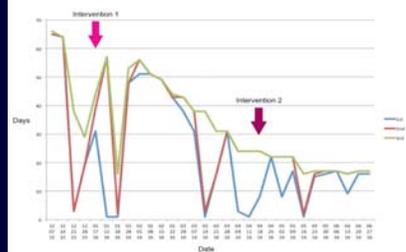
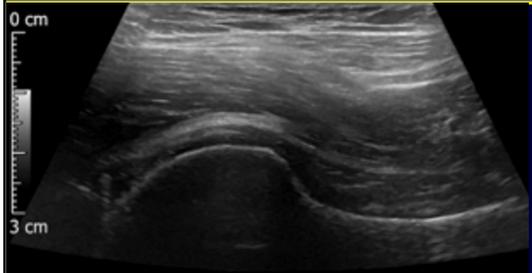


# Increasing Access to Musculoskeletal Ultrasound to Improve Patient and Provider Satisfaction



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## PROBLEM STATEMENT

The average wait time for Diagnostic MSK ultrasound (US) and ultrasound guided joint procedures failed to provide efficient and effective care

## METHODS

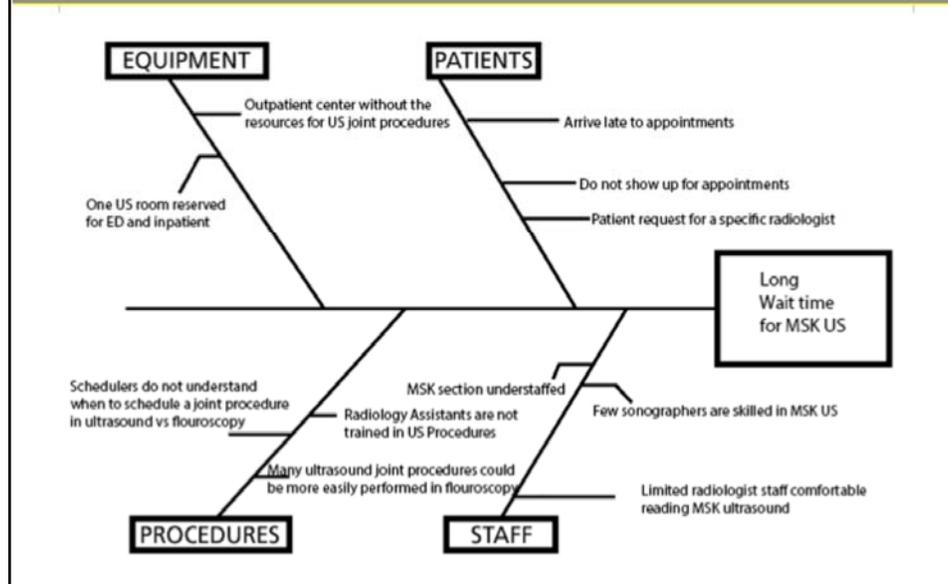
1. QI activity does not require formal Institutional Review Board approval
2. Project data collect from 12-07-15 to 07-01-16
3. Stakeholders included two yellow belt MSK radiologists, the MSK division chief, ultrasound chief, and another MSK radiologists
4. Followed DMAIC framework of define, measure, analyze, improve, and control stages

## MEASURE STAGE

### Key measurements

1. Room supply: only 1 room available in the am for MSK ultrasound examinations, 45 minute slot
2. Only 50% of MSK faculty perform MSK ultrasound and this 50% = only 2.43 CFTE
3. Only 25% of sonographers skilled/comfortable with MSK ultrasound
4. Diagnostic and procedural ultrasounds not scheduled by the same group

## ANALYZE STAGE - Ishikawa Diagram



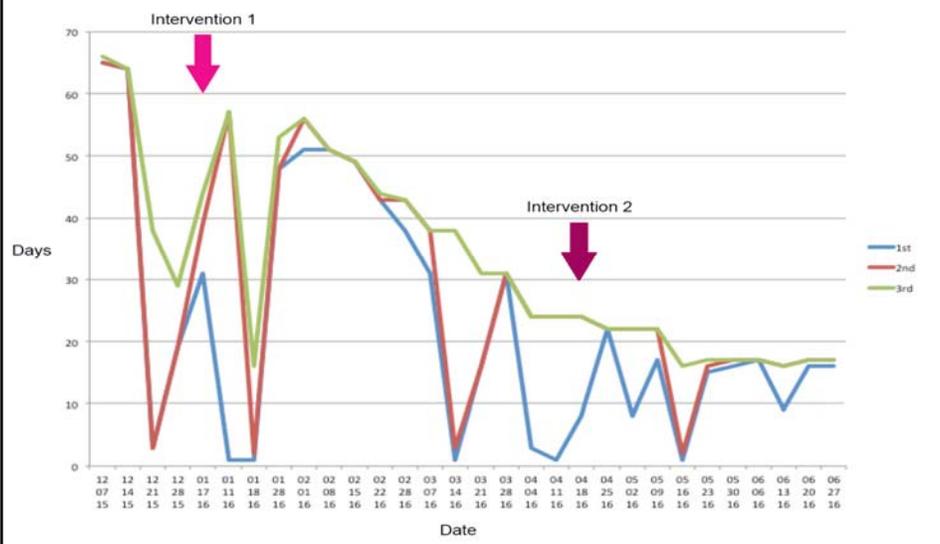
## Intervention 1 - Results

- Over a two week period before any intervention, the average days before the first available time slot was 64.7days.
  - The average days before the third available time slot was 65 days. The third available time is most reliable, as it is not usually affected by cancellations.
- Over a two week period just before the second intervention, the average days before first available time slot was decreased to six days. The average days before the third available time slot was improved to 24 days.

## Results

- After the second intervention in the final two weeks of measurement, the average days before first available time slot was 16.7 days. The average days before the third available time slot was 17 days.
- Before any intervention, the wait for third available study was 65 days. After intervention 2, the wait time for the third available study was 17 days.
- Total decrease in wait after both interventions was 73%.

Figure 1. Below is an annotated run chart demonstrating the wait time (in days) for the first (blue line), second (red line) and third (green line) available time slots over a 30-week period with two interventions (arrows). At arrow one, time slots were decreased from 45 to 30 minutes, a 60% increase in time slots. At arrow two, two ultrasound rooms were utilized on one of the clinic days, a 33.3% increase in total time slots.



## Negative consequences

- Negative consequences of intervention 1 included a decrease in satisfaction of the sonographers
- Negative consequences of intervention 2 include
  - 1) The radiologist on MSK ultrasound would no longer have time to help read imaging studies on the work list and turn-around-time increased.
  - 2) The use of the second ultrasound room on the double clinic day resulted in an increased wait for first, second and third available body ultrasound cases.
  - 3) The inability of the outpatient MSK US clinic to perform procedures increased the complexity of scheduling.

## CONCLUSION

- With two interventions utilizing Lean, we significantly increased patient access and decreased wait time for MSK diagnostic ultrasound and ultrasound guided joint injections
- There was a decrease in patient and referring provider complaints about the wait
- Improvement was accomplished without adding a clinic day
- Since we didn't reach our goal of less than two weeks, we will need to continue to find solutions, likely diverting simple joint injections ordered with ultrasound to MSK fluoroscopy clinic