Synopsis

In support of the MDA’s free first visit, this lecture will examine the myriad of over-the-counter dental products available to pediatric dental patients. The information provided will equip dentists, hygienists, and assistants with the knowledge they need to assist parents and caregivers in choosing the best products for their child.

OTC Items Reviewed

- Teething
- Soothers
- Toothbrushes
- Toothpaste
- Floss
- Mouthrinses

Product Specific Info

- Product Trivia & History
- Reasons & Evidence for Use
- Product Anatomy or Ingredients
- Professional & Organizational Endorsements
- Overview of available OTC product
- Advice for Parents
- Product Dangers?
- References
Teething

Trivia & History

Archaeology says it's a 5000+ year-old problem!

The Registrar General for Wales & England blamed it for 5016 deaths in 1839. Only 1600 deaths were attributed to teething in 1910.

“Adam and Eve had many advantages but the principal one was that they avoided teething.”
- Mark Twain

Reasons & Evidence for Use

- Teething is associated with increased biting/chewing, irritability, mild fever, decreased appetite for food liquids, facial rash.
- Teething may be associated with drooling, sleep disturbances, diarrhea, runny nose.
- Teething is not associated with body rashes, convulsions, high fevers.

Anatomy & Ingredients

- Systemic
  - Acetaminophen
  - Ibuprofen
- Topical
  - Benzocaine (7.5% or 10%)
  - Various toys, rings, ...
Professional & Organizational Endorsements

- Canadian Dental Association and the Canadian Pediatric Society recommend oral analgesics but topical anesthetics are not recommended.
- Non-pharmacological management (rings/toys) are generally approved provided there is no risk for aspiration/asphyxiation.

Overview of Available OTC Products

- **Systemic:** Acetaminophen (10 mg/kg/dose q4-6h) & Ibuprofen (5-10 mg/kg/dose q6-8h)
- **Topical:** Orajel & Anbesol Benzocaine Gel come in 7.5% and 10% concentrations in children and in a variety of flavors (Cherry, grape, Bubble gum) – not to be used more than 4x/day or in infants <6 mos

Overview of Available OTC Products

- **Teething Toys:**
  - Avoid any toy that has parts that may come off – aspiration risk
- **Teething Rings:**
  - Avoid gel-filled products after the first teeth erupt. Solid rings are better.
  - A cold/frozen washcloth works too!

Overview of Available OTC Products

- **Natural Remedies**
  - **Chamomile**
  - **Clove Oil (diluted)**
  - **Other**
Advice for Parents

Excerpted from www.fpnotebook.com/DEN/Peds/Tthng.htm

1. Distract with comforting (rocking or cuddling)
2. Massage child's gums with a clean finger
3. Ice Rings
4. Clean Frozen wash cloth
5. Consider systemic Analgesic
   1. Tylenol
   2. Motrin
6. Avoid fluid-filled teething rings after tooth eruption
7. Avoid teething on potential Choke Hazards
   1. Frozen bananas
   2. Frozen Popsicles
8. Avoid Orojel (topical anesthetic)
   1. Methemoglobinemia may occur with overdose

Product Dangers?

- Systemic Analgesics: Risk of overdose
- Topical Anaesthetics
  - Methemoglobinemia, allergic reactions...
  - Risk of choking if swallowed
- Teething Rings & Toys
  - Asphyxiation/aspiration if small parts

Suggested Reading

Trivia & History

- The “modern” pacifier was patented in the USA in 1900.
- Known by 100+ names: pacifiers, soothers, dummy, nuk, binky...
- Last year a nurse faced charges in the death of a 9-month old after tapeing a pacifier in his mouth (Associated Press. May 6, 2009)

Reasons & Evidence for Use

- Studies have shown pacifiers decrease the risk of SIDS and have a mild analgesic effect.
- Negative aspects of pacifier use are an increased risk for otitis media, problems with breast feeding, dental malocclusions.

Anatomy & Ingredients

- Teat
- Shield
- Handle
- May be made out of silicone, latex, plastic
- Regulated in Canada by the Hazardous Products (Pacifiers) Regulations (C.R.C., c. 930)

Professional & Organizational Endorsements

- Canadian Dental Association and the Canadian Pediatric Society recommend the use of pacifiers after one month of age to decrease its impact on breast-feeding.
- Pacifiers use should be kept to a minimum and ceased by age 3 to decrease the risk of developing a dental malocclusion.
Overview of Available OTC Products

- Multiple products exist all with patented shapes, sizes, different handles, colours, etc.
- No one soother is better than another, despite names that include words like “orthodontic”.

Advice for Parents

- Use what works, the type of pacifier doesn’t make a difference (e.g. orthodontic vs other).
- Never use any sweeteners on the pacifier.
- Aim to stop using a pacifier between the ages of 2-3 years.
- Always keep pacifier use to a minimum.

Product Dangers?

- Pacifiers should be discarded if the teat becomes worn/torn. Failure to do so can increase the risk that the teat will become disconnected from the shield and aspirated by the child.

Suggested Reading

Toothbrushes

**Trivia & History**

- Evolution from a chewing stick to the ‘modern’ toothbrush is attributed to the Chinese. It found its way to Europe in the 1400s.
- The first electric toothbrush was invented in Switzerland in 1939. Although it wasn’t popularized until 1961 when General Electric introduced a cordless model.

**Reasons & Evidence for Use**

- Several studies support the mechanical removal/disruption of plaque as beneficial in decreasing caries risk and improving gingival health.
- Studies have shown that certain powered toothbrushes are more effective than manual toothbrushes when properly used.

**Anatomy & Ingredients**

- From the Egyptian and Babylonian times to today, toothbrush anatomy consists of a handle and a brush. That said, do an internet search on toothbrush patents and you’ll find a hundred more parts!
- Nylon bristles were invented in 1938 and ushered in the modern toothbrush. The softness of a toothbrush is determined by the thickness and length of the bristles.
Professional & Organizational Endorsements

- Canadian Dental Association Seal of Recognition
- American Dental Association Seal of Approval
  - [http://www.ada.org/sealprogramproducts.aspx](http://www.ada.org/sealprogramproducts.aspx)

Overview of Available OTC Products

- Too many to list, but consider...
  - Power vs. manual
  - Handle size, shape, length
  - Hardness of bristles
  - Head shape & size
  - Attractiveness to the child using it!

Advice for Parents

- The type of toothbrush matters less than how you are using it
- Cochrane review states that certain power brushes are more effective (if used properly)
- Buy a soft or ultra-soft brush with a head that is age/size appropriate for the child
- Err on the side of changing a toothbrush more frequently rather than less
- If the child is old enough remember to inquire what they would like

Product Dangers?

- Children shouldn’t run/play with toothbrushes in their mouth. Sounds obvious but...
Suggested Reading


Trivia & History

- The use of toothpastes dates back to 5000 B.C.
- Prior to the 1850’s toothpastes were actually tooth-powders
- The tube for striped-toothpaste was patented in the USA in 1957. Multi-stripes were patented in 1990.

Reasons & Evidence for Use

- The literature strongly supports the benefits of fluoride containing toothpastes – see Suggested Reading for Cochrane Reviews
- The prevented fraction using a 1000 ppm toothpaste is 24%
- Toothpastes with 550 ppm or less were not shown to be more effective than a placebo
Product Ingredients

Numerous ingredients are used in modern toothpaste, each fulfilling a specific role:
- Abrasives, thickeners, detergents, flavour, colour, anti-bacterial, etc...
- Specifics but each ingredient are readily available with an internet search.

At the end of the day, only a few of these ingredients are medicinal, the majority just make the medicinal parts palatable!

Professional & Organizational Endorsements

Canadian Dental Association says use fluoride toothpaste at any age. Use a small smear for infants/toddlers.

Health Canada says no toothpaste for children under age 3.

Professional & Organizational Endorsements

Canadian Dental Association Seal of Recognition

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Overview of Available OTC Products

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Advice for Parents

- Fluoride toothpaste is acceptable for children at any age but only a light smear under 2 and a small-pea size after that.
- Toothpaste containing < 1000 ppm has not been shown to be more effective than a placebo.
- The risk of fluorosis diminishes after age 7 because the crowns of the permanent teeth have formed.
- Keep fluoridated toothpastes away from children. Fluoride toxicity is a real risk.

Product Dangers?

- Fluoride toxicity can start at 5 mg/kg. A 1000 ppm toothpaste has 1 mg/mL. Know the math, a parent might call you first.
- There are 22,000+ calls per year to Poison Control Centers in the USA and ~400 hospital visits due to fluoride toothpaste ingestion.

Acute Fluoride Toxicity

- Symptoms of overdose—GI, CNS; death in 4 hr
- Probably toxic dose 5 mg F/kg
- Certainly lethal dose 16-32 mg F/kg (Hodge and Smith) 15 mg F/kg (Whitford)
- Treatment — Induce vomiting or bind F
  —<8 mg F/kg: milk, observe >6 hr, refer if symptoms develop
  —≥8 mg F/kg: syrup of ipecac, followed by milk; refer immediately
  —unknown dose: asymptomatic: treat as <8 mg F/kg symptomatic: give milk, refer immediately
  —poison control center: gastric lavage, IV calcium gluconate

Suggested Reading

Floss

Trivia & History

- Floss was invented by a Louisiana dentist in 1815 and was made out of silk.
- Commercial production of silk floss began in 1882.
- In 1994, an inmate escaped a West Virginia jail by braiding waxed floss into a rope the diameter of a phone cord.

Reasons & Evidence for Use

A PubMed search for articles showing the benefits of flossing on gingivitis and plaque reduction revealed numerous studies supporting the efficacy of flossing.

This search was done using the following limits: Randomized Controlled Trial, Review, English, All Child: 0-18 years.

Ingredients

- Generally made from nylon or plastic monofilaments
- Flavouring agent (e.g. mint)
- Waxed vs. unwaxed
Professional & Organizational Endorsements

- Canadian Dental Association Seal of Recognition
- American Dental Association Seal of Approval
  - [http://www.ada.org/sealprogramproducts.aspx](http://www.ada.org/sealprogramproducts.aspx)

Overview of Available OTC Products

- Floss holders / sticks are generally recommended for children as it is easier for parents to manipulate the floss into the required 'C' shape versus having it wrapped around their fingers
- Children appreciate the shapes, colours, logos of the floss sticks
- Personally, I prefer the larger handles that are angled rather than straight...

Advice for Parents

- Flossing is a valuable habit to develop but not at the expense of good brushing!
- Having the child lay down when you are flossing their teeth is easier than standing up
- Flossing done poorly is no better than not flossing at all. Teach parents how to do it right.

Product Dangers?

- Other than the possibility the floss rope might break when escaping from prison, ingestion is also a possibility...

Suggested Reading


Trivia & History

Hippocrates recommended a mouthrinse made of salt, alum, and vinegar.

Some mouthrinses contain 27% alcohol.

Poison control centers in the USA took 6000+ calls about fluoride rinses and 10,000+ about alcohol-containing rinses in 2008.

Reasons & Evidence for Use

Cochrane review states that fluoride containing mouthrinses can reduce caries risk by 26% (prevented fraction).

Chlorhexidine, cetylpyridinium chloride, xylitol and several other materials have demonstrated anti-bacterial properties.
Ingredients

- Common medicinal ingredients
  - Fluoride
  - Cetylpyridinium chloride
  - Chlorhexidine
  - Triclosan
  - Essential Oils
  - Zinc Chloride
  - Other...

Professional & Organizational Endorsements

- Canadian Dental Association Seal of Recognition
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Overview of Available OTC Products

- Fluoride mouthrinses
  - Fluorinse, Smart Rinse...
- Anti-bacterial mouthrinses
  - Peridex...
- Plaque disclosing mouthrinses
  - Agent Cool Blue, Inspector Hector...

Advice for Parents

- Never use with a child who can not expectorate
- Never use alcohol-containing mouthrinses, if they are in the house keep them out of the reach of children
- Plaque-disclosing rinses can stain... be careful!
- Fluoride rinses should be considered in children who are in active orthodontic treatment or at high risk for new carious lesions
Product Dangers?

- Fluoride toxicity
- Ethanol toxicity
- Increased cancer risk with alcohol-containing rinses (still being debated)

Suggested Reading


Conclusions

With an ever increasing number of oral health products claiming to do more and more for a person’s oral health, it is important for each member of the dental team to stay aware of what is available over-the-counter and what the risks & benefits of using these products are.