AuSFO Inc.
Recommended Guidelines for
Age Estimation

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Definition:
An age estimate is the chronological age range of an individual determined from the analysis of dental, skeletal and other physical characteristics and compared to relevant standards developed from individuals of known age.

Principles:
The scientific assessment of age is based on the recognition of certain biological changes known to take place at certain stages during growth and development and throughout life. These changes occur gradually over periods of time which may vary significantly according to ethnicity, sex, genetic background, geographic location, socio-economic status and lifestyle, diet, condition of health and medical treatment. Biological age therefore cannot be expressed in precise terms of chronological age, but at best, within an age range derived from population studies over a significant number of people. The range is expressed with a confidence interval of 95% (i.e. a group of 5% of individuals will fall outside of this range due to genetic and/or environmental factors, but it is not possible to say if a particular individual belongs within that 5% group).

The age range usually is less during early life and childhood when development and growth occur more rapidly and dramatically. Following maturation physiological changes such as pulp chamber size, cementum deposition, apical translucency and resorption may occur. The only other significant oral changes that occur are those produced by environmental agencies, diet and lifestyle, and manifest externally as visible tooth wear and disease. In such cases assessments can only be made over wider age ranges.

Use:
An age estimate may be required for the following situations:

Living	Deceased
Refugees and immigrants	Individual Identification
Individual Identification	Disaster Victim Identification
Adoption	Biological profiling
Missing persons	Differentiation of siblings
Identity theft	Missing persons
Amnesia	
Fraud	

Age Categories:
Where an age category is referred to, the following definitions apply.

Category:	Definition:
Prenatal	in utero
Infant	0 -<2 yrs
Child	2-12 yrs
Adolescent	13 -18 yrs
Adult	>18 yrs

Materials:
Biological material, photographs, radiographs, CT scans. Where possible a history, including ethnicity, sex and medical history, should be obtained.

Analysis of Materials:

Analysis should use a method appropriate to the available material. Where possible multiple methods should be used. Examples given below are not prescriptive. Where possible contemporary Australian data should be used.

Methods & Data Sets:

Category	Methods	Current available dataset	Contemporary Australian dataset in progress
Infant (0-2)	Moorrees, Fanning & Hunt	MFH (USA 1963)	Graham/Hill
	Pictorial	Taylor & Blenkin (Aust 2010)	
Child (3-12)	MFH	MFH (USA 1963)	Graham
	Demirjian	Blenkin (tooth) (Aust 2005)	
	Pictorial	Taylor & Blenkin (Aust 2010)	
	Greulich &Pye (hand/wrist)	G&P (USA 1950)	Blenkin (h/w)
Adolescent (13-18)	Demirjian	Blenkin (tooth) (Aust 2005)	
	Pictorial	Taylor & Blenkin (Aust 2010)	
	Bassed	-	Bassed
	G&P (hand/wrist)	G&P (USA 1950)	Blenkin (h/w)
Adult (>18)	Bassed	-	Bassed
	Pictorial	Taylor & Blenkin (Aust)	
	Gustafson & Koch	G&K (Scan 1974)	
	Bang and Ramm	(Scan 1970)	
	Solheim	(Scan 1993)	
	Kvaal	(Scan 1995)	

References:
A comprehensive reference list is available from AuSFO website.

1. Methods
2. Australian datasets
3. Other population datasets

Reports:
Reports should follow instructions for expert witnesses in the local jurisdiction and include:

Name
Qualification
Training
Examination requested by…and why
Time, date and place of examination
Chain of evidence – what material
Description of method
Rationale for method selection
Limitations of method
Dataset used in estimate
Method of imaging used
Age estimate
References
Appendix of glossary of terminology

Training Packages:
Under development