Impact of Internet Based Resources on Resident Teaching and Educational Conferences: Experience at a University Affiliated Hospital Network Comprising Academic and Community Based Pathology Practices

J L Fine1, Y Yagi1, A V Parwani1, M J Becich1 and J R Gilbertson1.

1Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States.

ABSTRACT

With subspecialty pathology sign-out. This milieu presents challenges to department wide resident education and academic missions. The Internet and other digital communication technologies have been utilized to mitigate these challenges, resulting in a large resource of online teaching cases, archived conferences, and annotated whole slide image teaching sets. These are collected presently in the departmental web site (http://path.upmc.edu), as well as the departmental telepathology web site (http://telepathology.upmc.edu).

Design: The educational and academic mission of the distributed department is supported by three web-based systems: 1) A web-based teaching case. These resources have been widely utilized and represent a substantial investment of departmental resources when complete.

Result: These resources have been accepted by residents, faculty, and departmental leadership. Currently 439 teaching cases have been archived for resident review, including more than 2,750 images. Since 1995, more than 450 cases have been posted. CME credit is available via the departmental home page.

Conclusions: These Internet-based pathology informatics resources have enriched our pathology educational and clinical programs. These resources have facilitated pathology education in a wide-based, subspecialty organized environment, and are readily available to all residents and faculty at our health system. These substantial digital media resources are valuable and represent a significant investment by the pathology department in order to facilitate pathology education and serve as a model for other institutions as they build their digital archives.

BACKGROUND

Our health care organization educates pathology residents at five hospitals in a largely subspecialty sign-out environment. This complicates access to teaching conferences and educational materials. Internet-based technologies have been in use for more than 10 years in a successful effort to address these challenges.

These applications fall into three categories: multimedia teaching cases; daily internet-broadcast and archival of educational conferences; and whole slide images (WSI, also known as virtual slides). This poster presents our experience in successfully providing Internet-based educational resources, including WSI, for routine educational applications.

DESIGN

Teaching cases (http://path.upmc.edu/cases.html) feature photomicrographs, gross photographs, and radiology images (Figure 1). CME credit is available via the departmental home page. Responsibility for authorship is assigned annually as part of the residents' schedule. Case creation is therefore an official activity within the department.

Daily educational conferences (http://teleconference.upmc.edu/pathconf/) are digitally recorded and archived. These resources include more than 2,750 genitourinary, dermatopathology, neuropathology, and bone/soft tissue WSI (Figure 3). Weakly unknown conference slides are scanned and then made available through the residents' web site. Image links are embedded within the clinical history sheet that is supplied by the conference moderator. WSI creation is supported by members of the telepathology group. To increase resident access to and utilization of WSI resources a web site has been created to provide one-stop access to these resources (VirtualPath, Figure 3).

RESULTS

Teaching cases have been regularly published since 1995; there are 455 cases including approximately 4,200 images. These are accessed regularly both from within and from outside the department. More than 875 educational conferences have been archived since 2002. These are accessed by approximately 60 to 100 unique users each month.

CONCLUSIONS

- Internet-based educational resources have enhanced pathology resident education in a multi-campus, subspecialty-organized environment.
- Residents may "virtually" attend conferences that would otherwise be unavailable.
- A web portal (VirtualPath) can facilitate access to and utilization of whole slide image resources by residents as they rotate through various subspecialties.
- Dedicated support personnel are crucial for successful provision of these educational resources without disrupting existing workflow.
- Most of these educational resources are publicly available and may serve as models for others as they create digitally-based resources.

ACKNOWLEDGEMENTS

Partially funded by U.S. Air Force Integrated Medical Information Technology System (IMITS). Ishakicel Ahmad and Jon Duby provided technical support for conferences and WSI efforts. Ashok Kumar Patel and Drezan Juck developed the general pathology teaching collection. Tony Gigliotti helped develop the "VirtualPath" web site.