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| **Name:** |
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| **Group:** |
| 8A-3 |
| **Pathology Question:** |
| How do caries develop? |
| **Report:** |
| Dental caries is the progressive loss of the apatite composition of the enamel and dentin, or cementum and dentin. This loss of mineral composition is complex and multifactorial. For dental caries to occur, many different components are necessary; tooth structure, acidogenic and aciduric bacteria, and fermentable carbohydrates. Acidogenic bacteria produce acid in the presence of fermentable carbohydrates, creating a solution that dissolves the tooth structure. This process is dynamic and reversible in early stages. Clinically, caries are best dectected visually, however, interproximal caries can be more challengeing to detect. Radiographs are especially useful for detecting interproximal caries, and the progression can appear as a “SAMI the fish” pattern. Incipient caries is less than halfway through the enamel. Moderate caries extends more than halfway through the enamel but not involving the DEJ. Advanced caries is at or through the DEJ, spreads along the DEJ, and extends nor more than halfway through the dentin to the pulp. Severe caries extends more than halfway through the enamel and dentin to the pulp.  There are several different risk factors for caries development, some of the most notable for children being diet, oral hygine, fluoride use, having a dental home, socioeconomic status, and parental oral education. Those who are at higher risk often present with a high sugar diet, low oral hygine, little to no fluoride use, not having a dental home, low socioeconomic status, and low parental oral education. Other characteristics that place patients into the high risk category include teeth lost to caries under 6 years old or in the last 36 months if older than 6, chemo/radiation, caries experience of immediate family, special care needs, visually and radigraphically evident caries in the last 24 months whether cavitated or not, and severe dry mouth. Many of these risk factors can be reasonably alleviated by educating patients and instructing them on proper dieting and oral hygiene. |
| **References:** |
| Bryan, L. Caries Risk Assessment and Management [PDF document]. Retrieved from lecture notes website.  Koenig, L. Radiographic Interpretation of Caries [PDF document]. Retrieved from lecture notes website.  Anil, Sukumaran, and Pradeep S Anand. “Early Childhood Caries: Prevalence, Risk Factors, and Prevention.” *Frontiers in Pediatrics*, Frontiers Media S.A., 18 July 2017, www.ncbi.nlm.nih.gov/pmc/articles/PMC5514393/.  *Caries Risk Assessment and Management*, American Dental Association, 2018, www.ada.org/en/member-center/oral-health-topics/caries-risk-assessment-and-management. |