



Current Problems in Diagnostic Radiology

journal homepage: www.cpdjournal.com



Strategies for Increasing Radiologist Efficiency

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Radiologists experience higher than average rates of burnout. Contributing factors include job tedium, a lack of a sense of autonomy, and decreasing compensation in the context of practices closely monitoring relative value unit output. Increasing radiologist efficiency may be a strategy for mitigating burnout, as freeing up time may allow radiologists to focus their attention on the aspects of their job that they enjoy and find most meaningful. In this work we propose several strategies of distraction minimization and time optimization that radiologists may employ to increase their efficiency.

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Introduction

Feeling overwhelmed by your job? You are not alone, whether in the context of radiology or medicine in general. According to the 2018 Medscape National Physician Burnout & Depression Report, radiologists experience higher than average rates of both burnout and coincident burnout and depression.¹

Increasing rates of burnout not only affect the physician but can also negatively affect patient care. What are the reasons contributing to a higher-than-average rate of radiology burnout? The data aggregated over all specialties suggest some common themes, including tedium of the actual job (charting and interaction with the electronic medical record in particular), a lack of a sense of autonomy, and decreasing compensation. These same themes apply to radiology, with the added stressors of reduced imaging reimbursement and practices closely monitoring relative value unit output. Such monitoring may increase productivity in the short term via the Hawthorne effect, whereby efficiency is increased solely by virtue of knowing that one is being monitored, but may be detrimental in the long term due to the perceived erosion of autonomy.²

How can we address the problem of burnout and improve physician wellness? In this work, we focus on how individual radiologists can maximize efficiency, both when on clinical service and in noninterpretive work. Increasing efficiency can result in greater time and autonomy allowing radiologists to focus their attention on the aspects of their job that they enjoy and find most meaningful. Theoretically, increased efficiency empowers physicians to craft a job and lifestyle that promotes wellbeing (eg, a flexible-hours shift defined by a number of studies read rather than hours in a seat). We propose several strategies that radiologists may employ to increase their efficiency.

Efficiency Strategies

Strategy #1: Minimize Distractions

Distractions outside work can lead to a general sense of stress and overwhelm, but distractions in the reading room can lead to perceptual errors, a class of error in which an abnormality is retrospectively determined to have been present on a diagnostic image but was not seen by the interpreting radiologist at the time of primary interpretation. Phone calls and emails are a common source of distraction, and Balint et al quantify their effect, reporting that “one additional phone call during the hour preceding the generation of a discrepant preliminary report [by a radiology resident] resulted in a 12% increased likelihood of a resident error”.³

Phone Calls

Strategies for mitigating distraction due to phone calls include hiring a physician extender who can be trained to answer common questions (often termed a “reading room assistant”), assigning one particular radiologist who may have a lesser expectation as to reading studies, or implementing systemic educational practices addressing common questions by referring physicians. A targeted focus at reducing interruption from phone calls may increase efficiency and productivity, while reducing chance of error.

Emails

Email is a source of frequent distraction and wasted time. Implementing a system to deal with emails immediately and converting them into actionable items can increase efficiency and decrease stress—if one has dozens, hundreds, or possibly thousands of emails percolating in one’s Inbox then it is a low-level constant stressor to parse this list several times per day and determine anew which messages require immediate action. One of the more popular systems of many that have been proposed is from David Allen’s *Getting Things Done: The Art of Stress-Free Productivity*.⁴ The author proposes the 5 Ds, an effective and time-efficient strategy to dealing with email communications:

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- Delete it—If you don't need it, delete it!
- Do it—If it can be done quickly (<2 minutes), do it NOW.
- Delegate it—Often an ignored strategy!
- Deposit it—Create an easily accessible and organized archiving system.
- Defer it—If it is going to take more than a few minutes. Develop a reliable system to schedule and track these tasks.

We posit that this strategy encompasses a larger world—view extending beyond email communications, per se: as Lackey, et al state, “e-mail is a microcosm of an individual's overall productivity framework.”⁵ With minor modifications these strategies may be generalized to deal with incoming requests from all sources, both in the context of work and outside of it. Although one cannot *delete* a request for home maintenance work around the house it is certainly a reasonable strategy to *delegate* the work (“I'll call a handyman today”) or *defer* it with a specific date in mind (“I'll be able to get to this on Saturday afternoon. It's on my calendar.”).

Internet-based Distractions

The advent of smartphones and widespread Internet access has revolutionized the way we communicate with each other and consume entertainment and media. Unfortunately, this also can be an enormous distraction, particularly for the younger radiologists (or younger at heart). Text messages, social media notifications, personal phone calls, and incoming emails all can lead to near-constant interruptions. Set aside designated time in between several cases to mentally relax and participate in these activities. Otherwise, leave the smartphone in “do-not-disturb” mode, place in a bag or coat pocket, or at least keep facedown to minimize distractions while reading cases.

Strategy #2: Optimize Use of Your Time

Taking Short, Scheduled Breaks

Is it feasible and effective to stay on-task and productive for hours at a time? Research in other fields of industry suggests that short, intermittent breaks are best for increasing productivity while working. One popular technique, known as the Pomodoro Technique, involves use of a timer to work for 25 minutes followed by a 5 minute break. After 4 of these approximately 30 minute intervals, a longer break of 15-30 minutes is recommended. This technique has been described in various fields such as Extreme Programming, which like radiology involves rapid manipulation of data by a team of individuals.⁶ Consciously allowing for these short breaks—to respond to a text message, make a phone call, upload a picture of your latte to social media, check the news, or watch kitten videos on YouTube—can increase focus and productivity when coming back to the task at hand.

Efficient Reporting

Structured reporting has been documented as a method improving clarity and consistency, but can this technique improve efficiency as well? Structured reporting with customized templates can increase efficiency, in particular via the use of “pick lists” that present predefined (and, importantly, preproofread) options for common entities. With sufficient familiarity with the layout of one's templates, straightforward cases may be distilled to an appropriate item on a pick list of commonly encountered entities, for example, “absent gallbladder,” “prior hysterectomy,” “normal appendix,” and “moderate atherosclerosis.” Adherents to free form reporting may resist this framework, but in our experience that there is no added value in the act of dictating a statement regarding an uncomplicated prior cholecystectomy. Indeed, the process of dictating itself is more time-consuming than double clicking on a predetermined list item (or selecting it via voice, eg, “pick 2” for the second option in a list) and introduces an unnecessary potential source of error.

Be Concise

Lengthy radiology reports can distract the radiologist from focusing on the clinical question at hand, and creation of reports with too much irrelevant clinical detail may be a source of inefficiency. One simple strategy to produce more concise reports is to report on no more than 2 focal lesions per organ system (eg, 2 liver lesions, 2 lung nodules, 2 representative lymph nodes). There is ample precedent for this practice in that it follows the widely-accepted RECIST 1.1 criteria for target lesion selection, with the rationale that if the lesions chosen are representative of the overall disease process then the correlation between 1, 2, or an arbitrary number of lesions should be similar. From a practical perspective, limiting the number of lesions followed and consistently reporting on these lesions can increase reporting efficiency and coherence, especially if one does not editorialize on the magnitude of size changes (ie, “slightly decreased”) but instead merely reports current and prior dimensions (eg, “lesion 1, in hepatic segment 7, currently X by Y mm (image/series), previously A by B mm”).

Optimize Ergonomics

There is much discussion in the literature regarding workplace ergonomics. Indeed, computer work combined with a sedentary lifestyle is akin to smoking given its associations with health risks. Ergonomic considerations relate to posture, monitor height relative to one's eye level, and whether one should sit, stand, or perhaps even stride along on a treadmill while at work. An equally important consideration, particularly important to radiologists, is that of monitor layout. The goal should be minimization of the distance that one's eyes and mouse cursor must traverse in order to dictate a study. Dictation software should be located near the displayed images, to minimize the amount of distance one has to look from exam to dictation. Similarly, if PACS software has a palette from which series can be dragged to the diagnostic monitors to hang them then this should be located close to the primary image display monitors. Other software that radiologists may refer to on occasion, such as the electronic health record or the worklist of studies to be dictated, can be relegated to monitor real estate further in the periphery.

Conclusion

Radiologists experience burnout at a higher than average rate as compared to all medical specialties. While there are several contributing factors leading to symptoms of burnout, a major contributing factor is the relentless push to interpret more studies in a given time. By increasing one's efficiency both at and away from the reading station radiologists may be able to increase their job satisfaction by decreasing the proportion of their time spent dealing with tedium and thereby allowing them to spend more time on the aspects of their jobs that they find to be fulfilling.

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