

INPLASY2026100069

doi: 10.37766/inplasy2026.10.0069

Received: 14 October 2026

Published: 14 October 2026

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Risk factors for recurrent intussusception in children: a systematic review and meta-analysis protocol

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ADMINISTRATIVE INFORMATION

Support - Supported by Sanming Project of Medicine in Shenzhen (No. SZSM202411010). The funder had no role in the design, conduct, interpretation, or dissemination of this study.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2026100069

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 14 October 2026 and was last updated on 14 October 2026.

INTRODUCTION

Review question / Objective What are the risk factors associated with recurrence of intussusception in children, and do their effect sizes differ across recurrence time windows (48 hours, 7 days, 30 days, and 1 year)?

Rationale Recurrence of intussusception is common after initial treatment, yet the risk factors reported across studies are inconsistent, and the definition of "early/short-term" recurrence varies (48 h, 7 d, 30 d). Existing meta-analyses compare treatment modalities with recurrence as an outcome, but no systematic review has pooled the predictors of recurrence. This review will synthesize risk-factor evidence and clarify the recurrence time-window definition.

Condition being studied Pediatric intussusception and its recurrence after initial treatment.

METHODS

Search strategy PubMed/MEDLINE: (intussusception[tiab]) AND (recurren*[tiab] OR recurrent[tiab] OR relapse[tiab]) AND (child*[tiab] OR pediatric*[tiab] OR paediatric*[tiab] OR infant*[tiab] OR neonat*[tiab]) AND (risk*[tiab] OR factor*[tiab] OR predict*[tiab] OR prognos*[tiab] OR nomogram[tiab] OR "machine learning"[tiab] OR "odds ratio"[tiab] OR "hazard ratio"[tiab])
The strategy will be adapted for Embase, Cochrane CENTRAL, Web of Science, CNKI, Wanfang, and VIP. Searches from inception to the search date, with no language restriction.

Participant or population Children (≤ 18 years) with a confirmed diagnosis of intussusception who received initial treatment (air enema reduction, hydrostatic reduction, or surgery).

Intervention Candidate risk factors: age, sex, birth weight, gestational age, history of previous intussusception; presenting symptoms (vomiting,

bloody stool, fever, symptom duration); laboratory markers (white blood cell count, C-reactive protein / high-sensitivity CRP, monocyte ratio, red cell distribution width-CV, thrombin time, adenovirus infection); sonographic features (target-sign diameter, location, bowel-wall thickness, intraluminal lesion/lead point, peritoneal effusion, enteritis); and treatment modality.

Comparator Children without the risk factor of interest.

Study designs to be included Observational studies — cohort and case-control studies reporting odds ratio (OR), risk ratio (RR), or hazard ratio (HR) with 95% confidence interval (CI) for recurrence.

Eligibility criteria Inclusion: children (≤ 18 years) with intussusception recurrence risk-factor data; cohort or case-control design; OR/RR/HR with 95% CI reported or derivable. Exclusion: adult or animal studies; reviews, case reports, conference abstracts; no recurrence outcome or no extractable effect estimate; duplicate publications (largest or most complete retained).

Information sources PubMed/MEDLINE, Embase, Cochrane Library (CENTRAL), Web of Science, China National Knowledge Infrastructure (CNKI), Wanfang Data, VIP. Reference lists of included studies will be hand-searched.

Main outcome(s) Recurrence of intussusception.

Additional outcome(s) Recurrence stratified by time window: 48 hours, 7 days, 30 days, and 1 year.

Data management Two reviewers will independently deduplicate records, screen titles/abstracts and full texts, and extract data; disagreements will be resolved by discussion or a third reviewer. The process follows PRISMA 2020.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale (NOS) will be used for cohort and case-control studies.

Strategy of data synthesis A random-effects model will be used to pool effect sizes (OR primarily; RR/HR pooled separately or approximated under a low event rate). Heterogeneity will be assessed with the I-squared statistic and Q test (I-squared $> 50\%$ considered substantial). A factor will be pooled when at least

three studies report it within the same time window.

Subgroup analysis Subgroup analysis by recurrence time window (48 h vs 7 d vs 30 d vs 1 y), region, treatment modality, and study design.

Sensitivity analysis Excluding studies at high risk of bias; leave-one-out analysis.

Language restriction English (search unrestricted by language).

Country(ies) involved China.

Other relevant information This review will also clarify the definition of early/short-term recurrence, which currently varies across studies (48 hours, 7 days, 30 days).

Keywords Intussusception; recurrence; risk factors; meta-analysis; children.

Dissemination plans Publication in a peer-reviewed journal.

Contributions of each author

Author 1 - Jing-Jie Guo - Conceptualization, methodology, data curation, formal analysis, writing – original draft, supervision.

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