



Value-based radiology cannot thrive without reforms and research

Thomas C. Kwee¹ · Derya Yakar¹ · Jan P. Pennings¹ · Ömer Kasalak¹

Received: 13 December 2021 / Revised: 29 December 2021 / Accepted: 12 January 2022 / Published online: 11 February 2022
© The Author(s), under exclusive licence to European Society of Radiology 2022

Key Points

- A value-based system aims to achieve improved patient-relevant outcomes without increasing costs.
- Value-based radiology cannot thrive as long as volume dominates as the most important metric to reward clinical performance.
- Reforms and research are needed to enable radiologists to practice value-based healthcare.

Keywords Healthcare reform · Radiology · Workload

Introduction

The concept of value-based healthcare has been introduced to cope with the increasing costs of healthcare [1]. A value-based system aims to achieve improved patient-relevant outcomes without increasing costs [1]. However, medical imaging itself is often considered “cost” and not a primary contributor to value [2, 3]. In a recent *New England Journal of Medicine* paper, imaging and other diagnostic studies were literally described as low-value services [4]. Meanwhile, radiologists are supposed to provide value-based healthcare, whereas financial rewards for value-based radiology services are basically lacking [5]. On the contrary, the number of studies performed still determines the amount of income and remains the most relevant metric by which the clinical performance of a radiology department is measured and benchmarked. This communication addresses the conflict between value-based and volume-based practice, and the need for reforms and research.

The conflict

We will describe three situations in which an attempt to practice value-based radiology conflicts with volume-

based practice when financial incentives only exist for the latter.

The first situation concerns the radiologist’s role as a gate-keeper. Requests for imaging studies should be refused when the expected diagnostic yield and impact on patient management are too low. Discussions with the referring clinicians require time and can sometimes lead to conflicts when the referring clinician wants the study to be performed at any cost. Because the risk of missing relevant pathology can never be excluded, the radiologist usually gives in and provides permission to perform the study to avoid a malpractice suit. This inappropriate imaging examination may cause side effects (e.g., due to the use of radiation or contrast agents) and/or reveal an incidentaloma, thereby increasing worthless healthcare expenditures. However, refraining from any discussion with the referring clinician about the appropriateness of an imaging examination and allowing all studies to be performed are currently the path of least resistance and financially most rewarding.

A second situation that is experienced by most radiologists is poor quality imaging requests [6, 7]. As the diagnostic yield of imaging is dependent on the clinical input, the radiologist should ideally retrieve the missing information from the clinical records or contact the referring clinician. Unfortunately, with large volumes in a busy radiology practice, it would be a virtually impossible task to do this for each study. The most time-efficient and financially rewarding path for radiologists is often to report a study without struggling to retrieve all relevant clinical information. However, the lack of sufficient clinical information may lead to wrong diagnoses or may stimulate radiologists to introduce hedging language to their report or to recommend additional diagnostic tests

✉ Thomas C. Kwee
thomaskwee@gmail.com

¹ Medical Imaging Center, Departments of Radiology, Nuclear Medicine and Molecular Imaging, University of Groningen, University Medical Center Groningen, Hanzeplein 1, P.O. Box 30.001, 9700 RB Groningen, The Netherlands

to reduce the risk of malpractice [8]. This, in turn, increases costs and reduces value.

A third area in which radiologists may play a role is in patient communication [7]. Diagnostic radiologists are often invisible to the patient, and their contribution to patient care remains unnoticed. However, the diagnostic yield of a study can be improved and patient experience can be enhanced when a radiologist directly engages with patients in a communication about their clinical symptoms and imaging results [9, 10]. A recent patient survey by the European Society of Radiology confirmed the value patients attribute to communication with their radiologist [11]. However, this requires time, and a radiological procedure with a radiologist-patient communication does not provide more income than one without.

The spiral decline

Volumes and complexity of medical imaging studies have increased considerably over the past decades, and will continue to rise. Meanwhile, reimbursements for imaging services have followed the opposite direction. Financial cuts limit the possibilities of radiology practices to hire new staff. As a result, the workload per radiologist keeps on increasing. Over the years, radiology practices have transformed into factories with more and more imaging studies as products on the assembly line. The pressure to report studies faster and faster leads to an increased risk of burnout and may at some point lead to diagnostic errors. Importantly, because of staff shortages, and the fact that the main focus is only on productivity, there is no time and there are no financial incentives to increase the delivery of value-based healthcare.

Potential solutions

For the great majority of clinical imaging applications, it is unknown if they add value. Well-designed research is needed to evaluate the value of both existing and new diagnostic imaging services [3, 12]. Executing such studies on existing imaging applications may be challenging. First, they require cooperation with clinicians who may be reluctant to change habits. Second, withholding imaging from patients in a research study that they would undergo under normal clinical circumstances (e.g., imaging follow-up in cancer patients) may raise ethical concerns and patient enrollment issues. Third, the chance of a negative study result (i.e., imaging does not add any value) is substantial. Negative study results are generally more difficult to get published due to publication bias, making it less attractive for researchers to initiate such studies. Policy makers should allocate more financial resources to evaluate the efficiency of (existing) clinical imaging applications, and stimulate referring clinicians,

radiologists, patient organizations, and medical journals to work together in performing and publishing such studies [3, 12]. Policy makers should also realize that referring clinicians request low-value imaging services, and not radiologists. Radiologists can only increase the value of imaging studies when judged on and paid for the quality rather than the quantity of services provided. To enable policy makers to evaluate quality, metrics of value need to be developed urgently [5, 7].

Summary

Value-based radiology cannot thrive as long as volume dominates as the most important metric to reward clinical performance. Radiologists may become trapped in a race to the bottom due to the ever increasing number of imaging studies (whose value is largely unknown) and reimbursement cuts, if reforms will not take place. These reforms require policy makers to regard radiology as an opportunity to add value rather than cost, and to reward this added value rather than cutting reimbursements for imaging studies. Research is crucial to evaluate the value of both existing and new diagnostic imaging services, and to develop metrics of value that can be used by policy makers.

Funding The authors state that this work has not received any funding.

Declarations

Guarantor The scientific guarantor of this publication is Thomas C. Kwee.

Conflict of interest The authors of this manuscript declare no relationships with any companies whose products or services may be related to the subject matter of the article.

Statistics and biometry Not applicable to this editorial

Informed consent Not applicable to this editorial

Ethical approval Not applicable to this editorial

Methodology

• editorial

References

1. Porter ME (2009) A strategy for health care reform—toward a value-based system. *N Engl J Med* 361:109–112
2. European Society of Radiology (ESR) (2017) ESR concept paper on value-based radiology. *Insights Imaging* 8:447–454
3. Brady A, Brink J, Slavotinek J (2020) Radiology and value-based health care. *JAMA* 324:1286–1287

4. Zaki MM, Jena AB, Chandra A (2021) Supporting value-based health care - aligning financial and legal accountability. *N Engl J Med* 385:965–967
5. McGinty G (2016) Is value-driven health care an unfunded mandate for radiologists? *AJR Am J Roentgenol* 206:280–282
6. Kasalak Ö, Alnahwi HAA, Dierckx RAJO, Yakar D, Kwee TC (2021) Requests for radiologic imaging: prevalence and determinants of inadequate quality according to RI-RADS. *Eur J Radiol* 137:109615
7. European Society of Radiology (ESR) (2021) Value-based radiology: what is the ESR doing, and what should we do in the future? *Insights Imaging* 12:108
8. Mezrich J (2019) Hiding in the hedges: tips to minimize your malpractice risks as a radiologist. *AJR Am J Roentgenol* 213:1037–1041
9. Gutzeit A, Sartoretti E, Reisinger C et al (2021) Direct communication between radiologists and patients improves the quality of imaging reports. *Eur Radiol* 31:8725–8732
10. Gutzeit A, Heiland R, Sudarski S et al (2019) Direct communication between radiologists and patients following imaging examinations. Should radiologists rethink their patient care? *Eur Radiol* 29: 224–231
11. European Society of Radiology (ESR) (2021) Patient survey of value in relation to radiology: results from a survey of the European Society of Radiology (ESR) value-based radiology subcommittee. *Insights Imaging* 12:6
12. Brady AP, Bello JA, Derchi LE et al (2020) Radiology in the era of value-based healthcare: a multi-society expert statement from the ACR, CAR, ESR, IS3R, RANZCR, and RSNA. *Insights Imaging* 11:136

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.