

Accepted Manuscript

Title: Bone morphogenetic protein use in spine surgery in the united states: how have we responded to the warnings?

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PII: S1529-9430(17)30187-0
DOI: <http://dx.doi.org/doi: 10.1016/j.spinee.2017.04.030>
Reference: SPINEE 57307

To appear in: *The Spine Journal*

Received date: 25-10-2016
Revised date: 18-1-2017
Accepted date: 24-4-2017

Please cite this article as: Javier Z Guzman, Robert K Merrill, Jun S Kim, Samuel C Overley, James E Dowdell, Sulaiman Somani, Andrew C Hecht, Samuel K Cho, Sheeraz A Qureshi, Bone morphogenetic protein use in spine surgery in the united states: how have we responded to the warnings?, *The Spine Journal* (2017), <http://dx.doi.org/doi: 10.1016/j.spinee.2017.04.030>.

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3 **Bone Morphogenetic Protein Use in Spine Surgery in**
4 **The United States: How Have We Responded to The**
5 **Warnings?**

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23 **Acknowledgements:**

24 The authors would like to acknowledge Janay Mckie for inspiring this work.
25

26 Abstract

27 **Background Context**

28 Recombinant human bone morphogenetic protein-2 (rhBMP-2) has been widely
29 adopted as a fusion adjunct in spine surgery since its approval in 2002. A number of
30 concerns regarding adverse effects and potentially devastating complications of
31 rhBMP-2 use led to an FDA advisory issued in 2008 cautioning its use, and a
32 separate warning about its potential complications was published by *The Spine*
33 *Journal* in 2011.

34 **Purpose**

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