Best Practice Guidance:
Preassessment Services for Children undergoing Surgery or Procedures

Association of Paediatric Anaesthetists of Great Britain and Ireland

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Methodology:
This guidance document is based on published evidence, presented evidence and recommendations from an expert panel of clinicians. This builds on the recommendations for preassessment published by the Royal College of Anaesthetists (RCOA) and the Association of Anaesthetists (AoA). [1,2,3]

Purpose and Aims:
This guidance is designed to describe the establishment and delivery of a paediatric preassessment service in any hospital where children aged 0-18 years of age undergo surgery or other procedures under anaesthetic, and the functions it should deliver. It describes the benefits for every child from straightforward to complex, undergoing straightforward or complex surgery.

Introduction:
Preassessment services for adults are well-established and valued within the adult surgical pathway, preparing and optimising patients for elective procedures. The benefits for children and young people have not been similarly recognised and hence this has not translated to a similar and equitable development of paediatric preassessment services. [4] This has resulted in significant variation in the standards and availability of paediatric preassessment services for children around the UK.

All children and young people should expect to have a preassessment prior to the day of their procedure.

Children have significantly different emotional needs, physical needs and comorbidities requiring skilled assessment and preparation for their procedure. This ensures that not only are their medical, physical, and emotional needs met, but also the requirement for appropriate informed consent for anaesthesia is achieved in line with recently updated GMC guidance. [5]

All hospitals: district general hospitals (DGH), larger teaching hospitals or specialised children's hospitals, should provide a preassessment service for children who are attending for surgery, imaging or other procedures requiring general anaesthesia. Whilst the majority of children are fit and appear well (ASA 1 or 2) and having straightforward procedures as day cases, effective preassessment in this group will still have benefits for children, parents and carers, and the organisation (see Table 1).

Table 1. Functions of Paediatric Preassessment Service

- Improved safety and quality
- Clinical assessment
- Informed consent
- Shared decision making
- Health screening
- Safeguarding
- Anxiety management
- Optimisation
- Increase Child and Parent Satisfaction
- Support for Learning Disabilities and Autism
- Theatre Efficiency

1. **Service Design**

All children and parents should commence preassessment at an appropriate time prior to the day of their procedure, to allow assessment, optimisation of medical conditions, psychological preparation and consent. The service should be configured to triage children to receive the appropriate level of preparation based on their needs. This will involve the following services (see figure 1):

- the availability of a health questionnaire prior to attending to triage children to the appropriate level of preassessment
- a nurse led preassessment service
- a consultant paediatric anaesthetic led clinic for children identified as having specific medical or behavioural needs.

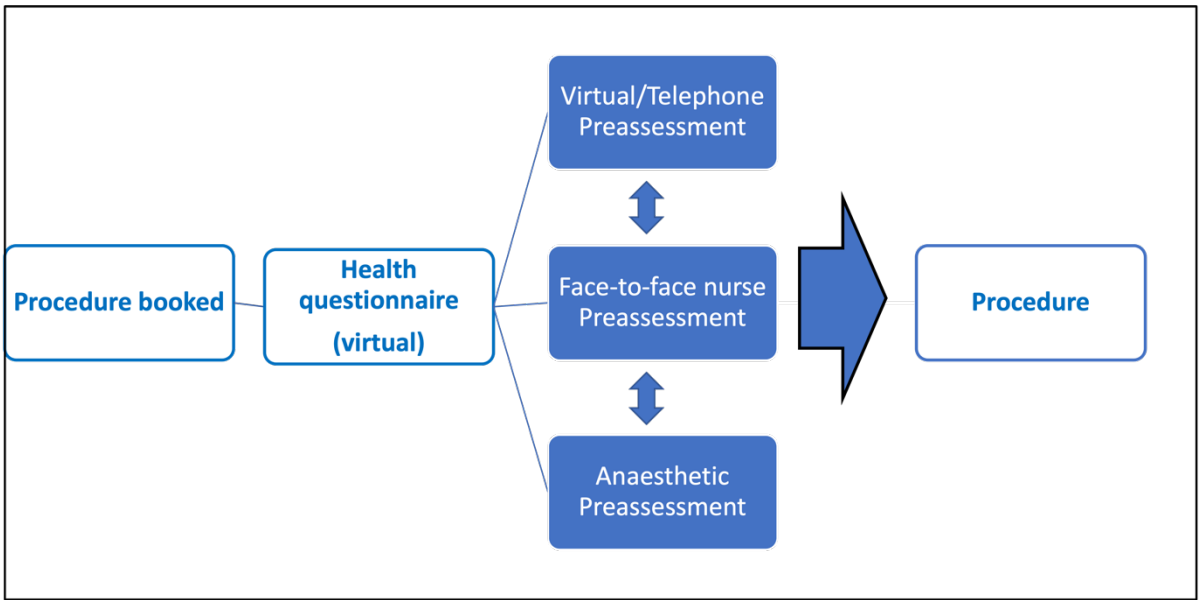

Figure 1. Preassessment Triage and Delivery Model. The use of a health questionnaire enables the appropriate preassessment pathway to be allocated for each child.

The paediatric preassessment service should be delivered by appropriately trained nurses with clinical and governance support from anaesthetists with a paediatric interest. It should be delivered in an appropriate environment for children, separate from adult services, in line with other children's out-patient clinic standards.

On the completion of preassessment, there should be an agreed shared plan between the child, parents and carers, and health care team on admission on the day of the procedure, and include preferred induction of anaesthesia, analgesia and recovery following the procedure.

All hospitals should have a clear policy on the elective procedures they are able to deliver and also the lower age limit for anaesthesia and surgery for the hospital.

Children and young people, and parents and carers should be involved in the design and evaluation of the preassessment service, and ongoing feedback should be collated to support quality improvement.

Health Questionnaire

- A digital health questionnaire should be considered for children and young people prior to preassessment, in order to stratify children to receive the appropriate level of assessment and preparation for their procedure (see Figure 1). Electronic media or cloud-based tools are increasingly being used for this.

Nurse-led Service

- Nurse led preassessment clinics are an effective service model for providing the majority of preassessment for children and young people before their procedure and should be established in all hospitals providing surgery for children and young people. [3, 6, 7, 8]
- The timing of preassessment should occur prior to the day of their procedure and with a sufficient time window, according to the complexity of the child or the procedure, to complete any assessments, investigations, or optimisation needed beforehand. It should also allow reasonable time for the parents, carers, children and young people to consider the information, ask questions and enable informed consent. [9]
- Nurse led appointments can be delivered face to face or through virtual media where appropriate. The preassessment pathway for every child must include the opportunity for physical examination and baseline observations to be completed prior to the procedure.
- The establishment of virtual clinics will also reduce disruption to both parents and children by reducing unnecessary additional attendances at the hospital. Some parents and children may prefer face to face appointments, and this should be a choice offered to parents. Virtual assessments may be preferable for children who live a significant distance from the hospital, or for those who have attended the hospital on multiple previous occasions.
- Both socioeconomic factors and geographical factors should be considered in determining the optimal preassessment pathway for the child and parents. This might include consideration of access to public transport and the availability of wider family support which may contribute to ensuring the parents and child attend on the day of the procedure.
- The preassessment service should ensure that any required translation services are available for the appointment and also on the day of the procedure, and that any cultural sensitivities are identified and addressed.
- Face to face and virtual appointments should be provided by appropriately trained staff.
- Face to face appointments should be delivered in a suitable environment for children.
- The opportunity to meet staff and see the theatre and recovery environment should be provided either through face-to-face tours with staff or with bespoke virtual tours for each hospital e.g. Little Journey app. [10]
- Nurse led face-to-face or virtual appointments, should follow an agreed pathway designed and approved locally, which meets published protocols and guidelines for children and young people.
- The preassessment pathway should identify children who are fit to proceed for their procedure without the need to access further resources.
- The preassessment pathway should include criteria to identify groups of children who may require further preparation or support:
    - Conditions requiring assessment by consultant paediatric anaesthetist
    - Medical conditions requiring assessment or input by consultant paediatricians or other specialists e.g. diabetes, obesity
    - Anxiety or behavioural issue requiring additional planning and preparation
    - Discussion with clinical teams in specialist centre to determine whether referral is required
- The preassessment visit should be clearly documented in a care pathway or electronic patient record and be available on the day of their procedure.

Consultant Delivered Preassessment Service

- There should be a clear pathway for identifying and referring children from the nurse led service to receive an assessment by an anaesthetist providing paediatric preassessment.
- There should be a designated lead anaesthetist, with a paediatric interest, for the paediatric preassessment service. The lead should have specified programmed activities within their job plan. [3]
- Paediatric preassessment sessions delivered by consultant anaesthetists should be represented as clinical activity within job plans to ensure a high quality service is delivered.
- Appropriate administrative support should also be provided for the preassessment service.

2. Staffing and Training

Nursing Staff

- Staff involved in the preassessment of children should be appropriately trained and experienced for their role (this should be reflected in their banding) and could include nurses, nurse practitioners or operating department practitioners. The team should include trained paediatric nurses.
- All nursing staff should maintain mandatory training in level 2 Safeguarding and paediatric life support. Additional training in communication skills with children, anxiety management and the consent process and the needs of children and young people for this , should be provided.
- Nurses working with anxious children and involved in the explanation of risks may benefit from advanced communication training.
- Preassessment nurses should have received training to deliver preassessment in children and this should include familiarity with the paediatric preassessment pathway and documentation, relevant policies and pathways including the routes of referral of children for assessment by a consultant anaesthetist or for other specific support.
- Nurses should receive training to recognise abnormal physiological measurements taken at preassessment for the full range of ages i.e. pulse, blood pressure, oxygen saturations, and the potential implications of abnormalities in these measurements.
- Trusts and Health Boards should support ongoing education for paediatric preassessment nurses

Consultant Anaesthetists

- Anaesthetists involved in the preassessment of children should have regular elective paediatric theatre lists in their job plan and have maintained an appropriate level of competence in paediatric anaesthesia as demonstrated in annual appraisal.
- All anaesthetists preassessing children for their procedure should maintain training in Level 2 safeguarding and paediatric life support. Additional training in communication skills with children, anxiety management and consenting children and young people is desirable. The lead paediatric anaesthetist should have level 3 safeguarding training. [11]
- Advanced training in anxiety management of children is recommended e.g. POEMS course
- There should be a lead for paediatric preassessment who should lead on the formation of the paediatric preassessment pathway, policies and documentation.

3. Clinical Governance, Pathways and Policies

- A clear policy indicating the structure of the service and the roles and responsibilities of staff should be available.
- A comprehensive preassessment pathway should be in place which encompasses all health-related issues in primary and secondary care, including social, developmental and behavioural issues, which may be commonly encountered in children and young people.
- Specific guidance may be required to address some conditions specific to children. These should describe required investigations, opportunities for optimisation and also criteria for referral to the specialist centre:
    - Congenital heart conditions
    - Respiratory conditions – asthma, URTI, asthma, OSA
    - Endocrine and Metabolic conditions including diabetes
    - Inherited conditions and syndromes
    - Learning disabilities and behavioural issues including autism and ADHD
    - Safeguarding

- There should be a policy on the consent process for children and young people which includes evidence of the provision of information on the risks of anaesthesia in accordance with the current recommendations by the GMC. [5]
- These policies should provide the required guidance for nurses delivering paediatric preassessment. They should be available to aid interventions and ensure appropriate referral to the consultant anaesthetist preassessment sessions and/or other medical specialties.
- All non-specialist centres should have clear criteria for children and young people who are able to have their care delivered locally, and criteria, based on the complexity of the procedure or the child's comorbidities, as to when they should be referred to a specialist children's hospital for their procedure.
- In District General Hospitals and Teaching Hospitals, a governance process should be established to ensure a multi-disciplinary approach to the care of children usually under the care of a specialist centre. This can be by direct links with the regional specialist centre or by working with regional operational delivery networks. This should provide assurance on the most appropriate place for any procedures or investigations to be performed.

4. Clinical Preassessment

- Preoperative assessment should ideally occur at least 2 weeks before their procedure to allow time to address issues that may impact on the patient journey and an efficient pathway on the day of their procedure. This also allows an appropriate amount of time for all information provided to parents, carers, children, and young people to be considered and for any questions to be answered.
- Children with complex needs require early referral to pre-operative care to allow sufficient time for information gathering, optimisation and discussion.
- Preassessment could be co-ordinated with the surgical outpatient visit to minimise hospital attendances where the procedure is anticipated to occur relatively quickly. However, if there is a significant time window before the actual day of the procedure, preassessment should be arranged closer to that time as indicated above.

- A clear standardised paper or electronic proforma for paediatric preassessment should be used, which records all elements of the clinical assessment and resulting actions.
- The paediatric preassessment pro-forma should include specific spaces to record the following information specific to children and young people:
    - Birth history
    - Prematurity and associated care requirements and long-term health conditions
    - Congenital conditions including family history (including sickle status)
    - Acquired conditions
    - Behavioural and educational needs
    - Previous experiences of surgery and anaesthesia
    - Anxiety issues and current status
    - Safeguarding history
    - Immunisations [12]
    - Medications
    - Allergies

- Children and young people should expect to have access to play specialists and learning disability liaison nurses where it is considered important to care.
- Behavioural and educational needs. Ensuring equitable and regular access to healthcare services has been recognised in preventing morbidity in individuals with learning disabilities. Preassessment should enable optimisation of their physical well-being and assessment of their behavioural needs. This should result in a personalised care plan to meet all the needs of each child. Preassessment also offers the opportunity to check hearing, sight and dental checks are up to date and co-ordinate any outstanding blood tests or investigations with the anaesthetic episode which might otherwise prove very distressing.
- Consultant led clinics should be used to review and assess children with more complex conditions or undergoing more complex surgery. They should review underlying comorbidities to ensure there have been appropriate recent investigation and assessment, and opportunities for optimisation. This could include involvement of other teams in a multi-disciplinary format and shared decision making. A more thorough clinical examination may be required and should be documented. [13, 14]
- Establishing good links with other specialities is an important part of developing the pre-assessment service. Writing peri-operative guidelines in conjunction with the parent specialty team(s) e.g. cardiology, metabolic teams, promotes consistency within the pathway and also further builds multi-disciplinary links.
- All multidisciplinary discussions conducted by whatever media (letter, email, telephone, video meeting or face-to-face) must be recorded in the patient notes as per GMC guidance.
- There are opportunities to optimise specific conditions in children prior to their procedure, although there is limited published evidence currently:
    - Respiratory optimisation in asthma can be done using the Asthma Control Test (www.asthmacontroltest.com), with a referral back to the GP, asthma nurse or respiratory consultant if required. Children who suffer recurrent chest infections may benefit from pre-operative antibiotics
    - Children with anaemia may be more likely to have adverse peri-operative outcomes including death and blood transfusion. [15] Iron deficiency anaemia can be identified easily through the red cell indices and subsequent correction arranged via the GP.
    - Diabetes has potential for pre-operative optimisation with collaboration with the diabetes team, to reduce the young person's perioperative risk.

- The preassessment should help inform the decision as to whether the child is suitable to have their procedure as a day-case, an in-patient or whether critical care support is required post-operatively.
- The preassessment should also inform the decision of whether it is appropriate for the child to have their care delivered locally, or whether it may be necessary for referral to a specialist centre (see section 3).
- The peri-operative plan should be communicated with all healthcare teams involved in the process: the family; the admission and post-operative ward(s); theatres and recovery; and other allied health professionals such as play specialists, dieticians, and physiotherapists.
- Staff should be aware of the named doctor and nurse within their hospital. Within the assessment, all previous safeguarding related documentation should be available and reviewed.

5. Preoperative information and Consent

- All parents and children should ideally complete informed consent prior to the day of surgery.
- Children attending for procedures should have informed consent completed with an individual competent to perform the procedure in question, or have had the training to take delegated consent.
- Information should be provided for the child/young people and parents and carers regarding their procedure, anaesthesia, and analgesia. It should include descriptions of anaesthesia (induction options, risks, benefits, side-effects, complications and alternatives) and analgesia (options, risks, benefits and choices) which allow informed shared decision making.
- Information for children and parents should be available in appropriate formats addressing any language or cultural needs.
- Up to date guidance on preoperative fasting must be included in the information provided to parents, carers, children and young people. [16]
- Information provided should take the form of paper documents to take away as well as direction to resources on websites. [17]
- Age specific information leaflets are available explaining the events surrounding surgery and anaesthesia [17] . More recent developments include using apps on mobile phones/tablets specifically designed to provide information as well bespoke virtual tours of the local hospital theatres and strategies to help children prepare for the day of their procedure at home e.g. Little Journey app (endorsed by NHSE and APAGBI). [10]
- Information and resources should be available for children and young people with learning disabilities.
- The information provided must enable the parents, children, or young people to give informed consent prior to their procedure. Recent updated guidance on consent from the GMC requires that parents are provided with full information on the risks of anaesthesia.[5] This information should be provided at preassessment in the form of a leaflet clearly detailing the risks which can be considered in the time leading up to the day of their procedure, which are available from the Royal College of Anaesthetists. [17] Ideally, this information should not be provided on the day of their procedure although certain circumstances may necessitate it. [5] Whilst there is no requirement for written consent to anaesthesia, there may be some benefit in recording whether this information has been provided and read.
- The capacity of the young person should be considered at the time of consenting. Young people aged 16-17 years with capacity should sign their own consent forms. Young

people under the age of 16 years who are deemed to have sufficient maturity and intelligence to understand the treatments proposed should also be encouraged to sign their consent form. [5]

- Electronic Consent. There is increasing transition to electronic patient records with the included facility to complete electronic consent. The use of standardised, adaptable and secure processes will enable increased opportunities for consenting through remote consultations and the sharing of a permanent record of consent. This also facilitates the sharing of electronic parent/child information by email. A paper record of consent may be required for the patient notes during any period of transition to the electronic format. It is hoped that there will be support across all regions of the UK, to ensure that there is an equal opportunity for this digital transformation.

6. Examination

- All children should have the following routine observations recorded at preassessment and/or on the day prior to their procedure: [9]
  - Weight and height
  - Temperature
  - Oxygen saturations
  - Heart rate
  - Blood pressure (over 3 years). [18]
  - Airway assessment including loose deciduous teeth
- The initial health questionnaire should allow triaging of appropriate children who could be offered virtual/telephone preassessment without recording routine observations. These observations and a physical examination can then be completed on the day of the procedure by the anaesthetist.
- Children and young people attending for a face-to-face nurse led preassessment, should have all baseline observations measured and recorded. Based on this nursing assessment, for example where comorbidities are significant, the nurse may refer the child to a medical preassessment appointment for further clinical examination.
- Children referred to the consultant anaesthetist delivered preassessment, with existing significant comorbidities, should have baseline observations recorded and a physical examination performed.
- There may be some value in the routine auscultation of the heart of younger children (< 2 years) presenting for preoperative assessment for the first time and where there is no record of a previous examination. This may occur preferably at a consultant led preassessment clinic or otherwise on the day of their procedure. Previously undetected murmurs should be discussed with the paediatric team and investigated appropriately.[14,19,20]
- There should be a pragmatic decision on the benefits of certain observations where anxiety or behavioural issues make it challenging for the child or young person to comply.
- Staff should be trained to recognise the normal and abnormal ranges for each of these measurements in all age groups and their significance. If there are concerns regards any measurements, these should be discussed with a consultant paediatric anaesthetist to determine the need for further assessment or investigation.
- The infrequent identification of unexplained hypertension and its implication should be included in the above training. [18]
- In times of pandemic, such as the recent COVID pandemic, it may be necessary to include swab testing prior to the procedure to confirm the absence of infective status.

7. **Investigations**

- The majority of children who are ASA 1 or 2 and undergoing elective day case surgery will not require any investigations prior to surgery. [9,21]
- Blood tests should only be ordered where it is felt that the results will alter preparations (see below) through highlighting specific underlying health conditions or opportunities for optimisation.
- Children and young people undergoing major surgery where significant blood loss may occur should have FBC and G&S as a baseline reference.
- Children with long-term conditions which may cause suspected or known anaemia should have a full blood count. The introduction of non-invasive haemoglobin assessment may reduce the need for unwanted venepuncture. [9,14,22]
- Confirmation of the sickle cell status of children should be undertaken in the appropriate populations. [23]
- Children with significant comorbidities e.g. congenital heart conditions, should have the most recent investigations reviewed (CXR, ECHO, ECG, lung function, pacemaker check where relevant) by a consultant paediatric anaesthetist. There should be consideration of the need for repeating these prior to surgery where it is felt it would inform on risks or preparation. [9]
- Pregnancy testing should be completed in all post menarchal females prior to anaesthesia on the day of their procedure. This should be mentioned at preassessment. A local policy should be in place based on the guidance published by the RCPCH which recommends testing should be started at age 13 yrs. [24]

8. Anxiety management

Up to 80% of children presenting for an anaesthetic will experience some degree of anxiety.[25] Staff should all be trained in the recognition of significant anxiety and in anxiety management strategies in children. Poorly managed anxiety will lead to immediate and long-term issues for the child.

- All staff that care for children should have training in the recognition and management of anxiety.
- Hospitals that regularly care for children should have a play specialist available to help them prepare for their admission and facilitate their theatre journey.
- Hospitals should have appropriate resources for the preparation of anxious children. This may include physical and digital options, tours of theatre or play aids.
- Assessment of anxiety should form part of the clinical preassessment. There should be a clear policy describing the management of moderate-severe anxiety in children. This should recognise the need for individualised plans and coping strategies.
- The anxiety management policy should include elements to assist parents in preparing their child and managing their own parental anxiety.
- Preassessment should specifically address the needs of children with autism and learning disabilities and the impact of factors such as the hospital environment on their experience.
- There should be a clear premedication pathway which describes the range of medications regularly used, the routes of administration and the plan for successfully achieving this on the day of surgery. This should include the optimal environment on admission (a side room), position on the list and access to the recovery area for parents.

- Where the least restrictive option to deliver a premedication involves any deprivation of liberty or restraint, this should be clearly discussed with the parents at preoperative assessment and documented. All staff must have completed appropriate restraint training relevant to children.
- Pre assessment services should develop links with local providers and charities who work with children who have anxiety, autism or other specialist needs.

9. Health Screening

- The NHS Long-term Plan recognises that the NHS needs to give children the healthiest start in life. Messages regard public health for children and families are an important opportunity within preassessment to "make every contact count".
- Within the preassessment pathway, consideration should be given to providing advice, guidance and directing families to additional support. The particular opportunities to provide wider help outside the surgical episode of the child or young person include:
    - Immunisation uptake
    - Obesity
    - Parental smoking
    - Oral health
    - Safeguarding
- Immunisations. Whilst immunisation history should be recorded in the clinical assessment, preassessment provides an opportunity to provide educational material where needed and also redirect parents to primary care for information access to immunisations[34]. Up to date guidance on immunisations and anaesthesia is available here. [12]
- Exposure to parental smoke in the home environment has been shown to increase perioperative adverse respiratory events. [26] Screening for parental smoking should be included in the initial health questionnaire and the nurse led preassessment. Information regarding the immediate benefits to the child in the perioperative period should be provided and also the longer-term health benefits for both child (reduced sudden infant death syndrome, asthma and middle ear infections) and parent. Signposting to smoking cessation services should be available.
- Childhood obesity is a growing problem and the recent PEACHY (PErioperAtive CHildhoodobesitY) study has highlighted that surgical patients have a higher prevalence of obesity compared to the general population. [3] Paediatric weight management services across the country vary significantly. Awareness of local services should be known and how to access them. Generic online resources are available via links such as 'change4life', 'Moving Medicine' and the NHS Healthy Weight website [27, 36, 37]. The BMI centile should be calculated using the NHS calculator for each child. [28] Where this is significant, this could lead to further screening regard levels of physical activity. Information on the complications of obesity for the child's general health should be available and signposting to available weight management services in primary care. A wider Trust strategy to encourage healthy eating within the hospital environment should be developed.
- Oral Health. Dental decay is found in a quarter of 0-5 year olds and is linked to living in areas of deprivation. Clinicians may wish to recommend the free, NHS approved Brush DJ app (www.brushdj.com) which provides evidence-based information about oral care. It is helpful to establish if dental extractions are planned under general anaesthesia, and if so whether a joint procedure might be feasible. Parents whose children are expected to require an overnight stay should be reminded to bring a toothbrush and paste for their child. Additional information and resources are available on the "Mini Mouth Care Matters" published by Health Education England[35].

10. Safety and Theatre efficiency

- The introduction of pre-assessment services for children have resulted in reductions in cancellations on the day of their procedure. Efficiency improvements have been shown to create financial savings in excess of the costs of running the preassessment service. [29,30] Preassessment reduces tasks on the day of the procedure leading to improved start times for theatre lists and reduced changes to list order. Preassessment identified significant numbers of interventions to improve efficiency on the day even in ASA 1 or 2 children such as the completion of essential clinical and administrative paperwork. [31,32]
- Other efficiency improvements may include: [30,31,32,33]
    - Increased day case rates for surgery
    - Reduced length of stay
    - Improved multi-disciplinary team working
    - Reduced waiting times and starvation times through staggered admissions
    - Reduced days of lost work by parents
    - Reduced missed days of school for child and siblings

11. Networks

- Regional funded networks (NHSE ODNs) for Surgery in Children should support the development of standardised referral pathways so that children requiring specialist surgery or care are directed to the specialist centre and also to support the delivery of care locally where appropriate.
- Operational delivery networks should assess paediatric preassessment services within each network to ensure there is an established paediatric preassessment service at each site delivering surgery for children, and that there is equitable access and limited variation in this across the region.
- Regions should develop a pathway for children to have preassessment and investigations as close to their home as possible when surgery is planned at the specialist centre or other large centre within the network.
- Regions should establish links between preassessment services to facilitate the sharing of information between hospitals.

12. Quality Improvement

- There should be regular audits and quality improvement work to assess and improve the quality of the preassessment service with measurable outcomes.
- Collated feedback from children, young people, parents and parents should be collected and used to redesign and improve the preassessment service.

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