Response to Effects of COVID-19 on Radiology and Strategies Moving Forward

Sharon Mohammed, BSMI, R.T.(R)(CT)
Lior Z Molvin, MBA, R.T.(R)(CT)
Bradley M Spieler, MD, FSAR

Radiology is an important medical specialty, driven by seemingly limitless technological advances. Several imaging modalities are central to diagnosing and treating various diseases for patients worldwide. Despite changes in the radiology profession because of the COVID-19 pandemic, the demand for imaging services will continue to increase.[1] Moving forward, radiology leaders must develop new approaches and strategies to define the pathway. More than 3 years into this pandemic, organizational leaders must continue to meet the rapidly changing scenarios and operational demands in a radiology department.

Economic Effects

During the height of the pandemic, many outpatient centers canceled elective and nonemergent imaging examinations. One tertiary health care institution reported an 87% reduction in outpatient imaging and a 93% reduction in mammography because of COVID-19.[2] Decreasing imaging volumes resulted in decreasing revenues for imaging departments, and hospital personnel faced salary cuts.[3] However, some health care organizations took steps to change their practices and financial policies, and as a result, were in a better position financially when the pandemic ended.[3] Federal aid also assisted in the recovery, particularly the Coronavirus Aid, Relief, and Economic Security (CARES) Act,[4] which was signed into law on March 27, 2020. The CARES Act earmarked $100 billion for hospitals. In addition to these federal provisions and stimulus funding, radiology practice leaders worked to minimize staffing disruptions. Nevertheless, reduced working hours, pay cuts, suspended bonuses, furloughs, and freezes on new staff became semipermanent in some cases.[5]

Maintaining Connectivity

In response to social distancing concerns during the pandemic, there was an increase in the installation of home PACS workstations for radiologists to work remotely,[6] further distancing diagnostic radiologists from patients and other staff and placing them at the forefront of telemedicine. As a result of these conditions, tension and discord occurred in many departments.[7] Some radiology staff members, such as radiologists, were able to stay at home, while patient-facing staff, such as technologists, were not able to do so. This disparity in the working environment was a potential stimulus for fear of contracting the virus in hospital personnel who were in direct physical contact with patients.

In response, virtual platforms were used to enhance communication among members of the radiology team. Connectivity can be a critical element for patient-facing staff to continue to thrive and can aid in maintaining a department's culture no matter what new challenges arise. Remote work technologies such as Zoom (Zoom Video Communications, Inc) and WebEx (Cisco) can be used as pathways to communication, helping to drive departmental unity.[8] Conscious interaction and

engagement through small gatherings can be maintained by members of the imaging team, promoting equitable interactions among all levels of department stakeholders. For patient-facing staff to continue to excel at their jobs and perform to their full potential during an extended and stressful period, methods of open communication must be developed. This open communication is critical so that staff feel informed and have more confidence in their leadership and in themselves.[9]

Interprofessional collaboration and effective communication have helped radiology leaders succeed. They ensured the safety of patients and staff, preserved staff morale and well-being, and continued to provide patients with the highest level of care during the height of the pandemic.

Protecting Staff

Necessary precautions were taken to keep patients and staff safe and protected.[10] Imaging leaders outlined guidelines to prevent the virus spreading through human-to-human contact and contact with imaging equipment. Those guidelines included steps to maintain access to critical supplies and personal protective equipment. Strategies to clean and decontaminate patient care areas according to Centers for Disease Control and Prevention guidelines were created. Creating policies for the safe ambulatory imaging of patients with COVID-19 became a priority. Social distancing protocols were implemented in waiting rooms, hallways, and work areas. Universal masking of patient-facing staff was also implemented. The efficiency of every patient encounter was optimized. For example, imaging protocols were shortened when possible to minimize the amount of time a patient spent in the radiology department. Patient flow through the imaging suite was streamlined to minimize unneeded contact. Visitor restrictions were also implemented. Technologists and other patient-facing staff were further educated on safe use of personal protective equipment and proper hand hygiene.[10]

Radiology Education

The lack of in-person interaction among radiologists, trainees, and technologists had a negative effect on education.[11] Also, a sizable percentage of hospital inpatient imaging during the pandemic consisted of chest examinations for patients with COVID-19. Decreased outpatient imaging affected the education of radiology residents and technologists. For example, many technologists observed and performed fewer imaging examinations and were exposed to less diverse pathology during the pandemic.[12]

Several innovative strategies helped compensate for these limitations and enhanced residents' and technologists' educational experience during the pandemic. To ensure that trainees did not lose the daily clinical experience, quality control managers and teams led additional didactic conferences and virtual case conferences.[11] These conferences required a collaborative effort among radiology leadership, quality managers, and lead technologists. These individuals were tasked with choosing topics to discuss, providing technical and clinical information, developing an environment for virtual education, and conducting sessions remotely or on-site while maintaining the appropriate social distancing and keeping staff fully engaged. Trainees were expected to sign in for the duration of these presentations and participate in question-and-answer sessions at the end.[12]

A crucial element to consider while creating these continuing education sessions was maintaining social distancing among attendees and presenters. Access was provided using workstation virtualization and screen-sharing solutions through a virtual private network.[12] For example, trainees at New York University Imaging accessed sessions from remote locations using the virtual private network. They could interact and had full access to departmental WebEx, which allowed for screen sharing and cursor and input control.[13] Virtual platforms can be a way to connect teams on a higher level. Using a virtual classroom for a daily huddle can help leadership conduct effective conversations that achieve intended educational goals.[14]

Workforce Strategies

A trend that is transforming the health care workforce and causing pronounced demographic shifts is the phenomenon known as the *Great Resignation*. A record number of workers in the United States voluntarily resigned from their jobs. Nearly 4.1 million workers quit in September 2022, which will affect workforce

planning.[15] Recruiters must put themselves in a position to overcome these challenges. Simple solutions include higher salaries, better benefits, better working hours, and less physically demanding roles.

Effective recruitment platforms and data-driven hiring decisions are essential to future proof the profession.[16] The ability to validate licenses and credentials quickly is also needed. Strategic hiring decisions where recruiters understand the local market and can use data-driven decisions to target ideal candidates are needed.[16]

Other workforce solutions include addressing skill gap and diversity recruitment challenges. The most common ethnicity of diagnostic radiologic technologists is White (73.8%), followed by Hispanic or Latino (10.2%), Asian (6.0%), and Black or African American (5.4%).[17] Career readiness organizations are needed to assist students from underrepresented groups. This can be accomplished by increasing students' awareness of in-demand careers in allied health and providing resources such as tutoring and counseling that will foster academic success in radiologic technology programs.

Upskilling and Reskilling

Upskilling and reskilling the current workforce are other strategies to improve the delivery of imaging services. Data from the U.S. Chamber of Commerce shows that the return on investment when employers invest in skill-based training is as high as 63%.[18] Doing so will enable employers to mitigate skill gaps by up to 63% and directly address the changing workforce needs by 59%. Additional data from the U.S. Chamber of Commerce shows this could improve employee retention by up to 58%.

Tuition Forgiveness

Investing in tuition forgiveness has a return on investment as high as 74% according to data from the U.S. Chamber of Commerce, improves employee retention by 74%, and directly addresses skill gaps by as much as 40%.[18]

Empowering Leadership Style

Employee empowerment is a management philosophy, cultivated with intention, not by accident.[19] When leaders give everyone in the organization the chance to help improve systems and processes, the whole company can benefit. Employees that lead initiatives and projects on their own empower other employees, the core of a successful business.

Giving employees more freedom to be creative and develop new ideas can lead to higher productivity and creativity, improve employee confidence, and cultivate a sense of accountability for the workflow in a radiology department.[20] Providing semiautonomy also can make employees more willing to put effort into their jobs. Empowered technologists might have stronger job performance, job satisfaction, and commitment to the department and organization.[20]

Empowering programs can lead to more motivated employees, and leaders can direct that motivation to clear goals.[20] These programs should verify that technologists have the necessary tools and resources to efficiently complete their tasks. The expectations are that empowered employees will have higher engagement levels and be higher performers who are more productive and produce higher-quality work.

Employees are valuable ambassadors for an organization's brand. The more empowered and engaged technologists are the happier they are in their roles and thus more likely to vocally recommend an organization.[20] Thus, the organization then can become a magnet for top talent, decreasing the amount of money spent on recruitment. In addition, higher job satisfaction levels can help retain current employees.[20]

An empowering leadership style builds trust by ensuring all team members know the main goals and are actively contributing to and shaping them.[19] This style of leadership gives technologists an opportunity to give input and handle the delegated tasks with sufficient support. Leaders must express appreciation and celebrate the technologists' accomplishments. This appreciation can close the loop, building mutual trust and creating a deeper sense of empowerment in the department.

Raised morale and collaboration favor an organizational culture where technologists take the initiative.[19] Technologists might embrace a can-do attitude because they are supported and can make decisions where they act and propose solutions to problems. Because technologists are on the front lines, they might be familiar with problems and have solutions.

Conclusion

Radiology departments remain at the forefront of identifying COVID-19 in patients. The radiology market and environment are evolving constantly. The COVID-19 pandemic had an adverse effect on radiology practices and will dictate how health care and radiology services are delivered in the future. Finding ways for team leaders to support the culture of the department on individual and organizational levels is critical because cultivating professional and personal connections is important. A positive and proactive approach to employees' well-being is essential. Workflows must be able to keep pace with internal and external developments or risk becoming unable to meet the constantly changing needs of patients, the organization, and its employees. Radiology leaders must track and measure new workflows and identify pandemic-related operational bottlenecks. Systems must run with optimal efficiency and productivity in clinical processes while maintaining patient satisfaction, regulatory compliance, and the engagement of all stakeholders in the radiology workforce.

How a problem is defined influences how the problem is solved. The workforce shortage requires a bigger reimagining than simply producing more of the same type of health care workers. The latent skill of health care professionals should be tapped by upskilling and reskilling the current workforce. The health care team also should be reimagined, creating interprofessional teams that have robust supervision models, escalation protocols, and support so that outcomes and care are owned by groups of employees whose collective capacity is greater than the sum of their individual capacity.

Sharon Mohammed, BSMI, R.T.(R)(CT), is assistant director of technical education for Bellevue School of Radiologic Technology in New York City. She can be reached at mohammes11@nychhc.org.

Lior Z Molvin, MBA, R.T.(R)(CT), is chief technologist and imaging manager for Duke Health Department of Radiology in Durham, North Carolina.

Bradley M Spieler, MD, FSAR, is professor and assistant dean for admissions at Louisiana State University Health Sciences Center (LSUHSC) School of Medicine and vice chair of scholarly activity and research for Department of Radiology LSUHSC School of Medicine in New Orleans, Louisiana.

References

1. COVID-19: what you need to know. National Governors Association. Updated February 3, 2021. Accessed February 3, 2021. https://www.nga.org/coronavirus/
2. Naidich JJ, Boltyenkov A, Wang JJ, Chusid J, Hughes D, Sanelli PC. Impact of the coronavirus disease 2019 (COVID-19) pandemic on imaging case volumes. *J Am Coll Radiol.* 2020;17(7):865-872. doi:10.1016/j.jacr.2020.05.004
3. Cavallo JJ, Forman HP. The economic impact of the COVID-19 pandemic on radiology practices. *Radiology.* 2020;296(3):E141-E144. doi:10.1148/radiol.2020201495
4. Coronavirus Aid, Relief, and Economic Security Act, Pub L No 116th Congress (2020). Accessed April 4, 2020. https://www.appropriations.senate.gov/imo/media/doc/FINAL%20FINAL%20CARES%20ACT.pdf
5. Arnsdorf I. A major medical staffing company just slashed benefits for doctors and nurses fighting coronavirus. ProPublica. Published March 31, 2020. Accessed December 29, 2022. https://www.propublica.org/article/coronavirus-er-doctors-nurses-benefits
6. Quraishi MI, Rizvi AA, Heidel RE. Off-site radiology workflow changes due to coronavirus disease 2019 (COVID-19) pandemic. *J Am Coll Radiol.* 2020;17(7):878-881. doi:10.1016/j.jacr.2020.05.008
7. Wolfman DJ, Porter KK, Johnson DL, Parikh JR. Unsustainable: COVID-19 demands increased support for radiologists. *Clin Imaging.* 2021;73:18-19. doi:10.1016/j.clinimag.2020.11.038
8. Lieux M, Sabottke C, Schachner ER, Pirtle C, Danrad R, Spieler B. Online conferencing software in radiology: recent trends and utility. *Clin Imaging.* 2021;76:116-122. doi:10.1016/j.clinimag.2021.02.008
9. Davenport MS, Bruno MA, Iyer RS, et al. ACR statement on safe resumption of routine radiology care during the Coronavirus disease 2019 (COVID-19) pandemic. *J Am Coll Radiol.* 2020;17(7):839-844. doi:10.1016/j.jacr.2020.05.001
10. New York State Department of Health. Interim health advisory: updated COVID-19 guidance for hospital visitation and non-hospital employed patient support. Published June 7, 2021. https://coronavirus.health.ny.gov/system/files/documents/2021/06/hospital_visitation_guidance_06072021.pdf
11. Virarkar M, Jensen C, Javadi S, Saleh M, Bhosale PR. Radiology education amid COVID-19 pandemic and possible solutions. *J Comput Assist Tomogr.* 2020;44(4):472-478. doi:10.1097/RCT.0000000000001061
12. Mohammed S, Leardi V. Frontline imaging: meeting the challenges of the COVID-19 pandemic. *Radiol Technol.* 2020;92(1):78-81.
13. Mohammed S, Molvin L. In-service education programs for CT technologists during the COVID-19 Pandemic. *Radiol Technol.* 2022;93(6):560-562.

14. Mohammed S, Molvin LZ. Team building and productivity among technologists. *Radiol Manage*. 2021;43(3):17-21.
15. Kenton W. Job openings and labor turnover survey (JOLTS). Investopedia. Updated May 5, 2022. Accessed December 29, 2022. https://www.investopedia.com/terms/j/jolts.asp
16. Occupational outlook handbook: radiologic and MRI technologists. U.S. Bureau of Labor Statistics. Updated September 8, 2022. Accessed May 18, 2023. https://www.bls.gov/ooh/healthcare/radiologic-technologists.htm
17. Diagnostic radiologic technologist demographics and statistics in the U.S. Zippia. Updated September 9, 2022. Accessed April 26, 2023. https://www.zippia.com/diagnostic-radiologic-technologist-jobs/demographics/
18. Ferguson S. Data Deep Dive: Upskilling and Reskilling Our Workforce. U.S. Chamber of Commerce. Published December 8, 2022. Accessed April 26, 2023. https://www.uschamber.com/workforce/education/data-deep-dive-upskilling-and-reskilling-our-workforce
19. Choi SL, Goh CF, Adam MB, Tan OK. Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. *Hum Resour Health*. 2016;14(1):73. doi:10.1186/s12960-016-0171-2
20. Mohammed S, Rosenkrantz AB, Recht MP. Preventing burnout in the face of growing patient volumes in a busy outpatient CT suite: a technologist perspective. *Curr Probl Diagn Radiol*. 2020;49(2):70-73. doi:10.1067/j.cpradiol.2019.02.005