

Comparison of the Original and Updated American Academy of Orthopaedic Surgeons Clinical Practice Guidelines on Hand and Wrist Pathologies

Sophia Mavrommatis¹, Ramesses Abeja Akamefula, Charlotte Pecot, Tessa R Lavorgna, Dainn Woo, Andrew Sobel

¹University of Minnesota Medical School

INTRODUCTION:

The American Academy of Orthopaedic Surgeons (AAOS) publishes clinical practice guidelines (CPGs) which provide evidence-based approaches to the care of common conditions treated by orthopaedic surgeons. They are updated after comprehensive reviews of newly published research with the goal of improving the quality of the recommendations. The aim of this study is to compare the characteristics of the included studies within the original (2008) and updated (2016) CPGs on Carpal Tunnel Syndrome (CTS) and original (2009) and updated (2020) CPGs on Distal Radius Fractures (DRFs). We hypothesize that there will be no differences in the mean levels of evidence (LOE) or percentage of high LOE studies of the included studies, no differences in the funding of studies, and inclusion of older studies on average for both CPGs over time and no differences between CPGs. Understanding the characteristics of the AAOS CPGs and their changes over time will allow for the specific focus on future research topics in need of improvement and direction of funding to improve the quality of research that is ultimately included in future CPGs.

METHODS:

Manuscripts of studies included in the original and updated versions of the CTS and DRF CPGs were reviewed. The LOE, date of publication, journal of publication, country of origin, and funding status were determined for all eligible references. T-tests and chi-square tests were utilized in comparing continuous and categorical variables between CPGs of the same kind (e.g., 2008 CTS to 2016 CTS) and across respective versions of CPGs (e.g., 2016 CTS and 2020 DRF).

RESULTS:

There was no difference between the mean LOE (2.02 vs. 2.02, $p=0.98$) or the percentage of high-quality (LOE 1 and 2) studies included in the original vs. updated CTS CPGs (69.4% vs. 67.1%, $p=0.69$). There was no difference between mean LOE (1.41 vs. 1.40, $p=0.96$) or the proportion of high-quality studies included in the original vs. updated DRF CPGs (86.5% vs. 90.9%, $p=0.37$). However, there was a difference between mean LOE and percentage of high-quality studies across original CPGs ($p<0.001$ and $p=0.009$) and across updated CPGs ($p<0.001$ and $p<0.001$), respectively (Figure 1).

The mean time from study publication to inclusion in the original and updated CTS CPGs was 7.1 and 10.7 years, respectively ($p<0.001$). The mean time from study publication to inclusion in the original and updated DRF CPGs was 9.97 and 11.06 years, respectively ($p=0.395$). There was a difference in mean times from publication to inclusion across original CPGs ($p=0.009$), but not across updated CPGs ($p=0.75$).

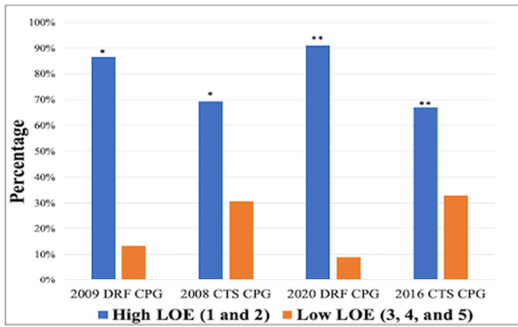
There was no difference in the percentage of internationally-conducted studies for the CTS CPGs (66.3% vs. 67.5%, $p=0.83$) or DRF CPGs (72.9% vs. 87.50%, $p=0.05$). There was no difference in the percentage of internationally-conducted studies across original CPGs CTS and DRF CPGs (66.3% vs. 72.9%, $p=0.26$) though there was a difference in the percentage of studies conducted internationally across updated CPGs (67.5% vs. 87.50%, $p<0.001$).

The percentage of U.S.-funded studies did not differ between original and updated CTS CPGs (15.3% vs. 11.4%, $p=0.33$) or original and updated DRF CPGs (6.8% vs. 3.4%, $p=0.33$). There was a difference in the percentage of US-funded studies between updated CPGs (11.4% vs. 3.4%, $p=0.027$) (Figure 2).

DISCUSSION AND CONCLUSION:

Included studies within CPGs did not change from original to updated versions with regard to mean LOE, percentage of high-quality LOE, percentage of international origins, and percentage funded by domestic sources. Included studies were older, on average. The included studies within the updated DRF CPG had higher mean LOE, percentage of high-quality studies, and percentage international origins than the updated CTS CPG. Most included studies in all CPGs are from institutions outside the US. Very few studies included in the CPGs are funded by domestic sources, with even fewer DRF studies than CTS being funded by US sources. Ultimately, there are specific needs to increase the LOE of studies included in the next CTS CPG more than the DRF CPG and an increase in domestic funding to support the creation and inclusion of high-quality studies in future CPGs could help.

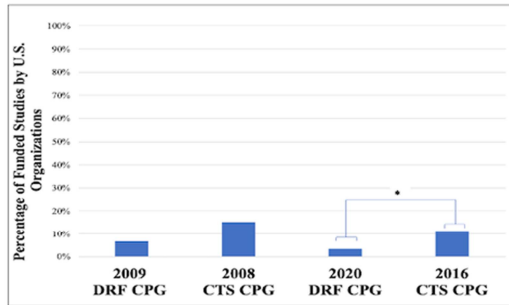
Figure 1. Comparison of Level of Evidence of Included Studies in Original vs. Updated Versions of Carpal Tunnel Syndrome (CTS) and Distal Radius Fractures (DRF) Clinical Practice Guidelines (CPGs)



* There was a difference in the proportion of high-quality studies across original versions of the CTS and DRF CPGs (69.4% vs. 86.5%, $p=0.009$)

** There was a difference across in the proportion of high-quality studies across updated versions of the CTS and DRF CPGs (67.1% vs. 90.9%, $p<0.0001$)

Figure 2. Comparison of Funding Status of Included Studies in Original vs. Updated Versions of Carpal Tunnel Syndrome (CTS) and Distal Radius Fractures (DRF) Clinical Practice Guidelines (CPGs)



* There was a difference in the percentage of funded U.S. studies across updated versions of the CTS and DRF CPGs (11.4% vs. 3.4%, $p=0.03$)