# Assessing Change in Quality Adjusted Life Years with Use of Diagnostic Ultrasound Focal Neuropathies

Arvin R Wali, BA1, Charlie C Park, BS1, Dina Hingorani, PhD2, Milli J Desai, BS,MHS3, Devesh M Vashishtha, BA3, Justin M Brown, MD1, Michael Cartwright, MD4 and Ross Mandeville, MD1.
1: UCSD Neurosurgery; 2:UCSD Surgery,3 UCSD School of Medicine, 4: Wake Forrest Neurology

## Background

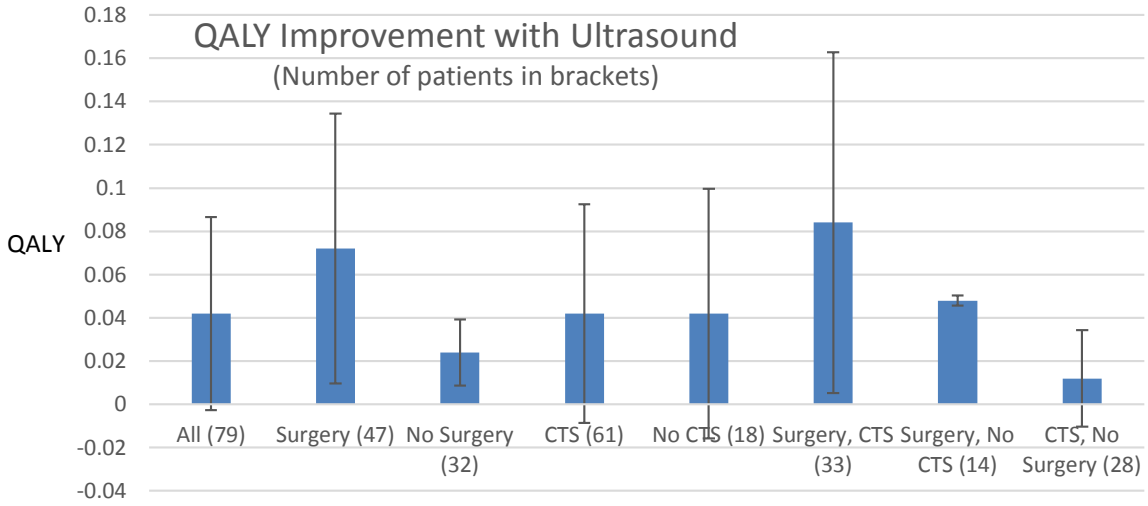
- Neuromuscular ultrasound becomes ever more present in the neurophysiology lab, but cost-effectiveness is unknown.
- Fryback and Thornbury proposed a 6-level hierarchical model to assess efficacy of diagnostic imaging tests.
- Levels 1-4 have been fulfilled in published literature describing validity, reliability, and accuracy of ultrasound in focal neuropathy.
- Cartwright et al. fulfilled the 5th level with a prospective trial showing improved outcomes from use of ultrasound in focal neuropathy.
- To fulfil of the 6th and final level, quality adjusted life year (QALY) is required prior to formal cost-effectiveness analysis.

## Objective:

- To assess whether diagnostic ultrasound in focal neuropathy improves patient QOL, measured in QALYs.

## Methods

- Using the individual SF-36 values provided from the original prospective study, we extracted the SF-6D scores, a measurement of QALY, through applying a validated published algorithm.
- Patients who had surgery just prior to final follow were excluded to avoid QALY interference from the recent surgery.
- Significance and magnitude of differences between groups and subgroups were evaluated using Generalized Estimating Equations.
- Subgroup analysis included Surgery, Carpal tunnel syndrome (CTS), and their combinations.




## Results

- Whole cohort: ultrasound increased QALY by 0.042 (p<0.055), a clinically meaningful amount (>0.03 QALY)
- Surgery group: 0.072 QALY (p<0.026)
- Non-surgery group: 0.024 QALY (<0.003)
- CTS + Surgery: 0.084 QALY (p<0.039)
    - CTS, No Surgery: 0.012 (<0.260)
- In CTS only and non-CTS only groups, there were strong trends but no significant differences:
    - CTS: 0.042 (<0.096)
    - Non-CTS: 0.042, <0.175)

## Conclusion

- Diagnostic neuromuscular ultrasound in focal neuropathy improves QOL, as measured in QALYs.
- The increasing use of ultrasound with neurophysiology testing appears appropriate.
- As well as supporting efficacy of neuromuscular ultrasound in focal neuropathy, this study lays the foundation for a cost-effectiveness analysis to fulfill Fryback and Thornbury's model for assessing efficacy of a diagnostic test.