

3.2. Imaging-based methods for age assessments

Case law shows that Member States have frequently relied on methods that assess skeletal and dental development to determine age. Although some imaging-based methods, such as magnetic resonance imaging (MRI) and ultrasound, do not involve ionising radiation, the most frequently used techniques are X-rays of the hand and wrist, computed tomography (CT) of the clavicles and orthopantomography (panoramic dental X-rays), all of which use radiation. These methods are typically interpreted by comparison with reference standards, such as the G&P Atlas or the TW3 scoring system. These standards were designed to assess biological development rather than chronological age and are based on studies of reference populations, making their results subject to statistical variation (EUAA, Practical Guide on Age Assessment, 2025, pp. 102-103). Consequently, these methods can provide only approximate estimates of biological age, with an associated margin of error that must be clearly stated. Courts and human rights bodies have also emphasised that medical age assessment methods constitute only one of several factors to be considered in an overall age determination and should be used only as a last resort (see the cascade approach).

Scientific literature referred to in case law, including the AGFAD recommendations on age assessment cited in *Section 3.1* calls for a combination of different imaging-based methods to improve the reliability of conclusions and identify developmental disorders relevant to age. AGFAD recommendations provide for a preliminary physical examination followed, when necessary, by an X-ray examination of the left hand and wrist, a dental examination, including an X-ray examination of the dentition, and an additional examination of the clavicles by conventional radiography or CT. Reference standards commonly used for hand and wrist X-rays include the G&P Atlas and the TW3 scoring system, while dental X-rays are often assessed using Demirjian’s scoring system, which measures dental maturity based on the developmental stages of the teeth.

The AGFAD recommendations further require reference studies to have adequate sample sizes, appropriate sex and age distributions, verified ages of participants, clearly defined characteristics and accurately described methodologies. Moreover, practitioners should consider applicants’ genetic and geographical backgrounds, socioeconomic circumstances and health status when comparing their results with those of the reference population, as these factors may affect development. Such circumstances should be clearly addressed in medical age assessment reports.

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