

Psychological Aspects of Utilizing Telecytology for Rapid On-Site Adequacy Assessments

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Abstract

Rapid On-Site Evaluation (ROSE) has been well documented in its ability to improve the diagnostic yield and accuracy of fine needle aspirations across many sites, resulting in better quality of patient management and a simultaneous reduction in treatment costs. Telecytology makes it possible for cytology laboratories to offer ROSE in a cost effective manner, whilst employing only a small number of trained cytopathologists to cover many sites from a single connected location. However, the adoption of telecytology for ROSE has been lackluster. We believe that this reluctance is not only due to barriers such as technology limitations and financial obstacles, but also due to overlooked psychological factors. This article discusses the unaddressed psychological considerations of telecytology for ROSE.

Keywords: Cytopathology, psychology, rapid on-site evaluation, telecytology

INTRODUCTION

Rapid on-site evaluation (ROSE) has been well documented in its ability to improve the diagnostic yield and accuracy of fine-needle aspirations (FNAs) across many sites.^[1] Real-time communication between a cytopathologist and clinician (proceduralist) is a key element in the effectiveness of ROSE. ROSE has many benefits in practice including a reduction in the duration of FNAs (through a reduced number of passes needed) and the need for subsequent FNAs (by improving the procurement of adequate specimens). The net result has been better-quality patient management with simultaneous reduction in treatment costs.^[2-4] This has accordingly resulted in a widespread demand for ROSE, especially in the current era of personalized medicine where there has been a notable rise in the use of FNAs and small core biopsies.^[5] The near ubiquity of ROSE today has helped build strong communication and deep relationships between the cytopathologist and clinician performing FNAs.

Cytopathologists have a long history of being early adopters of technological advances in pathology. Examples include the transition from conventional smears to liquid-based cytology, utilization of cell blocks for ancillary immunohistochemistry

and molecular testing, and more recently telecytology for ROSE. Telecytology makes it possible for cytology laboratories to offer ROSE in a cost-effective manner while employing only a small number of trained cytopathologists to cover many sites from a single connected location.^[6] Telecytology can be performed using static images, dynamic video, real-time robotic microscopy, whole slide imaging (WSI), or a hybrid WSI/robotic scanning device. Technical details and related workflows of these different modalities have been previously dealt with in the literature. Dynamic videomicroscopy is one of the most popular modes of telecytology in practice and typically requires a cytotechnologist to be present on site to prepare slides and screen them using a microscope with an attached digital camera that transmits an image to a remote cytopathologist.^[7] Many of the early barriers to telepathology have been overcome including technology limitations, financial obstacles, the pathologist's mindset, and regulations.^[8] Despite this progress, the adoption of telecytology for ROSE has been

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lackluster. We believe this reluctance is in part a manifestation of unaddressed psychological factors.

INNOVATIVE LEADERSHIP

A drawback of ROSE from a Pathology Department's perspective is the lack of commensurate reimbursement for the cytopathologist's time during this procedure. A single ROSE episode may consume anywhere from 10 min to 1 h. Telecytology has the potential to change that by reducing the cytopathologist's downtime, thereby bringing effective reimbursement closer to opportunity costs. While adoption of telecytology is promising, its initiation can be unsettling for individual cytology departments. Such innovation requires cytology leaders to take personal risks, push beyond the limits of their comfort zone, overcome skeptics, and navigate around the forces of organizational homeostasis. Junior and senior cytologists may also interact differently with digital cytology technology.^[9] It is imperative that during the switch to using telecytology, leadership should instill a culture of psychological safety (without fear of negative consequences) to help team members operate beyond their fear of failure. Fear tends to create pessimism, which leads to risk aversion, which may inhibit progress. However, emphasizing a safe working environment should not tip the other way, where the cytology team settles into an "it's ok to make mistakes" mindset. Leadership should also foster organizational patience and engagement that persists beyond implementation and accept, or perhaps even embrace, surprising outcomes (e.g., clinicians forgoing ROSE and instead choosing to submit biopsies directly into liquid-based fixative). Such optimism helps fight the natural psychological tendency to retrench back to the safety of existing practices in the face of minor setbacks.^[10]

BARRIERS TO COMMUNICATION

While strong leadership and engaged contributors are important characteristics of high-performance teams, open communication and mutual trust between team members are equally vital.^[11,12] In a telecytology setup, the lack of face-to-face time between the cytopathologist and clinician performing the biopsy may hamper the organic creation of a good working relationship. This gap is further amplified with newly hired physicians to an organization who may have never had the opportunity to meet in person. Hence, it is important that physicians working together make a concerted effort to foster open communication. Strong communication creates understanding, understanding breeds trust, trust enhances respect, and mutual respect encourages openness to discuss and work collaboratively, ultimately leading to high-quality patient care. Cytopathologists have experienced this better than others with conventional ROSE when they were physically present at the "bedside." Successful telecytology requires similar commitment and principles, despite working remotely.

LOSS OF CONTROL

Relying on a cytotechnologist to "show slides" using a microscope with an attached digital camera (i.e., dynamic/streaming videomicroscopy), and being separated in space from the specimen, requires the cytopathologist to forgo some control to the cytotechnologist. This causes both parties to operate outside their comfort zone, creating anxiety. This is especially challenging for cytopathologists, as many of them are detail-oriented perfectionists. Since the cytopathologist is no longer in charge of "driving the slide" and may have to rely on a cytotechnologist who may not be experienced enough for independent ROSE, it is possible to get into the habit of simply assessing adequacy and/or preliminarily categorizing aspirated material as "atypical" instead of providing a more definitive interpretation, leading to ineffective ROSE. Department leaders and individual cytopathologists have to be alert and conscientious about not letting this happen. Using robotic microscopy instead to remotely view slides allows the cytopathologist to be in complete control of slide navigation and focusing but still requires a cytotechnologist to be present on-site to prepare slides. Cytopathologists performing ROSE by telecytology may also become frustrated and averse to this novel practice. A noisy on-site environment where the cytotechnologist is involved in multiple tasks, is rushed, and hurriedly shows select areas on the slide may lead to ineffective communication that could add to the issue. If a junior or inexperienced resident is sent on ROSE without the cytotechnologist, it could further exacerbate the situation.

STEPPING UP

Apprehension about relying on cytotechnologists to perform video microscopy also comes from the lack of assurance that a cytotechnologist can play the active role that this setup demands. In a conventional ROSE setup, the cytotechnologist plays a minimal role in assessing specimen adequacy/rendering a preliminary diagnosis and communicating this finding directly with the clinician, and more of a supporting role focused on slide preparation and assisting the clinician in specimen handling, preservation, and triage. Until recently, there has been limited attention devoted to ROSE with telecytology in cytotechnology schools.^[13] In fact, lower reimbursement for cytotechnologist-read ROSE relative to cytopathologist-read ROSE creates disincentives to train cytotechnologists for this role. Nevertheless, a successful telecytology operation requires cytotechnologists to step up and take on a more active role during ROSE, including being an interface between the cytopathologist and clinician. Cytotechnologists not only need to acquire these skills to be competent but may also need to gain confidence so that they are more independent during ROSE. Hence, it is in our best interest to ensure that cytotechnologists are well trained for independent ROSE. There may also be some apprehension that in time, given that cytotechnologists are

becoming as competent as cytopathologists at performing ROSE,^[14] this task may be completely relinquished to them. This resembles the nurse anesthesia profession, which evolved in response to a shortage of suitable anesthetists and the reluctance of operating physicians/surgeons to provide anesthetics.^[15]

INSTITUTIONAL ENDEAVORS

At the University of Wisconsin Hospital and Clinics (UW) and University of Pittsburgh Medical Center (UPMC), the cytopathology departments utilize dynamic telecytology in adequacy assessments of FNAs performed at various hospitals, and/or affiliated institutions, and outreach clinics. At UPMC, numerous cytopathologists and cytotechnologists were purposely involved in deploying, testing, and validating the telecytology system to cultivate early buy-in and hopefully ownership of this new technology. Cytotechnologists at UW are evaluated in a simulated telecytology setting.^[16-18] This assessment evaluates not only their technical cytology skills but also their understanding of the telecytology system and how to troubleshoot. Only those meeting the minimum requirements are formally authorized for ROSE. Moreover, at UW cytopathologists and fellows are required to take a telecytology preparedness test after a period of observation and active discussions on live procedures with senior faculty. The test includes 10 FNA cases relayed by a cytotechnologist from a telecytology station to a remote cytopathologist for preliminary diagnosis. Competency is set at 90% accuracy for preliminary diagnosis, not only adequacy. This helps cytopathologists be better prepared both technically and psychologically. Indeed, preparing healthcare professionals by means of education and training is an important part of a successful telemedicine program.^[19] Constructive, nonpunitive feedback is also routinely provided to cytotechnologists, even positive, which helps further build their confidence.

CONCLUSION

Effective telecytology entails teamwork. It requires collaboration, understanding, and patience from the cytopathologist who is remotely located but has to still take responsibility for guiding the FNA procedure, the cytotechnologist who is being asked to step up and manage many tasks on-site including being a broker between the pathologist and proceduralist, and the clinician who has to trust diagnoses being rendered from afar. Unfortunately, the psychological aspects related to telecytology are often overlooked. They are an important factor in clinical practice and need to be satisfactorily addressed because overcoming these mental barriers is essential for sustaining and growing a successful telecytology service for ROSE.

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Conflicts of interest

There are no conflicts of interest.

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