

EMBASE (1980–Sept 2013) and International Pharmaceutical Abstracts (IPA) (1970 to Sept 2013). PubMed was also searched to ensure that all related articles were identified. All languages, all studies evaluating midazolam use in children undergoing imaging procedural sedation were included if they evaluated or reported efficacy and/or safety outcomes. Trial quality was assessed using the Jadad score for RCTs and STROBE scoring checklist for observational studies.

Results Twenty seven studies met our inclusion criteria. 22 studies evaluated midazolam AEs and included 7272 patients.

Dosage and route of midazolam varied between studies and ranged from 0.1 to 0.6 mg/kg for intravenous (IV) route, 0.15 to 0.45 mg/kg for intranasal (IN), 0.5 to 0.6 mg/kg for oral and 0.3 to 1 mg/kg for rectal administration.

The most common reported AE was hypoxia (73), with an incidence rate of 3.5 per 100 patients. Most cases of hypoxia AE ranged from mild (SpO₂ 90–95%) to moderate (SpO₂ <90%) representing 45 (2.2% incidence) and 28 cases (1.3% incidence) respectively with no severe cases. All cases were completely reversible after using simple manoeuvres, such as supplemental oxygen therapy.

Vomiting was the second most frequently reported AE, risk of 1 per 100 patients.

Two serious AE occurred, both were myoclonic-like movements of upper and lower extremities that developed 45 minutes and 30 minutes following administration of IV and oral midazolam. Both required medical interventions and hospitalisation.

25 studies evaluated midazolam efficacy. Procedural success rate with midazolam sedation ranged from 13.3% to 100%. Three observational studies showed that the success rate was higher for shorter imaging procedures such as CT scan (36.6%–100%) versus for MRI (0–67%).

Conclusions Midazolam for imaging procedural sedation seems to have a low incidence of adverse events, although the occurrence of mild/moderate hypoxia emphasises the importance of monitoring all children during sedation. The success rate is variable with shorter procedures, such as CT scan, seeing better results.

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MIDAZOLAM FOR IMAGING PROCEDURAL SEDATION IN CHILDREN: A SYSTEMATIC REVIEW

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10.1136/archdischild-2015-308634.40

Aim The aim of this systematic literature review is to evaluate all studies reporting midazolam effectiveness and safety as a sedative agent in children undergoing imaging procedures.

Methods A systematic literature review on the safety and efficacy of midazolam was conducted on MEDLINE (1948–Sept 2013),