



# MRI Overutilization in the Evaluation of Patients Aged 50 Years and Older with Mechanical Knee Pain

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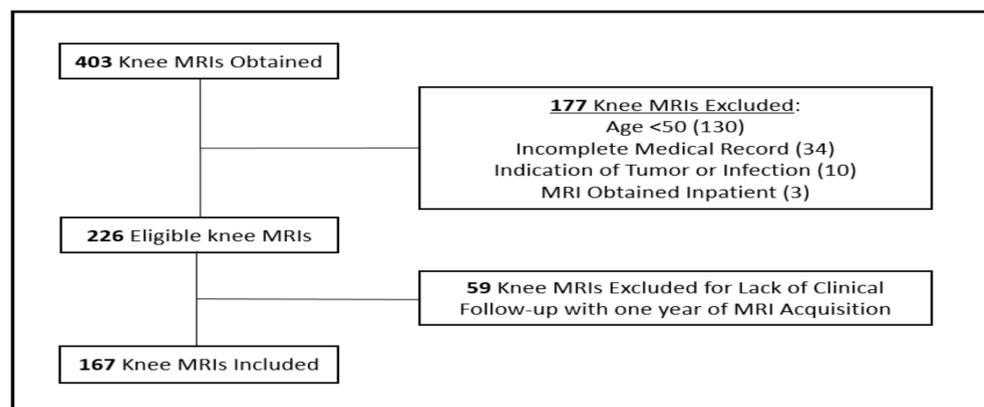


## INTRODUCTION

The overutilization of magnetic resonance imaging (MRI) in the evaluation of mechanical knee pain remains common despite the existence of well-established appropriate use criteria. Many providers inappropriately utilize MRI to screen for knee pathology and is often obtained before the initiation of any conservative therapies or the establishment of a patient's appropriate surgical candidacy. The purpose of this study was to determine incidence of knee MRI overutilization by orthopaedic providers (OPs) and non-orthopaedic providers (NOPs) of a safety-net county hospital in patients aged 50 years or older with mechanical knee pain.

## METHODS

A retrospective chart review was performed of 167 patients aged 50 years or older who were evaluated with MRI for mechanical knee pain over the course of a single year. Our primary outcome measures were: (1) the presence of plain radiographs obtained within 6 months prior to MRI acquisition; (2) radiographs were appropriately weight bearing, (3) the presence of clearly documented indications; and lastly (4) whether knees evaluated with MRI underwent treatment with arthroscopic surgery within one year of MRI. If any of the primary outcome measures were absent prior to MRI acquisition, then the MRI was considered overutilized.



## RESULTS

167 knees of patients aged 50 years or older with mechanical knee pain were evaluated with MRI and met our inclusion criteria. OPs were more likely to order knee MRIs with prior knee radiographs (96% vs 67%) ( $p < 0.001$ ), more likely to have those radiographs be weight-bearing (86% vs 42%) ( $p < 0.001$ ), more likely to clearly document an indication for the MRI (93% vs 69%) ( $p < 0.001$ ), and were more likely to have a knee MRI be treated with arthroscopic surgery (46% vs 18%) ( $p < 0.001$ ). Patients with government insurance were less likely to undergo arthroscopic surgery (6% vs 39%) ( $p = 0.004$ ) and African American patients were also less likely to undergo arthroscopic surgery (18% vs 38%) ( $p = 0.02$ ). In addition, 79% of knees had radiographic evidence of osteoarthritis (OA), and of those knees, 94% had evidence of meniscal pathology on MRI.

Primary Outcomes			
	Orthopaedic Providers	Non-Orthopaedic Providers	P-value
<b>X-rays Within 6 Months</b>	96% (65/68)	67% (65/99)	< 0.001
<b>X-rays Weight Bearing*</b>	83% (54/65)	42% (27/65)	< 0.001
<b>Indication Documented</b>	93% (63/68)	69% (68/99)	< 0.001
<b>Underwent Arthroscopy</b>	45.6% (31/68)	18.2% (18/99)	< 0.001

\* Calculation does not include the 19.7% (33/167) of knees that were evaluated with MRI without prior knee x-rays.

Patient Demographics		
	Orthopaedic Providers	Non-Orthopaedic Providers
<b>Number of Patients</b>	68	99
<b>Mean Age (Years)*</b>	57 (50-79)	58 (50-74)
<b>Gender*</b>		
Male	28 (41%)	31 (31%)
Female	40 (59%)	68 (69%)
<b>Race*</b>		
Caucasian	46 (68%)	46 (46%)
African American	16 (24%)	46 (46%)
Hispanic	2 (3%)	4 (4%)
Other	4 (6%)	3 (3%)
<b>Insurance Type*</b>		
Uninsured	20 (29%)	25 (25%)
Government	25 (37%)	45 (45%)
Commercial	23 (34%)	27 (27%)

\*(P-value >0.05)

## CONCLUSION

MRI of the knee is overutilized by providers at our safety-net county hospital in the evaluation of patients aged 50 years or older with mechanical knee pain. Overuse was significantly more common amongst NOPs than OPs. Providers caring for this patient population considering the need for knee MRI should obtain weight bearing radiographs at least 6 months prior to acquisition and have a clearly documented indication. If no clear indication exists or the need for knee MRI is in question despite an appropriate work-up and attempted conservative therapies, the decision to obtain an MRI may best be deferred to an orthopaedic surgeon.

## CREDITS/DISCLOSURE/REFERENCES

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\*Note: Additional References Included on Complete Works Cited Page