# Assessment of the success of radiological reduction of intussusception in children

**Descriptor:**

An audit to assess the success rates of radiological reduction for ultrasonographically confirmed intussusception in children. Success rates can be compared to published national survey results [1,4]. Secondary outcomes include success rates for reductions performed by paediatric or general radiologists and success rates using contrast (hydrostatic) or air (pneumatic) reduction.

**Background:**

Intussusception of the GI tract can occur at any age but 75% occur below the age of two years. Although most cases are idiopathic (90%), intussusception is occasionally caused by an underlying lead point such as a Meckel's diverticulum or duplication of the GI tract.

Imaging plays an important role in both diagnosing and treating this condition. Initial assessment of children with suspected intussusception is usually with ultrasound. Ultrasound has a sensitivity of 98-100% and a specificity of 88% for detecting intussusception [2].

Following confirmation of the diagnosis on ultrasound, radiological reduction of intussusception is often initially attempted, thereby avoiding the need for surgery if reduction is successful. Reduction is usually performed with contrast or air enema depending on the preferences of the performing radiologist. Depending on local service provision the reduction can be performed/ supervised by either a paediatric radiologist or general radiologist. This is usually performed in a tertiary centre with paediatric surgical support in the event of complications such as intestinal perforation.

## The Cycle

**The standard:**

Successful radiological reduction of intussusception, avoiding the need for surgery.

**Target:**

Success rates of up to 90% have been described but the 1999 national survey reported a 70% success rate as gold-standard and 50% success rate as [1,3].

## Assess local practice

**Indicators:**

1. Percentage of cases of successful radiological reduction of intussusception

2. Percentage of successful radiological reductions performed by paediatric radiologists and by general radiologists

3. Percentage of successful radiological reductions performed using hydrostatic reduction and pneumatic reduction

4. To aid review if the target is not met it is also useful to note the presence of contributory features such as delayed presentation or lead point in cases of failed radiological reduction

**Data items to be collected:**

1. List of children who underwent radiological reduction of intussusception following confirmation of diagnosis on ultrasound

2. Overall outcome of radiological reduction

3. Performing / supervising consultant (paediatric or general radiologist)

4. Method of attempted reduction (hydrostatic or pneumatic)

5. Radiation dose and time of fluoroscopic procedure

6. Review of operation records for an underlying lead point in cases of failed radiological reduction

**Suggested number:**

All consecutive paediatric patients undergoing attempted radiological reduction of intussusception over the previous 12 months. For smaller centres it may be more appropriate to look at the last 3-5 years experience.

**Suggestions for change if target not met:**

1. Departmental discussion of techniques to assess if any improvements can be made

2. Limiting attempted reductions to paediatric radiologists, although this may not be possible due to limitations in service provision

3. If performed in a non-specialist unit, consider referring patients to a tertiary centre

4. A surgeon being present in the screening room at the time of the procedure has been reported as being associated with a significantly higher reduction rate [4]

**Resources:**

IT support to generate a list of appropriate patients

- PACS

- RIS

- Electronic patient record access

6 hours for data analysis

**References:**

1. Rosenfeld K, McHugh K. Survey of intussusception reduction in England, Scotland and Wales: how and why we could do better. Clinical Radiology 1999; 54: 452-458 <http://www.clinicalradiologyonline.net/article/s0009-9260(99)90831-0/abstract>
2. Sorantin E, Lindbichler F. Management of intussusception. European Radiology Supplements 2004; 14: 146-154
3. Ko HS, Schenk JP, Troger J, Rohrschneider WK. Current radiological management of intussusceptions in children. European Radiology 2007; 17: 2411-21
4. Hannon E1, Williams R2, Allan R2, Okoye B3 UK intussusception audit: a national survey of practice and audit of reduction rates.Clin Radiol. 2014 Apr;69(4):344-9 <http://www.ncbi.nlm.nih.gov/pubmed/24360511>
5. Carroll, A., Kavanagh, R., Ni Leidhin, C., Cullinan, N., Lavelle, L. and Malone, D. (2017). Comparative Effectiveness of Imaging Modalities for the Diagnosis and Treatment of Intussusception. Academic Radiology, 24(5), pp.521-529.

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