

Single-Use EEG-Cup Electrodes are Associated With Cost Savings And a Possible Reduction in Cross-Contamination Risk

A 2018 study by Sohrt et. al. is the first to investigate the cost of using reusable electroencephalography cup electrodes (EEG-CE) from four US hospital centers. Further, the study equally investigated infections risk and associated costs.¹

Cost of cleaning

Reusable EEG-CE are categorized as semi-critical devices and therefore requires high level disinfection (HLD) after each use. This because an abrasive paste is used to remove the epidermal layer of the skin before applying EEG-CE to the scalp. The study found the average time spent on reprocessing was 11.66 min (range 10–13.5) per EEG procedure, and the average hourly wage for the person conducting the reprocessing was \$US25 (range 19.9–31.5), giving an average wage cost per reprocessing of \$US4.86. The average cost for materials used for reprocessing was \$US0.71 (range 0.40–1.04). Thus, the total cost of cleaning reusable EEG-CE is \$US5.57.¹

Cost of Equipment

Based on info from the four hospital, the average equipment cost was found to be \$US3.25 (range 0.25–9.79), per EEG-CE procedure. This is based on an average of 25 electrodes used per procedure and the estimated number of times the reusable EEG-CE can be reused, which equaled 82 reused per cup electrode.¹

Total cost of use

Hospital-acquired infections are among the most frequent adverse events occurring in healthcare, causing significant economic burden on healthcare systems and harm to the patients.^{2,3} Reusable EEG-CE pose a risk of infection through device cross-contamination.⁴

Sohrt et al retrospectively studied 73,834 patients through two different outpatient visits; at the first visit, the patient did not have an EEG procedure; at the second visit, the patient received an EEG procedure. Patients were excluded if they had outpatient medical claims for infection during the 30-day period before the EEG or the non-EEG visits. No patients had acquired sepsis 14 days after the non-EEG visit, whereas 24 of 73,834 patients had acquired sepsis 14 days after the EEG visit (33 sepsis cases per 100,000 EEG procedures). The difference in risk of sepsis after the EEG visit and after the non-EEG visit was significant ($p < 0.001$).¹

The base-case analysis showed an average cost of reusable EEG-CE of **\$US19.95** and an **incidence of sepsis of 33 cases per 100,000 EEG procedures**. The average cost of single-use EEG-CE was \$US18.50, and the risk of sepsis was 0%. The article concludes *"results indicated that the single-use EEG-CE was less costly and more effective than the reusable EEG-CE with regard to sepsis."*¹

The following two key points for decision makers is stated in the article

- *"Single-use EEG cup electrodes are likely cost effective compared with reusable EEG cup electrodes."*
- *"Use of single-use EEG cup electrodes may be associated with overall hospital savings."*

References

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