

### 9.01 Digital chest drainage systems reduce hospital length of stay and number of chest x-rays performed in a paediatric population: a systematic review and meta-analysis

Rakesh Ahmed<sup>1</sup>, Anna Durr<sup>1</sup>, David Healy<sup>2</sup>

<sup>1</sup>Children's Health Ireland, Crumlin, Dublin, Ireland. <sup>2</sup>St Vincent's University Hospital, Dublin, Ireland

**Background:** Pulmonary resection is commonly performed as curative treatment for congenital lung lesions. A plethora of high-quality studies have shown improved outcomes with digital chest drainage systems compared to traditional water-seal systems in adults. By contrast, there is a paucity of research with children and therefore uncertainty in post-operative chest drain management in paediatrics.

**Methods:** A systematic review and meta-analysis was conducted to assess the effect of digital chest drainage systems in paediatric patients after pulmonary resection. Data sources included PubMed, Cochrane Central Register of Controlled Trials, EMBASE, and SCOPUS, with information from January 2007 to July 2024. Three observational studies with 74 patients were included. **Results:** There was a statistically significant reduction in hospital length of stay ( $p = <0.01$ ) and number of chest x-rays performed ( $p = <0.0001$ ) in the digital group compared to the traditional group. Although a reduction in chest tube duration was seen in the digital group, this was not statistically significant ( $p = 0.262$ ). There were no significant differences in development of pulmonary complications between groups ( $p = 0.839$ ).

**Conclusion:** The use of digital chest drainage systems demonstrated a shortened hospital length of stay and quantity of chest x-rays performed in this study cohort. **Keywords:** pulmonary resection, digital, chest drain, paediatric **Funding:** There was no funding support for this study. **Conflict of interest:** The authors declare that they have no conflict of interest.