

# EVMS EM JC CRITICAL REVIEW FORM:

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**Date:** 9/23/2022

**Citation:** Black JA, Abraham PJ, Abraham MN, Cox DB, Griffin RL, Holcomb JB, Hu PJ, Kerby JD, Liptrap EJ, Thaci B, Harrigan MR, Jansen JO. Universal screening for blunt cerebrovascular injury. J Trauma Acute Care Surg. 2021

## **Background:**

Blunt cerebrovascular injuries (BCVIs) increase the risk of stroke and have traditionally been found in 1-3% of blunt trauma patients. Most trauma centers selectively screen few high-risk patients using criteria, such as the Denver or Memphis criteria. Others have advocated for universal screening.

## **Study Objectives:**

To assess the true incidence of BCVI after blunt trauma with universal screening.

## **Study Methodology:**

The authors changed the protocol in 2016 to implement universal screening for BCVI with neck CT angiography. They retrospectively analyzed the incidence of BCVI and the sensitivity, specificity, positive (PPV) and negative predictive values (NPV) of different screening criteria.

## **Randomization and Blinding:**

No randomization was performed.

## **What were the results**

The authors reported 480 out of 6,287 screened patients (7.6%) had BCVI. The extended Denver criteria has the highest sensitivity (74.7%), but lowest PPV among all screening criteria. The Denver and Memphis criteria had average sensitivity, at 57.5% and 47.3% respectively. Most injuries were grade 1 (44.2%), but there were a fair share of grade 3 (9.6%) and 4 (15.8%).

## **Applicability to my patient care**

The incidence of BCVI may be higher than previously thought. Screening criteria frequently miss patients with BCVI and consideration should be given to screen more patients with blunt trauma with neck CTA. Their reported positive findings are three time higher than reported by others which brings into question differences in their population or possibly selection bias.

## **Strengths**

Universal screening protocol all trauma patients got the "gold standard". Blinding of reviewers.

## **Weaknesses/Bias**

Lack of reporting of stroke rates and neurologic/treatment outcomes. Retrospective database.

Single Level 1 trauma center report. May not be applicable to non-trauma settings, those without 256-slice scanners, expert radiologists. Unclear as to whether all patients included had formal documentation of the clinical screening tools (DC, eDC, MC).

### **My Clinical Bottom Line**

Although I remain unconvinced that universal screening is necessary, higher clinical suspicion should exist to identify patients who may benefit from neck CTA, beyond just patients who satisfy high-risk criteria.