Pediatric Dentistry Fact Sheet

SECTION I: FACT SHEET on DECAY

1. WHAT CAUSES DECAY?
    - In 1890, Dr. Willoughby Miller proposed the acid theory of tooth decay. His theory states that decay occurs only in the mouth when bacteria, sugar and teeth come into contact. In other words, it's a local phenomenon. Simply put, the bacteria consume sugar which is broken down into acid. The acid then initiates decay which progresses into a "cavity."
    - The acid theory of tooth decay has never been proven. Miller himself admitted that his theory was too simplistic to explain the complexity of decay. Still it continues to be accepted by dentistry today.
    - Studies have shown that soft drinks, fruit, GERD and micro-organisms can cause erosion of the tooth's protective enamel layer. (Grobler et all, 1999; Lazarchik and Frazier 2009; Bartlett, 2009)
    - Further studies have revealed that although bacteria and soft drinks may initiate decay, they cannot break down collagen or demineralize dentin to create a cavity. (Larmas, 2003)
    - The question remains: Does the local theory of tooth decay, which only involves the mouth, answer all our questions about decay?
2. IS DECAY A SYSTEMIC DISEASE?

For years, researchers have pointed to a systemic theory of decay. In other words, the problem originates in the body and manifests in the mouth. Here is some of their reasoning:

- If Dr. Miller's acid theory were true, everyone would be susceptible to decay with any exposure to sugars.
- Decay appears to be complicated. It reveals definite local factors with underlying systemic factors. The systemic factors appear to be more important.
- More recently, Dr. Leonora and Dr. Steinman discovered that the dentin of teeth is filled with fluid which nourishes the tooth and imparts decay resistance. They also were able to show that sugar consumption causes the fluid literally to stop, resulting in decay susceptibility.
- In follow-up studies, the same doctors discovered that an endocrine (hormonal) basis of tooth mineralization and decay resistance or susceptibility was based upon a hypothalamus-parotid gland-tooth axis.
- Additional studies have shown other systemic factors, such as blood calcium and phosphate levels, impact decay susceptibility. (Page and Abrams, 2001)
- The underlying concept is simple. Before decay begins, systemic factors must first affect the developing tooth. The result is dentin hypomineralization (insufficient mineralization), making the tooth susceptible to decay. It is now that nutritional factors and oral hygiene can either prevent or encourage the development of decay. It's important to note here that perfect diet and perfect oral hygiene, with

underlying hypomineralization, can still result in decay. On the other hand, proper mineralization, even with poor diet and poor oral hygiene, can still provide decay resistance.

1. CAN WE PREVENT DECAY NATURALLY?

Many dentists and researchers feel that finding the true cause of decay is academic because suppressive therapies are somewhat successful. But is that enough?

- Decay is only one of multiple effects from systemic hypomineralization. But decay is also the body's only means of warning us of a deeper problem. If we suppress it, aren't we allowing the process to go undiagnosed and untreated? That same process may turn up later as an untreatable medical or dental illness.
- Many holistic dentists treat decay by nutritional means only. The research by Dr. Weston Price on indigenous people showed that a nutrient dense diet with no processed foods is a good preventive for decay resistance. However, once crucial systemic factors or sufficient mineralization are turned off, proper diet alone will not turn them on. It's important to undergo a systemic assessment in order to reset the system.