



## Odontology Section - 2016

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### G16 Standards of Dental Developmental Stages

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After attending this presentation, attendees will: (1) survey currently defined tooth development staging criteria and identify similarities and differences as a first step in defining standardized age estimation staging metrics; (2) determine whether existing staging scheme definitions are adequately defined; and, (3) propose enhanced definitions of existing stages to facilitate inter-observer reliability.

This presentation will impact the forensic science community by setting the foundation for unambiguously defining the stage of dental development leading to a standardization of methodology to aid in intra-operator and inter-operator calibration.

Chronological age is a major criterion that determines an individual's eligibility for rights, privileges, and legal responsibilities throughout life. These determinations are complicated when an individual lacks birth documentation. For children, adolescents, and young adults, estimation of their chronological age based on dental, skeletal, somatic, and psychological development can provide adjunct data for decision-making in forensic cases. For living individuals seeking asylum, undergoing adoptions, or progressing through the legal system, the probability of having reached the age of majority is an important criterion for decision-makers. For unidentified decedents, age-at-death estimates can be crucial in the formation of a descriptive biological profile, can provide data to narrow antemortem record searches, and can provide adjunct data for identification.

Several methods are used for age estimation in subadults based on tooth formation. The methods utilize different staging schemes to document the development of crowns and roots of primary and permanent teeth, resorption of primary tooth roots, and eruption of teeth. The methods used in forensic cases involving children, adolescents, and young adults require staging of dentition formation. The number of stages and their definitions vary according to the method. Some staging schemes are described in great detail, whereas others are somewhat ambiguous and subject to reader interpretation. Agreement among observers and reproducibility are essential to verify method reliability. Variations in staging schemes can be challenging for forensic personnel who must be familiar with multiple methods in order to provide accurate age estimations. These variations pose even greater challenges for training new forensic odontologists and technicians.

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#### **Tooth Development, Standards, Dental Age**