



**Karolinska
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Institutionen för klinisk vetenskap, intervention och teknik (CLINTEC), Enheten för medicinsk bild, funktion och teknologi

**CONSEQUENCES OF OUTSOURCING
REFERRALS FOR MAGNETIC RESONANCE
EXAMINATIONS**

AKADEMISK AVHANDLING

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Abstract

Background: Rapid developments in imaging technology affecting its day-to-day clinical use continue to increase the workload in diagnostic radiology. Along with demands for ever more effective healthcare, these are two important factors for which outsourcing might be a potential solution. Outsourcing radiological examinations is a challenge and increases the need for cooperation between different health care units. Delegating a radiological examination is associated with administrative work while external examinations change the work flow and create a complex situation that is difficult to review both qualitatively and quantitatively. The impact of outsourcing magnetic resonance (MR) examinations to external units in a zero-based budgeting health care system is not known. This impact can be studied both from the perspective of healthcare work flow as well as from that of the patients.

Aims: The overall aim of this thesis was to examine the consequences of radiology departments' outsourcing MR referrals to external private radiology units. The aim of Study I was to investigate differences in management/turnaround time, patient waiting time, quality and costs between MR examinations performed in a University hospital and examinations outsourced to private units. The aim of Study II was to explore the experiences of referring physicians and patients when referrals for MR examinations are outsourced from a University hospital.

Material and Methods: Consecutive outsourced MR examinations requested by the Department of Oncology during the first quarters of 2005 and 2006 were selected for the first study. Examinations performed by the University Hospital's Radiology Department (Group A, n = 97) were compared to matched examinations outsourced to private units (Group B, n = 97). In Study II, interviews were held with one group of referring physicians (n = 10, Group β) from orthopedic and oncology clinics representing clinics with large volumes of MR referrals and one group of patients (n = 160, Group α) referred for MR examinations.

Results: In Study I, the time from writing a referral to obtaining the report was significantly longer in Group A than in Group B. For referrals without a preferred timeframe, the waiting time was shorter for outsourced examinations than those not outsourced. No significant difference in the number of examinations requiring additional imaging was observed between the two groups. Fewer examinations in Group A needed additional work for re-interpretation of images than in Group B (14% vs. 28%). The average cost for an MR examination in Group A was calculated to be €16.80, and €10.80 in Group B.

In Study II, all the referring physicians agreed that the quality of outsourced examinations was frequently inferior to that of examinations performed in the University Hospital's Radiology Department and requests for additional re-interpretation work led to higher costs for their clinics. Sixty-nine percent of the patients interviewed stated that they could neither choose nor influence the location to which their examination was referred. Aspects that influenced the patient's choice of radiology department were: short waiting time 79% (127/160), ease of travelling to the radiology department 68% (110/160), and short distance to their home or work 58% (93/160). For 40% (60/160) of the patients, a short time in the waiting room was related to a positive response regarding returning for a further MR examination. From the patient's perspective better information concerning the MR examination, more instructions during the procedure, the staff's attitude and the level of expertise of the staff were key factors defining quality of care.

Conclusion:

- Outsourcing magnetic resonance examinations is one potential solution for reducing patient waiting time.
- Outsourced examinations more frequently need re-assessment at the University Hospital than examinations that are not outsourced.
- The discrepancy between patients and referring physicians indicates that there is insufficient communication between referring physicians and the radiological departments.
- When considering outsourcing, the needs of the patients, of the referring physicians and of the radiological departments must all be considered, to optimize patient care.
- Reduction of additional costs incurred for re-interpretation, improvements in organizing outsourcing and the cost drivers of outsourced MR examinations should all be studied further.