

4Ts Framework for Physician Burnout Interventions in the Workplace: A Systematic Review and Call to Action for Clinical Informaticians

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What might the attendee be able to do after being in your session?

Identify successful interventions to decrease physician burnout related to electronic health records (EHRs) using the 4Ts (*time, team, transitions, and technology*) framework.

Description of the Problem or Gap

More than half of US physicians report at least one symptom of burnout¹, and many causes derive from organizational- and system-level factors, including EHRs².

Methods

A systematic review of the literature (January 1, 2007 to October 3, 2018) was performed to assess the effect of organization-directed interventions on physician burnout, including stress or job satisfaction in all settings; the search strategy queried Medline, Embase, and Cochrane databases and is reported elsewhere³. A subgroup analysis was performed to summarize how administrative burden related to EHRs and other electronic tools was decreased by technological improvements, team-based care, and transitions to improve workflow efficiency.

Results

The search strategy identified 633 citations; fifty met inclusion criteria. We proposed the 4Ts (*time, team, transitions, and technology*) framework to describe workplace intervention strategies for burnout (Figure 1). *Time* studies included schedule adjustments, duty hour restrictions, and time-banking. *Team* involved initiatives to incorporate scribes or medical assistants to facilitate EHR-related processes, distribute responsibilities, and improve communication among physicians. *Transitions* referred to workflow interventions such as process improvement or policy changes within the organization. *Technology* related to the adoption, implementation, or improvement of EHRs. Seventy percent (35 studies) reported improvement of burnout and/or its proxy measures of stress and job satisfaction following an intervention.

A subgroup analysis identified 29 studies with interventions designed to lessen the administrative burden related to electronic systems requiring data entry and communication including EHRs (both standard issue from vendors and customized), patient portals, disease-management software, clinical decision support, physician order entry, EHR-integrated paging, and clinical task-management systems. Interventions were primarily conducted in United States (26 studies) primary care (16 studies) settings. Most studies were of low-quality with follow-ups of short duration (majority less than one year or not reported). Seventy-two percent (21 studies) reported improvement of burnout and/or its proxy measures across *team* (16 studies), *transitions* (11 studies), and *technology* (ten studies) workplace interventions. Seven out of eight studies that combined *team* and *transition* interventions to implement changes or process improvements in team-based care workflows had significant positive outcomes related to burnout, stress, and/or satisfaction.

The majority of the *team*- and/or *transition*-based interventions expanded the duties of medical assistants (MAs) and/or scribes to add documentation of the clinical encounter that included: pre-visit planning; visit notes such as history, physical examination findings, laboratory and/or imaging results; assessments and plans; instructions and education for patients; referrals; and nursing orders. A few high-quality studies indicated that interventions improving workplace processes, promoting team-based care to shift data entry tasks from the physician to the team, and implementing scribes and/or medical assistants to perform EHR documentation and other routine tasks decreased burnout, increased job satisfaction, and/or decreased stress.

Technology interventions were categorized into adoption (four studies), implementation (three studies), and/or improvement (three studies) with qualitative analyses related to usability, workflow, satisfaction (physician, practice, and/or technology), efficiency, training, and documentation. Generally, EHR adoption and implementation interventions had no effect on or worsened burnout and its proxy measures. Data from low-quality (qualitative case series, cross-sectional, and poor-quality cohort) studies suggested that EHR training and improvements in its design and use decreased burnout. Examples of improvements included usability and agile methodologies to standardize documentation processes in workflows. Tailored interventions (two studies) decreased data entry time by increasing their efficiency as a result of limiting keystrokes and/or mouse clicks by iteratively adjusting the tool's performance based on user experience and feedback to the design team. Additionally, pre-post surveys determined increased satisfaction with the technology and modified workflows improved personal, professional, or practice satisfaction.

Discussion of Results

This review systematically analyzed interventions to address physician burnout and included a subgroup analysis of studies designed to overcome administrative burden. Burnout was lessened by interventions that improved processes, optimized EHRs, reduced clerical burden through the use of MAs/scribes, and implemented team-based care. Few high-quality studies were identified related to EHR optimization; however, interventions that provided customized training to users about documentation best practices, introduced standardized documentation forms, deployed individualized EHR enhancements, and used voice recognition for dictation in agile settings had improvements in usability, efficiency, and satisfaction with technology. Execution of rigorous informatics studies related to the usability and enhanced integration of EHR into team-based workflows are required to identify which technological improvements will have the greatest impact on burnout.

Future study considerations should include how organizational EHR interoperability can be improved to enhance patient outcomes, as some tasks are beyond the limits of what most certified EHR products can provide. Further improvements might be realized by optimizing EHRs for specific use cases rather than applying a one size fits all approach in EHR implementation. Limited advanced technology interventions were identified to combat burnout; as such, there is an opportunity to examine the impact of advanced analytics and artificial intelligence (AI) methods applied to EHRs. Only two studies leveraged clinical decision support and speech recognition algorithms to augment the user and the tool's performance. In addition to decreasing clerical burden, the supplementation of AI solutions to EHRs might improve usability and time management from physicians' perspectives. AI has the potential to extract, synthesize, and contextualize relevant, personalized, and timely information at the point of care. However, any improvements and innovations to EHRs need to consider the larger ecosystem including the organization, the marketplace, and regulatory policies.

Conclusion

The 4Ts framework outlines the types of pragmatic approaches that clinical informaticians can employ to make organizational and process changes to decrease physician burnout, especially burnout related to EHRs and related health information technologies.

Attendee's Take-away Tool

There is a need for high-quality research regarding EHR optimization. Implementation of team-based care, improved workflow processes, tailored EHR usability for precise use cases, and use of scribes can decrease burnout and improve physician resiliency.

References

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Figure 1.

