

Teleradiologic tutoring and case redistribution as a tool for subspecialisation

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Aims and objectives

To evaluate the role of teleradiology tutoring on efficacy and accuracy of radiologists interested in becoming subspecialists in abdominal and pelvic MRI.

When five mid-sized hospitals in the Västra Götaland region (VGR) in Sweden were facing a serious challenge running their radiology services, they needed a solution they could rely on. The VGR region was facing a chronic radiologist capacity shortage in several hospitals. The radiology community was comprised mostly of generalists who found themselves covering all subspecialty areas.

Waiting lists were increasing and an excessive amount of cases were being sent away for reporting, resulting in a damaging loss of knowledge for the local team.

VGR had been clients of Teleradiology for many years and were aware of the region's ambition to work together collaboratively to tackle these challenges. However, they recognised that the technology available within the region wasn't fully adapted to efficient network collaboration and the know-how to manage such a workflow did not exist, so they reached out to develop a collaborative diagnostic network that would match their specific needs.

Images for this section:



Figure 1: The participating hospitals in the Västra Götaland region (VGR)

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Figure 2: The mid-sized hospitals in Sweden faced challenges that resulted in high volumes sent to TMC for reporting

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Methods and materials

Six radiologists without sub-specialization in radiology were connected to a central teleradiology unit and reported on cases in a prospective study for nineteen months.

The exams were redistributed to these six with each reporting as many as feasible. They had the possibility of discussing their cases with subspecialists before or after reporting.

Their reports were sent to subspecialists and feedback was provided via the system which ranked the discrepancy level. The radiologists were also tutored midway at a week-long fellowship course. All their reports were read by experienced subspecialists and discrepancy levels were allocated.

The reporting rate per hour was recorded continuously via the that available RIS, reported as rad units (RU) per hour.

The first two months were not included in analysis as this period was considered warm-up phase.

An independent experienced reviewer blinded to the concept of the study was recruited to evaluate reports. The task of external auditor was to confirm that the final reports were consistent with good clinical practice and keeping good level of accuracy. We did not want to improve speed with sacrifice of due diligence.

Images for this section:

Body MRT subspecialist network

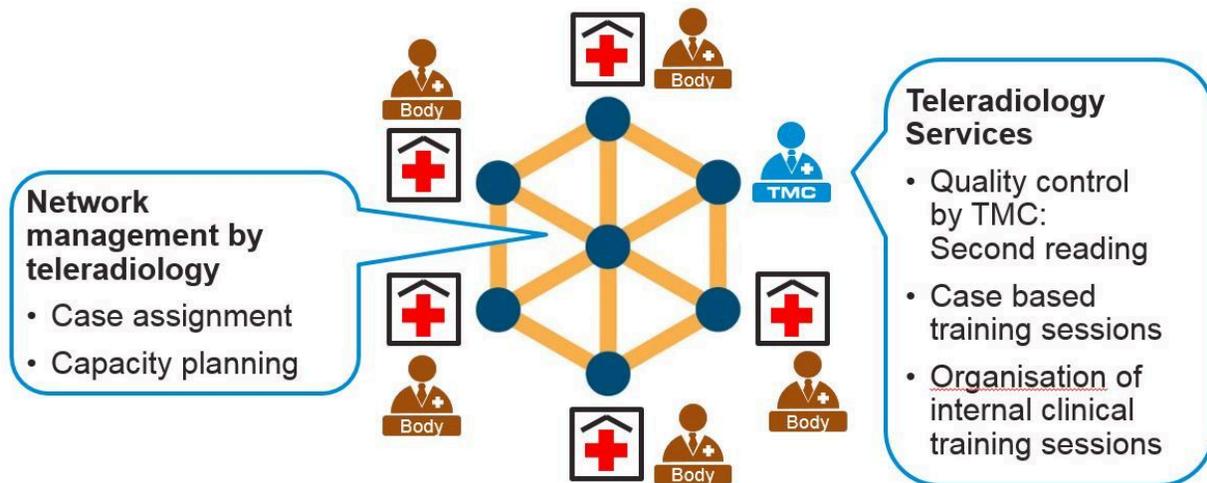


Fig. 3: Networking schema

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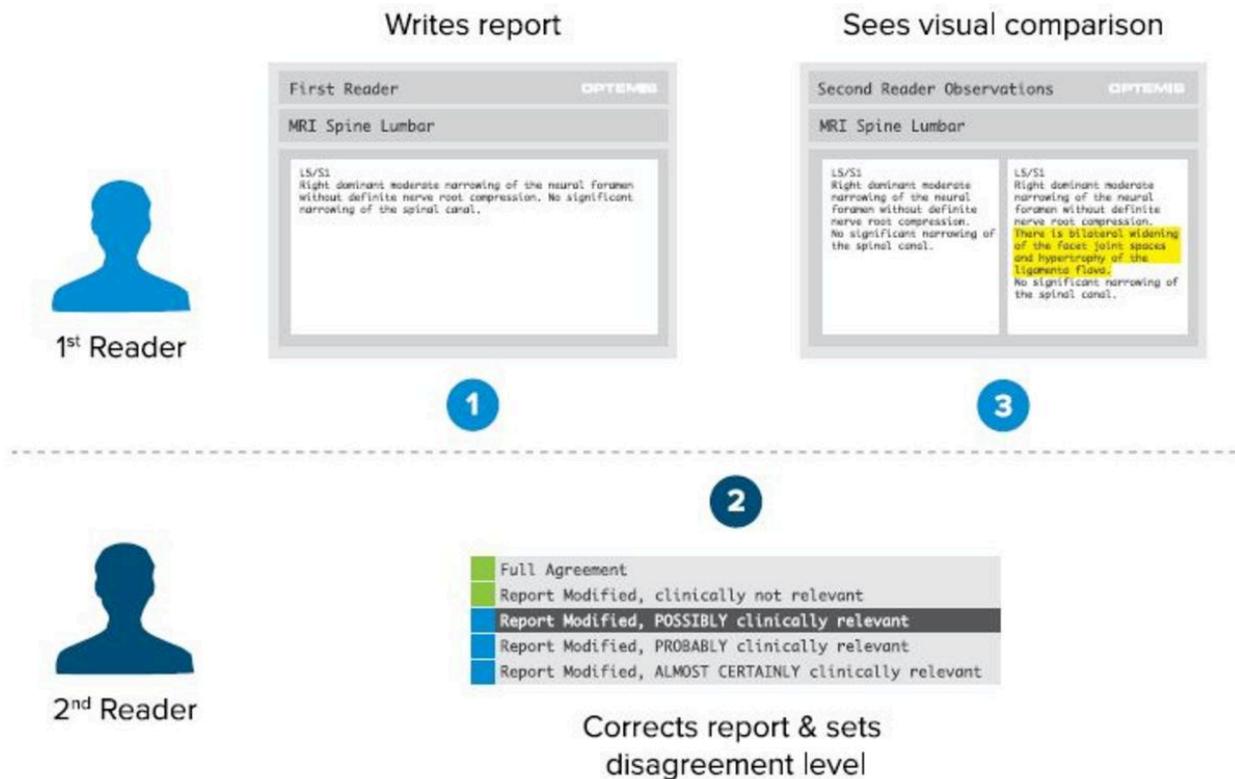


Fig. 4: Prospective peer review: The second reading workflow allowed the VGR radiologists to build up their own sufficient subspecialist knowledge being second read by TMC MR body subspecialists. After the pilot phase, the VGR radiologists will take over the second reading.

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Results

The independent reviewer showed no bias in reports during the trial. In other words there was high accuracy all through the project and no drop in accuracy could be noticed.

The discrepancy level fell 42% from 27% during months 3-5 to 15.7% months 12-14. The efficiency of reporting improved markedly by a factor of 27% from 5.0 RU to 6.4 RU reaching the level of subspecialists. At the end of 19 months the RU reported by an hour had increased by 54% reaching the level obtained by subspecialists.

There was a relatively direct relationship between total number of Rad-Units reported and the reporting efficiency per radiologist. Crucially, radiologists started to achieve higher average reporting efficiencies at around 300 reported cases.

Images for this section:

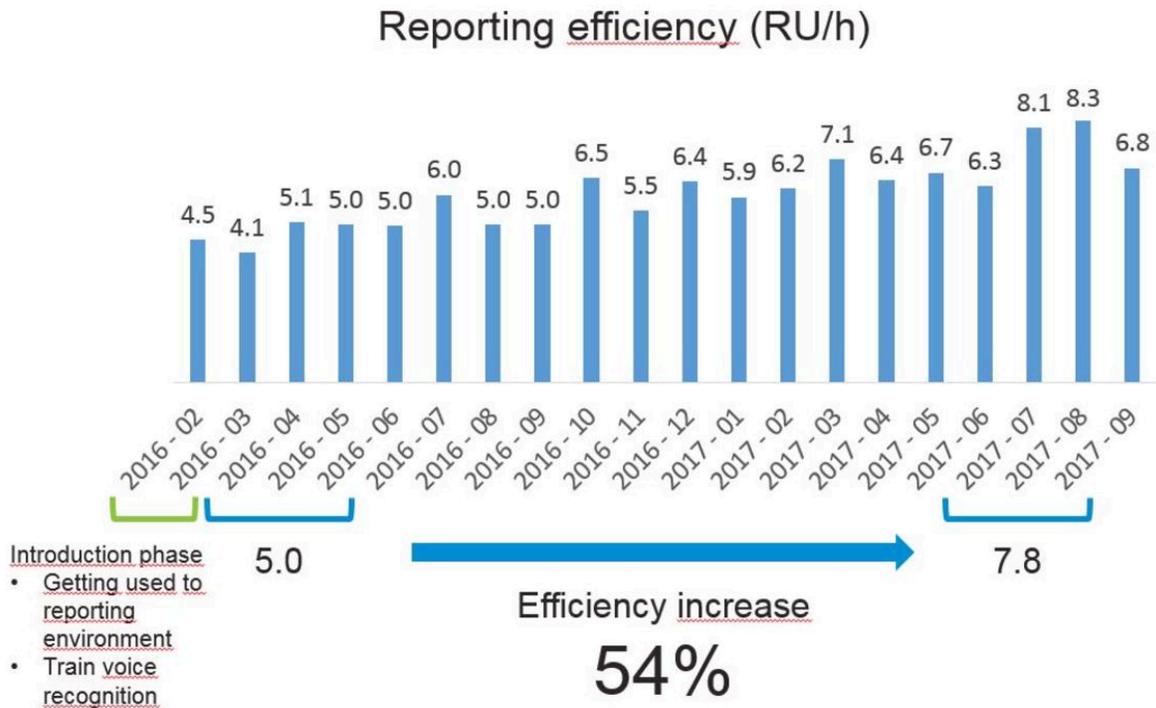


Fig. 5: The reporting efficiency, measured in Rad-Units per hour, shows a marked increase duration considering a 2-month introduction phase.

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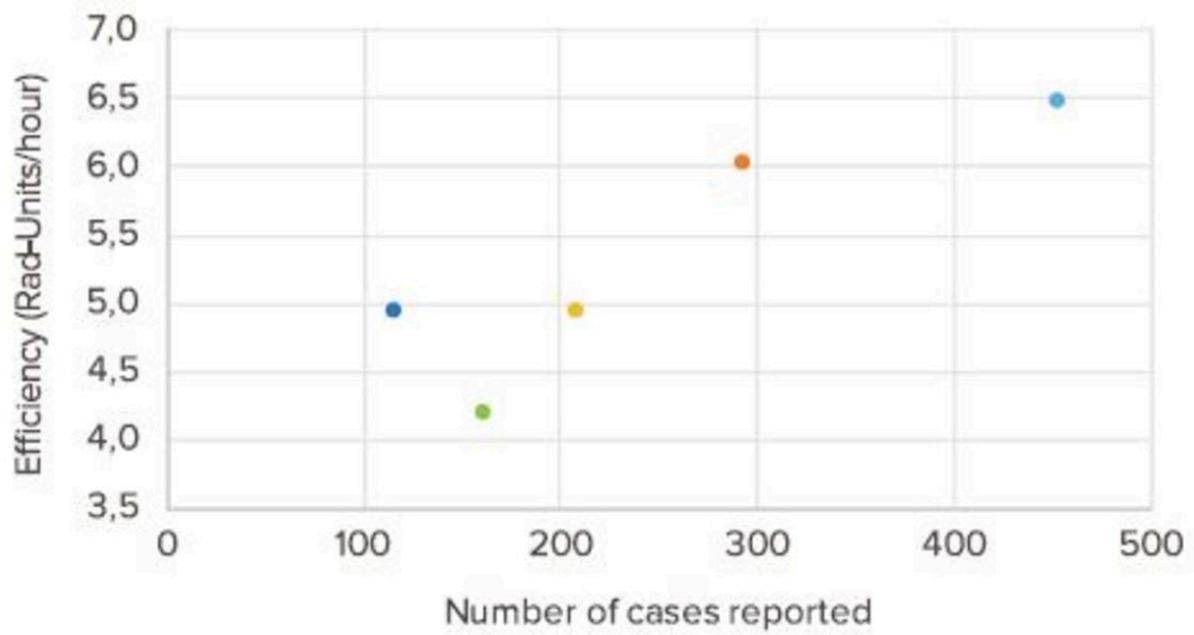


Fig. 7: Radiologists with higher reported volumes were able to achieve higher reporting efficiencies.

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Conclusion

Teleradiology can be used as a tool for providing tutoring in areas with subspecialist to improve rate of reporting and improved accuracy

Images for this section:



Fig. 6: Improved reporting efficiency after 19 months

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References

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