Received:
23 December 2014

Revised:
23 March 2015

Accepted:
31 March 2015

doi: 10.1259/bjr.20140864

Cite this article as:

Morgan A, Isaac M, Scrutton S, Wedgewood J, Jankowska P, Hwang D. Using a commercial software package to support treatment planning peer review activities in small radiotherapy departments. *Br J Radiol* 2015;88:20140864.

SHORT COMMUNICATION

Using a commercial software package to support treatment planning peer review activities in small radiotherapy departments

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Objective: To implement peer review of radiotherapy treatment planning processes between two geographically separated hospitals with different treatment planning systems.

Methods: The feasibility of using Microsoft® Lync 2013™, available in one of the hospitals, was investigated to determine its utility in sharing radiotherapy treatment planning information between hospitals with small numbers of clinical oncologists available to participate in peer review of treatment plans.

Results: Microsoft Lync 2013 has been successfully used to implement remote, real-time review of all aspects of treatment planning, including contours,

beam arrangements, isodose distributions and dose--volume histograms.

Conclusion: A reliable system for remote, real-time peer review of radiotherapy treatment plans has been implemented between two geographically distant hospitals using Microsoft Lync 2013. Interest in use of the system is developing regionally.

Advances in knowledge: This work appears to be the first to describe the use of Microsoft Lync 2013 in this area and demonstrates that smaller radiotherapy centres separated by distance can share clinical and scientific resources to participate in improved peer review processes, in line with recent UK national guidance.

In March 2014, the joint Cancer Research UK/National Health Service (NHS) England document “Vision for Radiotherapy 2014–2024”¹ highlighted that “Peer review of patient outlining and treatment plans in particular could significantly improve outcomes ...”. Peer review of treatment plans and structure sets is considered to be good clinical practice and takes place routinely in large cancer centres and in clinical trials.

Langmack et al² described how Microsoft® NetMeeting could specifically support peer review of target volume delineation, involving oncologists and radiologists. In smaller centres where fewer numbers of consultant clinical oncologists are available for peer review activities, facilities and software to improve communication between specialists can reduce the need to physically relocate to allow discussion to take place. This is particularly relevant for head and neck treatment planning

where there are multiple target volumes and organs at risk.

Software that can incorporate different planning systems and allow participant users to present cases would obviate the need to duplicate identical planning systems.

METHODS AND MATERIALS

At the time of the publication of “Vision for Radiotherapy 2014–2024”, both the Royal Devon and Exeter Oncology and Musgrove Park oncology centres were already working together to identify processes to facilitate cross-site peer review of contours and treatment plans for patients with head and neck cancer. A recognized problem was the use of different treatment planning systems (TPSs) on both sites.

Through communications with the Taunton Information Technology (IT) Department, the teams became

aware that this Trust was in the process of trialling Microsoft Lync 2013^{3,4} with a view to improving general communications, within the hospital, wider NHS network and beyond.

Lync is an instant messaging client and is one of the Microsoft Office® suite of programs. It allows personal computer (PC) users to communicate using real-time text, by voice using a microphone or by video conferencing, but more importantly in the context of this particular issue, PC screens can be viewed by remote users. On request, control can be transferred to any user logged in to the Lync session to allow them to scroll through planning images. Furthermore, screen sharing across geographical sites may also be undertaken to allow any site to be the “host PC” for viewing and editing of contours/plans. The typical network bandwidth required for this activity is around 1–3 Mbps.⁵ Communications between all users take place via a Lync Server, and this has been made available in Taunton. Additional IT resources were required, amounting to:

- 4 Windows Servers. This could be 3 but resilience is lower. Physical units can be used, but Taunton has implemented server virtualization using VMware®,⁶ Palo Alto, CA, as the overall cost is lower.
- 2 Lync 2013 Server Licenses
- 1 Structured Query Language License
- Lync 2013 Client Access License.

In Taunton, a Pinnacle™ TPS (Philips Healthcare, Fitchberg, WI) is in use. This operates on a Smart Enterprise architecture and access is via PCs that have Oracle Virtual Desktop Client installed on them to allow access to the Pinnacle data servers. Most of the PCs in which Pinnacle is accessed have dual screens.

In Exeter, an Eclipse™ TPS (Varian® Medical Systems, Palo Alto, CA) on a Citrix Server with access via desktop dual screen hospital PCs is in use.

In the context of this project, all communications take place within the N3⁷ network, the wide area network connecting healthcare providers within England and Scotland. N3 provides a secure clinical governance framework for data security and confidentiality. Microsoft Lync 2013 software is installed on several PCs in Taunton. Appropriate clinical and scientific staff on both sites are invited to join meetings via an e-mail invitation containing a link to the session. When joining a Lync 2013 meeting from a remote PC, a web client is installed on that PC, but administrator/power user rights are not required. At this time, the Lync 2013 servers used in this development are sited in Taunton, and all Lync meetings are scheduled from there. No other additional equipment is required by Exeter to join a Lync 2013 meeting other than a PC with internet and Eclipse TPS access.

DISCUSSION

Initially a number of trials were carried out, during which several problems were identified and resolved. All initial problems were traced to firewall issues and the fact that the

required ports to allow full communication between the two sites were not open at that time. This process required close collaboration between the IT departments in both hospitals. Following application of appropriate firewall permissions, full communication was allowed, and the system implemented into clinical use, with weekly interactive clinical review sessions between the two sites. To date, it has been maintained without interruption. The clinical oncologists in the two centres can review contours and plans and offer suggestions in real time for modification if required. Comments and observations made during the review process can be written in the Lync Messaging Box and be cut and pasted into the patient electronic record. In Taunton and Exeter, these are MOSAIQ® (Elekta AB, Stockholm, Sweden) and ARIA® (Varian Medical Systems), respectively.

Lync 2013 allows access by external users. However, while external users are able to attend appointments, they are not able to request or schedule them. At this time, Taunton schedules all appointments and Exeter attends them.

Lync 2013 is a competitor with other systems such as WebEx, which could be used in a similar way. However, Lync 2013 is integrated within Microsoft Office, which is in use in both Taunton and Exeter and meeting invitations are easily sent using Office e-mails.

This implementation has used the Pinnacle and Eclipse TPSs. However, there is no reason why similar processes could not be implemented on any other PC or Mac-based TPS.

This work describes a very specific use of Lync 2013 to support the development of collaborative working in radiotherapy between two hospitals in the south-west of England. However, there is no reason why use could not be expanded to other services provided by the two hospitals. Now that the process has been established, any of the teams on both sites are able to review and share data in real time using Lync 2013 meetings. Expansion of this tool to include other hospitals in the UK is currently under way, but the real-time sharing and review of physics data from Taunton has successfully taken place with a hospital in Leeds using Lync 2013. Hospitals wishing to participate in Lync meetings in which patient data are presented should consider discussing such participation with their information governance teams.

The potential use of Lync 2013 is not limited to PCs. An app exists to allow access to Lync meetings from iPads. This is currently being tested in Taunton and viewing of treatment plans is possible. Clinical plan review or modification may prove to be impractical on an iPad, but there is potential to participate in multidisciplinary team meetings remotely if relevant data can be shared across a network.

CONCLUSIONS

Microsoft Lync 2013 has been successfully used to implement peer review of radiotherapy treatment planning processes between two geographically separated cancer centres with different TPSs. The process eventually proved to be

straightforward to implement but required close collaboration between the IT teams at the two sites. NHS information governance requirements are satisfied and the need to physically

transfer either data or staff between sites is removed. Interest in the use of Lync 2013 is spreading locally and another centre is aiming to join this peer review group shortly.

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