



## OSAC Research Needs Assessment Form

**Title of research need:** Specific Population Studies in Dental Age Assessment

**Keywords:** Dental development, chronological age, physiological age, biological age, genetics, ethnicity, ancestry

**Submitting subcommittee(s):** Odontology **Date Approved:** 8/23/2016

*(If SAC review identifies additional subcommittees, add them to the box above.)*

### Background information:

#### 1. Description of research need:

Rates of dental development vary among individuals, and population groups. These groups are often described in terms of genetics (ethnicity, ancestry, gender) and extrinsic factors (geographic origin). Intrinsic factors, such as disease states and nutritional status have been considered as well. Studies have shown that population-specific data provides for a more accurate assessment of dental age.

For consideration: evaluation of dental age assessment methods for individuals with other genetic conditions that can include, but not be limited to: physiologic growth abnormalities, and congenitally missing teeth.

#### 2. Key bibliographic references relating to this research need:

- \*AlQahtani SJ, (2008). Atlas of tooth development and eruption. Barts and the London School of Medicine and Dentistry. London, Queen Mary University of London. MCLinDent.
- \*Chaillet N, Nystrom M, Demirjian A, Comparison of Dental Maturity in Children of Different Ethnic Origins: International Maturity Curves for Clinicians. J Forensic Sci, Sept 2005 Vol. 50, No. 5, pp. 1164-1174.
- \*Harris EF, Barcrowft BD, Haydar S, Haydar B. Delayed tooth formation in low birthweight African-American children. Pediatric Dentistry 1993 Jan-Feb;15(1):30-5
- \*Smith BH, "Standards of Human Tooth Formation and Dental Age Assessment" in Advances in Dental Anthropology, pp. 143-168, 1991 Wiley-Liss, Inc.
- \*Solheim T, Vonen A, Dental age estimation, quality assurance and age estimation of asylum seekers in Norway. Forensic Sci Intl, 15 May 2006.
- \*Office of the United Nations High Commissioner for Refugees, Geneva. Guidelines on Policies and Procedures in Dealing with Unaccompanied Children Seeking Asylum. February, 1997, p. 8.

#### 3a. In what ways would the research results improve current laboratory capabilities?

Dental age assessment involves comparison of an individual to a standard reference population commonly described by age, gender, ethnicity, and geographic origin. Unknown are the individual's chronological age, and the individual's rate of dental development. Ethnicity or ancestry is an analog for the genetic factors governing rate of development. Accuracy of dental age assessment may be improved when the individual is compared to a reference population that is more similar to the individual as population-specific data becomes available for comparison.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

It should improve our understanding of the role of population-specific data in dental age assessment, as well as provide a basis for guidelines and standards in dental age estimation.

3c. In what ways would the research results improve services to the criminal justice system?

Dental age assessment is an estimation of the chronological age of an individual for whom birth records are unavailable. This age estimate can be a data point to assist with the decision-making process associated with adjudication of a living individual in the criminal justice system. Dental age assessment can serve to describe a deceased individual in the identification process.

4. Status assessment (I, II, III, or IV):

I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	<b>I</b>	<b>III</b>
Existing current research is being conducted	<b>II</b>	<b>IV</b>

*This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.*

Subcommittee

Approval date:

*(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)*

SAC

1. Does the SAC agree with the research need? Yes  No

2. Does the SAC agree with the status assessment? Yes  No

*If no, what is the status assessment of the SAC:*

Approval date:

*(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)*