10 times	1	1	-	-	2	1	-	-	-	-	-	-	-
Can't recall number of times	11	8	12	8	8	6	15	4	14	14	11	11	28
Base: Nurses in direct px care	1132	642	396	340	190	77	35	93	68	57	70	39	30

Virtual visit while in-person with patient with REMOTE CLINICAL PROVIDER in past 3 months – *By Practice Setting*

	TOTAL	MAIN SETTING		HOSPITAL SETTINGS				COMMUNITY SETTINGS					
		HOSPITAL (NET)	COMMUNITY BASED CARE (NET)	Community hospital	AHSC	Non-AHSC teaching hospital	Complex Continuing Care/ Rehab hospital	Primary Care/ Family Med. office/ clinic	Community clinic/ Community health centre	Nursing home/ LTC	Homecare	Public Health Clinic	Specialists' office/clinic located in community
Virtual visit with remote clinical provider while in-person with patient	%	%	%	%	%	%	%	%	%	%	%	%	%
ANY (NET)	29	23	36	17	28	28	45	11	46	25	25	37	73
1 – 5 times	16	14	20	9	15	21	36	3	25	10	14	25	42
6 – 10 times	2	1	2	-	3	-	-	1	-	-	-	7	-
More than 10 times	2	1	2	1	2	-	-	4	5	-	-	-	3
Can't recall number of times	10	7	12	7	8	7	8	4	16	15	11	5	28
Base: Nurses in direct px care	1132	642	396	340	190	77	35	93	68	57	70	39	30

About 2 in 5 nurses say their main care setting has a policy on use of email to securely communicate with patients, though a quarter are unsure if they do.

% of nurses with a policy in MAIN care setting for using email to securely communicate with patients



- 2 in 5 nurses say their main care setting has a policy on the use of email to securely communicate with patients. Those with access to electronic systems are more likely to have a policy (43%) vs. those with paper only (26%).
- Nurses in community-based setting (46%) are more likely versus hospital (35%) to have a policy in place. However, those in nursing home / LTC are unlikely (20%) to have a policy, while those in AHSC (46%) and outpatient ambulatory/ specialist clinic are likely to have one (59%) versus nurses in other settings.

Base: Nurses providing direct care to patients (n=1,132)

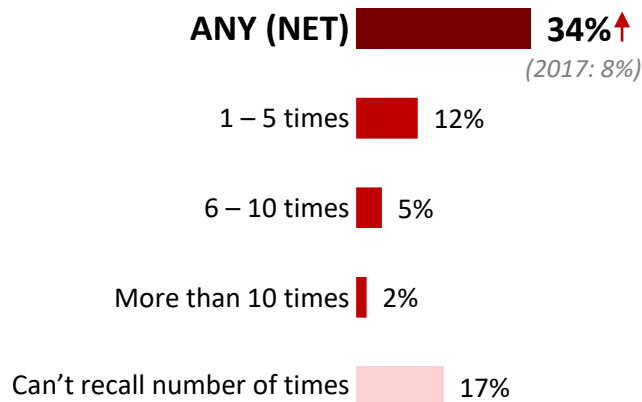
Q45. Does your MAIN care setting have a policy about the use of e-mail to securely communicate with patients about their care?

Enrollment of any patients in your care in remote telemonitoring services in past 3 months – *By Practice Setting*

	TOTAL	MAIN SETTING		HOSPITAL SETTINGS				COMMUNITY SETTINGS					
		HOSPITAL (NET)	COMMUNITY BASED CARE (NET)	Community hospital	AHSC	Non-AHSC teaching hospital	Complex Continuing Care/ Rehab hospital	Primary Care/ Family Med. office/ clinic	Community clinic/ Community health centre	Nursing home/ LTC	Homecare	Public Health Clinic	Specialists' office/clinic located in community
Enrollment of patients in remote telemonitoring services	%	%	%	%	%	%	%	%	%	%	%	%	%
ANY (NET)	34	31	38	27	31	28	59	27	46	21	20	39	62
1 – 5 times	11	10	15	7	9	13	28	5	15	11	7	12	34
6 – 10 times	5	3	9	1	3	6	8	7	12	-	3	11	7
More than 10 times	2	2	2	-	6	-	-	7	-	-	-	-	-
Can't recall number of times	17	16	13	19	13	9	23	9	19	10	10	16	21
Base: Nurses in direct px care	1132	642	396	340	190	77	35	93	68	57	70	39	30

A third of nurses have enrolled any patients in remote telemonitoring services in the past 3 months (a significant increase since 2017)

Enrollment of any patients in your care in remote telemonitoring services in past 3 months



- In the past 3 months, a third of nurses say they have patients who have been enrolled in remote telemonitoring services. Nurses with electronic systems are more likely to have done so than those paper charts only (37% vs 21%).
- Those practicing in an area with 10K-100K population are more likely to have enrolled patients (47%).

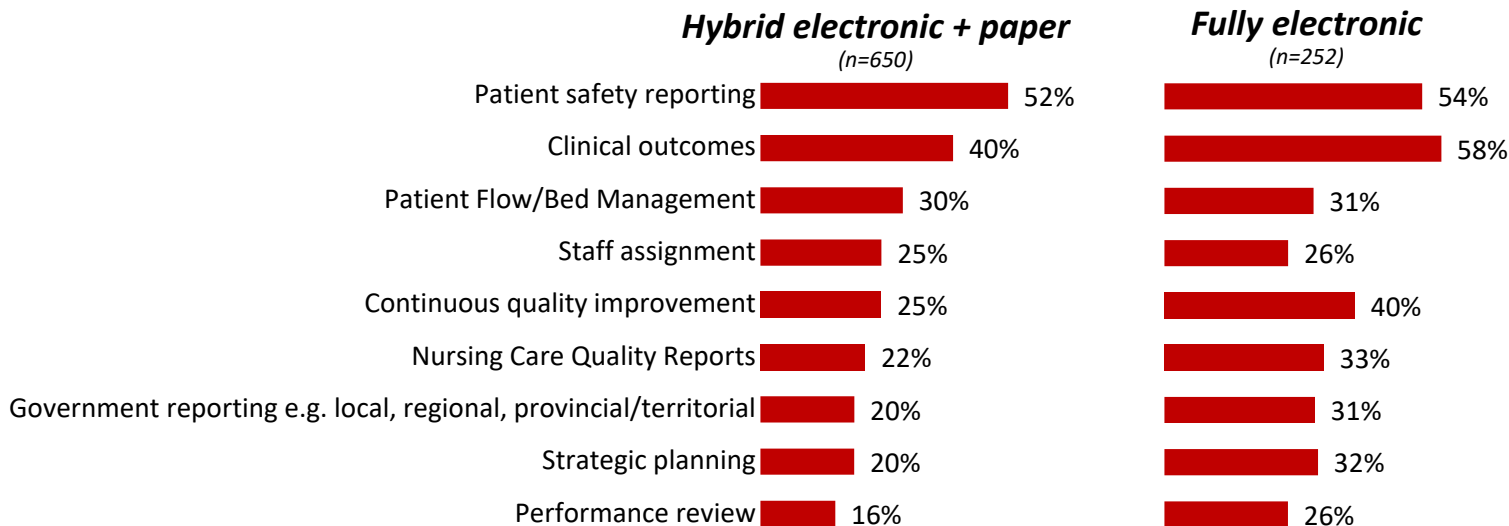
Base: Nurses providing direct care to patients (n=1,132)

Added # of times enrolling this wave – no trending

Q46. In the past 3 months, how many patients under your care have been enrolled in remote telemonitoring services (e.g. telehomecare)?

Use of electronic record / clinical information systems – hybrid versus fully electronic record keeping

Use of electronic record / clinical information systems to support each of the following



- About half of nurses use electronic systems to support patient safety reporting and clinical outcomes, 3 in 10 use it for patient flow and continuous quality improvement, a quarter use it to support staff assignments, care quality reports, strategic planning, and government reporting, and 1 in 5 for performance review.
- Nurses using fully electronic systems report higher use of clinical outcomes (58%), continuous quality improvement (40%), quality reports (33%), strategic planning (32%), government reporting (31%), and performance review (26%) versus those with hybrid paper and electronic record keeping.
- Nurses in hospital setting are more likely to use electronic systems to support patient safety reporting (61%) and patient flow (40%), while those in community-based care are more likely to use it to support strategic planning (32%). Highest electronic support of clinical outcomes seen in primary care / FM office/clinic (80%) compared to other settings.

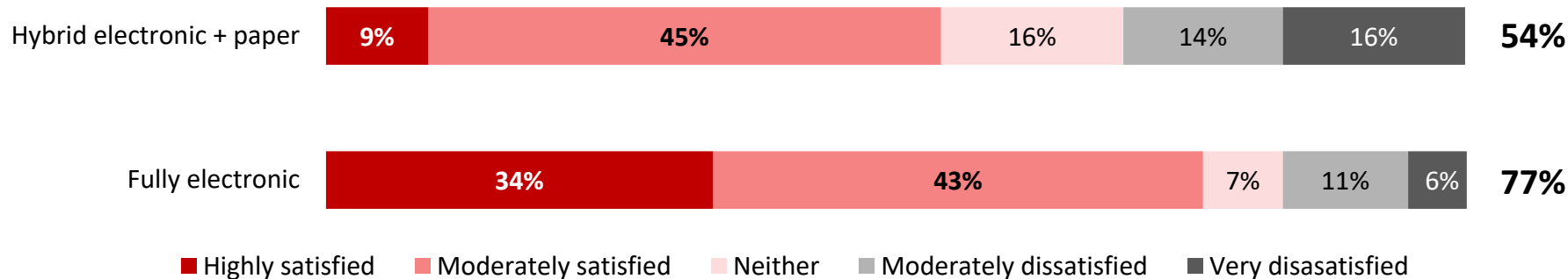
Base: Nurses providing direct care to patients who use hybrid electronic and paper record-keeping (n=650) / fully electronic record keeping (n=252)

Q17. In your role, do you use electronic record /clinical information systems to support

Nurses using fully electronic record keeping report higher satisfaction with the system at their main care setting versus those using hybrid electronic and paper

Satisfaction with electronic record / clinical information systems

SATISFIED

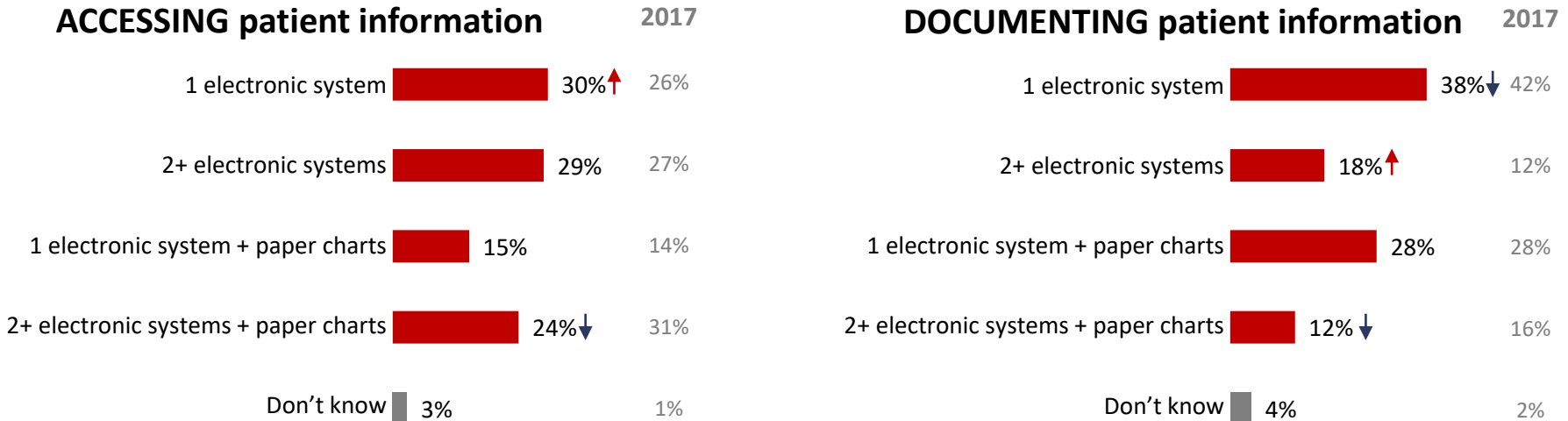


- Overall, a majority of Nurses with access to electronic record keeping are satisfied with the system at their main care setting.
- Nurses using fully electronic record keeping systems report higher satisfaction than those using hybrid paper and electronic (77% vs 54%)
- New users of EMRs (<1 year) also report lower satisfaction versus those using their electronic system for over a year (34% vs 66%).

Base: Nurses providing direct care to patients who use hybrid electronic and paper record-keeping (n=650) / fully electronic record keeping (n=252)

Q24. How satisfied are you with the electronic record/ clinical information systems that you currently use in your MAIN care setting?

Variation in use of single vs. multiple electronic systems to access and document patient information during patient encounters



- The number and methods of accessing and documenting patient information electronically varies among nurses using electronic record systems. A majority use only electronic systems to access and document patient information. Nurses typically use only one electronic system to document patient information.
- Those in community settings are more likely to use 2+ electronic systems to *access* (35%) and *document* (24%) patient information versus hospital settings (26% & 15%). Nurses in primary care / FM office / clinic setting are more likely to *access* (45%) and *document* (70%) from one electronic system than other settings. Nurses in homecare typically use 2+ electronic systems and paper chart to *access* (53%) and *document* (34%).
- Nurses satisfied with their electronic record keeping system are more likely to *access* one electronic system (35%) or two or more electronic systems (34%) and *document* in one electronic system (48%). Those dissatisfied with their electronic system are more likely to *access* from 2+ electronic systems + paper chart (41%) and *document* in one electronic system + paper charts (35%) or 2+ electronic systems + paper charts (24%).

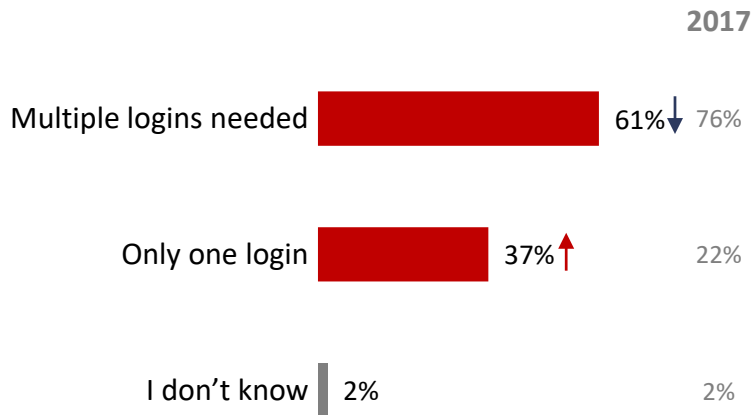
Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Q18. When accessing patient information in your MAIN care setting, how many electronic systems do you typically use to support a patient encounter? Electronic systems may include an EMR, lab viewer, drug profile viewer, or others. **Q19.** When documenting patient information in your MAIN care setting, how many electronic and/or paper systems do you typically use for a patient encounter? Electronic systems may include an EMR, lab viewer, drug profile viewer, or others.

Nurses using multiple systems to support patients encounters typically require multiple logins

Use of multiple systems to support patient encounters:

Single vs. multiple logins



- Overall, a majority (61%) of nurses using 2+ electronic systems require multiple logins; however, this has decreased from three quarters since 2017.
- Those in community hospital (72%), primary care /FM (76%), nursing home (80%), outpatient ambulatory clinic/specialist clinic (79%), and emergency department (72%) are more likely to need multiple logins compared to other settings.

Base: Nurses providing direct care to patients and using electronic record-keeping with two or more systems (n=568)

Q22. Do all these electronic systems have a single login process?

ELECTRONIC FUNCTIONALITIES USED IN MAIN CARE SETTING (MEDICATION & LABS)	FULLY ELECTRONIC			HYBRID ELECTRONIC + PAPER			PAPER CHARTS ONLY		
	Use in my setting	Available but no access	Not available	Use in my setting	Available but no access	Not available	Use in my setting	Available but no access	Not available
Electronic ordering/order entry of laboratory tests*	64%	14%	18%	53%	15%	26%			
Electronic list of all medications taken by an individual patient (including outside my organization)	63%	17%	16%	51%	19%	25%	29%	21%	45%
Electronic order entry/prescribing of patient medications*	61%	20%	17%	33%	18%	42%			
Electronic medication reconciliation (includes Best Possible Medication History)*	57%	12%	22%	42%	18%	31%			
Electronic warning for adverse prescribing and/or drug interactions*	51%	12%	25%	30%	13%	43%			
Base: Nurses providing direct care to patients	252			650			230		

*Functionalities not asked to those who use paper charts only

Q14. Please indicate which of the following you use in your MAIN care setting to support patient care. NOTE: 2017 survey asked use on stationary and mobile device – unable to trend

Availability and use of specific electronic functionalities – *Communication within and/or outside organization*

ELECTRONIC FUNCTIONALITIES USED IN MAIN CARE SETTING (COMMUNICATION WITHIN AND/OR OUTSIDE ORGANIZATION)	FULLY ELECTRONIC			HYBRID ELECTRONIC + PAPER			PAPER CHARTS ONLY		
	Use in my setting	Available but no access	Not available	Use in my setting	Available but no access	Not available	Use in my setting	Available but no access	Not available
Electronic communication to other health professionals within my organization (e.g. secure e-mail or messaging)*	78%	11%	9%	65%	14%	16%			
Electronic list of all lab results/diagnostic imaging for a patient (including outside my organization)	69%	11%	16%	60%	15%	20%	45%	19%	27%
Electronic receipt of laboratory test results from external laboratory/diagnostic imaging	63%	10%	21%	46%	17%	27%	32%	23%	34%
Electronic referral to other health care provider(s) (e.g. physician, physiotherapist, social worker, dietitian)*	61%	17%	19%	38%	16%	39%			
Electronic access to provincial/territorial patient electronic health record systems (e.g. encounters, drug, laboratory, diagnostic images, discharge summaries)	60%	13%	20%	46%	19%	23%	28%	22%	42%
Electronic list of all discharge summaries and discharge instructions for a patient (including outside my organization)	53%	12%	28%	37%	15%	38%	14%	21%	57%
Electronic communication to other health professionals outside my organization (e.g. secure e-mail or messaging)*	49%	13%	33%	42%	17%	26%			
Electronic notification of hospital visit (e.g. emergency, admission, discharge, death)*	44%	7%	36%	41%	16%	31%			
Electronic transfer of patients' clinical health information securely to other health professionals*	42%	19%	27%	31%	17%	34%			
Electronic communication with other health professionals outside my organization (e.g. virtual face-to-face e-consultation such as telehealth consultation)	37%	22%	33%	28%	27%	32%	15%	18%	54%
Base: Nurses providing direct care to patients	252			650			230		

*Functionalities not asked to those who use paper charts only

Q14. Please indicate which of the following you use in your MAIN care setting to support patient care. NOTE: 2017 survey asked use on stationary and mobile device – unable to trend

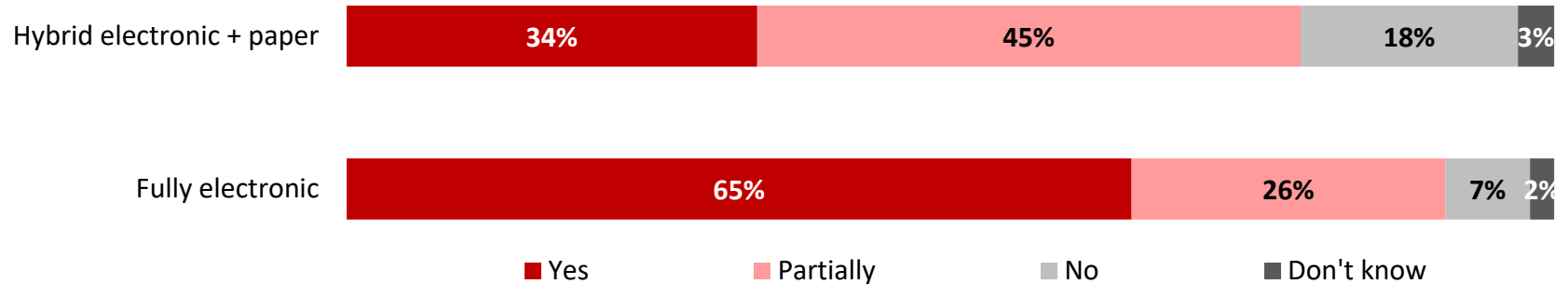
ELECTRONIC FUNCTIONALITIES USED IN MAIN CARE SETTING (INFORMING PATIENT CARE)	FULLY ELECTRONIC			HYBRID ELECTRONIC + PAPER		
	Use in my setting	Available but no access	Not available	Use in my setting	Available but no access	Not available
Electronic clinical documentation (e.g. assessments, progress notes)*	86%	7%	6%	56%	16%	26%
Electronic clinical decision support tool (e.g. BMI calculator)*	64%	12%	18%	33%	14%	36%
Electronic patient care plans*	60%	11%	21%	38%	13%	41%
Electronic flow sheet or checklist for management of patients with chronic disease (e.g. clinical care pathway)*	57%	10%	23%	29%	15%	40%
Electronic reminders for recommended patient care following clinical practice guidelines (e.g. complete falls risk assessment)*	54%	13%	28%	34%	15%	40%
Base: Nurses providing direct care to patients	252			650		

***Functionalities not asked to those who use paper charts only**

Q14. Please indicate which of the following you use in your MAIN care setting to support patient care. NOTE: 2017 survey asked use on stationary and mobile device – unable to trend

Most nurses feel their electronic / clinical information systems are adequate or partially adequate for their role, though some nurses do see room for improvement **Leger**

Adequacy of electronic record / clinical information systems at main care setting for nurses' role



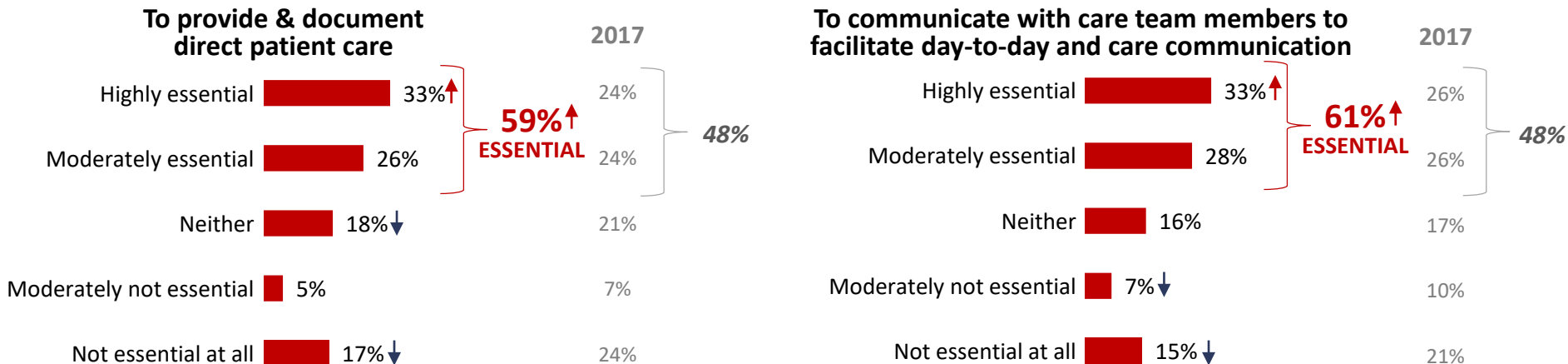
- Most nurses report the electronic record /clinical information systems they use at their main care setting are adequate or partially adequate for their role (82%), though about half of these nurses say only partially adequate.
- Nurses who use fully electronic record keeping continue to be more likely to say their electronic systems are adequate for their role in comparison to nurses whose main care setting using hybrid electronic and paper systems (65% vs. 34%). Nurses using hybrid electronic and paper are more likely than those exclusively electronic systems to say it is partially adequate (45% vs 26%). In addition, new EMR users (<1 year) are less likely to say their systems are adequate (23% vs 48%).
- Those working in hospital settings are more likely to say their EMRs are not adequate (16%) versus community-based (9%).

Base: Nurses providing direct care to patients who use hybrid electronic and paper record-keeping (n=650) / fully electronic record keeping (n=252)

Q23. Do you consider that the types of electronic record/ clinical information systems you are using in your MAIN care setting are adequate for your role?

Three in five nurses feel it is essential they have a mobile device to provide and document direct patient care and to communicate with other team care members

Importance of ACCESS TO MOBILE DEVICES in main care setting



- In terms of *providing and documenting patient care*, those in areas of smaller population (<100K) are more likely to say it is essential versus larger cities and urban areas. Nurses in community-based setting (69%), particularly nursing home / LTC (89%) and homecare (93%), see it as more essential versus hospital settings (53%).
- In terms of *communicating with care team members*, those in small cities with population 10K-100K are more likely to see it as essential (69%). Nurses in community-based setting (71%), particularly homecare (92%) see it as more essential versus hospital settings (53%).
- Nurses using exclusively electronic systems say access to mobile devices are more highly essential for both *providing / documenting* (41%) and *communicating* (51%).

Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Q25. *In your current role, how essential is it for you to have access to a mobile device to provide and document direct patient care? (e.g. smartphone, secure Wi-Fi enabled tablet).*

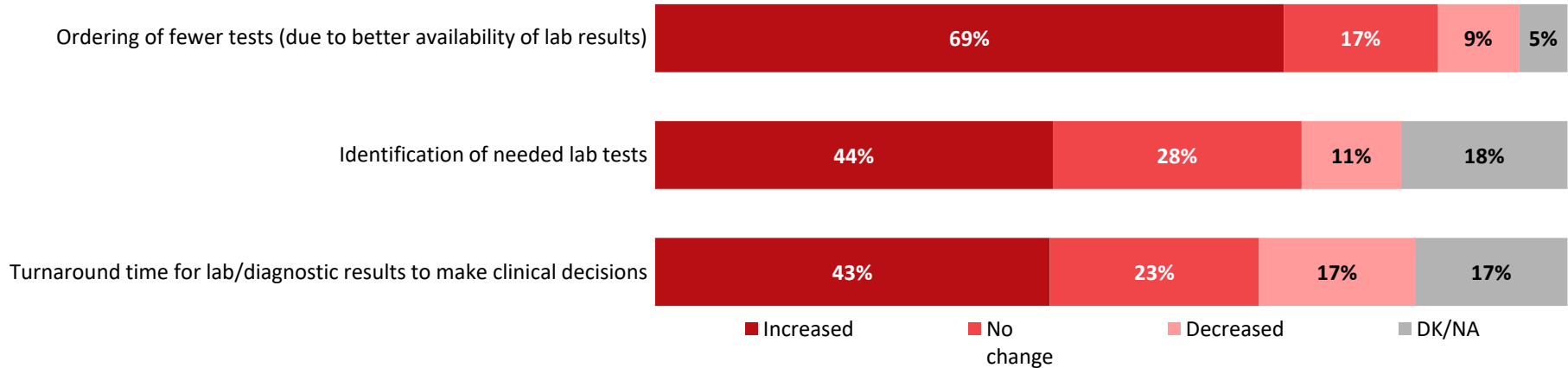
Q26. *In your current role, how essential is it for you to have access to a mobile device to communicate with other care team members in your setting to facilitate day-to-day communication and care coordination? (e.g. smartphone, secure Wi-Fi enabled tablet).*

A photograph of a young nurse in light blue scrubs sitting on a couch and showing a tablet to an elderly woman with short white hair. The woman is smiling and looking at the tablet. In the background, other people are seated at tables in a bright, modern setting.

Benefits and Barriers

Impact of electronic record systems on lab tests

Impact of using electronic records / clinical information systems on quality of nursing care during a face-to-face encounter – Lab Tests



- 7 in 10 nurses in direct patient care say their use of electronic record keeping systems have led to ordering of fewer tests. Nearly half saw an increase in identification of lab tests and turnaround time since using electronic systems.

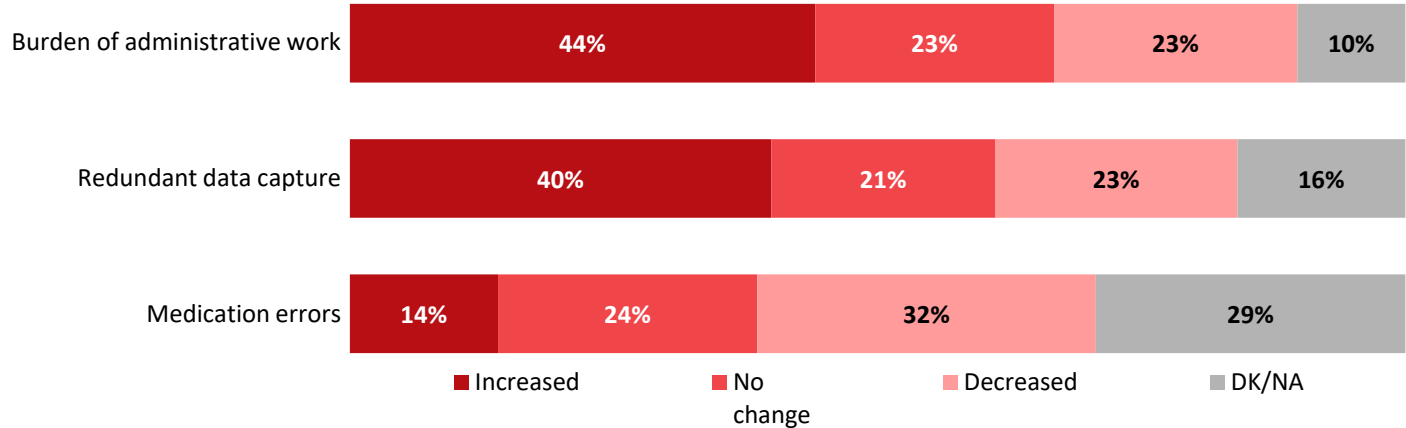
Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Question added this wave – no trending

Q16. Thinking about your practice in your MAIN care setting, rate the impact of your use of electronic record/clinical information systems in the quality of nursing care you provide during a face-to-face encounter...

Impact of electronic record systems on negative aspects

Impact of using electronic records / clinical information systems on quality of nursing care during a face-to-face encounter – *Negative Aspects*



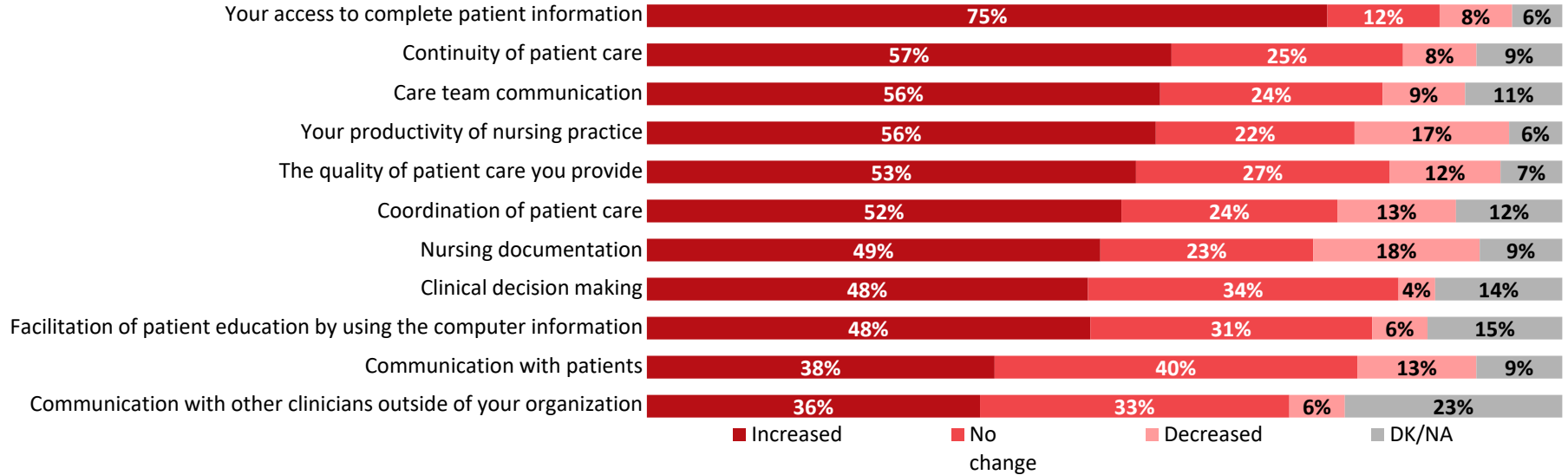
- About 2 in 5 nurses in direct patient care say their electronic systems has impacted their nursing care by increasing burden of administrative work and redundant data capture. Only 14% have seen an increase in medication errors, while a third have seen a decrease.
- Those with hybrid electronic and paper systems saw a greater increase in redundant data capture (43% vs 35%) than those using fully electronic systems.

Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Question added this wave – no trending

Q16. Thinking about your practice in your MAIN care setting, rate the impact of your use of electronic record/clinical information systems in the quality of nursing care you provide during a face-to-face encounter...

Impact of using electronic records / clinical information systems on quality of nursing care during a face-to-face encounter – *Other Aspects*



- Three quarters of nurses in direct patient care say their electronic record keeping system has led to an increase in access to complete patient information. A majority also saw an increase in continuity of care (57%), productivity (56%), care team communication (56%), quality of care (53%), and coordination of patient care (52%). About half report an increase in nursing documentation (49%), facilitation of patient education using computer information (48%), and clinical decision making (48%). Nearly 2 in 5 saw an increase in communication with patients (38%) and other clinicians outside of their organization (36%).

Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Question added this wave – no trending

Q16. Thinking about your practice in your MAIN care setting, rate the impact of your use of electronic record/clinical information systems in the quality of nursing care you provide during a face-to-face encounter...

Impact of using electronic records/clinical information systems on quality of nursing care during a face-to-face encounter – *By EMR use*

INCREASED	TOTAL	EMR USE	
		FULLY ELECTRONIC	HYBRID ELECTRONIC + PAPER
Lab Tests	%	%	%
Ordering of fewer tests (due to better availability of lab results)	69	71	68
Turnaround time for lab/diagnostic results to make clinical decisions	44	48	42
Identification of needed lab tests	43	49	41
Negative Aspects	%	%	%
Burden of administrative work	45	44	45
Redundant data capture	40	35	43
Medication errors	14	12	15
Other Aspects			
Your access to complete patient information	75	85	70
Continuity of patient care	57	68	53
Care team communication	56	69	51
Your productivity of nursing practice	56	67	50
The quality of patient care you provide	53	63	50
Coordination of patient care	52	61	49
Nursing documentation	49	56	47
Facilitation of patient education by using the computer information	48	57	45
Clinical decision making	48	59	43
Communication with patients	38	47	34
Communication with other clinicians outside of your organization	36	36	36
Base: Nurses providing direct care to pxs & using electronic record-keeping	902	252	650

Q16. Thinking about your practice in your MAIN care setting, rate the impact of your use of electronic record/clinical information systems in the quality of nursing care you provide during a face-to-face encounter...

Barriers preventing nurses from accessing or getting full value from electronic records / clinical information systems

BARRIERS	TOTAL	2017	2014	EMR USE		
				FULLY ELECTRONIC	HYBRID ELECTRONIC + PAPER	PAPER CHARTS
	%	%	%	%	%	%
NO BARRIERS	16 ↑	9%	--	30	14	3
Use of both paper charts and electronic records	38	46%	61%	8	56	20
Multiple logins required to access different clinical information systems	25	36%	54%	19	30	16
Integration with current /having multiple systems that aren't connected	25	31%	--	21	28	21
Lack of available equipment (e.g. workstations, mobile devices)	24	31%	48%	13	31	20
Too many other work demands	22 ↓	29%	38%	18	24	18
It takes too long to sign in to use the systems	20	21%	34%	16	22	16
Lack of appropriate training	18	19%	26%	15	21	10
Does not align with clinical workflow	16	25%	24%	16	17	10
Information content of system does not meet nursing needs	16	19%	--	13	18	10
Equipment does not meet nursing needs	16	21%	37%	9	19	13
Too many "workarounds" required to use system	15	18%	--	20	16	3
Available budget/costs associated from implementing electronic systems	15	22%	--	11	17	15
Clinical information system very complex and not intuitive	15	18%	27%	18	15	8
Unreliable network connection	14 ↓	22%	22%	15	16	6
Didn't receive applied training on e-systems in undergrad nursing program	11	10%	--	11	13	8
Documented data disappears sometimes from system creating a need to re-enter info	10	17%	20%	13	11	2
Lack of permissions to access systems	10	19%	27%	8	10	14
Internal policies do not support accessing e-record/clinical info systems	8 ↓	12%	19%	5	9	11
Too many clinical decision support (CDS) alerts or prompts	6	4%	--	8	7	-
Not applicable	9 ↓	12%	--	1	5	40
Base: Nurses who provide direct patient care	1,132	1,031	910	252	650	230

- Use of both paper charts and electronic records continues to be the most reported barrier to accessing or getting full value from electronic systems in their main practice setting.
- Other barriers include multiple logins required, integration with current systems / multiple systems, and lack of available equipment, each mentioned by a quarter of nurses.
- However, most barriers to accessing or getting full value have decreased significantly since 2017.
- In addition, 16% of nurses say there are no barriers to accessing or getting full value from electronic systems in their practice (an increase since 2017).

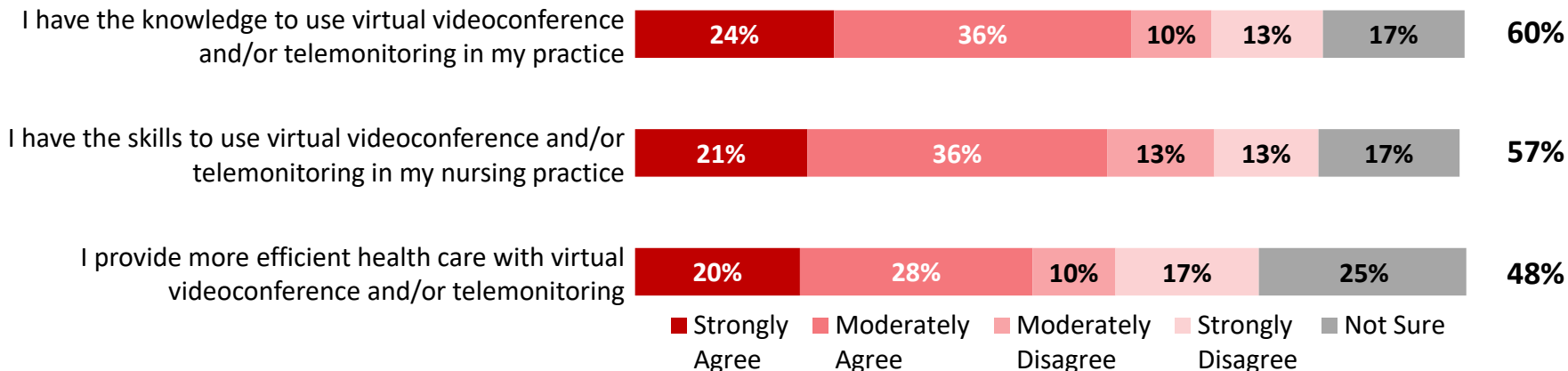
A healthcare worker in blue scrubs is sitting on a couch, holding a tablet and showing it to an elderly woman with short white hair. The woman is smiling and looking at the tablet. In the background, other people are seated at tables in a waiting area.

Supporting virtual care services

Among those nurses who have used virtual videoconference / telemonitoring in the past 3 months (*n=313*), about 3 in 5 feel they have the knowledge and skills to use these virtual services, and half agree that these tools provide more efficient health care

Agreement with statements among users of virtual videoconferencing and/or telemonitoring

% AGREE
(strongly / moderately)



- A majority of Nurses who use these virtual tools feel they have the knowledge and skills to use virtual videoconference and/or telemonitoring, though less than a quarter strongly agree. About half feel they provide more efficient health care virtually. As expected, those with electronic systems only feel most knowledgeable, skilled, and provide more efficient care via virtual health care versus those also using only paper or combination.
- Nurses working in community-based care are more likely to agree they have the knowledge and skills versus those in hospital settings.
- Those practicing in small cities (population 10K-100K) feel most knowledgeable and skilled.

Question added this wave – no trending

Base: Nurses providing direct care to patients who have used virtual videoconferencing and/or telemonitoring in past 3 months (n=313)

Q47. *As you have consulted directly with a patient via virtual videoconference or used remote telemonitoring services (e.g. telehomecare) in the last 3 months, to what degree do you agree or disagree with the following statements...*

A young woman with long brown hair, wearing a light blue short-sleeved uniform shirt and dark blue pants, is sitting on a light-colored sofa. She is holding a black tablet and looking at it with a smile. An elderly woman with short, wavy white hair, wearing a light-colored cable-knit sweater and dark pants, is sitting next to her, also smiling and looking at the tablet. In the background, a man in a light blue shirt is sitting at a table, and another person in a dark blue uniform is partially visible. The setting appears to be a bright, modern indoor space, possibly a community center or a care facility.

APPENDIX A:
Additional charts

Use of electronic record / clinical information systems

Use of electronic record / clinical information systems to support each of the following



- About half of nurses use electronic systems to support patient safety reporting and clinical outcomes, 3 in 10 use it for patient flow and continuous quality improvement, a quarter use it to support staff assignments, care quality reports, strategic planning, and government reporting, and 1 in 5 for performance review.
- Nurses in hospital setting are more likely to use electronic systems to support patient safety reporting (61%) and patient flow (40%), while those in community-based care are more likely to use it to support strategic planning (32%). Highest electronic support of clinical outcomes seen in primary care / FM office/clinic (80%) compared to other settings.
- Nurses exclusively using electronic systems report higher use of clinical outcomes (58%), continuous quality improvement (40%), quality reports (33%), strategic planning (32%), government reporting (31%), and performance review (26%) versus those using combination of paper and electronic record keeping.

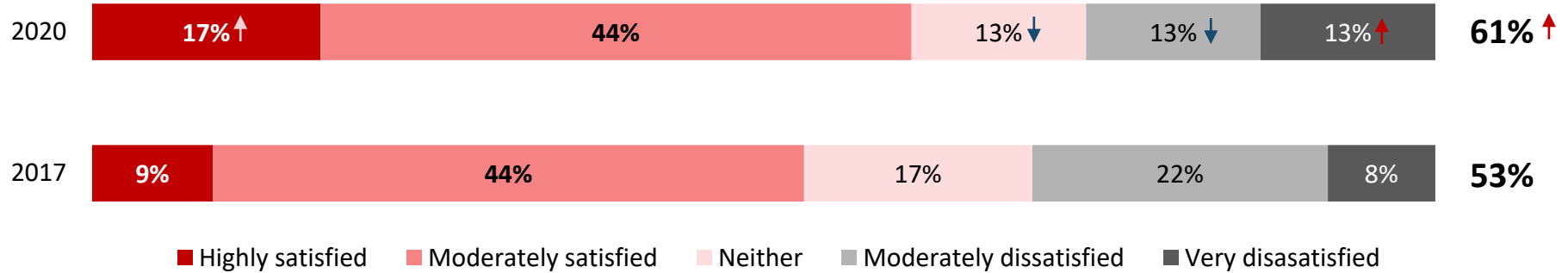
Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Q17. In your role, do you use electronic record /clinical information systems to support

A majority of nurses with electronic record / clinical information systems record keeping systems are satisfied with the system they use in their main care setting

Satisfaction with electronic record / clinical information systems

SATISFIED



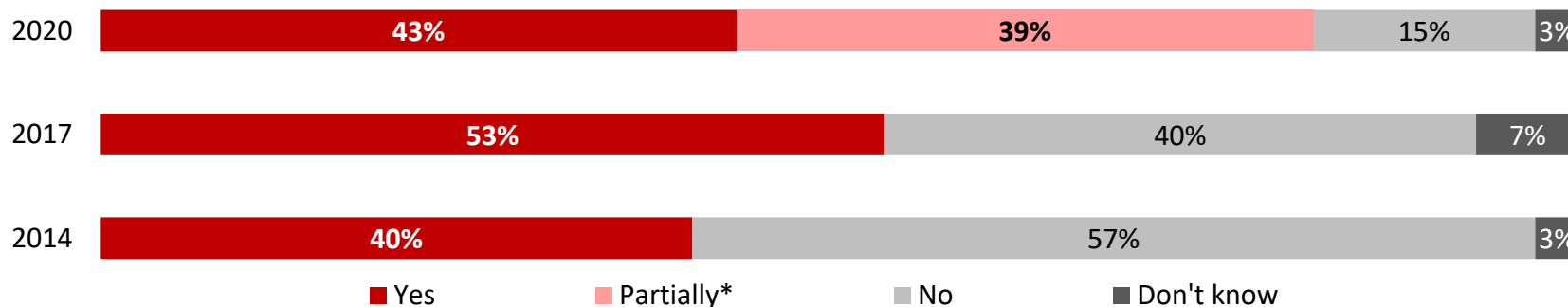
- Overall, three-in-five nurses with access to electronic record-keeping are satisfied with the system they use in their main care setting (increase from half of nurses satisfied in 2017). However, most of these nurses are only moderately satisfied.
- Nurses using exclusively electronic record keeping systems report higher satisfaction than those using combination paper and electronic (76% vs 54%)
- New users of EMRs (<1 year) also report lower satisfaction versus those using their electronic system for over a year (34% vs 66%).

Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Q24. How satisfied are you with the electronic record/ clinical information systems that you currently use in your MAIN care setting?

Most nurses feel their electronic / clinical information systems are adequate for their role, though nearly half of these nurses do see room for improvement

Adequacy of electronic record / clinical information systems at main care setting for nurses' role




***'Partially' added this wave – CAUTION TRENDING**

- Most nurses report the electronic record /clinical information systems they use at their main care setting are adequate or partially adequate for their role (82%), though about half of these nurses say only partially adequate.
- Nurses who exclusively use electronic records continue to be more likely to say their electronic systems are adequate for their role in comparison to nurses whose main care setting uses a combination electronic and paper systems (65% vs. 34%). Nurses using combination of paper and electronic are more likely than those exclusively electronic systems to say it is partially adequate (45% vs 26%). In addition, new EMR users (<1 year) are less likely to say their systems are adequate (23% vs 48%).
- Those working in hospital settings are more likely to say their EMRs are not adequate (16%) versus community-based (9%).

Base: Nurses providing direct care to patients and using electronic record-keeping (n=902)

Q23. Do you consider that the types of electronic record/ clinical information systems you are using in your MAIN care setting are adequate for your role?

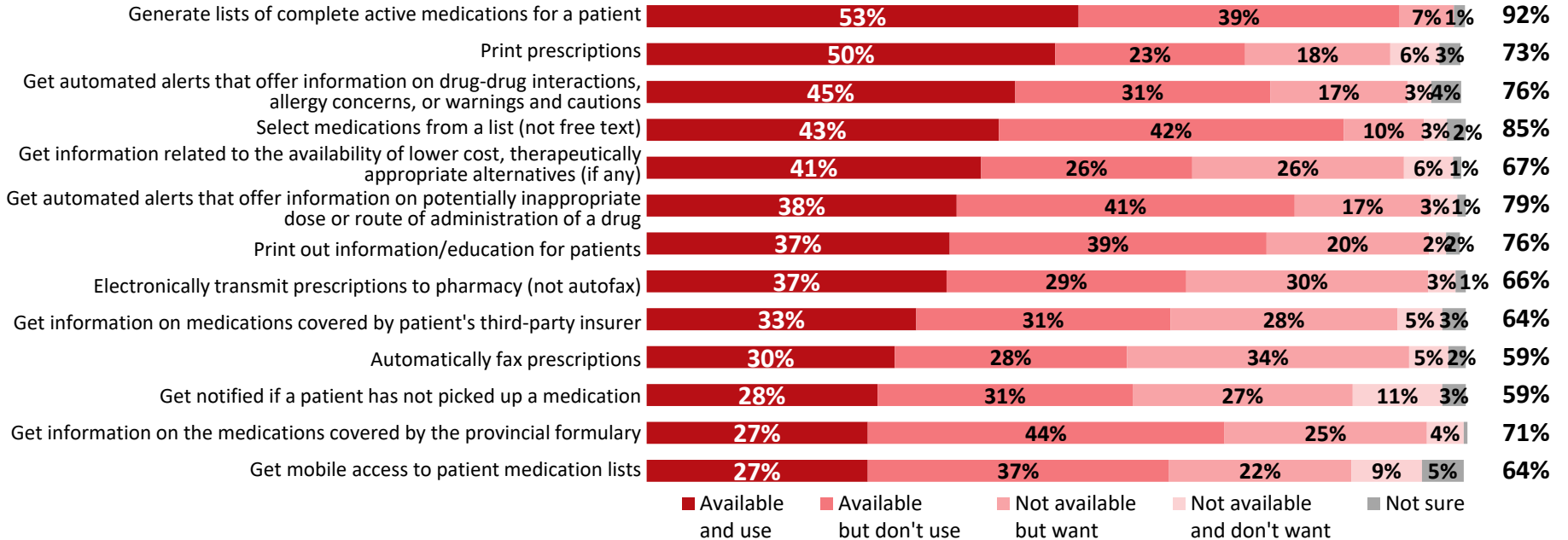
A photograph of a young woman in blue scrubs, identified as a nurse practitioner, sitting and smiling while looking at a tablet. She is interacting with an elderly woman with short white hair who is also smiling. They are in a bright, clinical setting with other people blurred in the background.

APPENDIX B:
NURSE PRACTITIONERS (NPs) providing direct care to patients

Availability, use, and interest in uses of EMR among Nurse Practitioners

Use of EMR among Nurse Practitioners

AVAILABLE



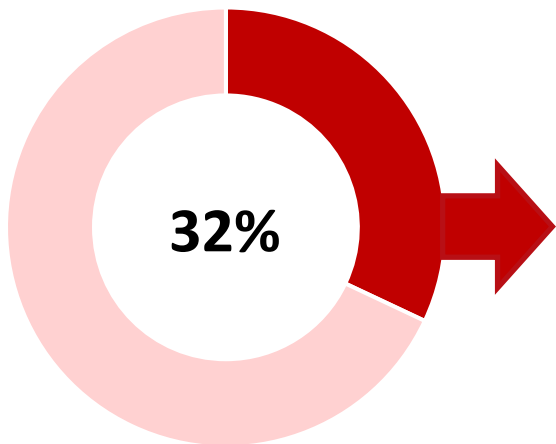
- Among those with EMR access, most nurses practitioners have access to a wide range of EMR functions in their main practice setting. Those who do not have access to functionalities typically would want each to be available in their practice.
- Highest use of EMR functions include generating lists of medications for patients (53%), printing prescriptions (50%), getting automated alerts on drug-drug interactions / allergies / warnings (46%), selecting medications from a list (43%), and obtaining information on availability of lower cost alternatives (41%).

Base: Nurses practitioners using electronic record-keeping (n=138)

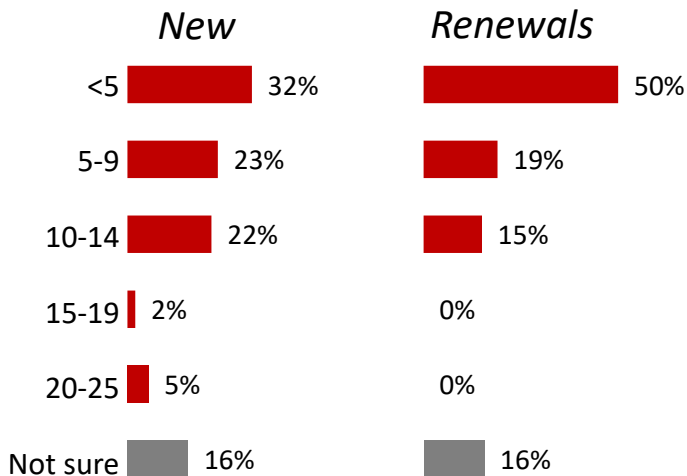
Q37. What best describes your use of EMR for each of the following?

A third of Nurse Practitioners prescribe medications to patients, most often in primary care setting

Nurse Practitioners who prescribe medication



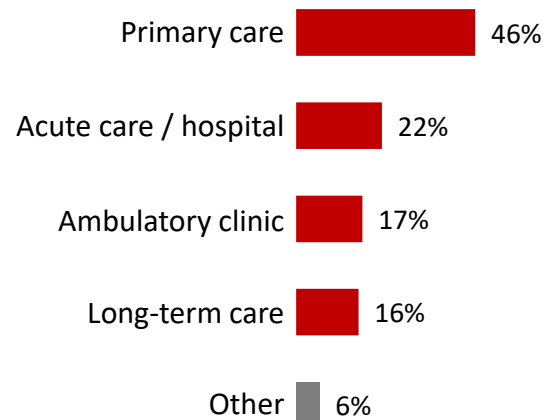
of prescriptions generated daily on average



AVG: 7 new Rx / day

AVG: 4 renewals / day

Clinical setting NPs prescribe medications



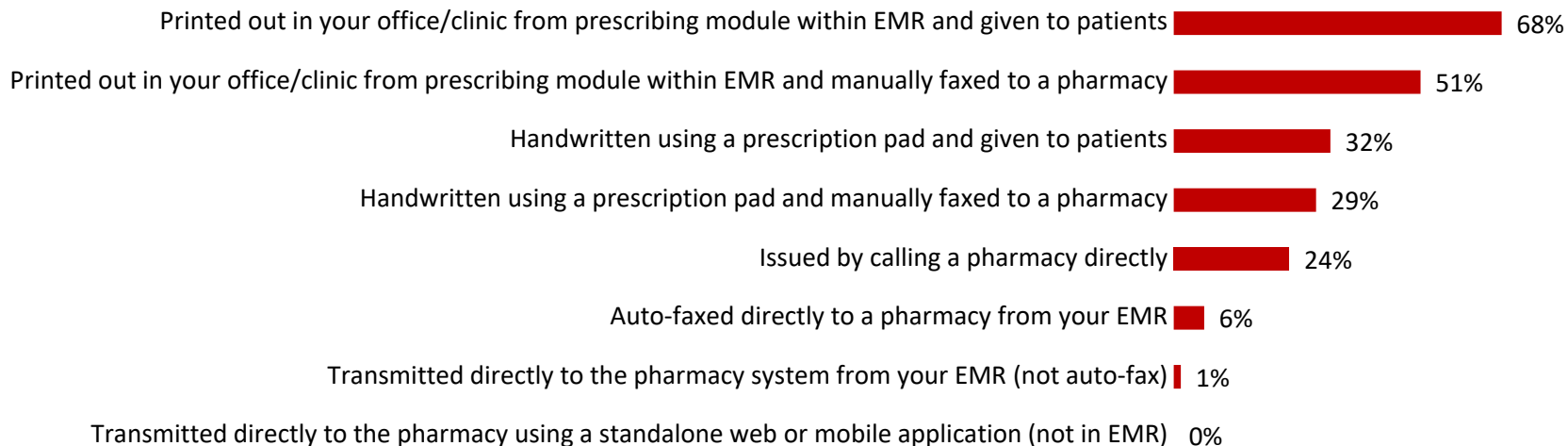
Base: Nurses practitioners in direct patient care (n=154) / who prescribe medications (n=55)

- Q38. Do you prescribe medications?
- Q39. On average, how many prescriptions do you generate daily?
- Q40. In what clinical setting do you prescribe medications?

Question added this wave – no trending

New prescriptions generated by Nurse Practitioners are typically printed out from **Leger** prescribing module within EMR and either given to patients or faxed to a pharmacy

Among Nurse Practitioners who prescribe medication, new prescriptions generated daily are...



- Two thirds of nurse practitioners who prescribe medications primarily print out new prescriptions from module within EMR and give to patients and half print out from EMR and manually fax to a pharmacy.
- A third provide a handwritten prescription to patients, 3 in 10 fax handwritten prescription to pharmacy, and a quarter call the pharmacy directly.
- Very few auto-fax or electronically transmit prescriptions to the pharmacy.

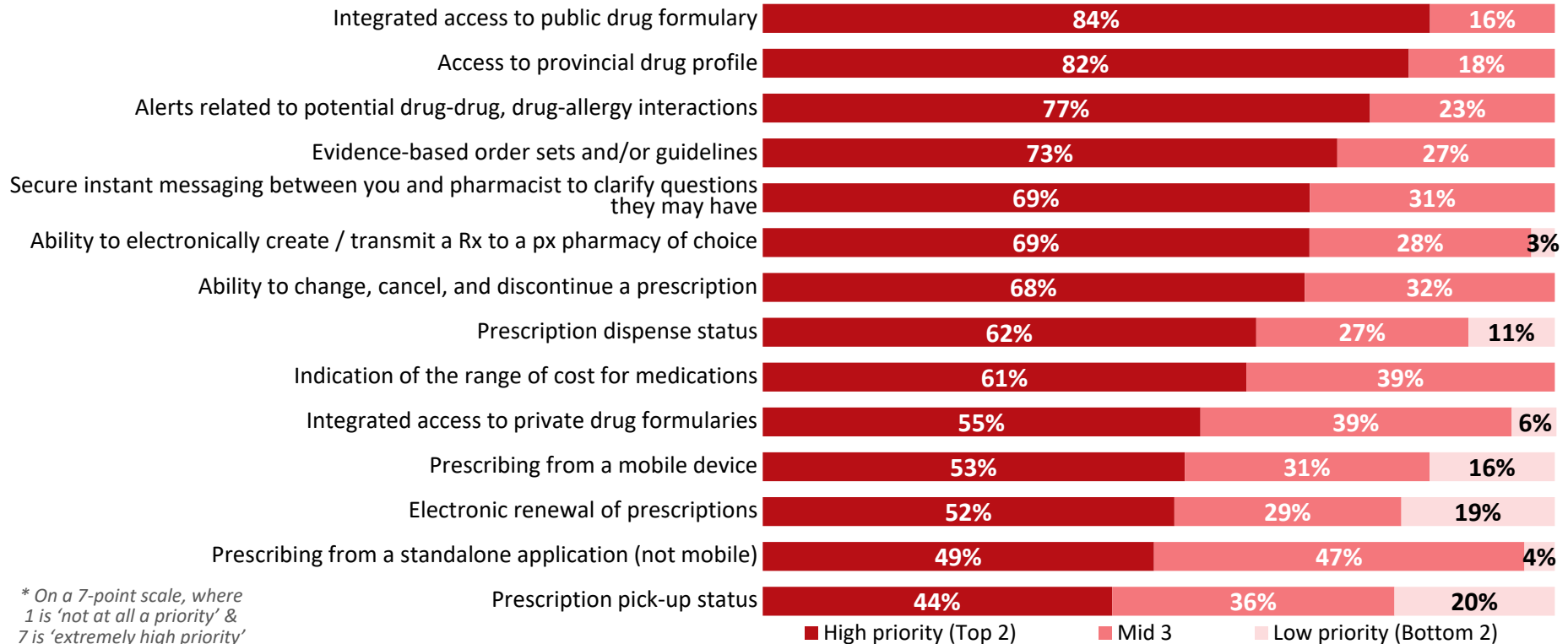
Base: Nurses practitioners who prescribe medications (n=55)

Q41. Thinking about your current practice, the new prescriptions you generate daily are...

Question added this wave – no trending

Importance of features of electronic prescribing services to Nurse Practitioners **Leger** who prescribe medication

Importance* of the following features of electronic prescribing service



* On a 7-point scale, where 1 is 'not at all a priority' & 7 is 'extremely high priority'

Base: Nurses practitioners who prescribe medications (n=55)

Q42. If an electronic prescribing service was available to you, how important would the following features be to you...

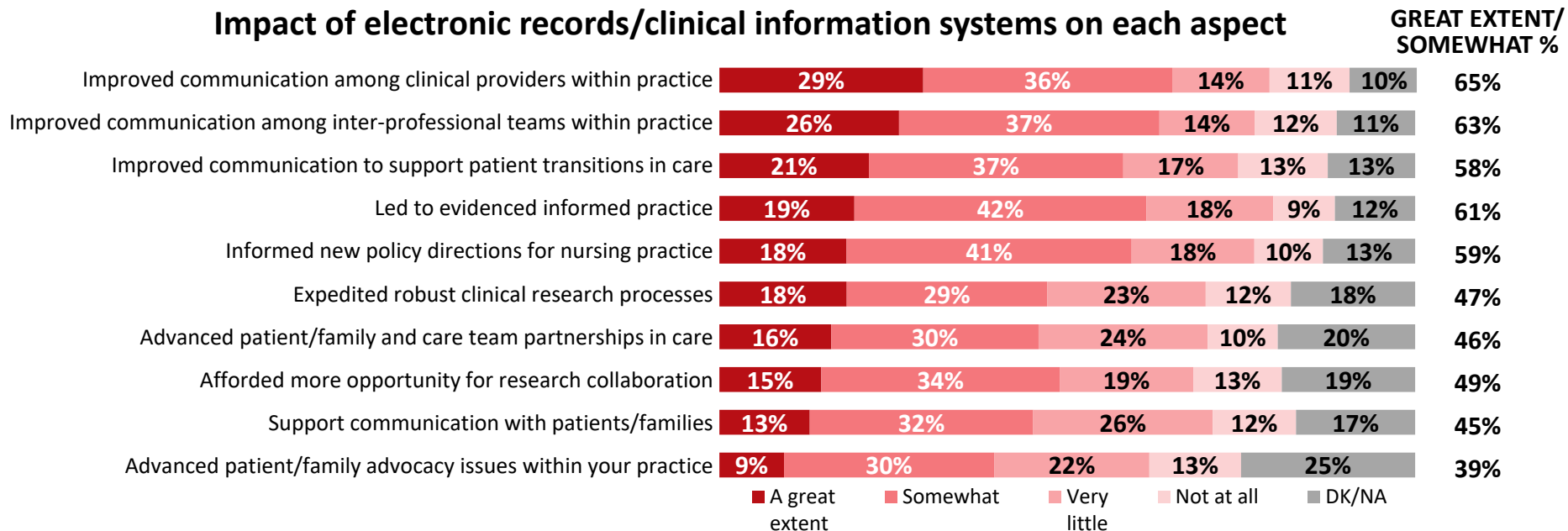
Question added this wave – no trending 55

A photograph of a young nurse in blue scrubs sitting on a couch and showing a tablet to an elderly woman. The woman is smiling and looking at the tablet. In the background, other people are blurred, suggesting a hospital or care facility setting.

APPENDIX C:
General inquiry – other nursing practice domains (Nurses not providing direct patient care)

Impact of electronic records / clinical information systems on aspects of nursing practice

Impact of electronic records/clinical information systems on each aspect



Overall, a majority of nurses who do NOT work in direct patient care see electronic records / clinical information systems have some / great impact in improving communication among clinical providers / inter-professional teams within their practice and to support patient transitions in care, evidences informed practice, and informed new policy directions for nursing practice.

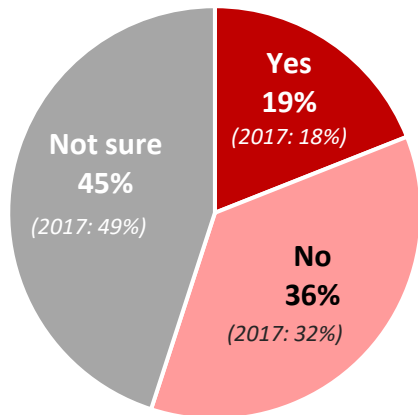
Base: Nurses not in direct patient care (n=510)

Q55. In your opinion, to what degree has the use of electronic records/clinical information systems in your MAIN Care setting... *Question asked to entire sample in 2017 study (including nurses in direct patient care) – no trending* 57

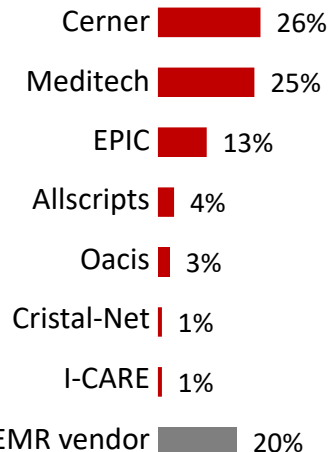
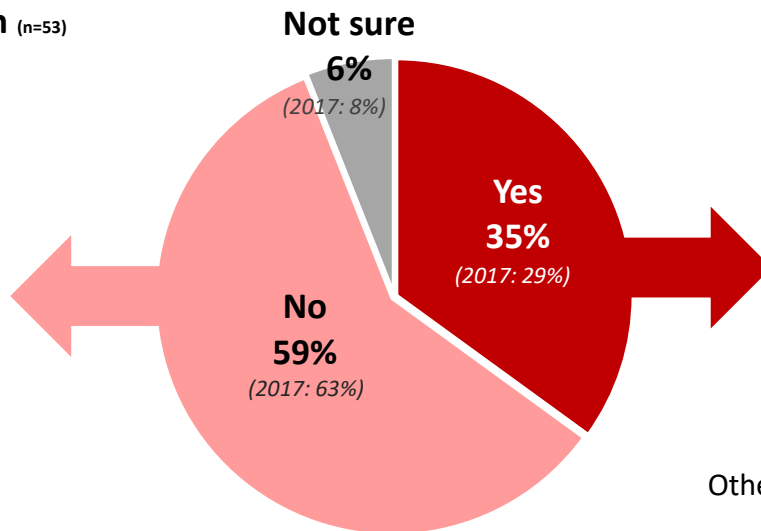
Nursing educators use of electronic record training versions – current and future use

Use of a training version of an electronic record / clinical information system to support teaching nursing skills

Among those without a training version, plans to acquire a training version (n=53)



Among those with a training version, system being used (n=31)



Base: Nurses in nursing education not in direct patient care (n=84) / those without / with training version (n=53/31)

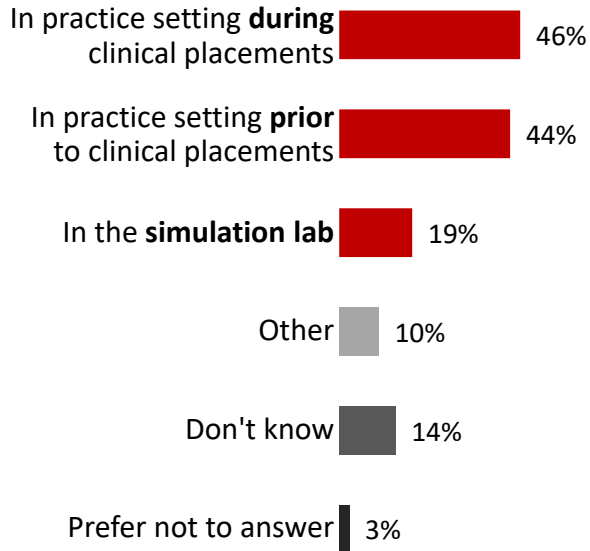
Q48. Are you using a training version of an electronic record /clinical information system in the teaching of basic nursing skills (e.g., in the simulation lab)?

Q49. Is the electronic record /clinical information system you are using...

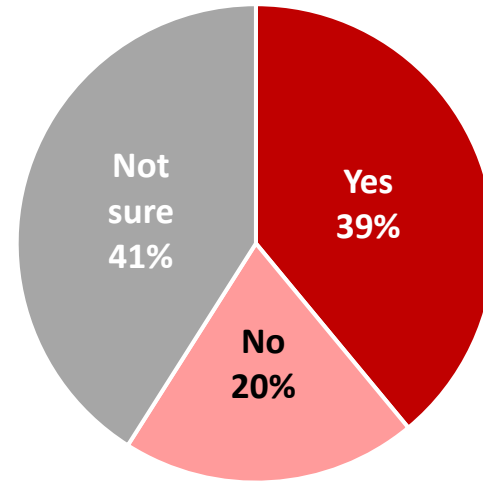
Q50. Are there plans to acquire a training version of electronic record /clinical information system to support the teaching of basic nursing skills at your institution?

Nurses in education report functionalities of electronic systems are learned mainly in practice setting (split between during and prior to clinical placements). 2 in 5 report the nursing program curriculum includes entry-to-practice informatics competencies; though 2 in 5 are unsure.

When nurses learn functionalities of electronic systems



Nursing program curriculum including the entry-to-practice informatics competencies for RNs



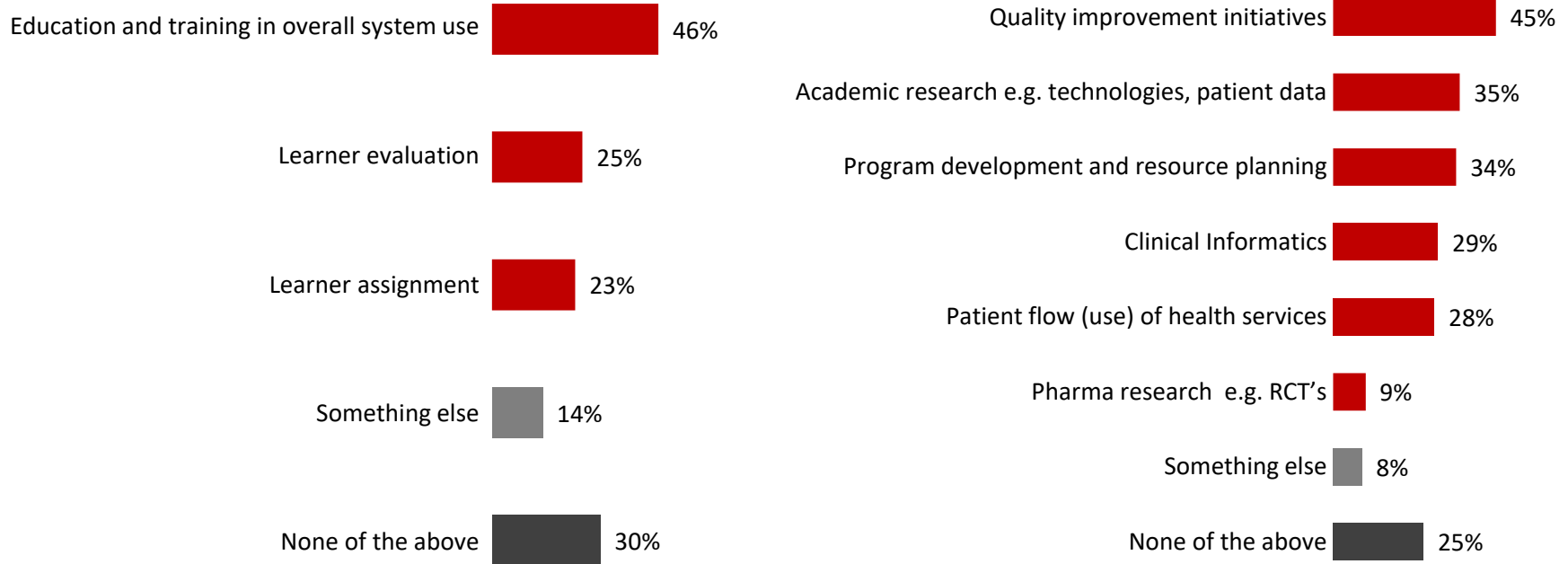
Base: Nurses in nursing education not in direct patient care (n=84)

Q51. At your institution, when do nursing students learn the functionalities of an electronic record /clinical information system?
 Q52. Does your nursing program curriculum include the entry-to-practice informatics competencies for Registered Nurses?

Questions asked to entire sample in 2017 study – no trending

Nurses report varied use of systems to support educational aspects

Use of electronic / clinical information systems to support...



Base: Nurses in nursing education / research / policy not in direct patient care (n=125)

Q53/ 54. *In your role, do you use electronic records/clinical information systems to support...*

Use of electronic / clinical information systems to support...

Role	2020	2017
Education and training of learners in overall system use	46% ↑	35%
Learner evaluation	25%	25%
Learner assignment	23%	21%
Something else	14%	8%
None of the above	30% ↓	50%

Role	2020	2017
Quality improvement initiatives	45% ↑	36%
Academic research e.g. technologies, patient data	35%	31%
Program development and resource planning	34% ↑	24%
Clinical Informatics	29%	24%
Patient flow (use) of health services	28%	21%
Pharma research e.g. RCT's	9%	7%
Something else	8%	n/a
None of the above	25%	n/a

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