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Background & Rationale

Over the last 10 years the use of magnetic resonance imaging (MRI) examinations has increased by 220%¹. MRI under general anaesthetic (GA MRI) is a resource intensive process with the scanner often being empty whilst the patient is being anaesthetised and recovered. The cost to NHS trusts for providing a GA MRI far exceeds the tariff they receive.

Play therapy has been shown to reduce the need for general anaesthetic as it equips the child with the skills needed to understand and cope with the procedure, without the need for a GA^{2,3}. Whilst play therapy in hospitals is well established, its use to formally prepare patients for MRI scans is less so.

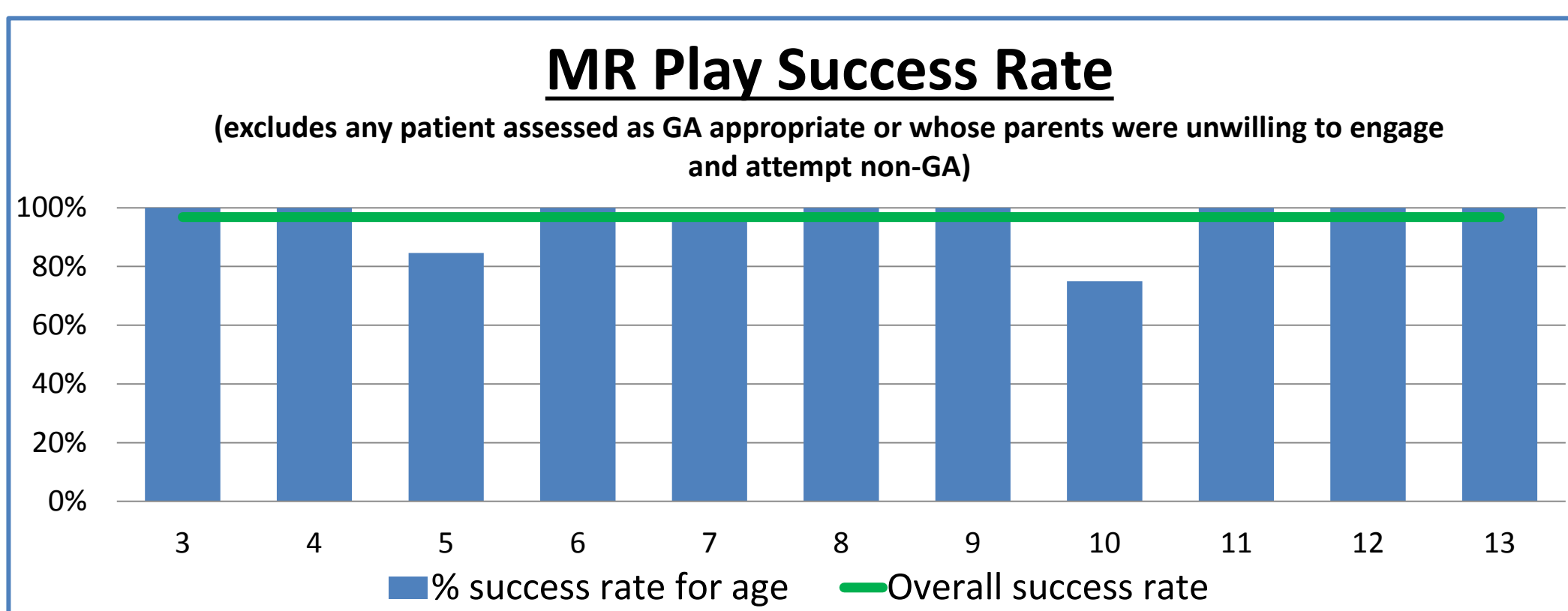
At UHS we carry out over 1000 MRI scans on 3-13yr olds each year. On average, 30% of those are carried out under GA. The cost of providing a 60 minute MRI scan under GA is approximately £1285. In comparison, the approximate cost for MRI with Play preparation is £343. Making an approximate saving of £943 per 60 min scan. In the 4-8yr age bracket, the proportion carried out under GA rises to just over 50%; this age group was the initial focus of the pilot project.

Approach

In April 2017 a pilot project was launched at UHS in partnership with the Paediatric Neurosciences ODN to test the theory that 25% of 4-8 year old children undergoing a GA MRI could be converted to MRI awake with the support of play therapy.

The number of MRI scans carried out under GA and awake was monitored throughout, and continues to be collected looking for changes in trends.

The project soon expanded to include children as young as 3 and older than 8 years.



PDSA Cycles

1. Pilot – May 2017

Referrals were slow initially, with the project not being widely enough advertised, limiting its initial impact. Those that were referred were very successful in going through their MRI without the need for GA showing the promising potential of MR Play.

2. Re-launch October 2017

The project was presented at the monthly care group quality & education meeting – increasing consultant awareness of the project. Initial success was highlighted, and posters displayed in the children's outpatient department, in offices and emailed to all child health consultants.

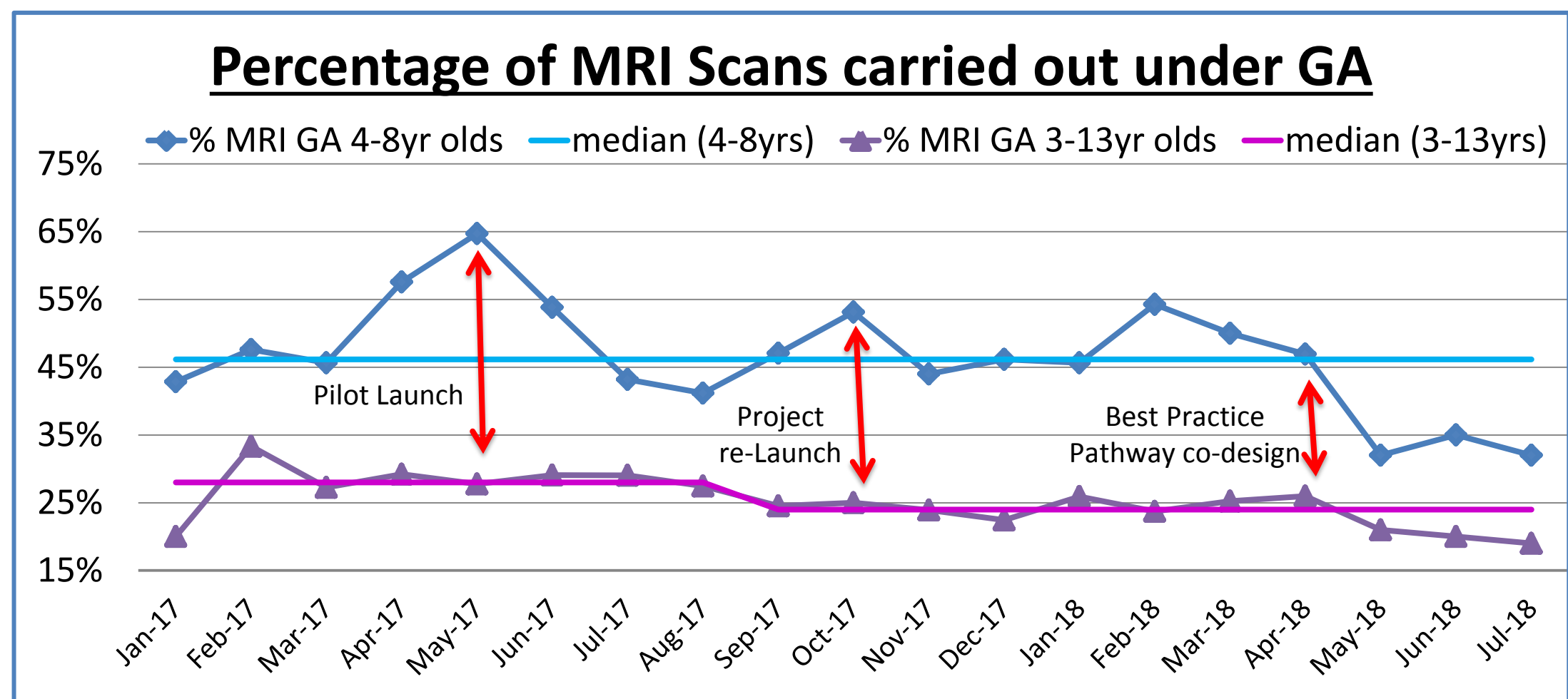
This led to a significant increase in referrals to MR Play, with over two thirds of 2017 MR Play patients being seen in November and December. We continued to see high success rates.

3. Process pathway redesign – November 2017

The pathway was simplified, removing the screening form, and making referral age-related. Referrals started to come from wider specialities, and success rate continued to be high.

4. Regional Best-Practice Pathway co-design – April 2018

In conjunction with University College Hospital (UCH), London and Poole Hospital, a regional best-practice pathway was developed and shared at the NAPS conference in London.



Results

In the first 15 months of the project 117 patients were referred for MR Play. (n=92 in target 4-8yr age group). 6 patients were assessed as being appropriate for a GA. 4 parents refused to engage with MR Play and wanted their child to have a GA despite discussing the risks associated. A further 4 patients were referred, but contact details were incorrect, and the family was unable to be contacted. 3 patients referred were 15yrs old, and 2 were referred for a CT scan and are therefore not included here. This left 98 children who reached the MRI scanner for an awake scan who previously would have had a GA. Of these 98 children, only 4 scans were unsuccessful; a success rate of 96%. This has resulted in £59,951 saving compared to those patients undergoing a GA-MRI over the first 15 months.

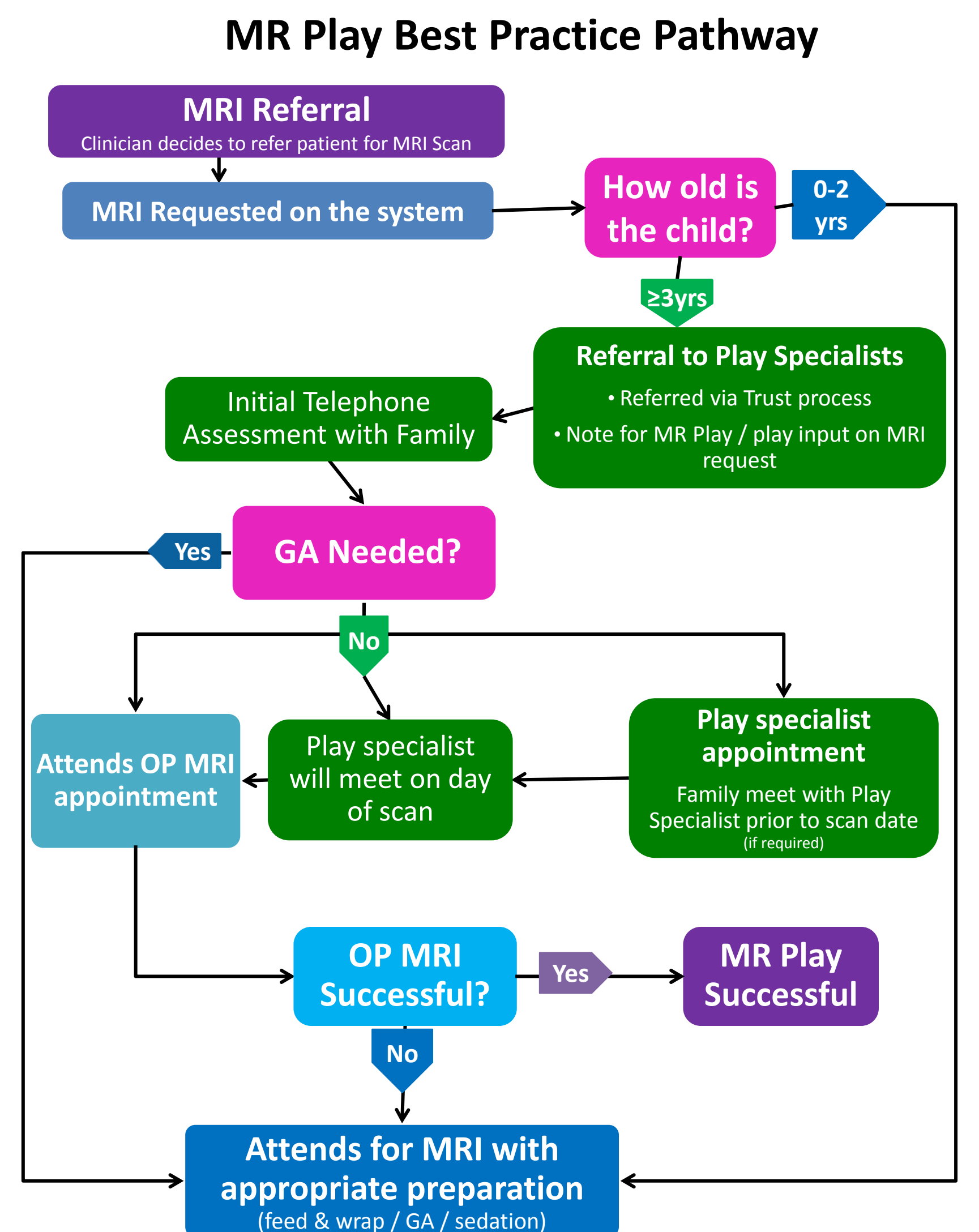
Discussion

Whilst the initial focus of the project was the 4-8 year age group, as the project progressed some children younger than 4 years were being supported through without GA and older children were also benefiting from support. We therefore expanded to include any child over the age of 3 years. It is our belief that all children over the age of 3 years requiring an MRI should go through the play specialists as a first line. The play specialists are then able to assess each family individually and offer support in the way most appropriate for the family.

All MR Play work has been carried out within the existing work stream of the play therapy department, and without the creation or change to MRI lists. MR Play patients were all seen within existing lists, being slotted in to empty slots, and on occasion into adult slots. This meant that MRI slots that previously may have been empty were filled with MR Play patients, reducing wasted slots. Feedback from families has also been positive, with one parent commenting:

“The play specialist explained it all well, especially as we as adults had never had an MRI. Our son was very excited and relaxed about the experience and told his class all about it! Thanks!”

Although we are only seeing approximately 15-20% of all 4-8yr old patients having an MRI scan currently, the success of the project has put pressure on the play workforce to a point where they are struggling to provide the cover for MR Play. With the proven success of this project and the example of UCH (whose dedicated play specialist for radiology is able to see 87% of their 4-8 year olds to some degree), an application is in for the recruitment of a Band 5 play specialist for radiology at UHS so that the best-practice pathway can be met, and more children can benefit from procedures without a GA.



References

- NHS England (2014) *NHS Imaging and Radiodiagnostic activity*.
- De Amorim e Silva *et al* (2006) Practice MRI: Reducing the need for sedation and general anaesthesia in children undergoing MRI. *Australian Radiology*, 50(4), 319-323.
- Raschle *et al* (2009) Making MR Imaging Child's Play – Pediatric Neuroimaging Protocol, Guidelines and Procedure. *Journal of Visualized Experiments*, 29: 1309.

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