EHR “SWAT” teams: a physician engagement initiative to improve Electronic Health Record (EHR) experiences and mitigate possible causes of EHR-related burnout

Lydia Sequeira,1,2 Khaled Almilaji,1 Gillian Strudwick,1,2 Damian Jankowicz,1 and Tania Tajirian1,2

1Centre for Addiction and Mental Health, Toronto, ON, Canada and 2University of Toronto, Toronto, ON, Canada

Corresponding Author: Tania Tajirian, MD, Centre for Addiction and Mental Health, 6168F—100 Stokes Street, Toronto, ON M6J 1H4, Canada; tania.tajirian@camh.ca.

Received 6 August 2020; Revised 21 January 2021; Editorial Decision 24 February 2021; Accepted 26 February 2021

ABSTRACT

This case report describes an initiative implemented to improve physicians’ experience with Electronic Health Records (EHRs), and is one of several strategies within our organization developed to reduce physician burnout attributed to the EHR. The EHR SWAT Team—a 10-member team—with interdisciplinary representation from clinical informatics, pharmacy informatics, health information management, clinical applications, and project management, is a direct feedback channel for all physicians to express their EHR challenges and have their requests reviewed, prioritized, and fixed in a timely manner. Through in-person divisional meetings, we gathered 118 requests, 36.4% of which were related to re-education and 17% of which were quick fixes. Popular requests included keyword search functionality, minimizing freezing, auto-faxing and auto-save. Our brief evaluation of 46 physicians demonstrated that physicians were satisfied with the initiative, with 61.3% physicians reporting that it increased their proficiency in using EHR functionalities. Lessons learned from this initiative include the importance of buy-in from Information Technology (IT) and physician leadership, extensive physician engagement, and leveraging project management techniques for coordination. Next steps include measuring the impact of this SWAT initiative on EHR-related burnout through a post-intervention organizational wide survey and objective back-end usage logs.

Key words: physician burnout, electronic health records, quality improvement, physician engagement, medical informatics

INTRODUCTION

The adoption of Electronic Health Records (EHRs) is widespread, with 80.5% of hospitals adopting at least a basic EHR within USA1 and 81% in Canada.2 Technology such as EHRs improves the quality of patient care through quicker access to information, more visualizations, reduction in duplication, and improved clinical decision support;3 however, over time these systems have also given rise to a phenomenon called “technological iatrogenesis” or unintended consequences of the technology by incongruent organizational–technological interfaces.4 Addition of EHRs into complex healthcare systems has caused documentation burden, data segmentation, and contributed to burnout among physicians.5,6 The clerical burden of EHRs has caused a reduction of time spent interacting directly with patients,7 which reduces the joy of medicine for many physicians.8 Within psychiatrists, EHRs have received a below-average usability score,10 and research has suggested links between EHR stressors to burnout within this specialty.6,11 Previous research suggests that among physicians, EHR use optimization is important in identifying EHR-related benefits.12 Optimization refers to “the process of evaluating and enhancing a system...
LAY ABSTRACT
This case report describes an EHR SWAT Team initiative, used to improve physicians’ experience with Electronic Health Records (EHRs). It is one of many organizational strategies we implemented to reduce possible burnout attributed to the EHR. The EHR SWAT Team is made up of 10 members with representation from clinical, informatics and project management disciplines. Through meetings with this team, physicians across our organization are able to express their issues and challenges with the EHR, and have these reviewed, prioritized and fixed in a timely manner. Through our first round, we gathered 118 issues and challenges, 36.4% of which demonstrated a need for added EHR education and 17% of which were quick technical fixes. Our evaluation survey showed that physicians were satisfied with the initiative and reported that it increased their proficiency in using EHR functionalities. The EHR SWAT Team initiative was made possible through buy-in from Information Technology (IT) and physician leadership, engaging physicians in every step, and using project management techniques for coordination. We plan to measure the impact of this initiative on EHR-related burnout through means of a follow up survey as well as usage data from our EHR analytics platform.

MATERIALS AND METHODS
Setting
This work was completed at Canada’s largest academic mental health hospital located in Toronto, Ontario. Ethical approval was obtained from the hospital’s Quality Improvement Projects Ethics Review board. The organization has 426 physicians who practise across seven different academic divisions, including Child and Youth, General Adult and Health Systems Psychiatry, Adult Neurodevelopment and Geriatrics, Schizophrenia, Addictions, Forensics, and Medicine in Psychiatry. The hospital uses a comprehensive EHR implemented six years prior to this initiative (May 2014) and has achieved Stage 7 on the HIMSS Electronic Medical Record Adoption Model, signifying a centric, multipronged approach for increasing satisfaction with the EHR (Figure 1). Previous organizational strategies to reduce burnout and improve professional fulfillment have discussed optimizing the EHR through reducing administrative complexity, elimination of unnecessary data entry, and improving training and education around the EHR through standardized templates, auto population, speech recognition technologies, streamlining orders, and easier chart navigation.

We assembled a team of 10 interdisciplinary specialists including 1 Chief Medical Information Officer (CMIO) began with a divisional tour during which she engaged with every academic division to determine the top three priorities for EHR optimization—these included simplifying documentation through standardized templates, auto population, speech recognition technologies, streamlining orders, and easier chart navigation.

The objectives of this case report are as follows:

1. To describe in detail the concept and implementation of our interdisciplinary EHR SWAT Team initiative, allowing other organizations to practically replicate this within their context.
2. To characterize the impact of the first round of our EHR SWAT initiative (i.e., number of requests collected and implementation results such as physicians’ satisfaction, attendance at events).
3. To identify key lessons learned from our implementation that are necessary for successfully implementing the EHR SWAT initiative.

Organizational physician engagement strategy
In 2019, our organization carried out a need assessment process (Figure 1). Our hospital’s inaugural Chief Medical Information Officer (CMIO) began with a divisional tour during which she engaged with every academic division to determine the top three priorities for EHR optimization—these included simplifying documentation through standardized templates, auto population, speech recognition technologies, streamlining orders, and easier chart navigation.

This was followed with an EHR benchmark survey to identify the extent of burnout and the contribution of the EHR toward burnout among our population of physicians. Results demonstrated that 74.5% of physicians who reported burnout symptoms identified the EHR as a contributor, with significant differences (P < 0.001) in the levels of EHR frustration and satisfaction with among those experiencing symptoms of burnout versus those who are not. Following this needs assessment, we identified a physician-centric, multipronged approach for increasing satisfaction with the EHR (Figure 1).

Following this needs assessment, we identified a physician-centric, multipronged approach for increasing satisfaction with the EHR (Figure 1). Previous organizational strategies to reduce burnout and improve professional fulfillment have discussed optimizing the EHR through reducing administrative complexity, elimination of unnecessary data entry, and improving training and education around the EHR through standardized templates, auto population, speech recognition technologies, streamlining orders, and easier chart navigation.

We implemented a Physician Think Tank where nominated representatives from every academic division were invited to join in monthly meetings that focused on the successful use of the EHR to improve patient safety and quality of care. Representatives were tasked with liaising with all physicians in their division and bringing forward pain points and required changes with the EHR that were faced by their colleagues. Having organizational-wide representation aided in making these Think Tanks a collaborative space for EHR optimization. Following the implementation of this Think Tank, we developed an EHR SWAT Team initiative, which we describe in detail below.

SWAT Step 1: Assembling an interdisciplinary team
We assembled a team of 10 interdisciplinary specialists including 1 Chief Medical Information Officer (TT), 2 clinical informatics nurses, 3 clinical applications team members, 1 health information management specialist, and 1 pharmacy informatics specialist. Representation from project management included 1 full-time team member (KA) to coordinate the request collection and process flow of the initiative, and 1 student who supported the initiative.

SWAT Step 2: EHR request collection
Post-implementation of the Physician Think Tank initiative, divisional liaisons began conversations about EHR optimization within
their academic division and championed the compilation of EHR change requests from their colleagues. This collection began three weeks prior to their designated divisional SWAT intervention.

The EHR SWAT Team coordinator collected and tracked the following information per EHR change request on a Microsoft SharePoint list: date of submission, disciplines impacted, request priority category, request details, clinical division, validation, triage, requestor/contact, date of committee approvals, testing and validation date and comments, in-production date, and communication (via newsletter) date. This list was updated on an as-needed basis and acted as the single source of truth for all requests.

**SWAT Step 3: EHR request prioritization**

Following collection of all the EHR requests, the coordinator set up an internal request categorization workshop for the interdisciplinary SWAT Team members. Requests gathered from academic divisions were categorized into one of four different categories (Table 1). Requests were also discussed at monthly Think Tanks to gather an organizational-wide perspective on the change and its impact on physician workflows within all divisions. Interdisciplinary SWAT Team members were also invited to discuss requests from a wide range of stakeholders.

**SWAT Step 4: Divisional intervention**

The team carried out a SWAT divisional level intervention (i.e., meetings) with all seven clinical divisions. Where possible, meetings were scheduled during divisional monthly academic meetings to leverage existing timeslots and maximize attendance. Through close collaboration with divisional chiefs, the SWAT coordinator circulated the meeting invite to all staff, and divisional liaisons encouraged attendance. Coffee and food were present for incentivizing attendance.
SWAT Step 5: Evaluate intervention
Following the divisional intervention, we evaluated the initiative through a brief survey with three 5-point Likert scale and two open-ended questions (Figure 2).

RESULTS
Below we describe the results of implementing Steps 2–4 of our SWAT intervention (see methods section for a list of steps):

SWAT Steps 2 and 3: Results of EHR request collection and prioritization
Following all divisional interventions, we had gathered 118 unique EHR requests, 36.4% of which fell within the re-education category, 17% of which were quick fixes and 35.4% of which were future fixes. Within four months following the final SWAT intervention, 100% (n = 20) of quick fixes, and 45% (n = 19) of future fixes were implemented.

A thematic analysis of the re-education requests identified major areas as finding documentation and information within the EHR and navigating notifications and confirmation within the EHR, with minor topics including how to handle referrals, medication lists and patient lists, auto-populating documentation, prescriptions, faxing and printing, chart navigation, and searchable help for the EHR. Quick fixes included adding documentation templates, updating order sets, adding extra notifications, and the option for autotext within documentation.

Table 1. Categorization of EHR change requests

| Category | Description | Examples | Number of unique requests (% total) |
|----------|-------------|----------|-------------------------------------|
| (1) Re-education: | Functionality currently exists within the EHR, and physicians required training or a refresher on how to carry out a specific task | Examples of re-education requests included the following: using global auto-text, finding and viewing laboratory and diagnostic results, finding patient information such as insurance coverage, creating customized medication lists, accessing the provincial EHR, and forwarding discharge summaries and consult notes | 43 (36.4%) |
| (2) Quick (6 weeks) fixes: | These change requests included fixes that can be delivered within 6 weeks of submission to internal change control governance | Examples of such requests included the following: creating new consult note templates, ensuring laboratory orders older than 30 days do not get hidden, including toxicology reports within discharge summaries | 20 (17%) |
| (3) Future (1 year+) fixes: | Such change requests are those that require a significant amount of work, often including coordination from multiple stakeholders including the vendor, and hence a longer timeline for implementation | Examples included the following: linking EHR directly to billing, free-text search, automatic faxing of certain referrals | 42 (35.6%) |
| (4) Not able to fix/address due to technical or regulatory restraints: | These change requests were those that remained out of scope for fixing due to technical restrictions of the EHR, as dictated by the vendor, or due to regulatory restraints of scope of work | Examples included the following: summary reports based on a physician’s patient list, visual representation of medication history | 13 (11.0%) |

Popular requests across divisions included adding keyword search functionality within the EHR, especially documentation (n=4), auto-faxing certain referrals (n=3), and improving the usability of the diagnosis module (n=3).

SWAT Step 4: Divisional intervention results
We carried out 7 (1-hour) divisional interventions over the span of 7 months (July 2019—January 2020). Attendance among the divisions varied, with certain units having >60% physicians in attendance (Addictions = 61%, Medicine in Psychiatry = 85%), and others with minimal attendance (General Adult Psychiatry = 12%, Forensics = 35%), for a total of 74 participants across all divisions (Figure 3).

The divisional meetings began with a discussion on whether the top three priorities gathered during the divisional tour still resonated. Following this, the CMIO summarized the status and progress for each EHR request gathered from that division prior to the SWAT intervention, providing a pending timeline for implementation of the changes. Initial re-education was provided for those requests that did not require any functionality changes, and additional change requests were gathered within the meeting.

SWAT Step 5: Intervention evaluation results
Our SWAT divisional intervention evaluation gathered responses from 46 physicians (response rate = 62.1%). 61.3% physicians agreed or strongly agreed that the initiative increased their proficiency in using EHR functionalities. 78.7% agreed or strongly
agreed that they would recommend it to a colleague and 78.9% agreed that the intervention met the objectives.

Participants attended the SWAT for a variety of reasons including due to requirements (e.g., “obligation,” “wasn’t given a choice”), improving practice (e.g., “make my use of I-CARE more efficient,” “improve workflow,” “reduce burnout,” “express opinion”), and improving education (hoped for significant tips). Ideas for improvement of the initiative included allotting more time, increasing the volume of education, and ensuring participants stayed updated on the change requests.

**DISCUSSION**

This SWAT initiative was an adapted, low-cost alternative using already available informatics and project resources, compared to the sprint initiative at UCHealth in Colorado, which cost 1.2 million annually due to full-time staff. Our project costs covered the salary of one full-time project coordinator and meals at divisional interventions. However, similar to the sprint initiative, our SWAT initiative similarly uncovered a large amount of re-education.

To close the loop on the EHR change requests, we communicated all status updates and new fixes through a monthly CMIO e-newsletter. Updates included the time taken for the request from approval to implementation and the division that put forward the request, and training tips and tricks for optimized EHR usage derived from the re-education requests, so knowledge was disseminated to all physicians, including those not in attendance at divisional interventions.

**Lessons learned**

We learned five practical lessons from carrying out our intervention, beginning with the importance of leadership buy-in. The hospital’s Chief Medical Information Officer led this initiative, with encouragement and support from our Chief Information Officer. Having endorsement from senior leadership within our academic hospital allowed for securing in-kind resources such as clinical application specialists and informatics education teams. Through these resources, EHR issues were able to be resolved in a limited timeframe. Additionally, having leadership buy-in and support allowed dedicated time within internal committee meetings (i.e., EHR change control committee) to discuss the change requests gathered from physicians in order to obtain the appropriate approvals to implement them. We relied on these already established structures to facilitate changes in an optimized manner.

A second lesson learned is the importance of physician engagement and leadership. This was critical in order to create awareness of our intervention and to be able to leverage monthly divisional physician meetings across the hospital. In order to secure time at these meetings, the Chief Medical Information Officer reached out to the physician chiefs from each division, leveraging prior relationships. Once approval was received from divisional chiefs, physician liaison resources for collecting change requests were leveraged. Physician liaisons were EHR champions within each division, who were a designated EHR educational resource for all physicians within their division—a role that was developed as a result of our organization’s larger physician engagement strategy. Engaging with frontline physicians and optimizing their time through scheduling our SWAT divisional interventions during monthly meetings was a key. We required physicians across the hospital to send in change requests, attend and participate within divisional meetings, and complete evaluation surveys. Without encouragement from their divisional chief, this level of engagement would have been a challenge.

Our third lesson was investing in a full-time project implementation lead. This resource was critical in implementing divisional SWAT interventions, managing the collection and flow of EHR change requests, and including following up on the status of change requests. This resource leveraged issue-tracking software (i.e., Microsoft Sharepoint) to ensure that all requests collected were accounted for. Follow-ups often required clarification of the issue from physician end-users, discussions with clinical application specialists, and a variety of communications/approvals from hospital wide committees prior to implementation of the change. Budgeting for this resource was a key step in implementing this initiative, and hiring and onboarding of this resource was managed through leveraging the expertise of our organization’s project management office.

Next, we relied on Agile development principles throughout, including continuous improvements to both the format of the SWAT intervention, as well as upgrades to the current EHR software by facilitating ongoing discussions between physician end-users, informatics specialists, and clinical application specialists.
Face-to-face discussions were maximized during our divisional interventions, and when in-person meetings were not appropriate (due to the COVID-19 pandemic), we quickly adapted to virtual meetings platforms. These meetings allowed end-users to explain their current challenges, while also allowing the SWAT Team to provide education when needed, or suggest appropriate changes to the EHR when required. Changes and fixes to the EHR were done on an ongoing basis.

Finally, we learned that in order to successfully implement this initiative, it was necessary to communicate the status of all the change requests collected from physician end-users in a timely and ongoing manner. We implemented a section within the Chief Medical Information Officer’s monthly newsletter that focused on how many changes were in progress, implemented and those that were deemed not feasible to change or fix. For those new changes that were implemented within the EHR over the past month, the newsletter also contained brief “How-To” tips to help physicians optimize their use of the EHR. Ensuring communication channels were embedded within the initiative created an accountability framework to highlight the value of our ongoing collaboration and increased trust of our physician end-users in the teams that were enabling the changes.

A snapshot of themes captured from our lessons learned are described in Table 2. Previous literature on adoption and implementation of Information Technology within healthcare has also stressed the importance of engaging leadership,21 physician engagement,22 champions,23 and project management24 for the successful implementation of an EHR project or initiative.

Future steps
We aim to carry out two future phases of the SWAT intervention, focusing on (1) sustainable approaches to re-educating physicians through in-person or virtual didactic session, including EHR system demos, also borrowing tools and suggestions from the literature,25 and (2) sharing a detailed accountability framework for continued EHR change requests and future fixes.

Additionally, we aim to carry out a more in-depth follow-up survey to identify a change in metrics that were collected within our baseline survey surrounding EHR experience, use and burnout as a result of this initiative. Since our organization has access to back-end usage logs through our EHR analytics system, we plan to also objectively evaluate the performance of physicians post re-education using a process-based evaluation instead of primarily using standardized metrics such as “physician burnout”.26 We aim to use these data to create physician efficiency profiles to allow physicians to measure their performance over time, and against their division means. Such objective analytics would also allow us to develop hands-on, customized individual training modules.

Limitations
Our SWAT initiative did have a few limitations. Since we did not have protected time for physicians outside of monthly meetings, attendance within the SWAT divisional interventions was limited to those that regularly attend those meetings (35% participation across the organization). While using regular, currently in-place academic physician divisional meetings was a method to maximize attendance, engagement differed among divisions. Additionally, certain individuals were more vocal than others, and therefore, our SWAT divisional intervention was heavily reliant on the discussion and engagement of physicians within that division. Since there was such a large amount of hands-on re-education required, 1-hour interventions proved to be time-limiting.

Our brief feedback survey was insufficient to determine whether the intervention was successful and had a low response rate, which we aim to address with our larger post-intervention survey.

CONCLUSION
Through engaging IT and physician leadership, the EHR SWAT Team initiative is a systematic method for collecting, discussing, tracking, and providing accountability on organizational-wide physician-specific EHR change requests, gathering 62 new workflow optimization requests and 43 educational needs. Embedding our initiative within the larger organizational physician engagement strategy allowed us benefits of change management and communication strategies that were already in place. We plan to measure the effects of this intervention on our organization’s baseline measures for physician burnout due to EHR (74.5%) using back-end usage log data and a follow-up survey.

AUTHOR CONTRIBUTIONS
TT, DJ, and GS conceived of the idea for this paper. TT led the planning and execution of the intervention along with KA. KA led the data collection. LS led the drafting of the manuscript, along with TT and GS. All authors contributed intellectual value, text, and final edits to the paper.
ACKNOWLEDGMENT
We appreciate the efforts of Abhayshin Chudasama, Dennis Hang, Hazel Walker, and Karishini Ramamooirth who aided in implementation of the SWAT initiative, as well as with quantitative and qualitative data analysis. We also acknowledge Centre for Addiction and Mental Health in Toronto, Canada, for its in-kind donations.

CONFLICT OF INTEREST STATEMENT
There are no financial interests or connections, direct or indirect, or other situations that might raise the question of bias in the work reported. The authors have no conflicts to declare as pertaining to commercial or other sources of funding, personal relationships, or direct academic competition. This work was not funded by any funding agency, but received in-kind contribution from the Centre for Addiction and Mental Health.

DATA AVAILABILITY
The survey data is available on the DYRAD, and data underlying the EHR requests will be shared on reasonable request to the corresponding author.

REFERENCES
1. Adler-Milstein J, Holmgren AJ, Kralovec P, Worzala C, Searcy T, Patel V. Electronic health record adoption in US hospitals: the emergence of a digital “advanced use” divide. J Am Med Inf Assoc 2017; 24 (6): 1142–8.
2. Gheorghiu B, Hagens S. Measuring interoperable EHR adoption and maturity: a Canadian example. BMC Med Inform Decis Mak 2016; 16 (1): 8.
3. Manca DP. Do electronic medical records improve quality of care? Yes. Can Fam Physician 2015; 61 (10): 846.
4. Palmieri PA, Peterson LT, Corazzo LB. Technological Iatrogenesis: The Manifestation of Inadequate Organizational Planning and the Integration of Health Information Technology. Organization Development in Healthcare: Conversations on Research and Strategies: Emerald Group Publishing Limited, 2011.
5. Colicchio TK, Cimino JJ, Del Fiol G. Unintended consequences of nationwide electronic health record adoption: challenges and opportunities in the post-meaningful use era. J Med Internet Res 2019; 21 (6): e13313.
6. Gardner RL, Cooper E, Haskell J, et al. Physician stress and burnout: the impact of health information technology. J Am Med Inf Assoc 2019; 26 (2): 106–14.
7. Shanafelt TD, Dyrbye LN, West CP. Addressing physician burnout: the way forward. JAMA 2017; 317 (9): 901–2.
8. Sinsky C, Colligan L, Li L, et al. Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. Ann Intern Med 2016; 165 (11): 753–60.
9. Downing NL, Bates DW, Longhurst CA. Physician burnout in the electronic health record era: are we ignoring the real cause? Ann Intern Med 2018; 169 (1): 50–1.
10. Melnick ER, Dyrbye LN, Sinsky CA, et al. The Association Between Perceived Electronic Health Record Usability and Professional Burnout Among US Physicians. Mayo Clinic Proc 2020; 95 (3): 476–87.
11. Domaney NM, Torous J, Greenberg WE. Exploring the association between electronic health record use and burnout among psychiatry residents and faculty: a pilot survey study. Acad Psychiatry 2018; 42 (5): 648–52.
12. Jamoon E, Hesey-Grove D, Yang N, Scanlon P. Physician opinions about EHR use by EHR experience and by whether the practice had optimized its EHR use. J Health Med Inform 2016; 7 (4): 1000240.
13. Romero MR, Staub A. Specialty task force: a strategic component to electronic health record (EHR) optimization. Stud Health Technol Inform 2016; 225: 1051–2.
14. Sieja A, Markley K, Pell J, et al. Optimization sprints: improving clinician satisfaction and teamwork by rapidly reducing electronic health record burden. Mayo Clin Proc 2019; 94 (3): 793–802.
15. Centre for Addiction and Mental Health. CAMH Annual Report 2018–2019. Toronto, Ontario: CAMH, 2019. https://www.camh.ca/-/media/images/all-other-images/annual-report-2018-2019/camb_annual_report_2018-19.pdf?la=en&hash=%205B3C801DF55B334413ED542CA5CE50C4730415F. Accessed April 20, 2020.
16. HIMSS. EMRAM: a strategic roadmap for effective EMR adoption and maturity. 2019. https://www.himssanalytics.org/emram
17. Tajarisan T, Stergiopoulos V, Strudwick G, et al. The Influence of Electronic Health Record Use on Physician Burnout: Cross-Sectional Survey. J Med Internet Res 2020; 22 (7): e19274.
18. Olson K, Marchalik D, Farley H, et al. Organizational strategies to reduce physician burnout and improve professional fulfillment. Curr Prob Pediatr Adolesc Health Care 2019; 49 (12): 100664.
19. Shanafelt T D, Noseworthy J H. Executive Leadership and Physician Well-being. Mayo Clinic Proceedings 2017; 92 (1): 129–46. 10.1016/j.mayocp.2016.10.004
20. Ambler S. Agile Modeling: Effective Practices for Extreme Programming and the Unified Process. New York: John Wiley & Sons; 2002.
21. J Duke. Agile Modeling: Effective Practices for Extreme Programming and the Unified Process. New York: John Wiley & Sons; 2002.
22. Pantaleoni J, Stevens L, Mailes E, Goad B, Longhurst C. Successful physician training program for large scale EMR implementation. Appl Clin Inform 2015; 6 (1): 80–95.
23. Gui X, Chen Y, Zhou X, Reynolds TL, Zheng K, Hanauer DA. Physician champions’ perspectives and practices on electronic health records implementation: challenges and strategies. JAMIA Open 2020; 3 (1): 53–61.
24. Safdari R, Ghazisaeidi M, Jebraeily M. Electronic health records: critical success factors in implementation. Acta Inform Med 2015; 23 (2): 102–4.
25. Robinson KE, Kersey JA. Novel electronic health record (EHR) education intervention in large healthcare organization improves quality, efficiency, time, and impact on burnout. Medicine (Baltimore) 2018; 97 (38): e12319.
26. Marchalik D, Shanafelt T. Addressing burnout among health care professionals by focusing on process rather than metrics. JAMA Health Forum, 2020.