NHS
Greater Manchester

# Baby teeth DO matter!

## Good Practice Guidelines

for quality management of three and four year-old children
in primary dental care in Greater Manchester

First version | SPRING 2013

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# Foreword

## Management of dental care for young children is a complex affair with a wide range of considerations which need to be taken into account.

As well as the child's general health, other social factors have an impact on the child's dental health such as socio-economic status, family history, cultural values and expectations and the patients' acceptance of treatment.

This guide aims to assist in clinical decision making and improve treatment planning and patient management over the short, medium and long term.

This guide is not didactic nor does it offer certainties – it is not 'dentistry by numbers'. It places the child and dentist with their diagnosis at the centre of the process. Much depends upon a rational, informed assessment by a dentist who is aware of a range of management options, as well as the co-operation of the child and parental expectations. These guidelines simply provide evidence based prompts for a range of treatment options and preventive interventions, where and when appropriate.

It explicitly supports active interventions where possible in an effort to increase the number of children who are treated effectively in GDP settings, with the clinicians being supported to provide the correct treatment and preventive regime for the correct patient at the correct time. This should result in a reduction in the number of children who are referred elsewhere for care and who may be forced to wait in pain and discomfort.

As dental professionals, we were trained to provide complex care for both adults and children. These guidelines prompt and support us with evidence so that we can feel confident in the treatment options available for our child patients. It supports the current strong movement away from referral for extractions as the only choice for our child patients in pain and the recognition that this should be seen as the last choice and, even then, should not be the sole treatment provided.

It is recognised that there will be some children who will need to be referred for care, either to resolve a current episode or, occasionally, for longer term care. The majority of children should be manageable in general dental practice, albeit with a little time and patience for some. Equally the GDP should recognise the need to refer for severe disease and/or the management of behaviour where no progress is being made.

This guide has been created by a Paediatric Care Sub-Group of the Greater Manchester Local Dental Network. The work is copyrighted to them ©. Acknowledgements, further information and links are detailed in Appendix 8

The group consisted of General Dental Practitioners, Specialists and a Consultant in Paediatric Dentistry, a Commissioner and a Specialist in Dental Public Health.

# Contents

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# Guiding principles for management of 3 and 4 year-old children:

## Think in the long term

What actions and advice will be best for the child and their family?

- Protect their general health
- Protect their oral health
- Consider and protect their ability to accept dental treatment in the future

## Prevent future disease

- Prevent deterioration of current disease – arrest the caries process
- Prevent new disease from starting
    - give evidence based preventive advice (Delivering Better Oral Health)
    - provide evidence based preventive care (Delivering Better Oral Health)
- Engage parents or carers to maximise benefits of good home care and attendance

## Priorities for prevention

- First tackle long term bottle use with sugar-containing drinks
- Then tackle frequent sugar-containing snacks and drinks
- And ensure adult fluoride toothpaste is being used twice daily
- Maximise benefits of brushing with fluoride toothpaste
    - Brush twice daily – last thing before bed and in the morning
    - Use a pea sized blob of toothpaste containing at least 1350ppm fluoride
    - Young children should be supervised when they brush
    - No child should be allowed to eat or lick toothpaste from the tube
    - Spit out after brushing – do not rinse out with large amounts of water or mouthwash

## Managing the disease

- Behavioural management for the child is central as the level of co-operation at each stage dictates the treatment options. The clinical team can have a major effect on the behaviour of each child.
- Manage the expectations of parent/carer. These need to be elicited as they may be unrealistically high, or they may be very low. Some parents or carers do not recognise their role in the short and long term care of the oral health of their children.
- Instigate a proactive prevention plan which involves parents and carers as well as the clinical team
- Where possible provide local treatment to resolve signs and symptoms
- Avoid or delay extraction in this age group where appropriate
- Aim for care that means the child is free of signs and symptoms until they reach a stage when they are cooperative - temporise or stabilise the disease
- Attempt to restore where possible without causing treatment induced anxiety

## When referral for extraction cannot be avoided

- This should be seen as only one part of a management plan. Prior to the referral appointment much can be done with acclimatisation, improving home care and managing parental expectations about care following extractions.
- As a default position, once a child is undergoing general anaesthesia for extractions a radical approach is taken and all primary teeth with established caries are extracted. The over-riding principle applied here is the avoidance of repeat general anaesthetics.

## Priorities

- Second primary molars have higher priority than first primary molars

## Managing sepsis

- Do not leave dental sepsis untreated. When possible provide pulp therapy or extract the tooth.
- Chronic sepsis should not be ignored and can be simple to treat (see Appendix 7).
- If sepsis is asymptomatic and the child is pre-cooperative, monitor and acclimatise for up to three months with the aim of allowing time for the child's anxiety to reduce and enable them to accept necessary treatment (extraction or pulp therapy)
- If within this time the child does not respond, consider referral to a specialist.

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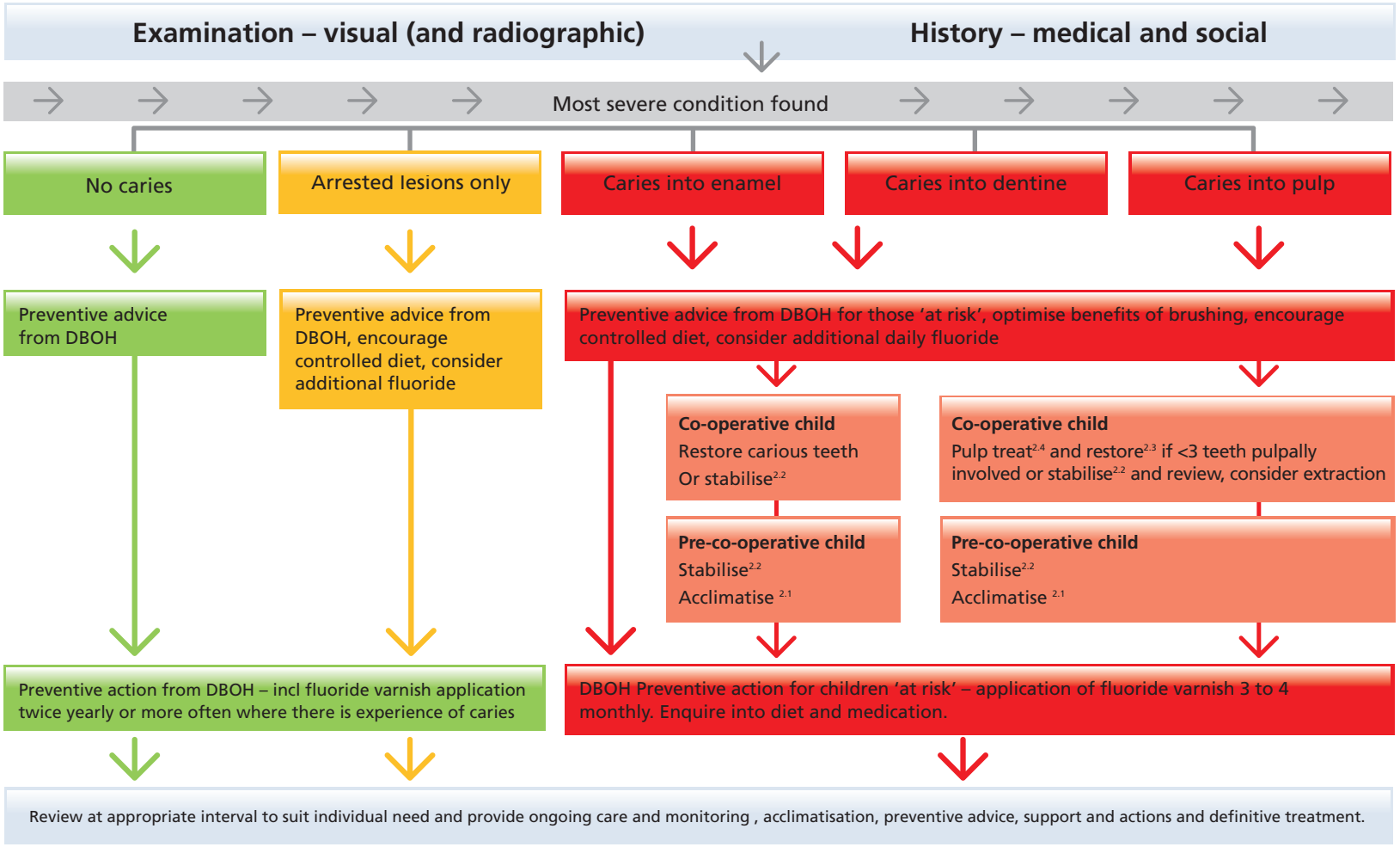
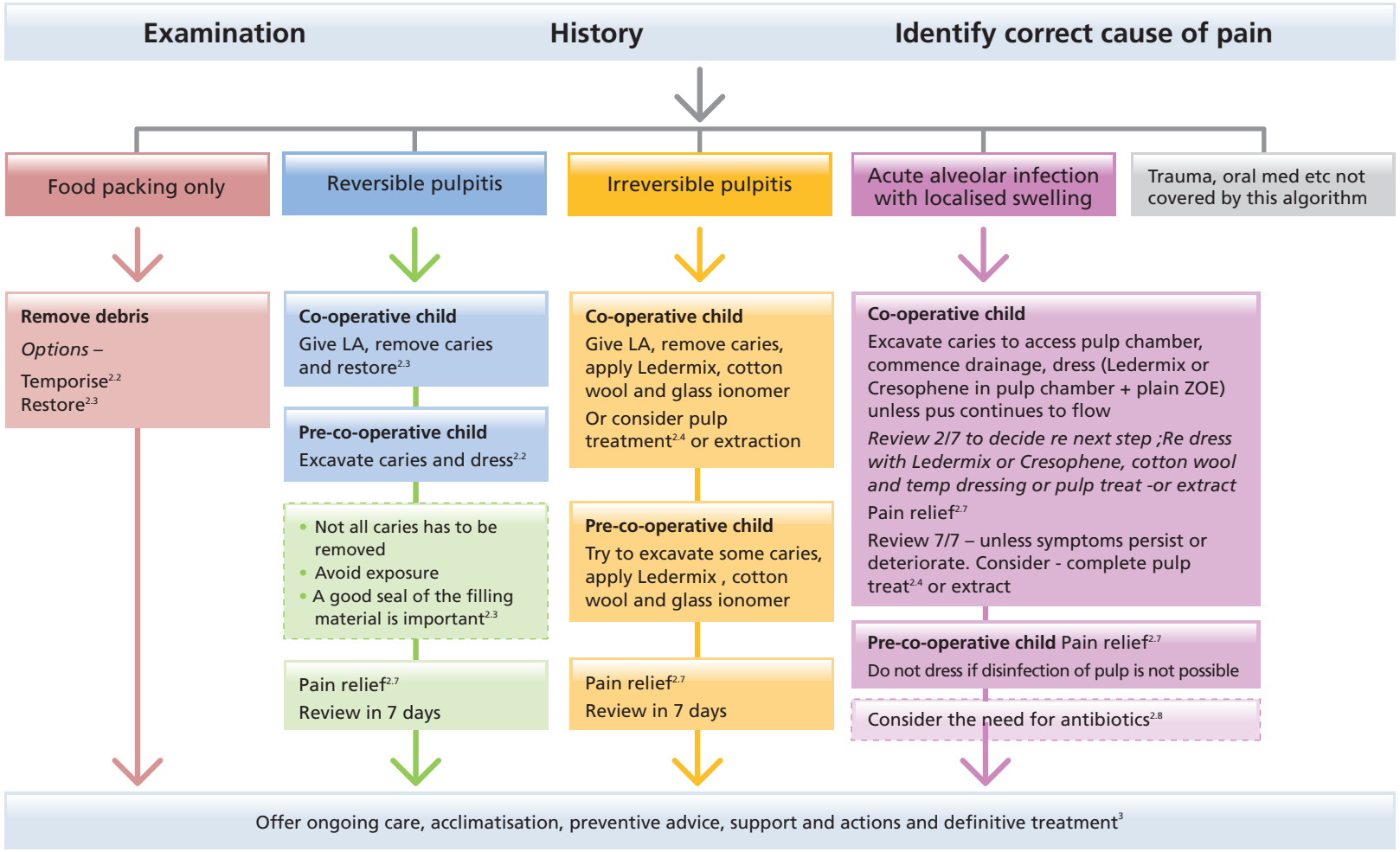
# Care pathway for a child aged 3 or 4 years with no symptoms (see appendices for detail)



# Care pathway for a child aged 3 or 4 years with pain or discomfort (see appendices for detail)



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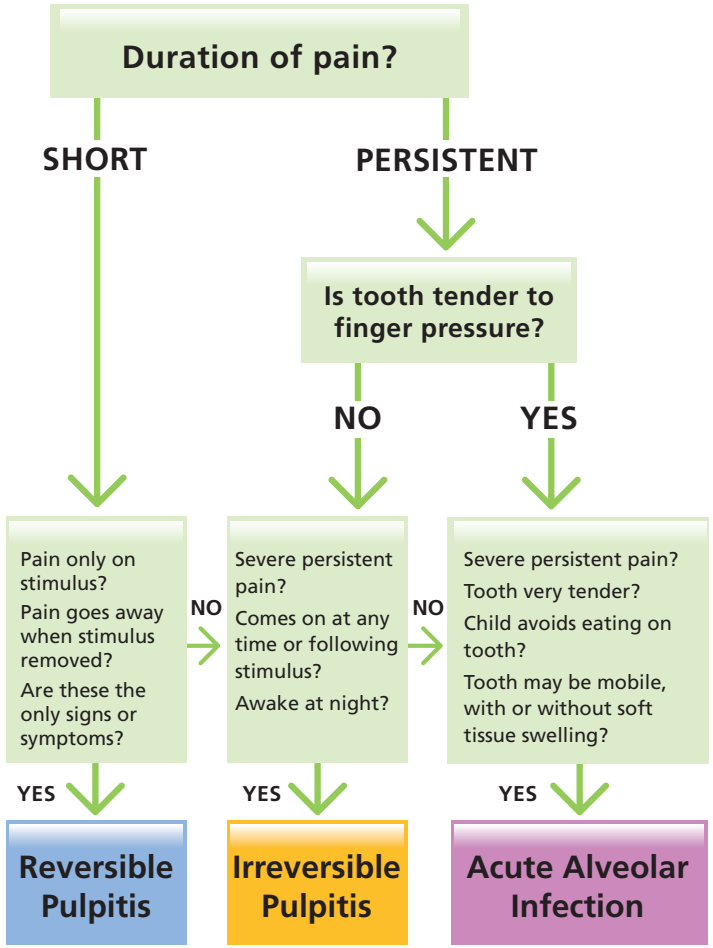
# Appendix 1

## Indications to assist with diagnosis of symptoms in young children



# Appendix 2

## Revision of terms and summary of clinical details

### 2.1 Behaviour management

- Several different behaviour management techniques have been described and are successfully used in dental practice to help young children accept dental treatment. They help to shape positive behaviour and a positive attitude towards dental health and dental experiences. They often alleviate fear and anxiety.
- A child centred approach with good communication skills, both verbal and non verbal, are required in order to develop a trusting relationship and good rapport between the dental professional and the child.
- Examples include relaxation techniques, voice control, modelling, enhanced control, 'tell, show, do' and positive reinforcement. No one method will be applicable in all situations, rather the appropriate management technique(s) should be chosen based on the individual child's requirements and the individual dentist's experience and expertise. A combination of techniques is frequently used.
- These, together with frequent and regular reassurance and praise will help the majority of children accept most treatments.

#### Acclimatisation

- This describes a process of introducing young children to dental care with the aim of increasing their confidence in the clinical environment, increasing their co-operation and instilling a positive reaction to receiving dental care in the long term. It often utilises a 'tell, show, do' approach and is backed up with a step by step approach and praise for good responses. Each stage of examination and treatment is introduced gradually and openly. As the child accepts the easier stages of treatment the next is explained, described and commenced. This may involve allowing the child to see stages demonstrated on a parent's hand or fingernail, then experienced on the child's hand, then chin before being used in the mouth. Children accept progress at varying rates.
- Praise for each new stage accepted reinforces the desired behaviour.

#### Pre-cooperative child

- This describes a child who is not yet sufficiently co-operative to allow a particular examination, preventive or interventive procedure. Careful behaviour management with acclimatisation techniques can usually convert pre-cooperative children to cooperative ones.

## 2.2 Stabilise

- This includes all measures aimed at achieving stable oral health in a situation where there is active dental disease. The procedures followed will contribute to encouraging an oral environment where caries activity is halted and periodontal problems are reversed and a healthy periodontium is maintained. The aim is to form a stable foundation from which to proceed with a definitive treatment plan.

  Procedures include:-

  - Diet advice tailored to the individual child
  - Toothbrushing advice to parents, including use of the correct toothpaste and appropriate toothbrush. Prioritise night time routine.
  - Fluoride varnish application
  - Making teeth self-cleansing where appropriate e.g. labial and approximal cavities in upper primary anterior teeth to encourage arrested caries
  - Removing soft caries and temporising cavities
- During a period of stabilisation, it may be necessary to address pain and sepsis and this will take priority.

### Temporise

- To place a temporary material in a tooth to help prevent pain or sepsis and, where necessary, restore form and function, until a definitive decision is made about the future of the tooth.
- Suitable materials include:-
  - Short term and easy to remove – zinc oxide eugenol eg Kalzinol
  - Longer term - Glass ionomer e.g. Fuji IX; reinforced zinc oxide eugenol e.g. IRM (Intermediate Restorative Material); polycarboxylate cement (E.g. Poly F).

## 2.3 Restore

- The decision to restore a primary tooth in a pre-school child depends upon many factors including history of caries activity, preventive home care and attendance pattern of the family, extent and activity of caries in the rest of the mouth and the level of co-operation that can be achieved. Restorations, if carried out correctly, and with regard to the condition of the pulp, can be a successful way of treating a young child and avoiding progression of caries and the need for extraction.
- Local anaesthetic allows for pain free caries removal. The use of a topical anaesthetic for sufficient time makes this easier to give.
- Options for restorative material in order of preference:
    - Resin modified glass ionomer E.g. GC Fuji II LC, GC Fuji VIII, 3M Photac Fil Quick, 3M Vitremer, Voco Ionolux
    - Compomer E.g. Dyract flow
    - Amalgam
- Conventional plain glass ionomer is not recommended as it has a high failure rate.
- See Appendix 3 and, for detail, Section 8 of Scottish Dental Clinical Effectiveness Programme – Dental Clinical Guidance on Prevention and Management of Dental Caries in Children. www.sdcep.org.uk/index.aspx?o=2332

### Hall Technique

- A simplified method of managing carious primary molars, particular those with multi-surface involvement.
- Correctly sized preformed metal (nickel-chrome) crowns are filled with glass ionomer luting cement and simply pushed onto the carious tooth with no local anaesthesia, caries removal or tooth preparation required. Sometimes separators are required to create space and ease fitting. The aim is to achieve a good coronal seal. The technique is less demanding of both children and the dental team when compared to conventional methods.
- See Appendix 4

## 2.4 Pulp treatment

- This involves the total removal of the coronal pulp tissue of a primary tooth that is inflamed or infected as a result of deep caries, and the maintenance of vital radicular pulp tissue.
- Where the pulp has been affected by the caries process it is unlikely that simple restoration without pulp treatment will be successful.
- A number of medicaments are available to use e.g. ferric sulphate. The crown is restored to ensure a good coronal seal, ideally with a preformed metal crown.
- Pulp treatment can be undertaken for vital or non-vital teeth. Where there are vital elements in an infected tooth it should be treated as if it were a vital tooth.
- Pulp treatment can resolve pain, remove sepsis, allow teeth to be retained as a temporary or long term measure, thus avoiding or delaying extraction and reducing the need for extraction in hospital or under sedation.
- See Appendix 6 for vital pulp treatment, Appendix 7 for non-vital pulp treatment.
- Pulp treated teeth should be monitored radiographically annually.
- Primary teeth with pulp polyps with no symptoms or sepsis can be left, but monitored, and the child provided with proactive preventive advice and care.

## 2.5 Radiographs

- Approximal caries is often difficult to diagnose by clinical examination alone. Bitewing radiographs are a useful addition to visual diagnosis, giving key information about the extent of carious lesions that is highly relevant for the formulation of a comprehensive treatment plan.
- Small films are available for use with young children and most young children accept bitewing radiography well.
- Apply acclimatisation techniques to achieve required levels of co-operation.

## 2.6 Triggers for referral

- Sepsis and pain are not, in themselves, triggers for referral for extraction. Both can often be resolved or controlled by local means. Even if restorations following local treatment are temporary this can 'buy time' until the child is older and more co-operative to accept definitive treatment.

### Indicators for referral for extraction of carious teeth under general anaesthesia (non-urgent):

- A child that is generally fit and healthy should be referred to a local provider. A child with a significant medical history may need to be referred to a specialist unit. Contact your CDS for advice or the specialist unit where the child receives their medical care.
- Consider local protocols regarding age and weight guidelines.
- A child in pain/ recurrent episodes of pain and/ or sepsis and all alternative treatment options have been considered or attempted and failed should be considered for referral.
- G.A. can be considered to be more likely where the child in pain:
    1. is pre-cooperative
    2. has multi quadrant extensive caries
    3. has multiple sites of pain and/ or sepsis
    4. has multiple recurrent episodes of pain and/ or sepsis
    5. is an irregular attender.

As a default position, once a child is undergoing general anaesthesia for extractions a radical approach is taken and all primary teeth with established caries are extracted. The over-riding principle applied here is the avoidance of repeat general anaesthetics. Parents should be made aware of the numbers of teeth that are likely to be extracted if the GA route is selected.

While children are awaiting extractions under GA their pain and sepsis should be managed by the referring clinician. Acclimatisation should be instigated, proactive prevention implemented and attempts should be made to instil a pattern of routine attendance for all children in the family.

### Indicators for URGENT referral for extraction of carious teeth under general anaesthetic:

- When there is swelling which extends to the eye, which is closing
- Swelling compromising the airway
- Despite antibiotics for 24 hours the swelling is still increasing in size
- Child has not taken any fluids for 24 hours

### Triggers for referral to Community Dental Services

- The majority of three and four year-old children will respond to behaviour management and dental care as outlined in the Good Practice Guidelines.
- In the presence of active disease, the measures described under 'stabilisation' will allow for the management of dental caries, whilst at the same time acclimatising the child to dental treatment and supporting the family with preventive advice.
- Some children are more able to cope with routine procedures and will accept treatment quite readily. However, for the less co-operative child, this minimum intervention and preventive-orientated approach will allow most children to progress to a stage where they can cope happily with the full range of dental treatment.
- Localised episodes of pain and sepsis can often be dealt with as they arise. A referral to the Community Dental Services might need to be considered if a child with pain or sepsis is clearly unco-operative for dental procedures, in spite of several attempts at acclimatisation. Children in this age group are not ideal candidates for inhalation sedation but community service dentists do have skills and expertise to deal with children with challenging behaviour. The GA referral guidelines give an indication of when this particular option might have to be considered.
- A referral might also be considered in cases of extensive caries where attempts at stabilisation are not successful and extra support and advice are required.
- Criteria for the acceptance of patients and available facilities vary from service to service and it is useful to liaise with your local service to clarify available options and referral routes. Ultimately, the aim would be to refer the child back to the General Dental Service for ongoing regular dental care with the rest of the family.
- Link to centralised referral system for Manchester, Trafford, Salford, Stockport, Tameside and Bolton: www.dental-referrals.org

## 2.7 Pain relief for young children

- Current guidance - best option is Ibuprofen unless the child has a history of asthma
- Alternatives are Sugar Free Calpol
- Or plain Sugar Free Paracetamol
- See BNF for dosage.
- Advice should be given about painkillers being taken regularly.
- In cases where Ibuprofen or Paracetamol alone is not effective, both Paracetamol and Ibuprofen can be given alternately (i.e. Ibuprofen can be taken first and then Paracetamol 2 hours later and so on, using the normal daily doses).

## 2.8 Antibiotics for three and four year olds

- Current guidance for indications:
    - systemic involvement with infection as indicated by a raised temperature and/or
    - spreading infection
    - cases where drainage cannot be achieved.  Such cases to have further care including pain relief and short interval review
- Current guidance for specific medication and dosage.  Prescribe sugar free
    - Amoxycillin – For child aged 1 to 5 years, 125 mg every 8 hours.  Can double the dose in severe infections. Oral suspension reconstitutes with water to 125 mg/5ML
    - Metronidazole – For child aged 3 to 7 years, 100 mg every 12 hours for 3 to 7 days. Tablets – only available in 200mg so need to be halved. Suspension – 200 mg/5mL – half a 5 mL spoon every 12 hours
    - Erythromycin – For child aged 2 to 8 years, 250 mg every 6 hours or 500 mg every 12 hours.  Can double the dose in severe infections. Capsules – 250 mg
    - Erythroped – Suspension SF, for reconstitution with water, 125 mg/mL (Suspension PI SF) or 500mg/mL (Suspension SF Forte)
- See BNF for details and to check dosage.

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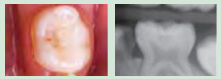
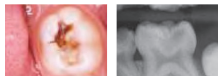
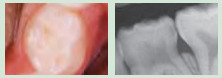
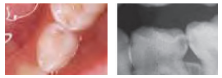
# Appendix 3

## Management of caries in primary teeth

Excerpt from Scottish Dental Clinical Effectiveness Programme guidance "Prevention and Management of Dental Caries in Children". Permission for reproduction kindly given.

### Table 1 Management Options for Carious Lesions in primary teeth

- For each type of lesion shown, when there are no clinical or radiographic signs of pulpal involvement, the possible treatment options are indicated. (Further details on each caries treatment technique are provided in Sections 8.1–8.5.)

| | | Partial caries removal and restoration | No caries removal, seal caries with fissure sealant | No caries removal, seal caries with Hall crown | No caries removal, provide prevention alone | No caries removal, make lesion self-cleansing and provide prevention | Extraction or review, with extraction if pain or sepsis develops |
|---|---|---|---|---|---|---|---|
| | Section 8.1 | Section 8.2 | Section 8.3 | Section 8.3 | Section 8.4 | Section 8.4 | Section 8.5 |
|  Occlusal, non-cavitated lesions | ✓ | ✓ | ✓ | | ✓* | | |
|  Occlusal, cavitated lesions | ✓ | ✓ | | ✓ | ✓* | ✓* | |
|  Approximal, early dentinal lesions | ✓ | ✓ | | ✓ | ✓* | | |
|  Approximal, advanced lesions | ✓ | ✓ | | ✓ | ✓* | ✓* | |
|  Anterior cavitated lesions | ✓ | ✓ | | | ✓ | | |
|  Grossly carious unrestorable tooth, without signs or symptoms of pain or sepsis | | | | | ✓ | | ✓ |

** due to a lack of supporting evidence, these approaches are only appropriate for these types of lesions if no alternative is feasible. Document the use of these approaches in the patient's record.*

# Appendix 4

## The Hall Technique

Excerpt from Scottish Dental Clinical Effectiveness Programme guidance "Prevention and Management of Dental Caries in Children". Permission for reproduction kindly given.

*The Hall Technique: caries in a lower E sealed in with a PMC*

### Hall Technique using preformed metal crowns

- This technique involves sealing caries into primary molars with a preformed metal crown (PMC). No local anaesthesia, tooth preparation or caries removal is used.
- Only an outline of the technique is given below. Before using it, refer to the Hall Technique User's Manual available at www.scottishdental.org/?record=31.
- Early detection of Class II lesions with radiographs before there is marginal ridge breakdown will facilitate their management with the Hall Technique, because PMCs can be more difficult to satisfactorily fit if the mesio-distal width has been reduced as a result of mesial migration of the tooth behind.

### Outline of Technique

- Ensure the child is sitting upright.
- Assess whether separators are required.
    - Placing separators requires a second visit 3-5 days later to remove them and to fit the crown, but some clinicians find they ease the fitting of a Hall crown.
- If there is any possibility of the crown endangering the airway during fitting, make a 'handle' for it with a strip of sticking plaster, or ensure the airway is protected with gauze.
- Select the correct size of PMC.
    - Do not seat the crown through contacts prior to cementation, as it might be difficult to remove.
- Ensure the PMC is well filled with a glass ionomer luting cement.
- Seat the PMC over tooth.
    - Seating can be assisted by the child biting on the crown, or on a cotton wool roll placed on the crown.
- Remove excess cement and clear the contacts using floss.
- Ensure excess cement does not flood over the tongue because it has a very bitter taste that children dislike.

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# Appendix 5

## Making carious teeth self-cleansing

Excerpt from Scottish Dental Clinical Effectiveness Programme guidance "Prevention and Management of Dental Caries in Children". Permission for reproduction kindly given.

### Technique for making a lesion self-cleansing

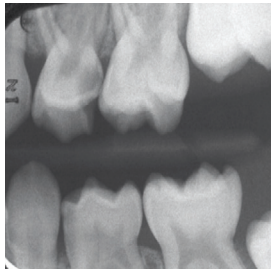
- As only enamel and carious dentine are removed, the use of a local anaesthetic should not be necessary unless subgingival tooth preparation is required.
- Using a high-speed handpiece, or hand instruments, remove undermined enamel adjacent to the carious lesion making the surface of the lesion accessible to toothbrushing.
- The resulting cavity form will vary in shape depending on the lesion. It might be opening out of an occlusal lesion or result in a 'slice preparation', as shown in these photographs.
- Apply fluoride varnish.
- Inform the child and parent/carer of the approach taken and record details in the patient's notes.

# Appendix 6

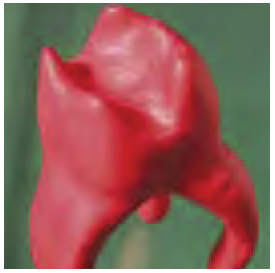
## Pulp treatment for vital teeth

Excerpt from Scottish Dental Clinical Effectiveness Programme guidance "Prevention and Management of Dental Caries in Children". Permission for reproduction kindly given.

*Clinical view*



*Radiographic view*



*Pulp morphology of upper D*

*Perforated pulp chamber floor*

*Symptomatic upper left D in a 5-year-old which requires pulp therapy*

- Note from the radiograph and model:
  - how much higher the pulp horns are relative to the central part of the pulp chamber roof in primary molars;
  - how divergent the root canals are when leaving the pulp chamber.
- Care is needed to avoid perforating the floor of the pulp chamber, which is very thin in primary molars (photo on right).
- The choice of pulp therapy technique will depend on whether the pulp is found to be vital or non-vital once accessed..

### 9.1.1 Vital Pulp Therapy

Example shown: pulp therapy of a symptomatic upper left D in a 5 year old

- Give local anaesthetic.
- Cut a large access cavity using a high speed handpiece, ensuring the entire roof of the chamber is cleared.
- Remove the contents of the pulp chamber using a slow-speed handpiece, or sharp excavator.



- Thoroughly irrigate the pulp chamber with water from the 3-in-1 syringe.
    - Avoid the use of compressed air, which could cause surgical emphysema.
- Identify entrances to root canals, which will be in the corners of the pulp chamber.
    - Maxillary primary molars have three canals (two buccal and one palatal).
    - Mandibular primary molars have just two canals (mesial and distal).
- If still bleeding, arrest haemorrhage by placing a pledget of cotton woo dampened in ferric sulphate into the pulp chamber, place another pledget on top, and then have the child bite on a cotton wool roll placed over the tooth for ~2 minutes.
    - Use of formocresol is not recommended due to concerns about its safety[7].
- If haemorrhage cannot be arrested, consider sealing in ferric sulphate in cotton wool until the next visit.
- Remove the cotton wool and place zinc oxide-eugenol cement in the pulp chamber. Alternatively, setting calcium hydroxide cement or MTA may first be placed on pulp stumps and the floor of the pulp chamber[28].
- Fill the cavity with zinc oxide-eugenol cement, then place a PMC following a conventional preparation (see Section 8.1) at the same appointment.
    - There is evidence that placing a PMC at the same appointment as the pulpotomy improves the prognosis of the tooth[29-33].

- Advise the parent/carer that the tooth might be a little uncomfortable for the child when the anaesthetic wears off, and that the child may need analgesia.
- Conduct a radiographc review of pulpotomised primary molars annually.

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# Appendix 7

## Pulp treatment for non-vital teeth

Excerpt from Scottish Dental Clinical Effectiveness Programme guidance "Prevention and Management of Dental Caries in Children". Permission for reproduction kindly given.

### 9.1.2 Non-vital Pulp Therapy

Example shown: pulp therapy of a lower E in a 6-year-old.

- Give local anaesthetic.
- Cut a large access cavity using a high speed handpiece, ensuring the entire roof of the chamber is cleared.
- Remove the contents of the pulp chamber using a slow-speed handpiece, or sharp excavator, and remove as much necrotic tissue as is possible from the entrance to the root canals, using a straight probe.
- Thoroughly irrigate the pulp chamber with water from the 3-in-1 syringe.
    - Avoid the use of compressed air, which could cause surgical emphysema.
    - Consider gentle irrigation of root canals using local anaesthetic solution.
- Dry pulp chamber with cotton wool. Place calcium hydroxide paste in coronal section of canals, using either an applicator, or a probe. Alternatively, use a mix of plain zinc oxide-eugenol.

- Back fill with zinc oxide-eugenol paste, applied with firm pressure, then at the same appointment, place a conventional PMC.
- If the tooth remains symptomatic, or a sinus is still present after three months, extract the tooth.

# Appendix 8

## Acknowledgements, further information and links

- Textbook – Paediatric Dentistry, 4th Edition. Edited by R Welbury, M S Duggal and MT Hosey. http://ukcatalogue.oup.com/product/9780199574919.do. See Chapter Seven by Stephen Fayle, 'Treatment of dental caries in the pre-school child'.
- British Society of Paediatric Dentistry (BSPD) care pathway guidelines. Guidelines for pulp therapy can be found from: http://www.rcseng.ac.uk/fds/publications-clinical-guidelines/clinical_guidelines/documents/pulptherapy.pdf
- Scottish Dental Clinical Effectiveness Programme – Dental Clinical Guidance on Prevention and Management of Dental Caries in Children. http://www.sdcep.org.uk/index.aspx?o=2332
- Hall technique User's manual www.scottishdental.org/?record=31
- Delivering Better Oral Health. www.dh.gov.uk

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Greater Manchester

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From April 2013

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