
UT Southwestern Medical Center

Positive Effect of Financial Incentive on Radiologist Compliance with Quality Metric Placement in Knee Radiograph Reports

Shuda Xia B.S., Oganesh Ashikyan M.D., Avneesh Chhabra M.D.

Background

- Utilization of advanced medical imaging has grown exponentially [1]
 - Performing unnecessary imaging should be avoided to save cost, time, and decrease incidental findings
- Kellgren and Lawrence (KL) proposed classification structure of osteoarthritis in 1957 [2]
- Previous study found incorporation of KL grading in knee radiographic reports resulted in statistically significant reductions in rate of MRIs ordered [3]
- Ongoing quality improvement (QI) process at our institution
 - Insert KL grading in knee radiograph reports
 - Low uniform adoption

Purpose

- Evaluate the effect of financial incentive on KL grading system usage
- Compare compliance rates of MSK radiologists to general radiologists who were not incentivized

Intervention

- Financial incentive
 - Clinical productivity
 - Participation in quality improvement (QI) processes
- Applied at individual and divisional level
- Based on 6-month performance and paid bi-annually
- Introduced in MSK divisional meeting May 2022 and re-emphasized in June 2022

Measures

- Database queried for all knee radiographs from:
 - Sept. 2021 to Feb. 2022 (pre-intervention)
 - March 2022 to Aug. 2022 (first 6-month incentive)
 - Sept. 2022 to Feb 2023 (Second 6-month incentive)
- Total of 45,328 reports retrospectively analyzed for KL grading usage
 - 43,874 created by MSK, 3,005 created by general
- Compliance calculated by dividing number of reports with KL grading by total number of reports per month

Results

Month	MSK Compliance Rates	General Radiologist Compliance Rates
September- pre incentive	70.01%	65.50%
October	72.88%	64.20%
November	73.37%	60.13%
December	76.70%	68.18%
January	77.40%	67.48%
February	72.94%	62.88%
March-1st incentive	76.84%	65.38%
April	82.49%	75.37%
May	87.28%	84.27%
June	89.10%	81.50%
July	89.30%	78.92%
August	89.10%	89.27%
September- 2nd incentive	90.43%	86.59%
October	86.11%	82.58%
November	90.34%	88.70%
December	90.10%	84.46%
January	88.88%	86.88%
February	85.75%	86.49%
18-month averages	84.2%	76.04%

Results

- Compliance rates for MSK radiologists significantly higher than general radiologists
 - On average 7.6% higher
- MSK radiologists demonstrated 7.5% increase in compliance during first six months immediately after introduction of incentive
- For MSK radiologists, compliance rates increased significantly ($P=0.0002$) from 78.3% at end of non-incentivized period to 88.6% at the end of the second incentive period.

Discussion

- Limitations

- Conducted at large academic center, where many reports initially created by trainees
- Did not survey for personal motivations to insert KL grade. Increased familiarity with structure over time may have influence compliance

- Strengths

- General radiologists served as excellent control group
- Large number of analyzed reports

Conclusion

- Study showed financial incentives in major academic radiology department led to significant increase in compliance rates with KL grading in knee radiograph reports
- Supports end goal of decreasing unnecessary advanced imaging studies ordered

References

1. Smith-Bindman R, Kwan ML, Marlow EC, et al. Trends in use of medical imaging in US Health Care Systems and in Ontario, Canada, 2000–2016. *JAMA* 2019; 322:843–856
2. Kellgren JH, Lawrence JS. Radiological assessment of osteo-arthrosis. *Ann Rheum Dis* 1957;16(4):494-502. doi: 10.1136/ard.16.4.494
3. Tornow K, Chalian M, Zerr J, Moore D, Thropp R, Xi Y, Browning T, Chhabra A. A Quality Improvement Project to Reduce Unnecessary Knee MRI for Chronic Degenerative Changes. *J Am Coll Radiol* 2019;16(7):940-944. doi: 10.1016/j.jacr.2018.12.041