

# California Orthopaedic Association 2016 Adult Reconstruction

# Best Article

The Journal of Arthroplasty 31 (2016) 178–188



ELSEVIER

Contents lists available at [ScienceDirect](#)

## The Journal of Arthroplasty

journal homepage: [www.arthroplastyjournal.org](http://www.arthroplastyjournal.org)



Primary Arthroplasty

### Contamination Relative to the Activation Timing of Filtered-Exhaust Helmets



Andrew E. Hanselman, MD <sup>\*</sup>, Michael D. Montague, MD, Timothy R. Murphy, MD <sup>1</sup>,  
Matthew J. Dietz, MD

*Department of Orthopaedics, West Virginia University, Morgantown, West Virginia*

# Article Review

- ▶ Introduction:

- ▶ Although the use of filtered exhaust surgical helmets is common place in joint replacement surgery there ability to prevent infection has not been established.
  - ▶ Additionally some have suggested that they in fact increase the potential of contamination during surgery.

- ▶ Hypothesis:

- ▶ “Our first hypothesis was that airflow from the filtered-exhaust helmet would lead to widespread dispersion of fluorescent particles in a surgical draping scenario. Our second hypothesis was that activation of the airflow system on a filtered-exhaust helmet before complete surgical gowning would lead to increased contamination of the surrounding surgical environment. “

# Article Review

- ▶ Materials and Methods:
  - ▶ Part I: The authors used a UV fluorescent powder to represent contaminants
    - ▶ One tablespoon was applied to the top of the helmet at the intake and the helmet was run for 30 seconds
    - ▶ The particles were allowed to settle for 30 minutes
  - ▶ Part II: Helmet is applied to the surgeon and the UV powder is applied to the helmet.
    - ▶ Control Group: helmet is activated before gowning (4X)
    - ▶ Experimental Group: helmet is activated once gowning is completed (4X)
  - ▶ UV light was used to analyze particle spread “contamination”

# Article Review

- ▶ Results:
  - ▶ Spray Pattern: up to 5 feet in front of helmet
  - ▶ Airflow activation timing:
    - ▶ UV light was used to score for contamination in 6 regions of the surgeons gown
    - ▶ Control group had contamination potential score of 6/6
    - ▶ Experimental group had a contamination potential score of 0/6

# Article Review

- ▶ Discussion/Conclusion:
  - ▶ Study does demonstrate a statistically significant decrease in contamination potential
  - ▶ “Delaying airflow activation until after complete surgical gowning is a simple step that requires minimal alteration of current practices. “
- ▶ Limitations:
  - ▶ Study did not evaluate for actual bacterial contamination
  - ▶ No laminar flow in the OR used for the study
  - ▶ Did not study actual infection rates

# THANK YOU

