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CORR Insights®: Moving Forward Through Consensus: A Modified Delphi Approach to Determine the Top Research Priorities in Orthopaedic Oncology

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Where Are We Now?

Orthopaedic researchers have used the Delphi method to develop metrics for measuring outcomes [1, 3, 4, 12], for

This CORR Insights® is a commentary on the article “Moving Forward Through Consensus: A Modified Delphi Approach to Determine the Top Research Priorities in Orthopaedic Oncology” by Schneider and colleagues available at: DOI: [10.1007/s11999-017-5482-7](https://doi.org/10.1007/s11999-017-5482-7).

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This CORR Insights® comment refers to the article available at DOI: [10.1007/s11999-017-5482-7](https://doi.org/10.1007/s11999-017-5482-7).

guidance in orthopaedic education [7, 9, 13], and other less prevalent purposes such as evaluating triggers to identify adverse events and to compare patient and physician perceptions of treatment [5, 8, 14, 16]. Delphi panels engage experts through a series of questionnaires with the goal of developing consensus treatment recommendations where Level-1 data are lacking [2, 6, 10, 15, 17, 18].

In the study by Ghert and colleagues, the authors use a relatively novel [11], modified Delphi approach as a means to prioritize research questions for future prospective clinical studies in orthopaedic oncology. Orthopaedic oncology is a small subspecialty with relatively limited resources. In order to advance the field effectively, efforts like those shared by the authors of the current study seem

important, as they can help coordinate and consolidate research efforts across the subspecialty.

Where Do We Need To Go?

Since the purpose of this study was to identify gaps of knowledge that orthopaedic oncologists believe are valid topics for future prospective research, the question “Where do we need to go?” was exactly what the researchers asked. Examination of the four specific, top research priorities identified by the study bears closer inspection, although the authors provide their own perspective as well. Those top priorities were: (1) Evaluating different postoperative surveillance regimens in patients with extremity sarcoma, (2) understanding the survival outcomes of orthopaedic oncology implants over time, (3) evaluating whether resection versus stabilization improves outcomes in patients with oligometastatic bone disease, and (4) understanding the natural history of untreated fibromatosis.

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The Musculoskeletal Tumor Society (MSTS), Connective Tissue Oncology Society, and International Society of Limb Salvage, along with other international tumor societies can, as the article suggests, organize working groups and workshops targeting the four topics listed above. The MSTS also has control of funding that can be specifically targeted towards important goals. Because the consensus achieved by the Delphi group represents the best consensus we are likely to have on research priorities in musculoskeletal oncology, specific funding requests to study these topics should be given special consideration by funding bodies.

In the United States, at the federal level, researchers seeking Orthopaedic Research and Education Foundation (OREF) and NIH funding in the areas involved can reference findings from the Delphi group summarized in this paper to emphasize the importance of their topics. Those involved on study panels and leaders at the NIH should consider emphasis in these areas as well. Whether the effort described herein by Ghert and colleagues will influence funding or action at those levels remains to be seen.

How Do We Get There?

Researchers can fill the gaps in our knowledge that remain by conducting

studies that address the four main priorities listed in the previous section and below.

(1) *Evaluating different postoperative surveillance regimens in patients with extremity sarcoma.*

Much has been written about sarcoma surveillance, but there is truly no consensus. And while sarcoma surveillance is a topic that could be effectively studied prospectively in a multi-institutional fashion, a study of that magnitude would be potentially challenging and difficult to complete due to the large numbers of patients needed, the need for consensus agreement on the logistics of performing such a study, and the length of time needed to show meaningful results.

(2) *Understanding the survival outcomes of orthopaedic oncology implants over time.*

Orthopaedic oncology implant survival has long been a target of interest to our field, and while a coordinated approach to tracking implant survival and functional outcome is currently more plausible than ever due to the developing emphasis on patient-reported outcome measures and the evolving availability of registries to collect the data, it is not a topic that will likely gain interest from any funding source other than industry, if that. However, these studies could be

organized in a piggyback fashion by utilizing existing total joint registries with multi-institutional cooperation and preferably industry support for clinical research coordination

(3) *Evaluating whether resection versus stabilization improves outcomes in patients with oligometastatic bone disease.*

Fortunately, through funding from the OREF, there are ongoing prospective studies randomizing patients with proximal femoral metastatic disease to either resection/reconstruction or stabilization, but accrual has been slow. A larger study examining the effect of such choices on prognosis rather than orthopaedic outcome alone would require a much-more-concerted effort.

(4) *Understanding the natural history of untreated fibromatosis.*

Fibromatosis is just one of the many orphan diseases in orthopaedic oncology that would likely benefit from a collaborative effort to study it in a more-organized fashion. A multi-institutional prospective natural history study or randomized controlled clinical trial comparing operative to non-operative care would be appropriate.

In this age of increasingly limited funding from industry, foundations, and the NIH in particular, studies like this may be of value to other subspecialties in consolidating their own

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research efforts in a similar fashion. Some may already be underway or simply have gone unreported. By utilizing this research project as a template, studies similar to this should be considered by subspecialty societies throughout orthopaedics.

Funding Funding was provided by Foundation for the National Institutes of Health, Carol M. Baldwin Breast Cancer Research Fund, Jim and Juli Boeheim Foundation, Stryker, Orthovita, Inc. and Wright Medical Group.

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