2021 Health Information Technology (HIT) Survey

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Department of Health

Contents

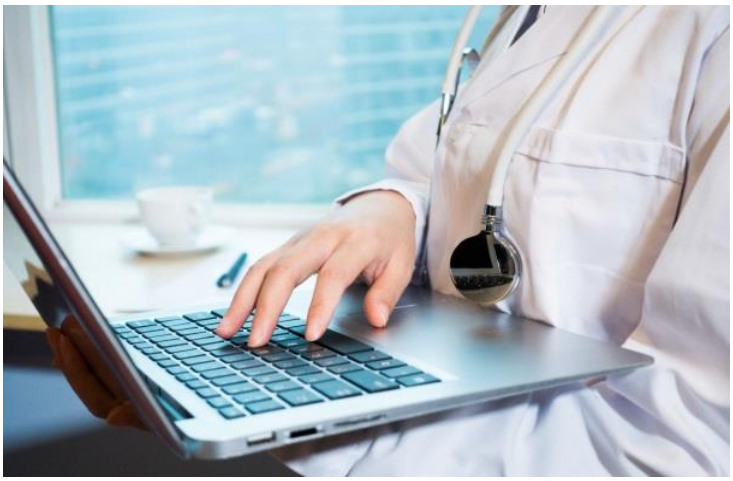
About the Health Information Technology Survey

The Rhode Island Department of Health (RIDOH) has administered the Health Information Technology (HIT) Survey to all licensed physicians in Rhode Island since 2009. Starting in 2013, RIDOH expanded the HIT Survey to include all licensed advanced practice registered nurses (APRNs) and physician assistants (PAs).

The HIT Survey examines the adoption and use of health information technology, such as electronic health records (EHRs), in Rhode Island. Although EHRs have been associated with beneficial clinical outcomes,[1] they have also been reported to reduce the quality of the clinician-patient interaction[2] and to contribute to clinician stress.

Over the past 12 years, the RIDOH HIT Survey has assessed and monitored changes in the proportion of clinicians with access to EHRs and who transmit prescriptions electronically, or e-prescribe. Additionally, the RIDOH HIT Survey explores the impact of technological advancements and federal legislation on HIT adoption and clinician workflow.

Because of the COVID-19 pandemic, this year's survey was brief, while still collecting important information to guide statewide efforts to improve the experience of using health information technology, including telemedicine, in Rhode Island.



[1]Hessels A, Flynn L, Cimiotti JP, Bakken S, Gershon R. Impact of heath information technology on the quality of patient care. Online J Nurs Inform 2015;19. Available at: http://www.himss.org/impact-heath-information-technology-quality-patient-care. Accessed October 2, 2020

[2] Marmor RA, Clay B, Millen M, Savides TJ, Longhurst CA. The impact of physician EHR usage on patient satisfaction. Appl Clin Inform 2018;9(1):11–14

Physician Summary Measures

The 2021 Physician Health Information Technology (HIT) Survey was administered to 4,466 physicians licensed in Rhode Island, in active practice, and located in Rhode Island, Connecticut, or Massachusetts. The survey received a total of 1,772 responses, for a response rate of 40%. Of those, 1,556 reported providing direct patient care and were asked to complete the full survey.

To describe the prevalence, use, and impact of HIT among physicians in Rhode Island, we report four composite measures:

1. physicians with electronic health records (EHRs)
2. physicians who e-prescribe
3. physicians who e-prescribe controlled substances, and
4. physicians who use telemedicine.

Aggregate results for these measures are in **Table 1 (page 5).** Please refer to the **measure specifications**[3] document for a description of how the measures were calculated and the **practitioner level report**[4] for individual physician results.
Table 2 (page 5) stratifies the four publicly-reported EHR summary measures by practice setting (office versus hospital) and, among office-based physicians, by specialty (primary care physician [PCP] versus non-PCP).

Figure 1 (page 6) compares this year's EHR and e-prescribing results to data from prior survey years. **Figure 2 (page 6)** shows the survey response rate from 2009 to 2021.

[3] http://www.health.ri.gov/publications/metadata/HealthInformationTechnologySurvey.pdf
[4] http://www.health.ri.gov/publications/annualreports/HealthInformationTechnologyPhysicanSurvey.pdf

Table 1. Publicly-reported measures for the physician respondents

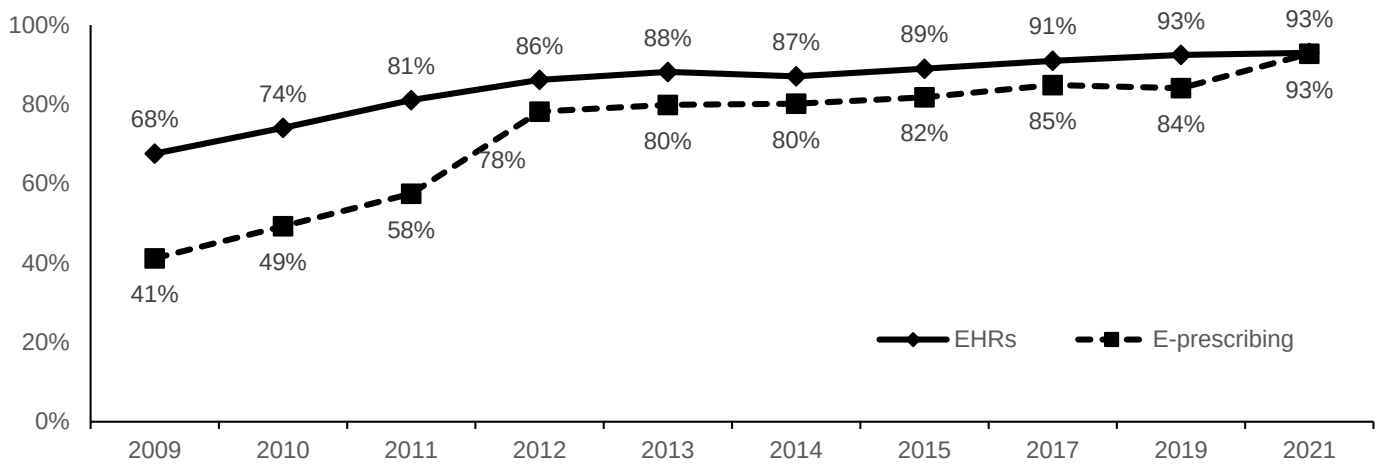
Measure	Respondents	n (%)
Physicians with EHRs[5]	1,556	1,447 (93%)
Physicians who e-prescribe[6]	1,433	1,330 (93%)
Physicians who e-prescribe controlled substances[7]	1,244	1,162 (93%)
Physicians who use telemedicine[8]	1,547	1,244 (80%)

Table 2. Physician publicly-reported measures, by practice setting and office-based specialty[9]

	Setting		Office-based specialty	
Measure	Office (N=1,109)	Hospital (N=447)	PCP (N=481)	Non-PCP (N=625)
Physicians with EHRs, n (%)[5]	1,012 (91%)	435 (97%)	454 (94%)	555 (89%)
Physicians who e-prescribe, n (%)[6]	1,023 (95%)	307 (88%)	467 (97%)	553 (92%)
Physicians who e-prescribe controlled substances, n (%)[7]	887 (93%)	275 (94%)	449 (98%)	435 (89%)
Physicians who use telemedicine, n (%)[8]	1,000 (91%)	244 (55%)	465 (97%)	535 (86%)

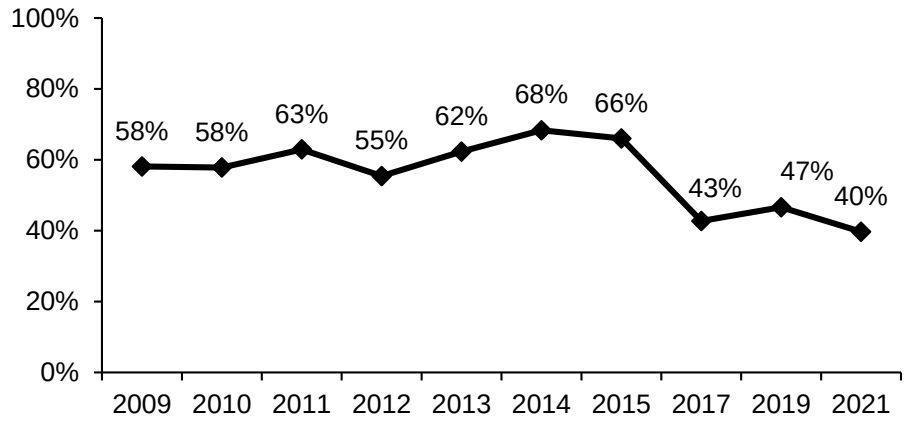
[5] EHR was defined in the survey as an integrated electronic clinical information system that tracks patient health data and may include such functions as visit notes, prescriptions, lab orders, etc.
[6] Excludes physicians who responded that prescribing was not applicable to their practice.
[7] Excludes physicians who responded that they do not prescribe medications or that they do not prescribe any controlled substances.
[8] For survey purposes, telemedicine was defined as remote, real-time communication between a patient and clinician, in lieu of a face-to-face visit. Telemedicine could include audio only (e.g., telephone) or audio and video (e.g., video calling).
[9] The denominator for each measure is the number of respondents for the specific associated survey question, which may be less than the number of total survey respondents (N) at the top of the column.

Figure 1. Prevalence of EHRs and e-prescribing among physician respondents, 2009-2021[10]



EHR adoption increased from 68% in 2009 to 93% in 2021; uptake has leveled off in recent years. While prevalence of e-prescribing had remained in the low 80% range between 2013 and 2019, it increased from 84% to 93% between 2019 and 2021. This change may be due to new state regulations in 2020 that mandated e-prescribing of controlled substances.

Figure 2. Physician response rate, 2009-2021[10]



In recent years, the HIT Survey has had a lower response rate, perhaps due, in part, to moving to a biannual distribution.

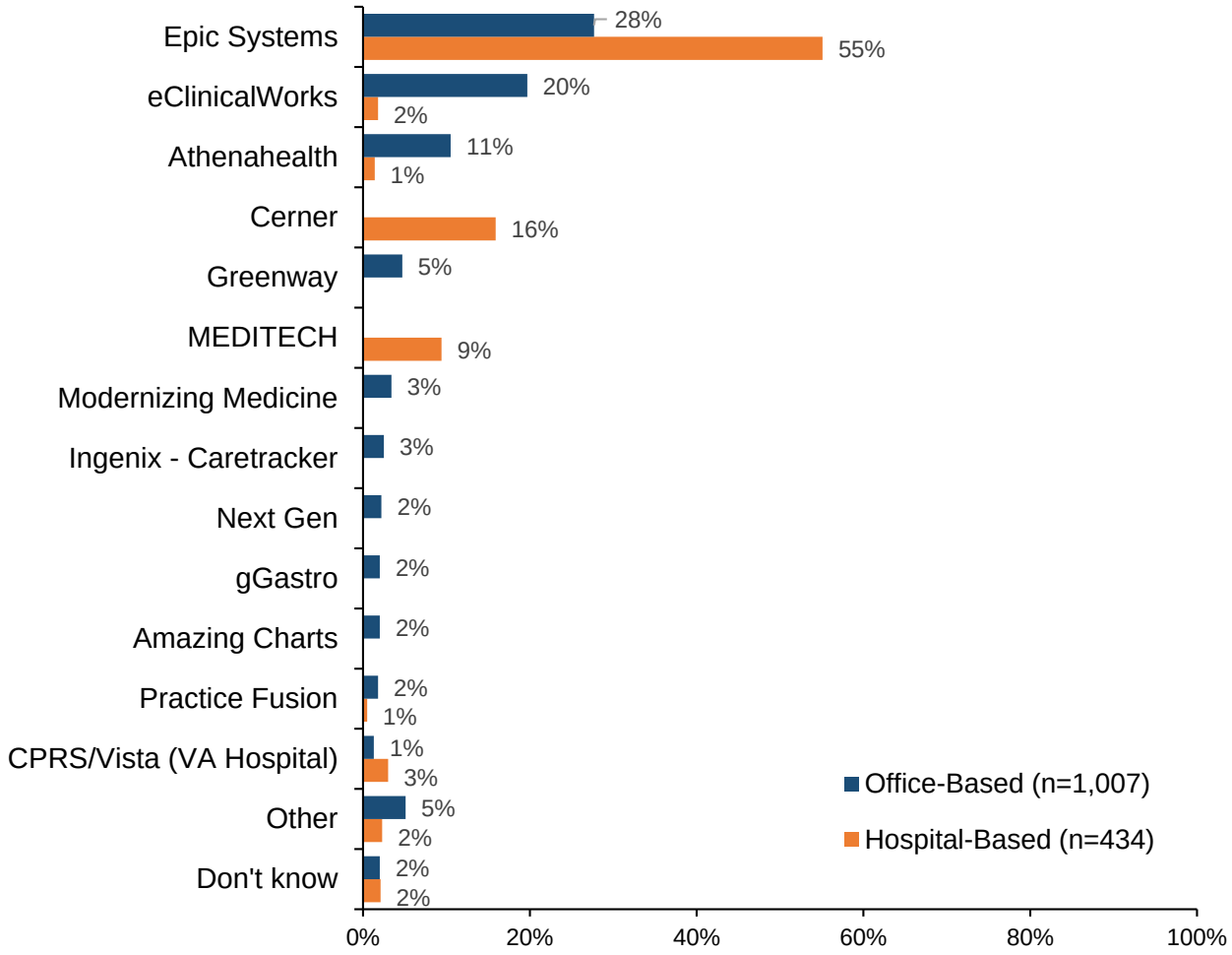
Despite the strain on clinicians in 2021, the response rate remained in the 40% range.

[10] The HIT survey was not conducted in 2016, 2018, or 2020.

EHR Vendors

Epic Systems is the most frequently used EHR vendor, with the majority of hospital-based physicians (55%) and more than a quarter of office-based physicians (28%) using an Epic EHR. Cerner (16%) and MEDITECH (9%) are the only other vendors with a substantial share of inpatient use among our respondents. While there is more variation in vendors among office-based physicians, more than half use one of three vendors: Epic Systems (28%), eClinicalWorks (20%), and Athenahealth (11%).

Figure 3. Percent of physicians who use each of the following EHR vendors, by setting



E-Prescribing Practices & Use of the Prescription Drug Monitoring Program

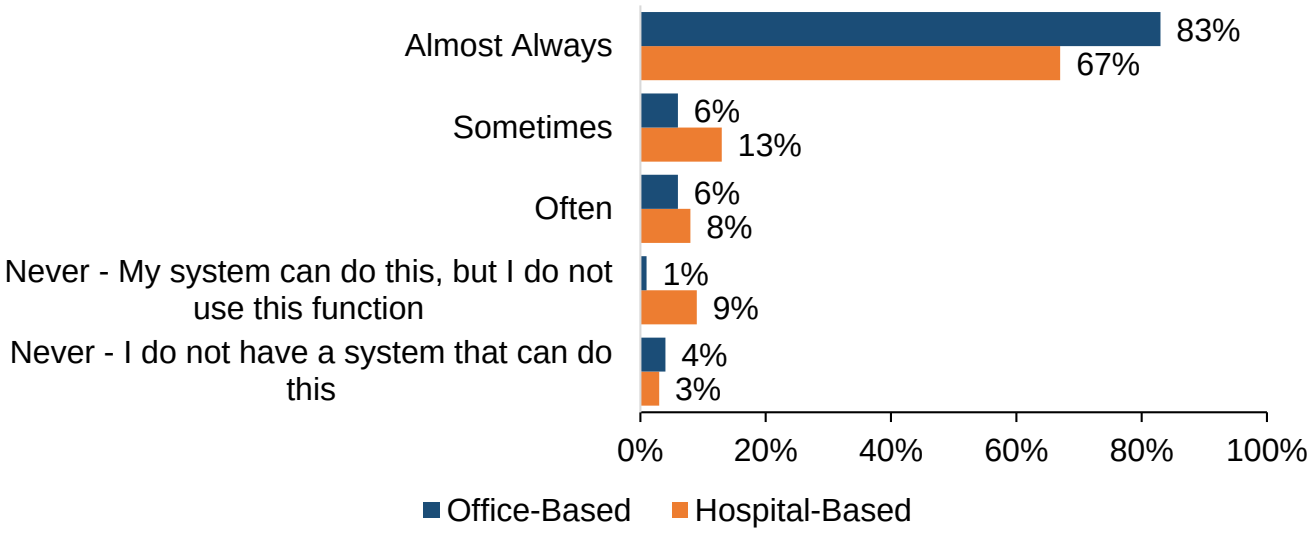
Electronic prescribing, or e-prescribing, allows clinicians to send prescriptions electronically to pharmacies, instead of by fax or paper.[11] E-prescriptions may be more accurate and legible, possibly reducing errors.[12]

The Health Information Technology (HIT) Survey measured the use of e-prescribing among physicians. **Figure 4** shows how often physicians e-prescribe. Hospital-based physicians were asked to consider only outside or community-based pharmacies and not the hospital or facility pharmacy.

Most office-based physicians who prescribe medications report that they "almost always" transmit prescriptions electronically to the pharmacy (83%). This proportion has increased from 59% in 2019.[13]

Among hospital-based physician who prescribe medications, 67% "almost always" transmit prescriptions electronically to an outside or community pharmacy. This proportion has also increased, up from 28% in 2019.[13]

Figure 4. Among physician respondents who prescribe medications, the percent who transmit prescriptions electronically to the pharmacy



[11] Centers for Medicare & Medicaid. E-Prescribing 2014 8/28/2017; Available from: https://www.cms.gov/Medicare/E-Health/Eprescribing/index.html.
[12] Porterfield, A, Engelbert K, and Coustasse A. Electronic prescribing: improving the efficiency and accuracy of prescribing in the ambulatory care setting. Perspect Health Inf Manag. 11: p. 1g.
[13] Note: The wording for this answer choice was changed from "Always" in 2019 to "Almost Always" in 2021. The other answer choices remained the same.

In addition to measuring the prevalence of e-prescribing overall, the 2021 HIT Survey also assessed e-prescription of controlled substances specifically (e.g., opioids and benzodiazepines).

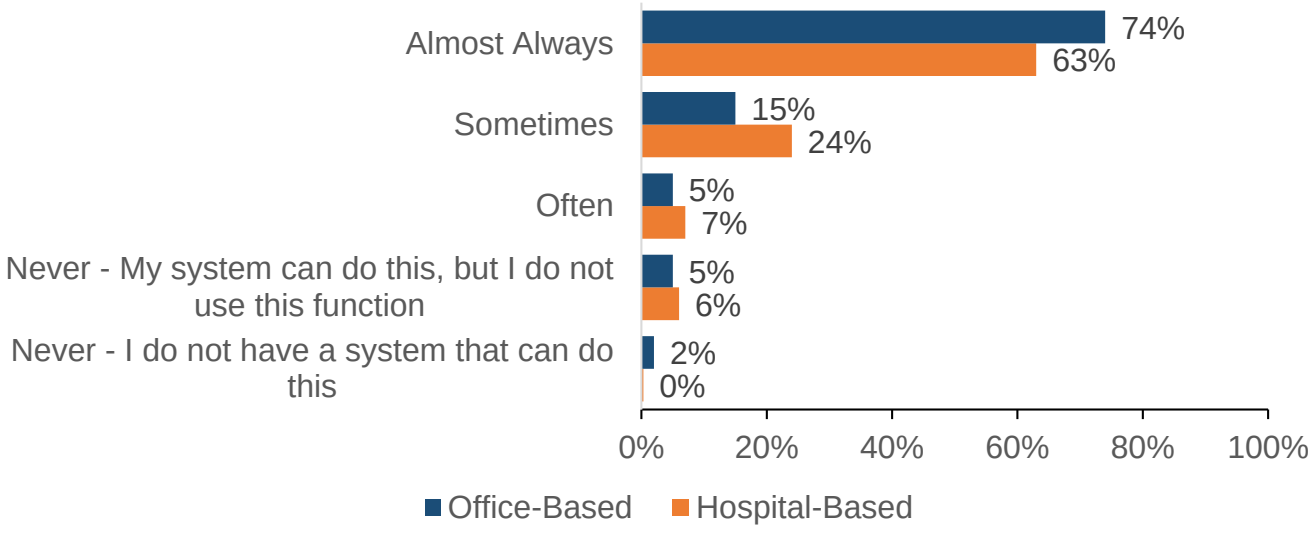
Rhode Island passed a law[14] that took effect in January 2020 requiring e-prescribing of all controlled substances. Among physicians who do *not* prescribe controlled substances (n=211), fewer than 10% reported that they stopped prescribing them because of the mandate to e-prescribe.

Figure 5 shows how often physicians transmit controlled substance prescriptions electronically. This figure only includes physicians who can e-prescribe and who prescribe controlled substances. Hospital-based physicians answered about prescriptions to outside or community-based pharmacies and not their hospital or facility pharmacy. 74% of office-based and 63% of hospital-based physicians report "almost always" electronically transmitting controlled substance prescriptions.

This represents a substantial increase from 2019, when 29% and 17% of office- and hospital-based physicians, respectively, "always" e-prescribed controlled substances.

More than a third of physicians in 2019 reported that their system was unable to electronically transmit controlled substance prescriptions, compared with only 1% in 2021.

Figure 5. Among physicians who can e-prescribe and who prescribe controlled substances, the percent of respondents who e-prescribe controlled substances, by practice setting

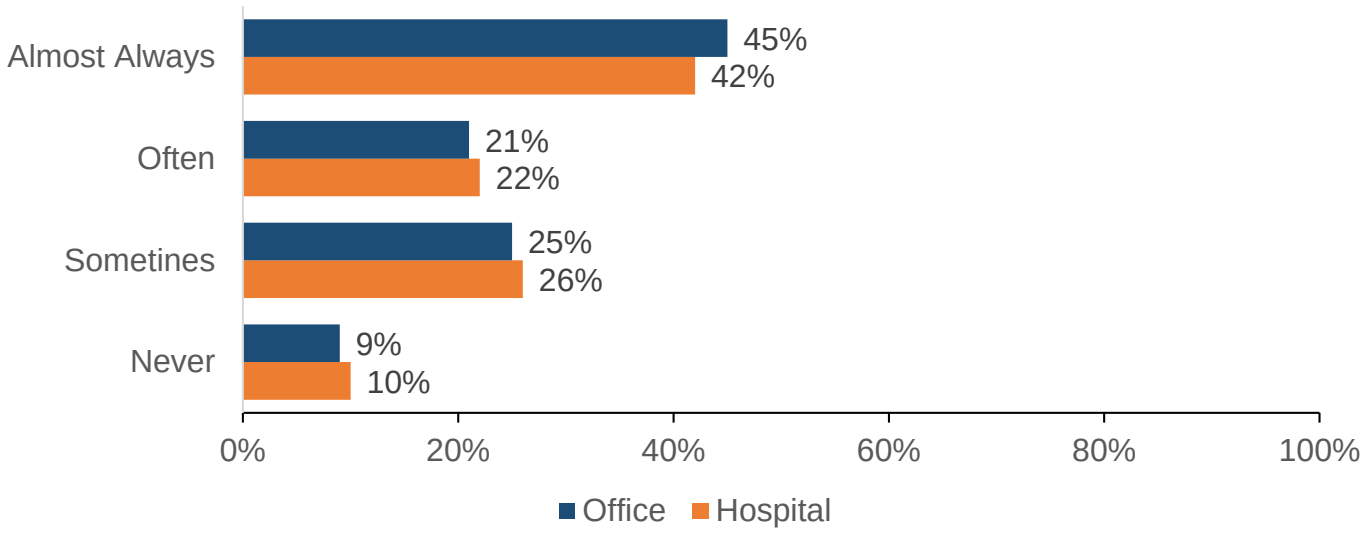


[14] https://health.ri.gov/medicalrecords/about/eprescribing/

Figure 6 shows how often physicians consult the Prescription Drug Monitoring Program (PDMP) before prescribing opioids or benzodiazepines. About 45% of office-based and 42% of hospital-based physicians “almost always” checked the PDMP before prescribing opioids and benzodiazepines.

Note: Hospital-based physicians were asked to consider only opioid and benzodiazepine prescriptions intended for use outside of their hospital or facility.

Figure 6. Among physician respondents who prescribe controlled substances, the percent who consult the Rhode Island PDMP before prescribing opioids or benzodiazepines



To learn more about the Rhode Island Department of Health’s Prescription Drug Monitoring Program, visit:

https://health.ri.gov/healthcare/medicine/about/prescriptiondrugmonitoringprogram/

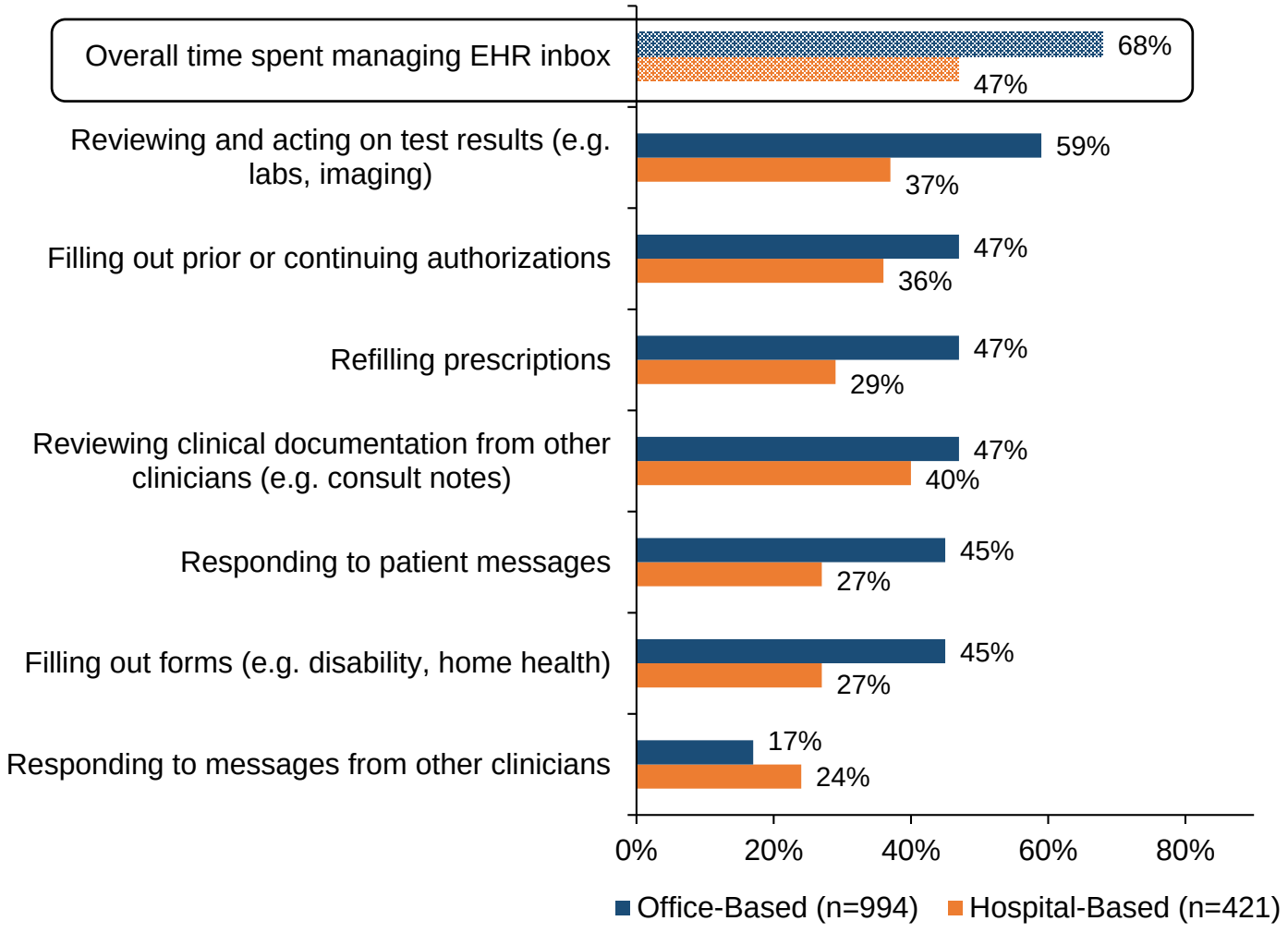
Time Spent by Physicians Managing EHR Inbox Tasks

Respondents were asked to share the amount of time they spend on tasks related to their EHR inbox (**Figure 7**).

More than two-thirds of office-based physicians (68%) and close to half of hospital-based physicians (47%) reported they spend a "moderately high" or "excessive" amount of time overall on inbox tasks.

Higher proportions of office-based physicians, compared to hospital-based physicians, reported spending a "moderately high" or "excessive" amount of time for each task type, except for responding to messages from other clinicians.

Figure 7. Percent of physician respondents who spend a "moderately high" or "excessive" amount of time on the following inbox tasks, stratified by practice setting (N=1,415)



Use of Health Information Technology for Immunizations

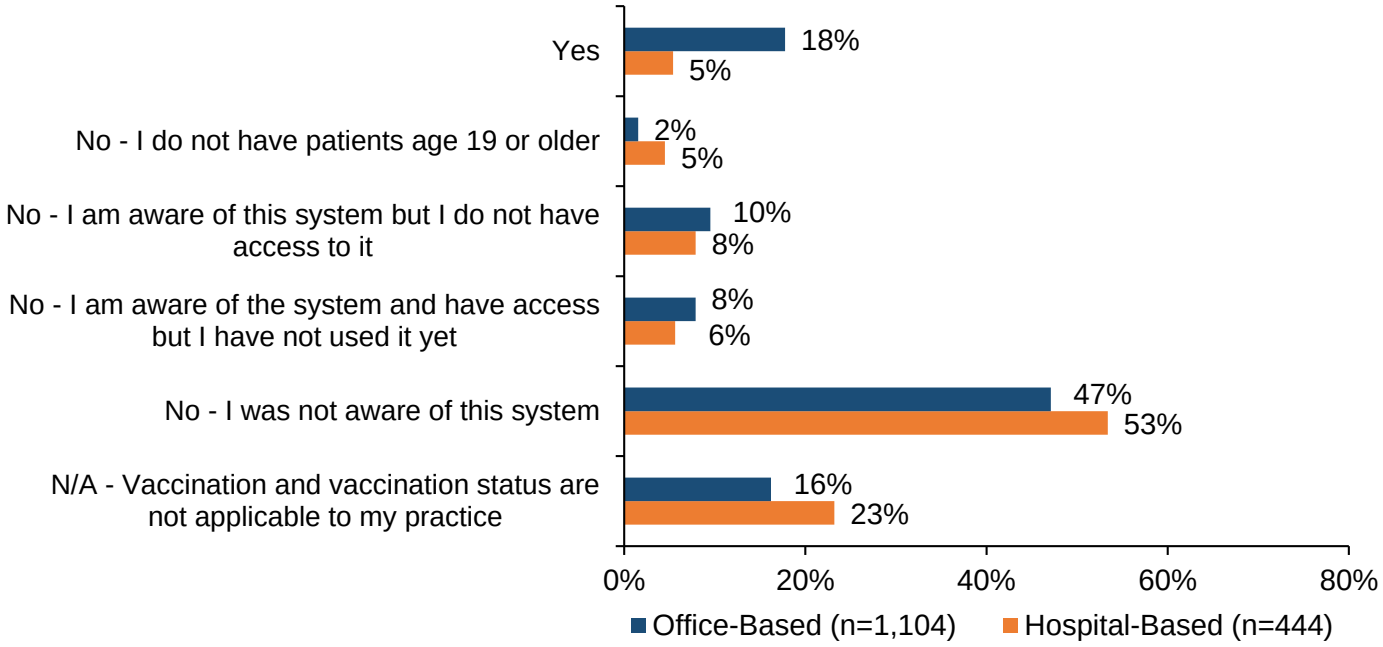
Physicians with and without electronic health records (EHRs) can access the **Rhode Island Child and Adult Immunization Registry (RICAIR)**. This database is an expansion of the KIDSNET system, which had only included individuals up to age 18.

Among all physician respondents, 14% had looked up an immunization record in RICAIR for an adult patient. About half of respondents (49%) were not aware of the system.

Figure 8 shows the proportion of physician respondents who had used or had knowledge of RICAIR, stratified by practice setting. Almost one-fifth (18%) of office-based physicians have used RICAIR, compared to 5% of hospital-based physicians.

Among the 220 physicians who had used RICAIR, 61% submit their own patients' immunization records directly to the RICAIR database.

Figure 8. Percent of physician respondents who had used RICAIR to look up the immunization record of a patient age 19 or older, stratified by practice setting



RICAIR provides a lifelong immunization registry and maintains all records of immunizations in one secure database, regardless of where the vaccine is administered:

https://health.ri.gov/programs/detail.php?pgm_id=156681

Physician Use of Telemedicine

The COVID-19 pandemic has changed the way many physicians provide care for their patients, including an increase in the use of telemedicine.

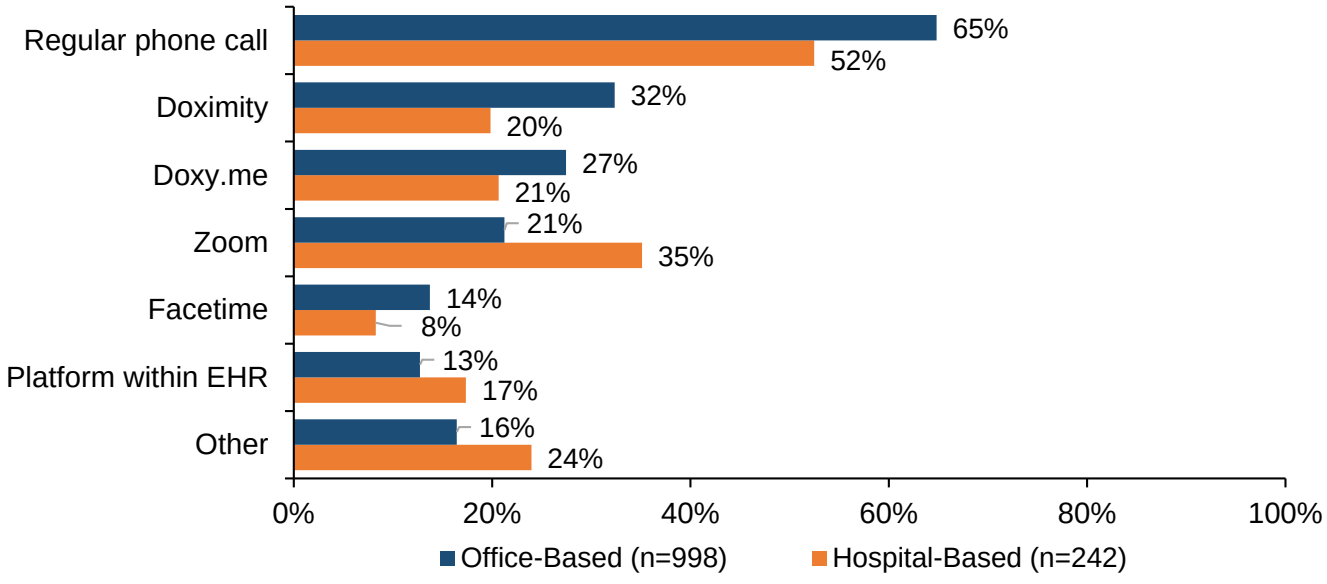
Overall, 80% of physician respondents reported using telemedicine to care for patients in the prior year (June 2020-May 2021). Higher proportions of office-based physicians reported using telemedicine (91%), compared to hospital-based physicians (55%). Among all respondents, only 11% had used telemedicine before the pandemic (12% of office-based physicians and 10% of hospital-based physicians).

Among physicians who had used telemedicine in the prior year, 39% used mostly audio-only technology (e.g., a telephone call). Almost a quarter (23%) used mostly audio/video platforms (e.g., Zoom), and 38% used a combination of audio-only and audio/visual technology.

The most common platforms and technologies used by physicians to provide telemedicine were regular phone calls (65% of office-based physicians and 53% of hospital-based), followed by Doximity (32%) and Doxy.me (28%) among office-based physicians, and by Zoom (35%) among hospital-based physicians (**Figure 9**).

Telemedicine was defined in the survey as remote, real-time communication between a patient and clinician, in lieu of a face-to-face visit.

Figure 9. Percent of physicians who use the following platforms and technologies for telemedicine, stratified by practice setting (N=1,240)

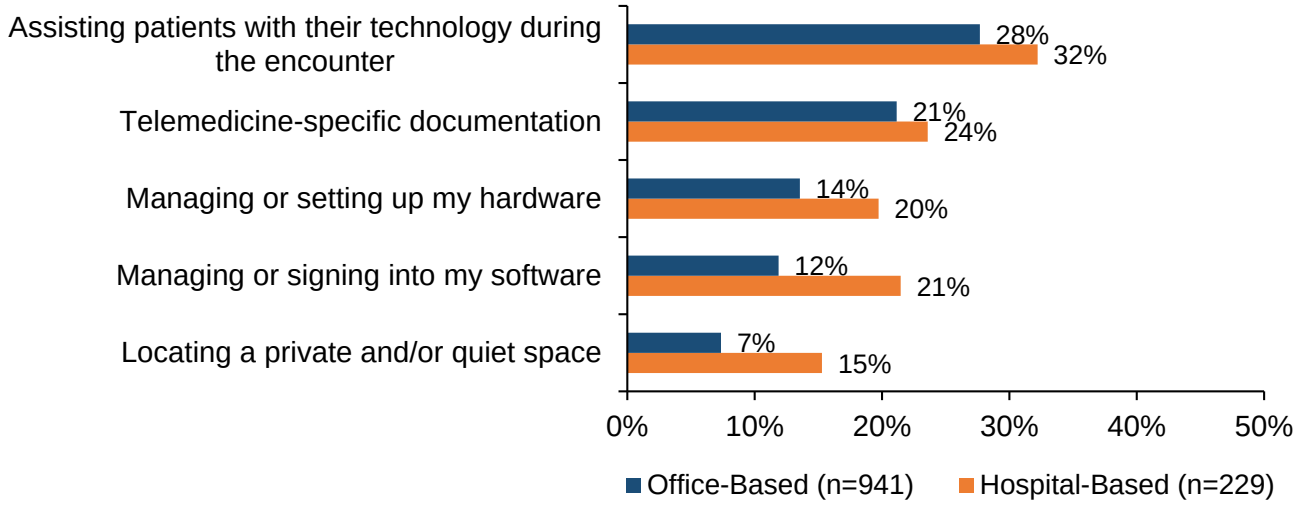


When asked about time spent on common tasks related to telemedicine, almost a third of office- and hospital-based physicians reported spending a “moderately high” or “excessive” amount of time assisting patients with technology during an encounter (28% of office- and 32% of hospital-based respondents) **(Figure 10)**.

More than one in five spent a “moderately high” or “excessive” amount of time on telemedicine-specific documentation (21% of office- and 24% of hospital-based respondents).

Across all tasks, higher proportions of hospital-based physicians, compared to office-based physicians, reported spending a “moderately high” or “excessive” amount of time on every task type **(Figure 10)**.

Figure 10. Among physician respondents who use telemedicine, the percent who spend a “moderately high” or “excessive” amount of time on the following tasks (N=1,170)

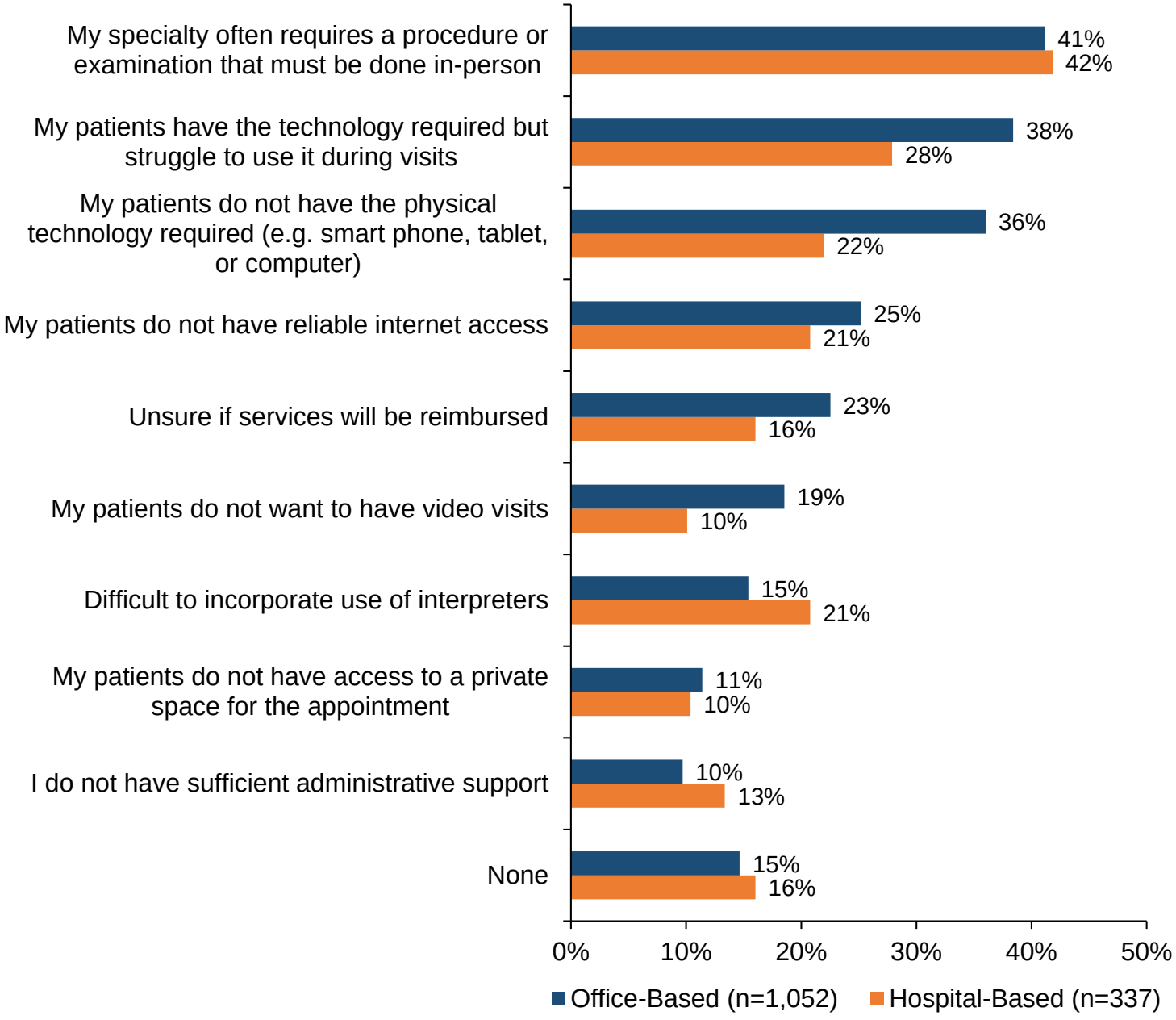


All respondents were asked about the barriers to providing telemedicine. The highest proportion (41%) reported that their specialty often requires a procedure or examination that must be done in-person.

The next most commonly cited barrier was that patients struggled to use technology during encounters (36%), followed by patients not having needed technology (33%) **(Figure 11, page 15)**.

In free-text responses, physicians provided more details about technology issues, reimbursement, and the need or preference for in-person visits. Additional barriers included challenges in specific populations (e.g., older adults, children, behavioral health patients), patients’ expectations for the timing or level of care during telemedicine visits, and patients multi-tasking (e.g., multiple respondents described patients driving or shopping during visits).

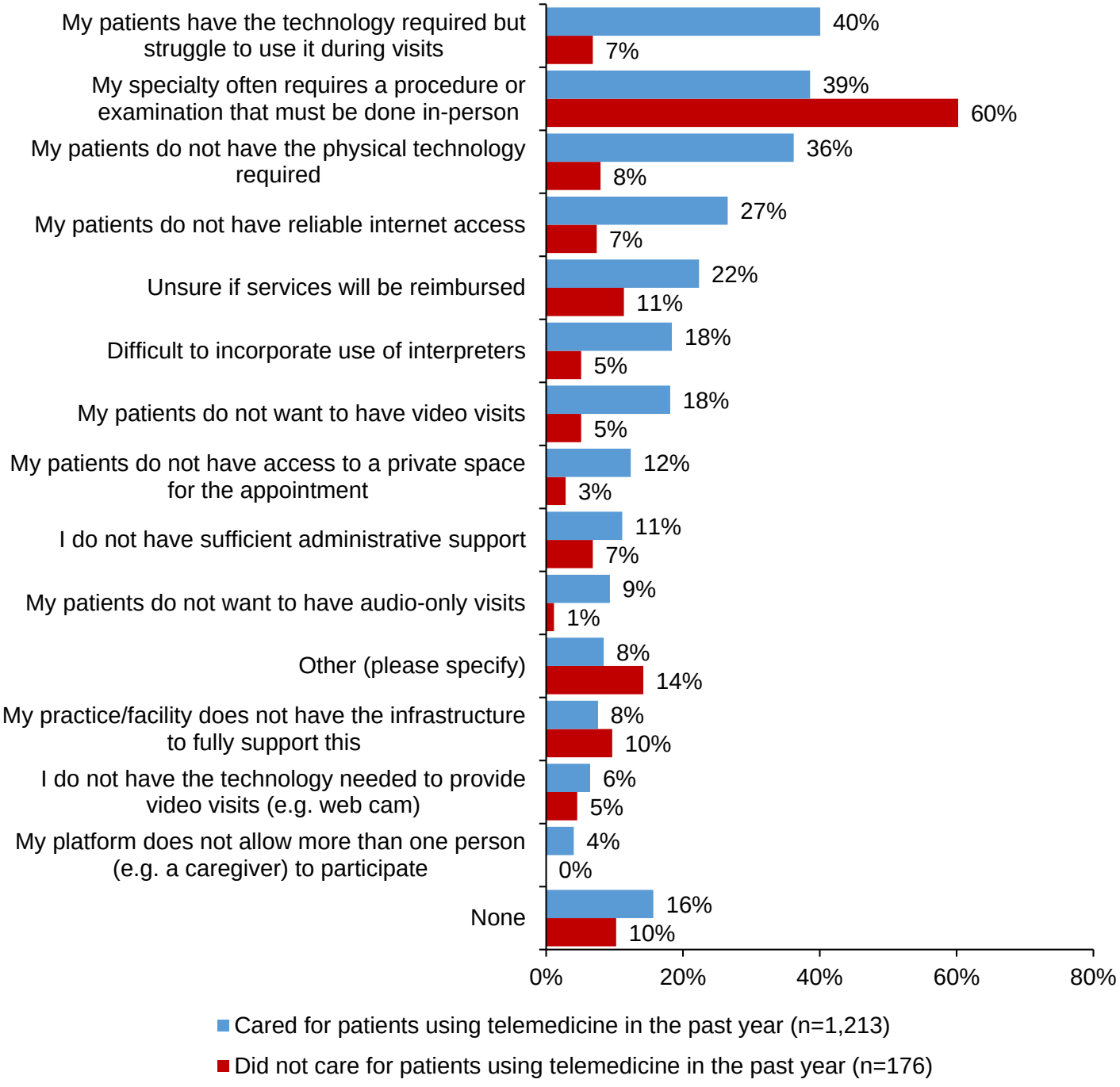
Figure 11. Percent of physician respondents who reported the following barriers to offering telemedicine, stratified by setting



This figure includes barriers that at least 10% of office-based or hospital-based physicians reported. Other barriers that were identified by fewer than 10% of respondents were: my patients do not want to have audio-only visits; my practice/facility does not have the infrastructure to fully support this; I do not have the technology needed to provide video visits (e.g., webcam), and my platform does not allow more than one person (e.g., a caregiver) to participate.

Among physicians who had *not* used telemedicine during the past year, the most frequently cited barrier to caring for patients using telemedicine was that their specialty often requires a procedure or examination that must be done in-person (60%) **(Figure 12)**.

Figure 12. Percent of physician respondents who reported the following barriers to offering telemedicine, stratified by whether the physician had provided telemedicine in the past year



Physician Burnout

The HIT survey has measured physician burnout since 2017, and the results have sparked statewide conversations about the role of technology in exacerbating burnout. Measuring and addressing physician burnout is more important than ever due to the ongoing COVID-19 pandemic, given the significant physical and emotional impact that the pandemic has had on physicians.

Burnout among healthcare workers is well-documented. Burnout results from persistent and chronic stress and is characterized by a combination of emotional exhaustion, depersonalization, and reduced perception of personal accomplishment.[15]

Symptoms of burnout are not only associated with poor health outcomes for the individual but have also been shown to negatively impact the quality of patient care.[16]

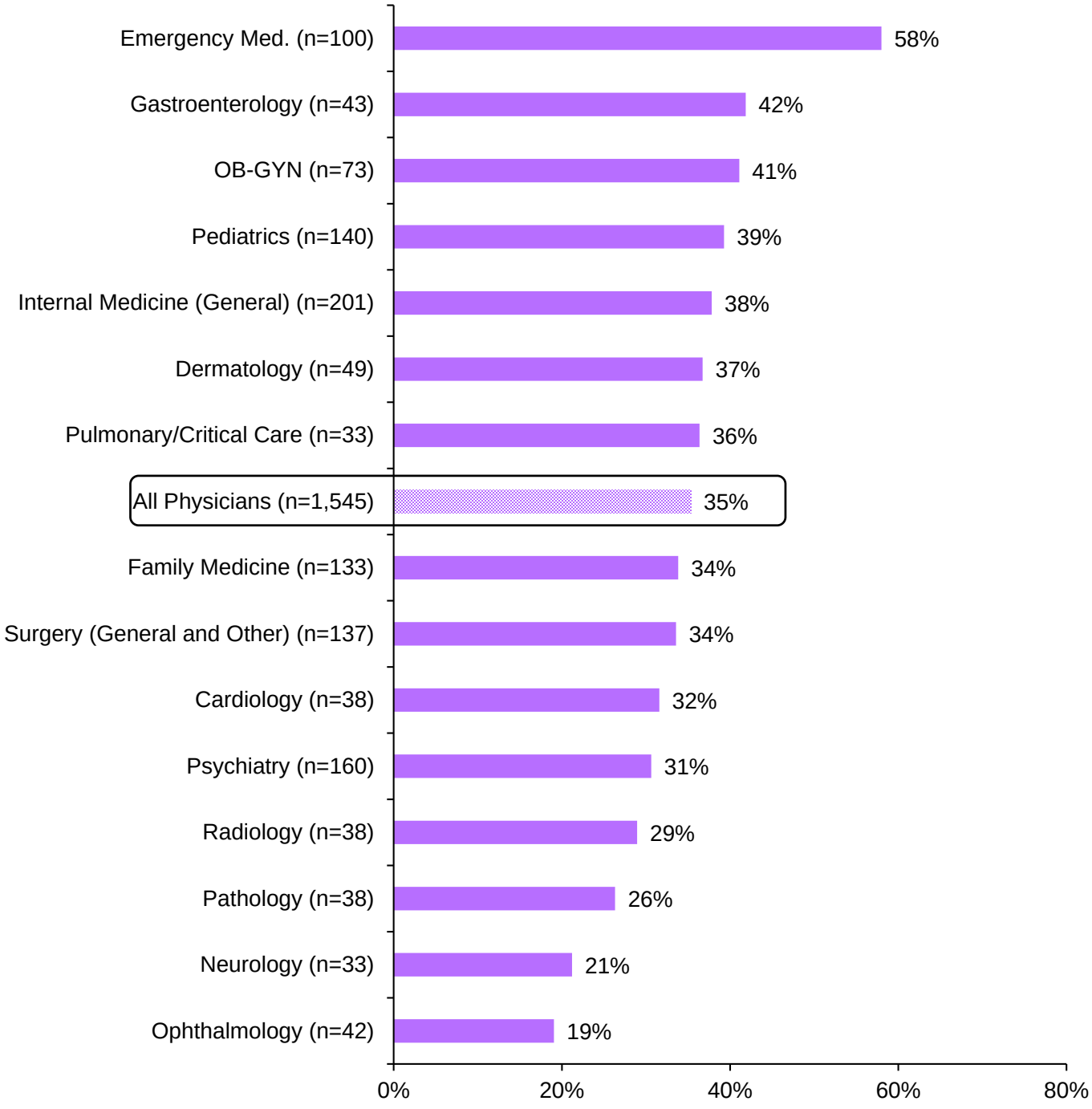
More than a third of physician respondents (35%) reported experiencing symptoms of burnout, which is an increase from 30% in 2019. The prevalence of burnout among primary care physicians was 37%.
There was a similar prevalence of burnout across practice settings, with 35% of office-based and 36% of hospital-based physicians experiencing burnout symptoms.

Among the 15 most common specialties, the highest prevalence of burnout was noted among emergency medicine physicians, with 58% reporting symptoms of burnout, up from 46% in 2019. Emergency medicine was followed by gastroenterology, with 42% of gastroenterologists reporting symptoms of burnout. Ophthalmologists reported the lowest prevalence of burnout—about 19% **(Figure 13, page 18)**.

These estimates are lower than those reported in recent literature, where about 50% of all physicians reported burnout symptoms.[17] The fact that the survey was not anonymous and was administered by the Department of Health, which also oversees physician licensing, may have affected response patterns to this question.

[15] Maslach C and Jackson SE, The measurement of experienced burnout. J Occup Behav, 1981. 14.
[16] Dewa, C.S., et al., How does burnout affect physician productivity? A systematic literature review. BMC Health Serv Res. 2014:14: p. 325.
[17] Shanafelt, T.D., et al., Changes in Burnout and Satisfaction With Work-Life Balance in Physicians and the General US Working Population Between 2011 and 2014. Mayo Clin Proc. 2015; 90(12): p. 1600-13

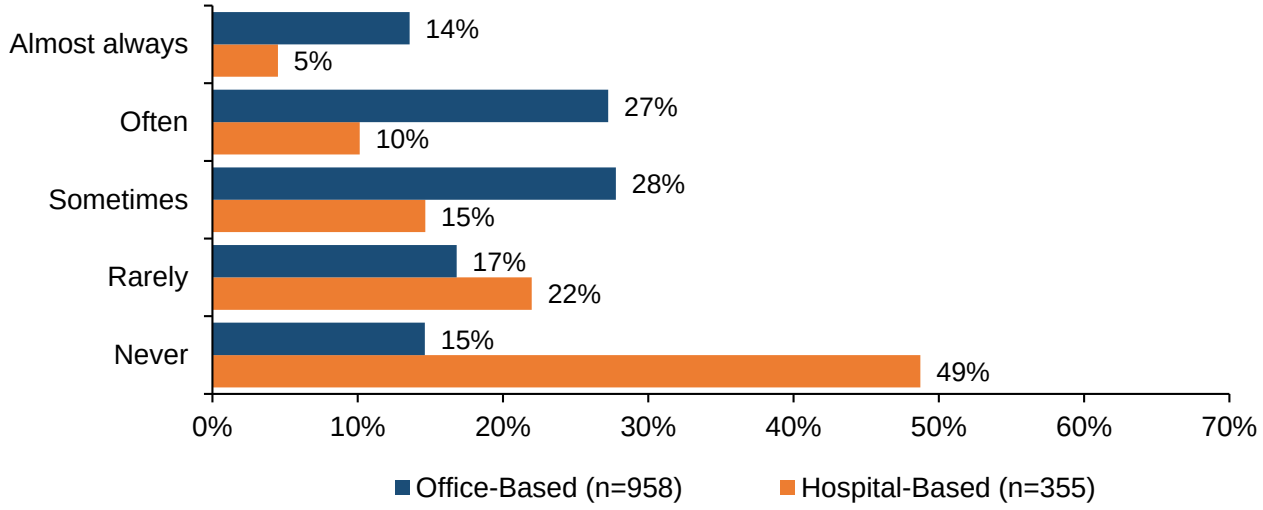
Figure 13. Percent of survey respondents who reported experiencing any symptoms of burnout, by specialty, among the 15 most common specialties (N=546)



Clinical Support with Technology

Survey respondents were asked about the type of clinical support they receive from their staff, such as assistance with managing inbox tasks **(Figure 14)** and use of a scribe. More office-based physicians reported “often” or “almost always” receiving assistance with their inbox tasks compared to hospital-based physicians (41% vs. 15%). Most hospital-based physicians reported “never” or “rarely” receiving any inbox assistance (70%), compared to 31% of office-based physicians.

Figure 14. How often physician respondents receive assistance from someone in their practice in managing their inbox tasks, by practice setting



Use of scribes was similar among office- and hospital-based physicians (12% and 12%, respectively) and has not changed substantially over the past four years.

Among physicians who routinely work with scribes during in-person visits, 77% report the scribe is physically present during the visit, and 19% report the scribe participates remotely.

Physicians who worked with scribes during telemedicine visits were also asked to describe their experience. Among the 65 physicians who provided comments, many described positive experiences, such as feeling less stressed, focusing more on the patient interaction, and spending less time on documentation. Some physicians described technical issues when including a scribe in telemedicine visits; others found it disruptive.

Respondents also described a variety of roles for scribes in telemedicine visits, including managing the “waiting room” or queue, chart preparation, triaging the calls, and handling administrative tasks without participating in the visit itself.

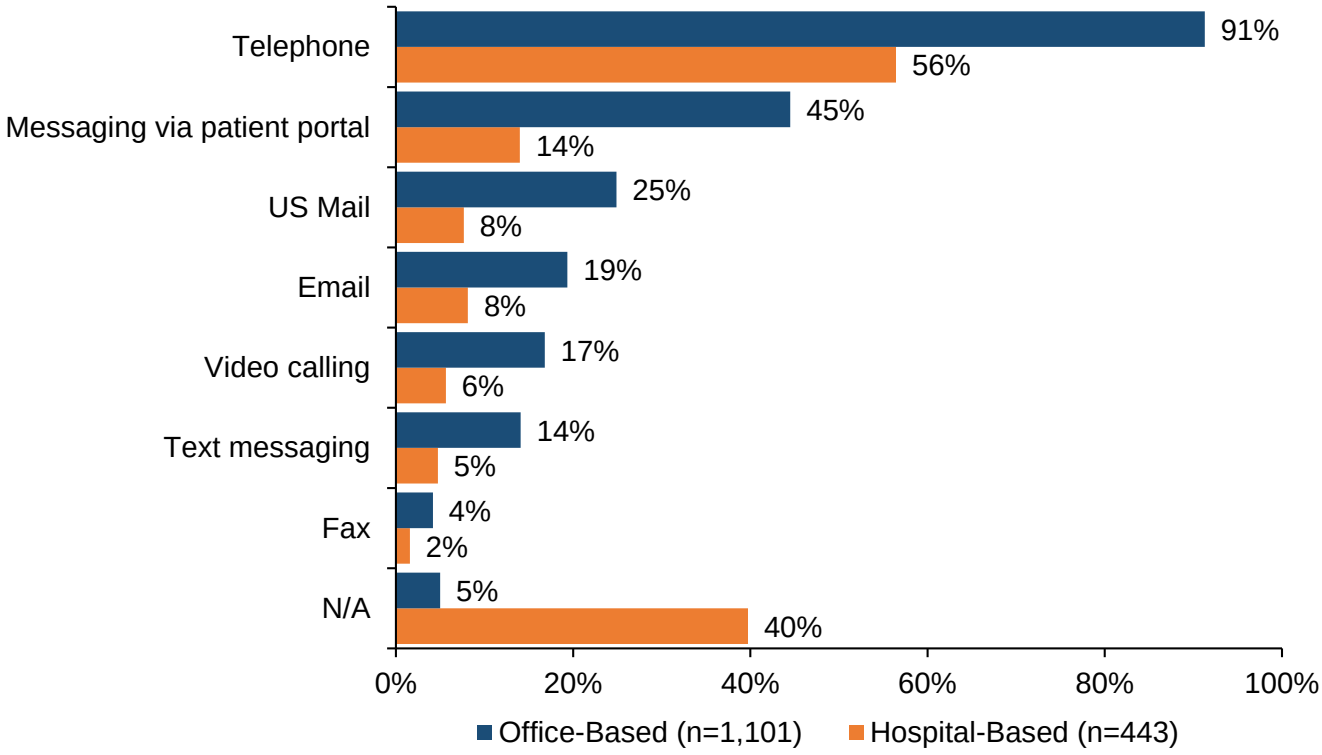
Use of Health Information Technology for Patient Engagement

Physicians with and without electronic health records (EHRs) are using technology to engage with their patients.

Figure 15 shows how physician respondents communicate with patients outside of a face-to-face encounter. Nearly all office-based physicians report communicating with patients via telephone, and this finding has not changed since 2015. Telephone is also the most common modality used by hospital-based physicians.

Since the prior survey in 2019, use of messaging via a patient portal, video calling, and text messaging have all increased.

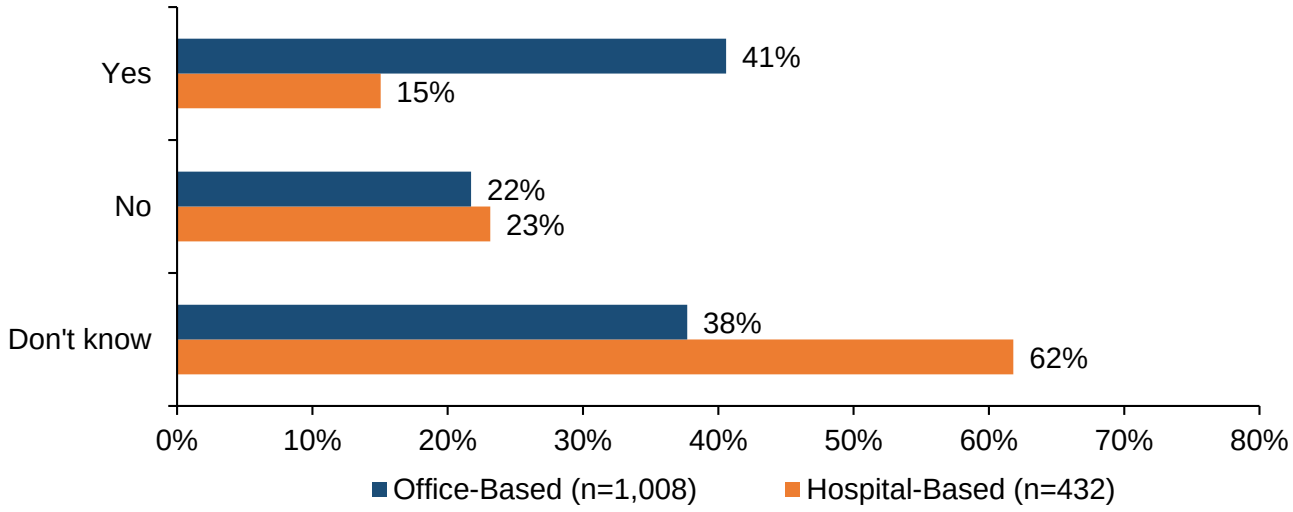
Figure 15. Percent of physician respondents who personally (i.e., not their office staff) communicate with patients using each modality, outside of a face-to-face encounter



The proportion of physicians messaging via a patient portal rose substantially between 2015 and 2021, from 24% to 45% for office-based respondents and from 6% to 14% for hospital-based respondents.

For the first time this year, respondents were asked whether their EHR had the capability to send text messages directly to patients. **Figure 16** shows that 41% of office-based physicians reported having EHRs with this capability. The majority of hospital-based physicians (62%) and a large proportion of office-based physicians (38%) were not sure if their EHR had this capability.

Figure 16. Among physicians with EHRs, percent of respondents whose EHR can send text messages directly to patients



Health Information Exchange

CurrentCare, Rhode Island's health information exchange (HIE), enables authorized clinicians to securely access patients' health information from multiple sources in one integrated and centralized electronic location.

Survey respondents were asked whether they, or any of their staff, use CurrentCare services and the specific tasks for which they use those services. **Figure 17** focuses on primary care physicians and shows for which types of tasks they or their staff use specific CurrentCare services. Among all PCP respondents, the most common use case scenarios were employing the CurrentCare viewer to locate specific results (23%) and using CurrentCare in the EHR for transitions of care and to locate specific results (both 17%).

When asked which data types, if added to CurrentCare, would be valuable in caring for patients, the most frequently identified data types were encounter notes (56%), radiology images (not reports) (41%), and care plans (31%). **(Figure 18, page 23)**.

Figure 17. For each task, percent of primary care physician respondents who indicated that they or their staff use the following HIE services, stratified by CurrentCare service

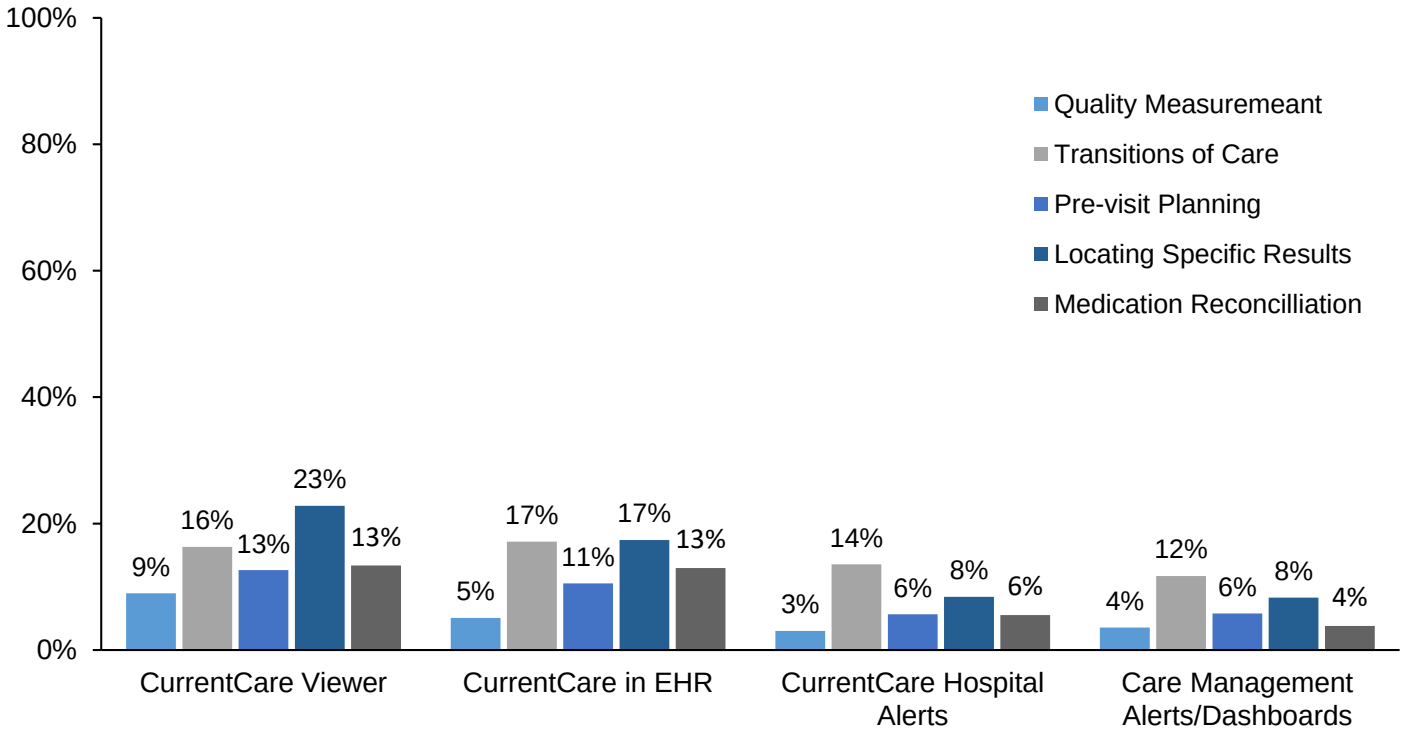
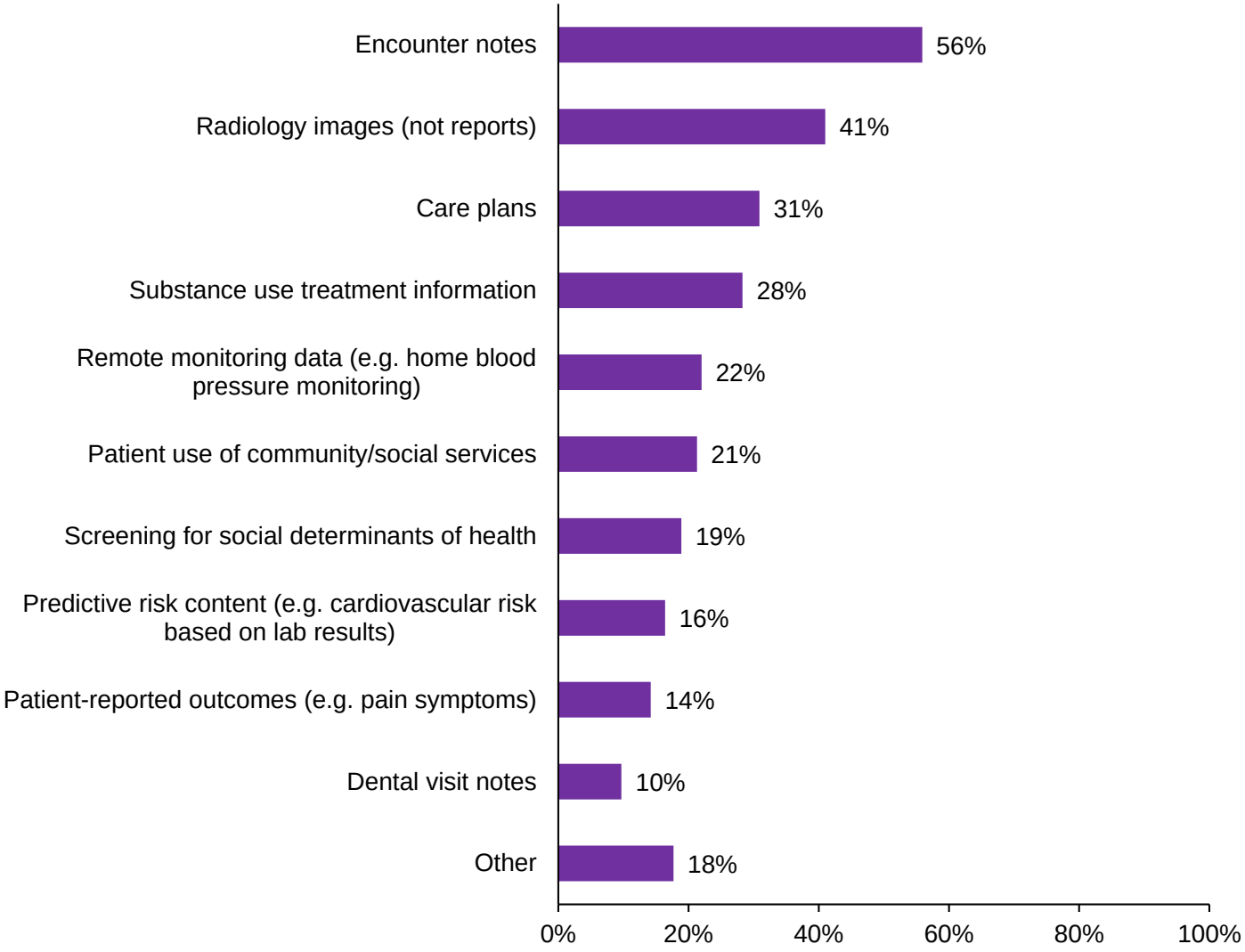


Figure 18. Percent of physician respondents who thought each of the following data types would be valuable for patient care, if added to CurrentCare (N = 1,015)



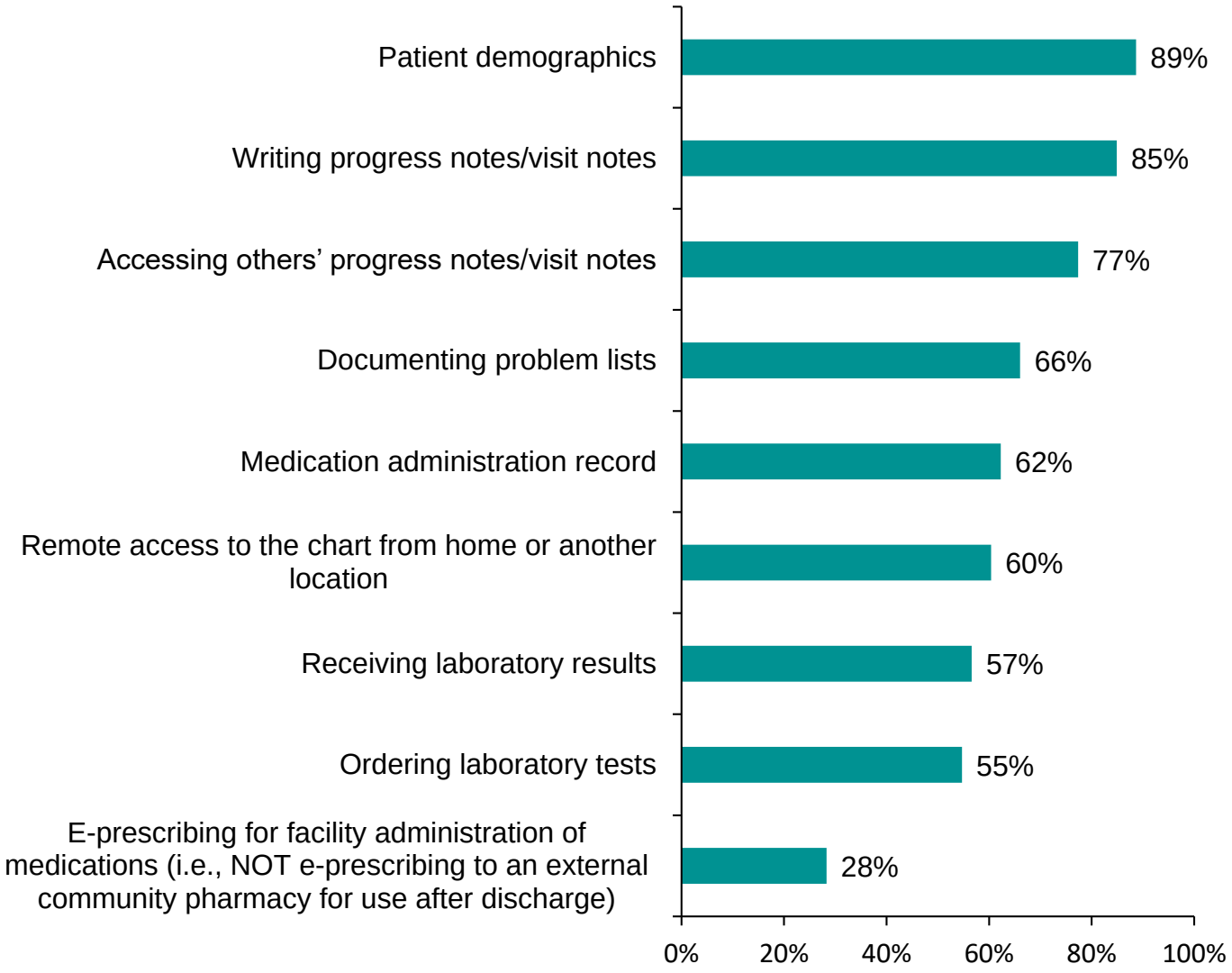
Rhode Island Quality Institute operates the statewide health information exchange, CurrentCare.
To learn more, visit www.currentcareri.org/

Health Information Technology in Specific Care Settings

Nursing Home or Skilled Nursing Facility

Four percent of physician respondents indicated that they provide care in a nursing home or skilled nursing facility. Most respondents working in nursing homes reported access to basic EHR functionality (e.g., patient demographics, writing progress notes) **(Figure 19)**. More than half can now order laboratory tests (increased from 26% in 2019) and receive laboratory results (increased from 32% in 2019).

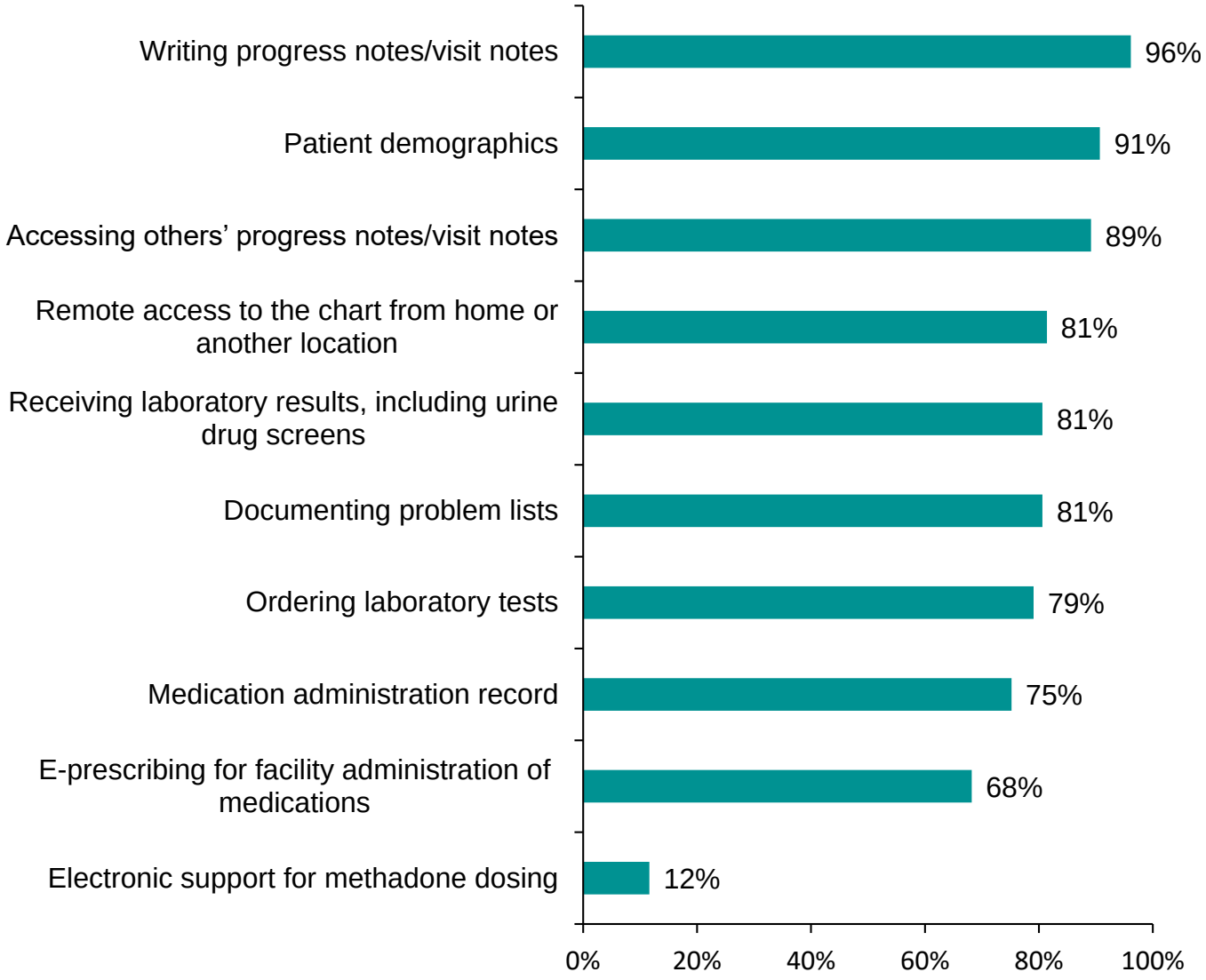
Figure 19. Among physicians who work in nursing homes, the percent reporting use of each of the following EHR functions (N=53)



Licensed Behavioral Health Organizations

Ten percent of physician respondents indicated that they provide care in a licensed behavioral health organization. Most respondents working in behavioral health organizations have access to basic EHR functionality (e.g., patient demographics, writing progress notes), including e-prescribing for facility-administered medications **(Figure 20)**.

Figure 20. Among physicians who work in licensed behavioral health organizations (BHOs), the percent reporting use of each of the following EHR functions (N=129)



Information Transfer at Hospital Admission and Discharge

The Centers for Medicare & Medicaid Services (CMS) now requires that hospitals communicate admission, discharge, and transfer information to their patients' primary care practitioners (PCPs) in real-time.

The 2021 HIT Survey asked PCPs whether hospitals routinely share admission and discharge information with the PCP's practice when patients are admitted. PCPs only provided information about hospitals to which they had admitted at least five patients in the prior year.

22% of PCPs reported *not* receiving real-time admission information about their patients from at least one hospital. Similarly, 21% of PCPs did not routinely receive real-time discharge information from at least one hospital. 8% of PCPs reported not receiving real-time admission information about their patients from *any* hospital, while 8% did not routinely receive real-time discharge information from any hospital.

PCPs usually receive some type of notification about admissions and discharges, regardless of whether their practice is owned by the same system or hospital or if they are not owned by any system. The predominant mode of communication does differ, however, depending on whether the PCP's practice is within the same health system, as seen in Figures 21 and 22 on the following pages. **(Figure 21, page 27 and Figure 22, page 28)**.

For more information on the CMS revision to requirements of participation:

https://www.cms.gov/newsroom/fact-sheets/interoperability-and-patient-access-fact-sheet

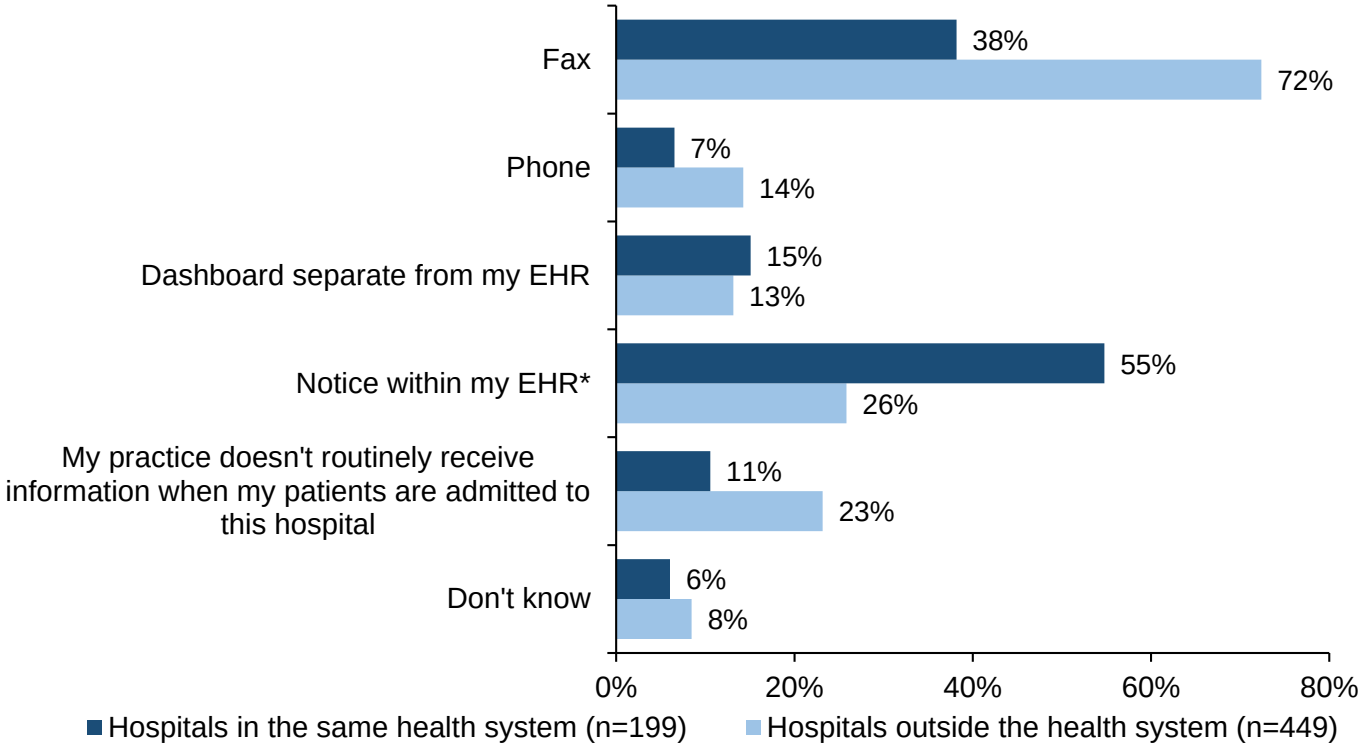
https://chimecentral.org/wp-content/uploads/2020/03/CMS-Interoperability-and-Patient-Access-Final-Rule-summary.final_.pdf

Among PCPs within the same health system as the admitting hospital, the most common way that real-time admission information was provided was via a notice within the PCP's EHR (not including notifications that a faxed document was uploaded) – reported by about half of respondents (55%) **(Figure 21)**. The second most commonly-reported modality was notification via fax (38%).

Similarly, when the PCP was part of the same health system as the hospital, discharge information was most commonly shared via a notice within the EHR (53%), followed by fax (36%) **(Figure 22, page 28)**.

When PCPs were *not* part of the same health system as the hospital, real-time information at both admission and discharge was most commonly shared via fax (72% and 72%, respectively) **(Figure 21; Figure 22, page 28)**.

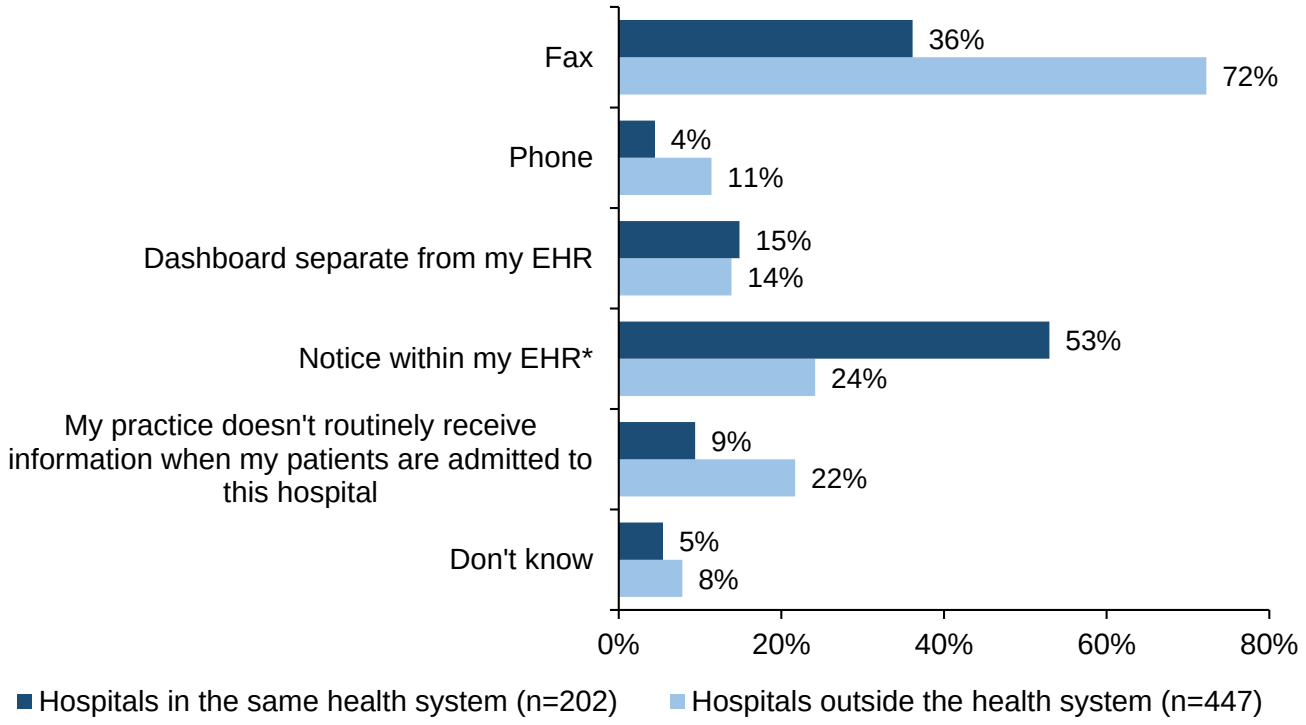
Figure 21. Percent of office-based PCP respondents who receive any real-time admission information via each modality, stratified by whether the physician's practice is affiliated with the hospital's health system



** Not including notifications that a faxed document was uploaded.*

Each physician is only counted once in each bar and can be included in multiple bars if the physician receives admission information via multiple modalities. For example, if a physician responds that they admit patients to multiple hospitals within their practice's health system and they receive a notice within their EHR from each of these hospitals, the physician is counted once in the dark blue bar for "Notice within my EHR." If this same physician also reports that they receive a fax when their patients are admitted to a hospital outside their health system, this physician would also be counted once in the light blue bar for "Fax."

Figure 22. Percent of office-based PCP respondents who receive any real-time discharge information via each modality, stratified by whether the physician's practice is affiliated with the hospital's health system



** Not including notifications that a faxed document was uploaded.*

Each physician is only counted once in each bar and can be included in multiple bars if the physician receives discharge information via multiple modalities. For example, if a physician responds that they have patients in multiple hospitals within their practice's health system and they receive a notice within their EHR from each of these hospitals, the physician is counted once in the dark blue bar for "Notice within my EHR." If this same physician also reports that they receive a fax when their patients are discharged from a hospital outside their health system, this physician would also be counted once in the light blue bar for "Fax."

The survey also included free-text space for physicians to describe their experience with receiving real-time hospital admission and discharge information for their patients.

Many physicians' comments focused on the amount and content of the information received, particularly redundant notifications and lack of meaningful clinical information in the notifications. Physicians also provided comments about the process of receiving information, including delayed notifications, the need for practice staff to request information, and inconsistency in notifications.

Other common themes included issues with the content and timeliness of information from specific hospitals, lack of any notification, and general positive comments about receiving information.

Advanced Practice Provider Summary Measures

The 2021 Health Information Technology (HIT) Survey was administered to 2,290 advanced practice providers (APPs), including advanced practice registered nurses (APRNs) and physician assistants (PAs), licensed in Rhode Island, in active practice, and located in Rhode Island, Connecticut, or Massachusetts. The survey received a total of 688 responses, for a response rate of 29%. Of those, 622 reported providing direct patient care and were asked to complete the full survey.

To describe the prevalence and use of HIT among APPs in Rhode Island, we report four composite measures: 1) APPs with electronic health records (EHRs), 2) APPs who e-prescribe, 3) APPs who e-prescribe controlled substances, and 4) APPs who care for patients using telemedicine. Aggregate results for these measures are in **Table 3**.

Table 4 (page 30) shows the aggregate measures stratified by practice setting and office-based specialty. **Figure 23 (page 30)** compares this year's results to data from prior survey years.

Table 3. Publicly-reported measures for the APRN and PA respondents

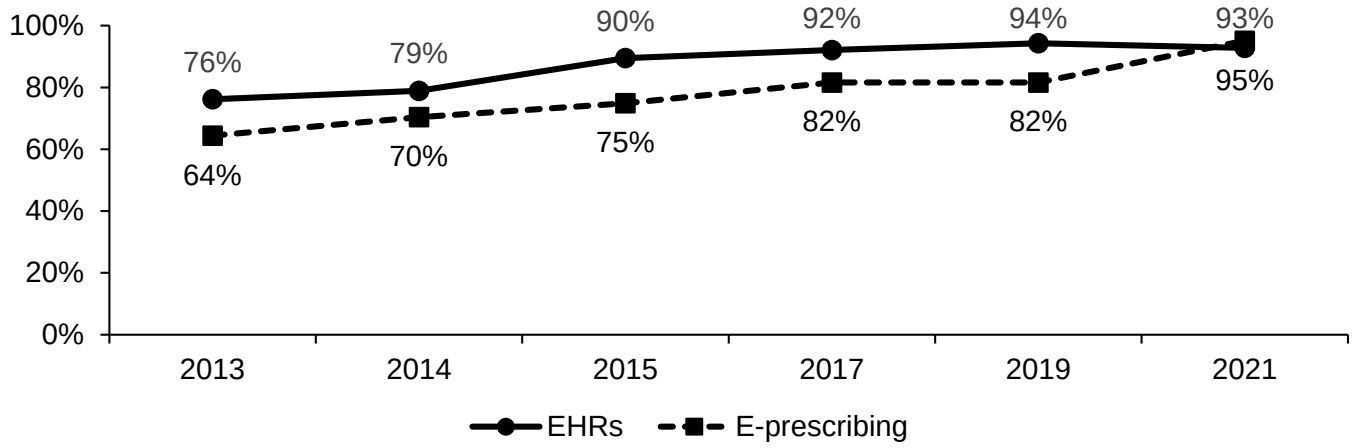
Measure	Respondents	n (%)
APPs with EHRs[18]	622	577 (93%)
APPs who e-prescribe[19]	573	545 (95%)
APPs who e-prescribe controlled substances[20]	507	467 (92%)
APPs who use telemedicine[21]	615	467 (76%)

[18] EHR was defined in the survey as an integrated electronic clinical information system that tracks patient health data and may include such functions as visit notes, prescriptions, lab orders, etc.
[19] Excludes APRNs and PAs who responded that prescribing was not applicable to their practice.
[20] Excludes APRNs and PAs who responded that they do not prescribe medications or that they do not prescribe any controlled substances.
[21] For survey purposes, telemedicine was defined as remote, real-time communication between a patient and clinician, in lieu of a face-to-face visit. Telemedicine could include audio only (e.g., telephone) or audio and video (e.g., video calling).

Table 4. APRN and PA publicly-reported measures, by practice setting and office-based specialty[22]

Measure	Setting		Office-based specialty	
	Office (N=467)	Hospital (N=155)	PCP (N=213)	Non-PCP (N=249)
APPs with EHRs, n (%)[23]	426 (91%)	151 (97%)	204 (96%)	218 (88%)
APPs who e-prescribe, n (%)[24]	428 (96%)	117 (93%)	207 (99%)	218 (94%)
APPs who e-prescribe controlled substances, n (%)[25]	356 (90%)	111 (98%)	185 (94%)	168 (86%)
APPs who use telemedicine, n (%)[26]	418 (91%)	49 (32%)	196 (93%)	222 (89%)

Figure 23. Prevalence of EHRs and e-prescribing among APRN and PA survey respondents, 2013 – 2021



The use of e-prescribing by APPs increased from 82% to 95% between 2019 and 2021. A similar increase was seen among physicians during the same time period (84% to 93%), possibly due to new state regulations in 2020 that mandated e-prescribing of controlled substances.

[22] The denominator for each measure is the number of respondents for the specific associated survey question, which may be less than the number of total survey respondents (N) at the top of the column.
[23] EHR was defined in the survey as an integrated electronic clinical information system that tracks patient health data and may include such functions as visit notes, prescriptions, lab orders, etc.
[24] Excludes APPs who responded that prescribing was not applicable to their practice.
[25] Excludes APPs who responded that they do not prescribe medications or that they do not prescribe any controlled substances.
[26] For survey purposes, telemedicine was defined as remote, real-time communication between a patient and clinician, in lieu of a face-to-face visit. Telemedicine could include audio only (e.g., telephone) or audio and video (e.g., video calling).

Advanced Practice Provider E-Prescribing Practices & Use of the Prescription Drug Monitoring Program

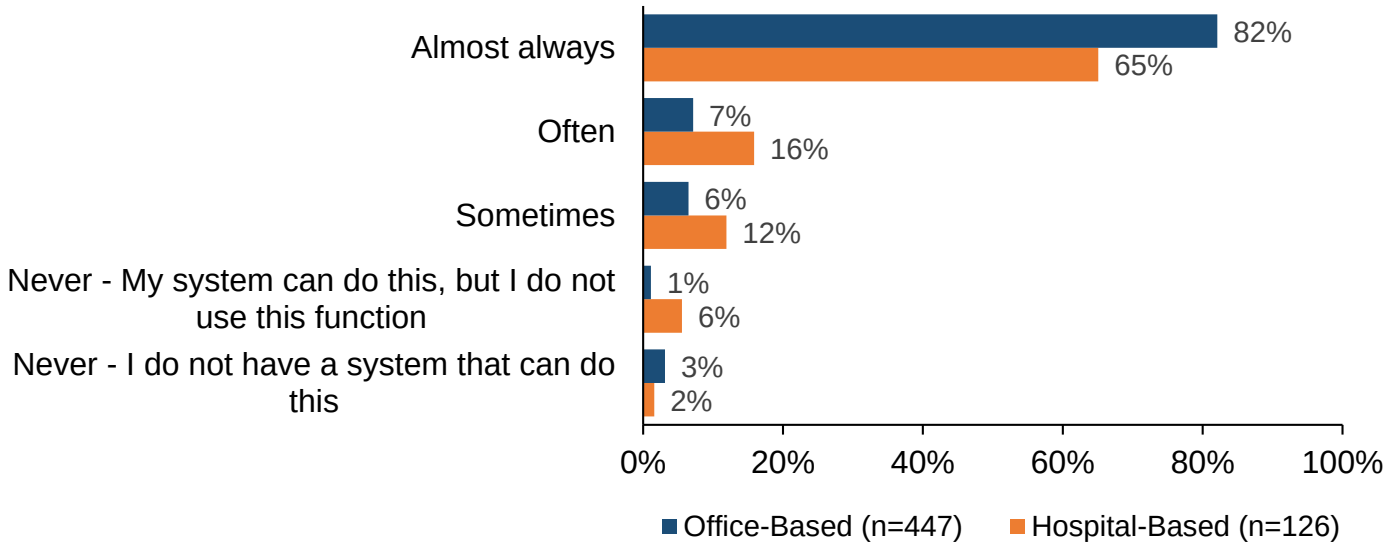
Electronic prescribing, or e-prescribing, allows clinicians to send prescriptions electronically to pharmacies, instead of by fax or paper.[22] E-prescriptions may be more accurate and legible, possibly reducing errors.[23]

The Health Information Technology (HIT) Survey measured the use of e-prescribing among advanced practice providers (APPs). **Figure 24** shows how often APPs e-prescribe. Hospital-based APPs were asked to consider only outside or community pharmacies and not their hospital or facility pharmacy.

Most office-based APPs who prescribe medications report that they "almost always" transmit prescriptions electronically to the pharmacy (82%). This proportion has increased from 59% in 2019[24].

Among hospital-based APPs who prescribe medications, 65% "almost always" transmit prescriptions electronically to an outside or community pharmacy. This proportion has also increased, up from 25% in 2019.[24]

Figure 24. Among advanced practice provider respondents who prescribe medications, the percent who transmit prescriptions electronically to the pharmacy



[22] Centers for Medicare & Medicaid. E-Prescribing 2014 8/28/2017; Available from: https://www.cms.gov/Medicare/E-Health/Eprescribing/index.html.
[23] Porterfield, A., K. Engelbert, and A. Coustasse, Electronic prescribing: improving the efficiency and accuracy of prescribing in the ambulatory care setting. Perspect Health Inf Manag. 11: p. 1g.
[24] Note: The wording for this answer choice was changed from "Always" in 2019 to "Almost Always" in 2021. The other answer choices remained the same.

In addition to measuring the prevalence of e-prescribing overall, the 2021 HIT Survey also assessed e-prescription of controlled substances specifically (e.g., opioids and benzodiazepines).

Rhode Island passed a law[25] that took effect in January 2020 requiring e-prescribing of all controlled substances. Half of APP respondents (53%) were unaware of this law when surveyed in May of 2019.

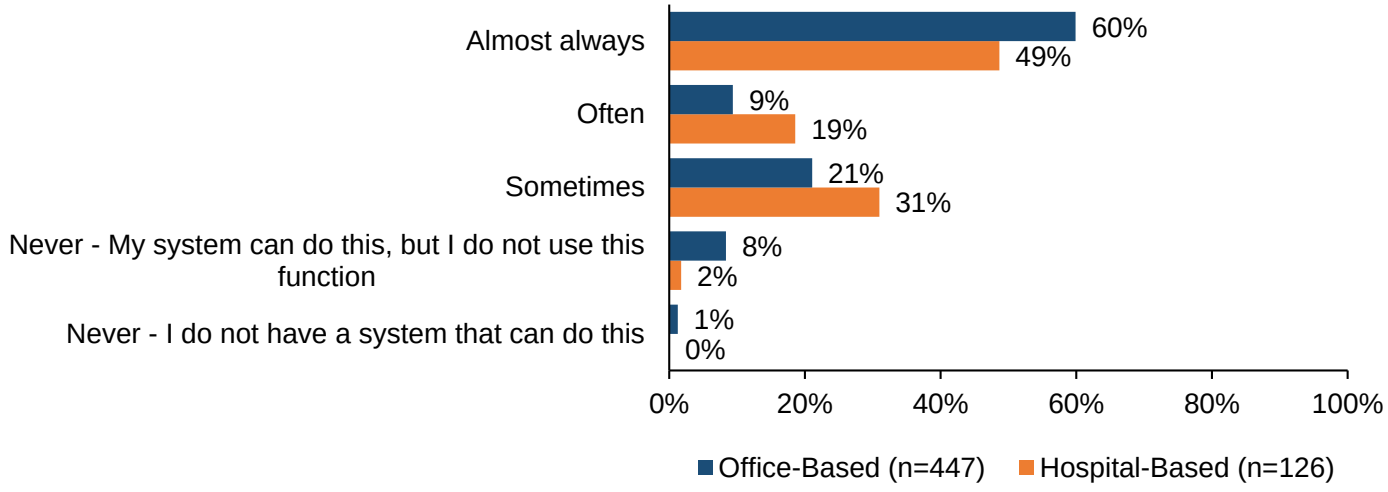
Among APPs who do *not* prescribe controlled substances (n=88), 2% reported that they stopped prescribing them because of the mandate to e-prescribe.

Figure 25 shows how often APPs transmit controlled substance prescriptions electronically. This figure only includes those APPs who can e-prescribe and who prescribe controlled substances. Hospital-based APPs answered about prescriptions to outside or community-based pharmacies and not their hospital or facility pharmacy. 60% of office-based and 49% of hospital-based APPs report "almost always" electronically transmitting controlled substance prescriptions.

This represents a substantial increase from 2019, when 24% and 21% of office- and hospital-based APPs, respectively, "always" e-prescribed controlled substances.

More than a third of APPs in 2019 reported that their system was unable to electronically transmit controlled substance prescriptions, compared with 1% in 2021.

Figure 25. Among APPs who can e-prescribe and who prescribe controlled substances, the percent of respondents who e-prescribe controlled substances, by practice setting

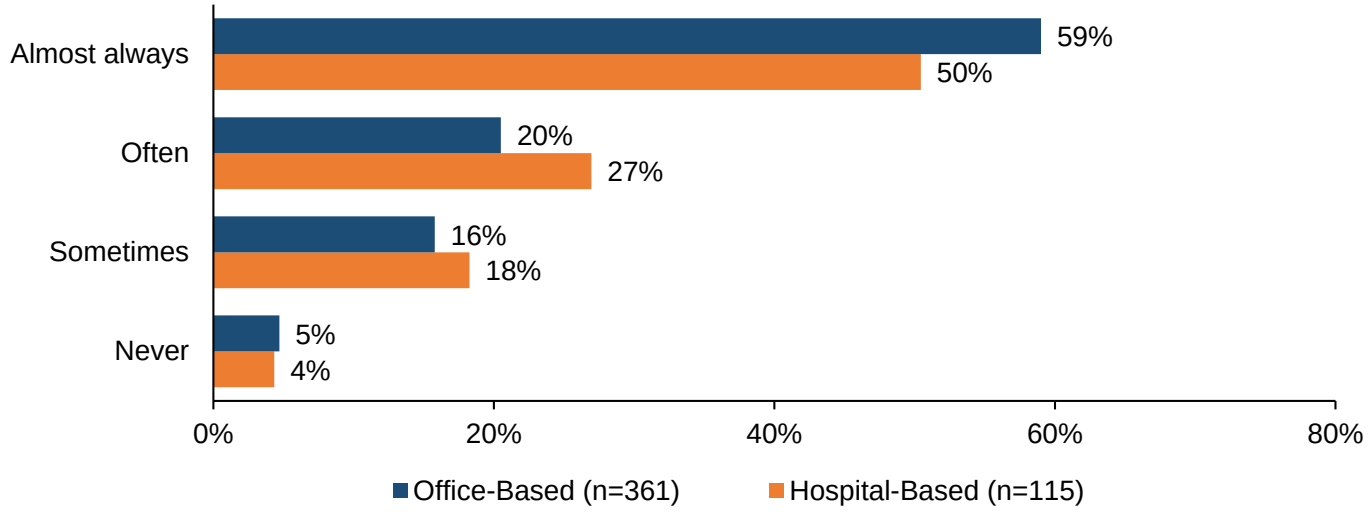


[25] https://health.ri.gov/medicalrecords/about/eprescribing/

Figure 26 shows how often APPs consult the Prescription Drug Monitoring Program (PDMP) before prescribing opioids or benzodiazepines. About 59% of office-based and 50% of hospital-based APPs reported they “almost always” check the PDMP before prescribing opioids and benzodiazepines.

Note: Hospital-based APPs were asked to consider only opioid and benzodiazepine prescriptions intended for use outside of their hospital or facility.

Figure 26. Among APP respondents who prescribe controlled substances, the percent who consult the Rhode Island PDMP before prescribing opioids or benzodiazepines



To learn more about the Rhode Island Department of Health’s Prescription Drug Monitoring Program, visit:

https://health.ri.gov/healthcare/medicine/about/prescriptiondrugmonitoringprogram/