Age assessment of unaccompanied minor asylum seekers in the Netherlands

RADIOLOGICAL EXAMINATION OF THE MEDIAL CLAVICULAR EPIPHYSIS

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DA-AAR

The Dutch Association of Age Assessment Researchers (DA-AAR) is a working group consisting of experts from various scientific disciplines. It met in 2012 to consider the approach taken to and the implementation of age assessment of minor asylum seekers in the Netherlands, and to investigate what a fair, child-friendly and reliable age assessment procedure can and should be. The working group has a temporary nature.

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 CONTENTS

Introduction 7
Need for age assessment 9
Current approach to age assessment in the Netherlands 9
Medical criticism of age assessment in the Netherlands 11
Foreign studies of clavicular maturation 15
Age assessment from a health law perspective 21
Legal representation of unaccompanied minor asylum seekers 22
Disciplinary appraisal of radiologists 25
Expertise of Dutch Forensic Institute (NFI) staff 27
Summary 28
Future developments 29
References 31
Dutch age assessment protocols 36
INTRODUCTION

An expert meeting on age assessment in the Netherlands was held in Utrecht on 16 May 2012. The meeting was arranged by a working group composed of experts from different fields to look into the use of methods for assessing the age of unaccompanied minor asylum seekers in the Netherlands, with special reference to the use of examination of the clavicle for this purpose. This working group, the Dutch Association of Age Assessment Researchers (DA-AAR), had a temporary nature and was set up to bring people from various disciplines together to consider what could and should constitute a fair, child-friendly and reliable method of age assessment.\(^1\) A side-effect of the expert meeting was that external invitees were kept informed about age assessment in general and encouraged to think along with the working group from a position of involvement.\(^2\)

The need to set up the working group arose from the observation that, despite the scientific criticism of the Dutch approach to age assessment since its introduction in 1999, no independent study of the scientific reliability of the Dutch method and no discussion of its medico-ethical implications had yet been carried out. Many changes have been made in the Dutch age assessment procedure since its introduction 15 years ago. For example, the protocol has been modified twelve times. In response to many complaints, an independent supervisory commission – the Age Assessment Commission – was finally set up in 2004. The responsibility for carrying out the assessment was then transferred to the Dutch Forensic Institute (NFI), which still performs this task today. The assessment method has also undergone several changes. The assessment criteria and the lower limit of the age assessed on the basis of maturation of the clavicular epiphysis (also known as the clavicular growth plate) and of the hand and wrist have been radically changed several times, in response to sustained criticism. And yet there has never been any really adequate reaction to shortcomings observed from a medical, legal and ethical perspective. Since the Dutch approach to age assessment is based exclusively on the use of four X-rays, the reliability of these images should not be open to any doubt at all. DA-AAR has therefore identified a number of problems, with special reference to the examination of the clavicular epiphysis, on the basis of the sketch of the Dutch situation given below. We believe that these issues need to be subjected to open discussion between experts, in order to determine which aspects of the current Dutch approach to age assessment require further attention.

DA-AAR hopes that the publication of the present report will contribute to the debate on this issue at a European as well as at a Dutch level. This debate is shaped by the efforts of the Separated Children

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\(^2\) Representatives of the following organizations were present at the expert meeting: Defence for Children, the Dutch Ombudsman for Children, Kinderpostzegels [Foundation for Children’s Welfare Stamps Netherlands], the Dutch National Ombudsman, the Dutch Association of Paediatricians, NIDOS [Association for the Protection of Young Refugees], UNHCR, UNICEF, Vluchtelingenwerk Nederland [Dutch Care for Refugees], and three participants who did not represent any organization: a physician and former member of the Dutch Age Assessment Commission; a paediatrician who had previously investigated the shortcomings of a method of age assessment from a medical ethics perspective; and a former Dutch Health Inspector. The minutes of the expert meeting of 16 May 2012 are available on request.
in Europe Programme (SCEP), UNICEF, UNHCR and the European Asylum Support Office (EASO). SCEP published its latest position paper on age assessment in May 2012. After inventorying the state of affairs in 16 EU Member States, the authors of this position paper amplified the existing recommendations in this field3. EASO aims to harmonize the way in which age assessment is performed in the various EU Member States. All Member States regard the determination of the age of minor asylum seekers as an important but difficult task due to the differences in legislation, the various investigative methods used and the medico-ethical sensitivity of the physical and sometimes invasive investigation of these vulnerable unaccompanied young people.

This DA-AAR report concentrates on the way in which age assessment has actually developed in the Netherlands. Hence, many aspects of the complex problem of the estimation of the chronological age that received ample attention in other publications are not considered in depth here.4 These aspects are at least equally important, since the agencies responsible for providing young asylum seekers with aid and support have found that these young people often encounter social isolation, the clash of two cultures and an environment that they sometimes perceive as hostile. As a result, the young asylum seekers often suffer from serious physical and mental problems such as anxiety and depression. Furthermore, the emotional implications of assigning a new age to the young people in question, the medico-ethical dilemmas of the investigative method used and the significance of the legal concept ‘in the best interests of the child’ only receive incidental attention here. For example, the expert meeting pointed out that it is doubtful whether the age assessment method used in the Netherlands can be described as ‘child-friendly’, since the needs of the child are not prioritized in practice. Furthermore, the fact that the young people in question are in need of protection and that granting them permission to remain in the Netherlands would be a means to this end also received little attention. In the light of the above, the DA-AAR working group hopes that this publication will spark a wider discussion and hence contribute to proper care of young people in need.

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NEED FOR AGE ASSESSMENT

Many motives may cause unaccompanied young people to move from their country of origin to or through European countries. Some seek international protection from persecution or fear that their own country offers insufficient protection. There is often a risk that the human rights of these young people may be violated, for example when their country is in a state of war. Other groups of young people need protection because they have been brought to Europe illegally by people traffickers to work in the sex trade or for other forms of exploitation.

But the threat of serious danger and violence is not the only reason that brings large numbers of people to Europe. Some come here in the hope of a better way of life. Even the young people who come to Europe to flee poverty or mass unemployment deserve a chance and may be in need of protection because of the social isolation in which they find themselves. The desire for a better life through the prospects of education and development is a universal motive for migration.

The wish for protection or a better future may lead children and young adults to believe that making a false declaration of age is the only way to get a real chance of being granted asylum or other facilities. This makes it understandable that some young people say they are under 18 in order to come into consideration for the special protection offered to children, while others claim to be adults in the hope of gaining entry to the labour market or an independent existence. While the group of economic migrants is often much larger, the plight of young people exposed to exploitation and human trafficking should not be forgotten. This latter group is under particularly great pressure and is in need of extra support and active protection.

Hundreds of young people apply for asylum in the Netherlands every year. Many of these children do not possess any authentic identity papers. These documents were lost in transit, or confiscated by the authorities or people traffickers. Furthermore, there are many parts of the world where birth registration simply does not exist, so the children in question are unable to present any evidence of their age or origin. And there are other children who do travel with identity papers, but the authenticity of these papers is doubted by European authorities.

It is against this background that the authorities consider it necessary to be able to determine whether young people have or have not reached the age of majority. In the Netherlands, minor unaccompanied asylum seekers or refugees come into consideration for special facilities such as special housing and education; the younger ones are also assigned a guardian. It follows that the Dutch authorities – and in fact all European countries and last but not least the young people themselves – have a real need for a standardized, scientifically valid and child-friendly method of age assessment. Unfortunately, however, such a universally valid and reliable method does not yet exist.

CURRENT APPROACH TO AGE ASSESSMENT IN THE NETHERLANDS

The age assessment method used by the Dutch Immigration and Naturalization Service (IND) consists of making and appraisal of one X-ray of the left hand and wrist and three X-rays of the medial clavicular epiphyses. The extent to which the epiphyses in these bones have disappeared determines the skeletal age of the young person in question.
It is decided during the initial screening interview, which is held immediately after the application for asylum, whether the young asylum seeker comes into consideration for age assessment. An IND official determines on the basis of the physical characteristics of the young asylum seeker whether any doubt exists concerning the stated age. If it is decided that the stated age is subject to doubt, two further IND officials are asked to examine the young person in question. The young asylum seeker is provided with information about the procedure to be followed, and signs a declaration that he or she agrees with the age assessment.

The asylum seeker is then referred to a physician from the Municipal Health Service; this is the first step of the age assessment procedure. This physician (or nurse) does not assess the likelihood that the asylum seeker in question is above or below the age of majority, but merely checks whether there is any contra-indication for the performance of the necessary radiological examination. The young asylum seeker is then taken to a diagnostic centre in Eindhoven, where all X-rays required by the IND are made.

It is stated in the protocol of the IND age assessment that expertise in two fields (physical anthropology and radiology) is required for the examination. Two anonymous radiologists appraise the X-rays and state whether the left hand/wrist region and/or the two clavicles show signs of complete maturation. Then a physical anthropologist decides on the basis of the statement by the radiologists whether the age stated by the asylum seeker is correct. Little is known about the expertise of the radiologists working for the IND. From 1999 to mid-2003, the radiologists concerned were Dutch and worked for one single medical imaging partnership. In 2003, two radiologists accused of malpractice by the Dutch Central Medical Disciplinary Council stated that their assessment and expertise could best be qualified as an ‘expert opinion’ and that the investigation in question could thus not be regarded as evidence-based. The Dutch radiologists suspended their participation in the age assessment procedure during the disciplinary hearing, and from the summer of 2003 the X-rays were appraised by radiologists who most probably work abroad. This appraisal at a distance is possible because the X-rays have been presented as digital files since 1999, allowing them in principle to be viewed anywhere in the world (teleradiology). Nothing is known about the foreign radiologists engaged by the IND since the summer of 2003. They work anonymously and the IND only identifies them by a two-letter code.

Since the radiologists appraising the X-rays are not asked what skeletal age (with margin of error) they estimate on the basis of the X-rays of the asylum seeker but only the extent of maturation of the bones in question, the IND has to introduce an additional conversion phase from the radiological results to the chronological age of the asylum seeker. The task of converting the radiological ‘closure’ or ‘non-closure’ of the relevant epiphyses to a chronological age has been given to a physical anthropologist since 1999. The ‘expert’ does not examine the asylum seeker, however. In 2008, this permanent IND physical anthropologist was replaced by an anthropologist working for the Dutch Forensic Institute (NFI). Since the autumn of 2010, the chronological age has been determined by a ‘trainee NFI physical anthropology expert’.

In the spring of 2010, the last but one NFI rapporteur proposed a drastic reduction in the lower age limit after continued criticism of the chronological age corresponding to closure of the epiphyses in the hand/wrist region. This was approved by the Age Assessment Commission in September 2010. While closure of the radius of the left hand had previously been assumed to correspond to a minimum age of 15 in girls and of 16 in boys, these lower limits were now reduced to 12.9 years in
girls and 14.5 years in boys. The X-ray of the left hand and wrist not only serves as a basis for deciding whether imaging of the clavicle is required, but also helps to determine whether a young person who has to undergo a later examination is still minor. It may then be asked whether this determination could be based solely on the maturation of the left radius, given the fact that much more is known from the perspective of medical practice about maturation of the hand/wrist region than about maturation of the clavicle. However, use of the left hand/wrist X-ray in IND practice will not be considered further in this report, since the main issue here is the value of the three clavicular X-rays.

The Dutch Health Inspectorate (IGZ) is responsible for supervision of the institute where the imaging is performed. The process of reformulating the tasks and responsibilities within the field of age assessment for IND began after the independent Age Assessment Commission was set up in April 2004. The Commission monitors the quality of the methods and procedures used in IND age assessment, and has published three reports so far – in December 2004, January 2006 and April 2012. The Commission stated in its most recent report that the number of asylum seekers undergoing age assessment has fallen appreciably (to 62 in 2011). The NFI informed the Commission that it now only ‘offers’ age assessment if it is suspected that the asylum seeker in question has reached the age of majority, and no longer if he or she is suspected of understating his or her age while probably being minor in any case. The 62 age assessments performed in 2011 led to the conclusion that 21 of the asylum seekers examined (33.9%) could actually be regarded as adult. It follows that the predictive value of the external examination performed by the IND officials is low when it comes to assessing adulthood. The annual age assessment figures presented by the Commission in its April 2012 report do not agree with the information provided to the Tweede Kamer (the Second Chamber of the Dutch Parliament) by the Secretary of State. At a rough estimate, there have been several thousand more age assessments performed since 1999 than the total figure of 6379 reported for in the period 2000 – 2011.5

MEDICAL CRITICISM OF AGE ASSESSMENT IN THE NETHERLANDS

When the age assessment started, it was found that the scientific basis for the examination of the clavicle consisted of 7 publications.6 Only one of these publications referred to observation of the medial clavicular epiphysis with the aid of conventional X-rays. The other six studies concerned


maturation of the clavicle as judged by visual examination of skeletal samples or with the aid of CT scans. But how usable are data obtained from these other two investigative methods? Clinical epidemiologists from the Julius Centre of Utrecht University Medical Centre concluded in 2000 that both the generalizability of the studies and the different methods used to assess the closure of the medial clavicular epiphysis could not withstand the test of criticism. Conventional X-rays should be assessed with reference to a standard set of conventional X-rays. Radiological assessment of epiphyseal closure or non-closure (complete or incomplete maturation) of the clavicles in living subjects, on the other hand, cannot be based on one-on-one comparison with visual inspection of the skeleton or CT images. It follows that the outcomes of studies of the maturation of the clavicular epiphyses using any technique other than conventional X-rays are of no use in the assessment of conventional X-rays. In addition, there are very few conventional X-rays of the clavicular epiphysis of young people with a known age between 17 and 23. In other words, there is no gold standard for the assessment of conventional X-rays of the extremities of the clavicle. Nevertheless, radiological examination of the clavicle is still being ‘validated’ with reference to studies that are not comparable with the IND clavicle X-ray assessments.

Apart from this criticism of the scientific basis of the age assessment method used, the quality of the X-rays made of the clavicle is also open to criticism. A standard PA exposure (posteroanterior, with the X-rays passing from back to front) is made of the medial extremities of both clavicles at the same time. Two oblique exposures are also made because the clavicular epiphyses can often not be assessed on the PA exposure due to superposition of other skeletal structures such as the vertebrae and ribs. In an unknown number of cases, one of three X-rays made (the PA exposure) is thus of no use for assessment because of superposition of other structures, so the outcome depends on what is visible in the oblique exposures. And the literature gives no precise details of the adjustment angle needed in these oblique exposures to provide optimum imaging of the epiphyses in question. The precise position of the medial clavicular epiphysis is unpredictable, due to the large individual variation in the form of the medial extremity of the clavicle and the angle the clavicle makes with the frontal plane (the plane perpendicular to the central axis of the X-ray beam). The individual variation in the build of the subjects under examination thus makes it very difficult to make a conventional X-ray of the medial clavicular epiphysis that is suitable for assessment.

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7 Letter of 10 July 2000 (including two enclosures) from Dr. C. S. P. M. Uiterwaal and Dr. K. G. M. Moons to the Medical Advice Collective.

8 This is also the conclusion of many other researchers who have studied the maturation of the clavicle, such as Schmeling and co-workers; see the Reference list.
An article by two Dutch paediatric radiologists appeared in 2004. This was an exploratory review by Van Rijn and Robben of clavicle X-rays made for the IND. The authors concluded that another adjustment angle than that visible from the IND X-rays is needed for imaging of the clavicular epiphyses using conventional X-ray techniques. Moreover, a different adjustment angle will be needed for each individual examined. The asylum seekers seem to have been positioned in such a way during the making of the oblique exposures that the IND radiologists were examining precisely the wrong extremity. Further inspection of the X-rays shows that the extremity of the clavicle that is most suitable for assessment is often not even visible on the photo.

In the words of Robben, the conventional X-ray is the Achilles heel of the IND method. He had already shared the following view with his fellow-radiologists in 2004:

*I often get a funny feeling when a technician asks me to have a look at a sternoclavicular joint because this is often difficult to assess due to the superposition of other structures. An epiphysis that is near closure is very narrow, and a tangential exposure is needed to image it properly. But the epiphysis is angled with respect to the sagittal plane. No standard values are known for this angle. It is thus unknown how many degrees the patient has to be rotated to ensure that the X-rays hit the epiphysis tangentially. The textbooks on radiological adjustment techniques offer no assistance here,*

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since they are only concerned with the imaging of the medial clavicle and not with getting a good picture of the epiphysis. Suboptimal rotation can make a partially closed epiphysis look completely closed, leading to the erroneous conclusion that the individual in question is an adult. There are no articles that compare this method with a gold standard in practice. But even if the X-rays hit the epiphysis at the correct angle, interpretation of the image obtained remains a problem since closure of the epiphysis is a biological process that takes place very gradually. Who can say whether a given image represents an epiphysis that is completely closed or almost completely closed? The distinction is almost negligible from a radiological perspective, but crucial from the legal point of view.

Robben rounded off his comment with the following statement: In short, this method was created in a semi-scientific setting, is not evidence-based and is applied without peer review. Legal acceptance does not in my opinion justify support for this method from radiologists.¹⁰

There is a fourth reason why the Dutch approach to age assessment has been controversial from the start, and that is that it involves the use of a lower limit for the estimated age. The NFI expert concludes on the basis of the results of the radiological examination of fully matured clavicles that the unaccompanied minor migrant is at least 19 (♀) or 20 (♂) years old. This lower age limit is justified on the basis of the argument that “no one with fully matured clavicles has ever been found anywhere in the world who is younger than 19 or 20”. This claim is however untenable, for the reasons given above. It is based on the comparison of data derived from investigative sources that are not strictly speaking comparable – CT scans, conventional X-rays and pathological studies – thus creating the illusion that a great deal of research has already been devoted to one specific method. It is true that criteria for radiological confirmation of full maturation of the clavicle can be defined for each investigative method, but these criteria are method-specific – that is, they vary from one method to another. For example, the clavicular extremities of a given individual may appear to be fully matured in a conventional X-ray, but not in the corresponding CT scan. The use of a lower age limit in Dutch age assessment can only be justified on the basis of adequately validated study of the maturation of the human clavicle on the basis of conventional X-rays (the Dutch method).

The above fundamental radiological criticism of the Dutch approach to age assessment has still not been refuted, partly because of the absence of any further investigation in response to this criticism. Various reasons for this lack of interest may be given. For example, assessment of clavicular maturation does not form part of normal medical practice but is a purely forensic application. Dutch clinical radiologists do not make these X-rays of the clavicle. Secondly, all IND X-rays are made in a single Dutch institute; there is no peer review of these results or any other form of external monitoring. Further, the anonymous mode of operation of the IND radiologists precludes any discussion of their work. We need to look abroad if we wish to throw more light on this method.

FOREIGN STUDIES OF CLAVICULAR MATURATION

The Arbeitsgemeinschaft für forensische Altersdiagnostik (AGFAD) was set up in Germany in March 2000. This multidisciplinary research group has drawn up guidelines for age assessment. It states that the assessment must be based on a multidisciplinary study consisting of the following components: (a) physical examination to determine the subject’s height, weight and constitution, sexual maturation, possible developmental abnormalities and medical history, (b) a (conventional) X-ray of the left hand/wrist region, and (c) full details of the dentition, including a panoramic X-ray of the teeth. In addition, the AGFAD proposes (d) an X-ray of the medial extremities of the clavicles if there is a need to know whether the subject has reached the age of 21. The various parts of this study should be performed by experts and the results passed on to a forensic paediatrician or a forensic physician, who will estimate the subject’s age with margins of error.

A publication from 2001 emphasized the need for further research because there is as yet no standard to guarantee the reliability of the combination of all investigative methods with any degree of confidence. It also mentioned the need for research into the effect of ethnicity and socio-economic circumstances on skeletal maturation, and the ethical requirement to look for investigative methods that do not make use of ionizing radiation (X-rays). Many German studies on age assessment appeared in the years after the foundation of the Arbeitsgemeinschaft für forensische Altersdiagnostik. The following comments may be made about these publications:

(a) nearly all studies are retrospective, because asylum seekers in Germany may not be exposed to X-rays (except on the orders of a judge, usually in the context of a criminal investigation);
(b) 14, 18 and 21 are all important age limits in Germany in the context of the criminal law;
(c) none of the researchers considers in detail the adjustment technique used in conventional oblique X-rays of the extremities of the clavicles.

The first article by Schmeling’s research group on the maturation of the clavicles using conventional X-rays appeared in 2004, by which time the clavicular method of age assessment had already been used for five years in the Netherlands. These researchers appraised thoracic X-rays that had been made for the purposes of medical examination in Berlin between 1995 and 2002. They concluded that the studies published so far on closure of the clavicular epiphysis were of limited utility because of the small size of the study populations, the lack of gender-specific data, the uncertainty concerning the chronological age of the subjects and inadequate data on their health. It was queried whether pathological-anatomical data could be translated into radiological findings concerning the clavicle, since they yield quite different outcomes in relation to the maturation stage. The suggestion was further made that PA exposures, which are not useful for age assessment, could perhaps be replaced by ‘lateral’ exposures, though no details were given of how these oblique exposures could be made. The German research groups continue to look for other methods of imaging closure of the clavicular epiphysis.

Schulz et al. studied clavicular maturation with the aid of CT scans. They concluded that only CT scans with a small slice thickness permitted reliable appraisal of the clavicular epiphysis. Unlike X-rays, CT scans show full maturation of the clavicle at the age of 21 in both men and women. A second CT study by Schulze et al. in 2006 produced two noteworthy results: firstly, two of the ten 19-year-old subjects examined already showed full maturation of the clavicle, and secondly the 99.67% reliability of the forensic age assessment required in Germany was not achieved. This confirms that the slices used in previous CT studies had been too thick. In the same year, Mühler and Reisinger also concluded that the slice thickness of the CT scan must be less than 1 mm to permit reliable assessment of epiphyseal closure.

A review of the studies that had already been published by this research group appeared in 2007. The authors noted that the criteria for a reliable reference study were still not met. The question of which method of statistical analysis needs to be applied to the different studies performed by this group has not yet been resolved, and it is difficult to formulate the terms of the ethical discussion on this point unambiguously in view of the international differences in views about the use of X-rays without medical indication.

Further research is therefore being performed in Germany on the use of non-ionizing radiological methods (ultrasound and MRI scans). An initial study on the usability of MRI for this purpose has already appeared. The ossification stages revealed by this method agree roughly with those determined with the aid of conventional X-rays and CT scans.

A small prospective study was published in 2008. This involved age assessment using both conventional PA X-ray exposures and CT scans of the clavicles. The ethical justification of this double use of X-rays was not discussed. Use of conventional X-rays can lead to the erroneous conclusion that someone is older (ossification of the clavicles is more advanced) than when CT scans are used. The authors wrote: Future studies should be carried out to evaluate whether the use of conventional radiographic images obtained in three planes (one PA and two anterior oblique projections) will make it possible to obtain a valid radiographic assessment of the medial clavicular epiphysis in every case.

Schulz et al. (2008) and Quirmbach et al. (2009) showed that ultrasound examination of the clavicular epiphysis is not a suitable investigative method for assessment of ossification of the clavicle.

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Quirmbach et al. further concluded that a CT scan with a slice thickness of $\leq 1$ mm is the gold standard for determination of the extent of clavicular ossification.\(^{19}\)

A new retrospective study (Kellinghaus et al.) was carried out in 2010 with the aim of defining a staging standard for clavicular ossification based on CT scans with a slice thickness of $\leq 1$ mm.\(^{20}\) Closer examination of the data revealed that 199 of the 592 CT scans had a slice thickness of 1.25 or 1.5 mm. The authors of this study re-emphasized the risk of overestimating the clavicular ossification in the case of excessive slice thickness of the CT scans used for this purpose. If the slice thickness is greater than 1 mm, partial fusion (stage III) on the CT image may look like complete fusion (stage IV) due to the partial volume effect of the thicker CT slices. Fifteen per cent of the total study population were rejected due to the abnormal (funnel-shaped) form of the clavicular extremity. The multidetector CT-scan (MDCT) study shows that ossification stage IV (complete closure of the clavicle) is first observed at the age of 21 year in both men and women.

In the same year, Vieth et al.\(^{21}\) studied the ossification of the clavicles by comparison of conventional X-ray images, CT scans and MRI scans. X-ray examinations of asylum seekers were performed in Germany from this year (2010), while formerly they were only allowed in criminal cases. The study by Vieth et al. was very limited in scope. It involved the post mortem application of the three above-mentioned investigative methods to the remains of 8 subjects aged between 15 and 17 years. Two oblique exposures at an angle of 30° were made in addition to a conventional AP exposure (anteroposterior, rather than the usual PA). (The angle of the oblique exposure in the Netherlands is chosen between 10 and 20°). The slice thickness of CT scans is 1 mm, and that of MRI scans 1.4 mm. In nine of the fifteen cases studied, the three investigative methods used yielded different ossification stages in the same person. It was further observed that the large variation in morphology of the end of the clavicle (for example, the existence of a funnel form) made interpretation of the ossification stage much more difficult in conventional X-rays, and that there was a tendency to overestimate the skeletal age on the basis of these images. The authors still regard the CT scan with a small slice thickness as the method of choice, but the X-ray load associated with such an investigation is unacceptably high. The assessment methods not involving X-ray load – ultrasound and MRI scans – have not yet been adequately investigated; further research is needed here.

In the meantime, a prospective study has been started at the University of Ghent under the leadership of Prof. K. Verstraete aimed at determining whether MRI can be used for assessment of the skeletal age in living subjects and whether a conventional PA exposure gives a sufficiently reliable image or whether supplementary oblique exposures are needed. This study yielded the following


results. Clavicular ossification in 121 volunteers (39 ♀ and 82 ♂) was assessed in two different ways: using a conventional X-ray and by means of MRI. The outcome of the study showed that the images from the 3T MRI scans (VIBE sequence) were better than the conventional X-ray images for this purpose. Appraisal of the conventional clavicular X-rays was judged to be ‘difficult’ to ‘very difficult’ in more than 85% of the cases. It is interesting to note that stage IV (complete ossification with the epiphyseal scar still visible) could not be demonstrated on MRI images.

The ossification of the clavicle was investigated in 2011 in a Spanish study (Garamendi et al.) using digital conventional X-rays of the clavicles. A single researcher examined the PA thoracic X-rays (taken by a hospital’s trauma department) of 61 Spanish men and 62 Spanish women (total n=123). No oblique exposures were made. The study was of very limited value because only a small proportion of the subjects were in the age range from 17 to 23.

The article by Bassed et al. is more important in this connection. This Australian research group examined the VIFM (Victorian Institute of Forensic Medicine) file, which contains more than 18,000 post mortem total body CT scans. Most of these were of victims of fatal traffic accidents or disasters (forest fires). Six hundred and seventy-four multi-slice CT scans (219 ♀ and 455 ♂) in the age range 15-25 year were selected from the total collection. The slice thickness for the medial clavicular region was 1 mm in 58% of the cases and 2 mm in the remaining 42%. The intra- and interobserver variability may be classified as good (0.86 and 0.73 respectively). Two noteworthy findings may be mentioned. (a) The ossification of the left and right clavicles was different in more than 20% of the cases. This asymmetrical ossification of the left and right clavicles is much higher than that previously found, and raises the question which side should be used for age assessment, or whether an average of both sides is to be preferred. (b) Stage IV ossification (complete closure of the epiphysis) is first observed in men at the age of 17 and in women at 19. This “early closure” conflicts with the findings of Kellinghaus and Schulze. The Australian authors ascribe this to the thinner slices (0.6–1.5 mm) used in the study by Kellinghaus and co-workers, while the slice thickness in the Australian study was 2 mm in 42% of the cases. Another explanation could be differences between the Australian and German populations.


Age assessment of unaccompanied minor asylum seekers in the Netherlands

Keunen, Roscam Abbing, Schumacher (DA-AAR, May 2013)
An online publication by Cameriere et al.\textsuperscript{25} appeared on 12 September 2012. This Italian/Spanish research group showed 274 conventional PA X-ray of the medial clavicular epiphysis to five experts and asked them to judge whether the persons concerned were older than 18. The five observers were forensic anthropologists, dentists or dental surgeons or forensic physicians. They were all experienced in staging the ossification of the clavicle according to Schmeling’s classification. The intra- and interobserver variability was determined, and the study showed that the interobserver variability was low to moderate. Two of the observers were found to have insufficient intra-observer variability. The authors also discussed the substantial technical problems involved in making PA X-rays of the medial clavicular epiphysis that were suitable for assessment, the specialized radiological knowledge required for the assessment of these images and the ethical aspects of this forensic examination. It may further be noted that no precise details were given of the posteroanterior positioning of the patient. The authors wrote: \textit{Care must be taken to ensure that the individual being examined is bending the shoulder so that the X-ray beams are perpendicular to the medial clavicle and the zone of ossification.} In view of the technical limitations of conventional X-rays, MRI or CT scans (with small slice thickness) are probably better for age assessment. However, further research is required before these techniques could be adopted as routine methods for age assessment in asylum seekers. Although this investigation is limited by the small study population, it provides further confirmation that conventional X-rays of the medial clavicular epiphysis are not suitable for the purposes of age assessment. The article by Cameriere et al. ends with the following statement: \textit{The major conclusion of this study is that, at the present time, there is an obvious lack of reliability in assessing the medial epiphysial ossification of the clavicle by X-rays for purposes of estimating chronological age.}

The Belgian research group of Hillewig et al.\textsuperscript{26} published a follow-up in 2013 to the investigation that had been performed in Ghent in 2010 and 2011. The authors stated their expectation that MRI observation of the clavicular epiphysis might be useful for determining whether young people are younger or older than 18, provided that a conventional X-ray of the hand/wrist region is available at the same time. This is because MRI does not allow a distinction to be drawn between Schmeling’s ossification stages I and IV. When the MRI scan shows complete bilateral ossification of the clavicular epiphyses (stage IV), this probably provides a basis for distinguishing between minor and adult subjects. However, more work needs to be done on comparison of MRI scans with conventional X-rays and CT scans.

The 2013 publication contains no new research data. It is a descriptive account of the earlier study in Ghent, to which a statistical predictability analysis has now been applied. Further research is needed to obtain adequate reference populations for the different age-groups.

To sum up, it appears that no reliable data were available that would provide a basis for assessment of clavicular ossification with the aid of conventional X-rays when the IND started its age assessment programme in 1999. There was only one reference study from 1976 based on conventional X-rays of


632 Indian subjects in the age-range 11 to 26. Selection of the relevant population aged from 17 to 23 year yields a sample of 295 males and 165 females. When Van Rijn and Robben published an initial analysis of the IND clavicle X-rays in 2003/2004, it was found that the adjustment technique chosen for the oblique exposures, which were necessarily because of the superposition of images observed in many PA exposures, was incorrect. Superposition of images is a big problem in all three types of clavicular X-rays. The German studies in subsequent years showed that it is far from easy to visualize and assess ossification of the clavicular epiphysis in CT scans as well as in conventional X-rays. Reliable assessment of ossification in CT scans is only possible if the slice thickness is less than 1 millimetre. These findings from 2006 showed definitively that the CT studies by Kreitner (1997/1998), which form a substantial part of the IND age assessment database, are inadmissible because nearly all CT scans were performed with a slice thickness of ≥7 mm. This means that the basis for the Dutch age assessment procedure, which was never particularly strong before that, is further compromised.

In 2011, an Australian research group studied a large set of post mortem CT scans with slice thickness of 1 to 2 mm. Only 20% of the 19-year-old women in this population (n = 20) were found to show stage IV clavicular ossification. Among the 17-year-old men (n = 33), 6.1% were found to be at stage IV, while the corresponding figure for 18-year-olds was 4.6%. These findings necessitate reconsideration of the lower age limit for closure of the clavicular epiphysis.

A critical Dutch study made it clear at quite an early stage of the IND age assessment programme that there was no reliable empirical basis for the IND age assessment. There is no trustworthy gold standard against which the ossification stage of the clavicular epiphysis determined with the aid of conventional X-rays can be compared. It is furthermore very difficult to visualize the clavicular epiphysis properly on a conventional X-ray. It is well known that a PA exposure on its own does not allow proper assessment of the stage of closure, due to the superposition of structures in the X-ray image. The IND was therefore obliged to make oblique exposures, but the adjustment angle required for these exposures is not known in advance due to individual differences in the build of the subjects concerned. The authors of the above-mentioned Dutch study stated that the IND radiologists actually examined the wrong clavicular extremity because the subjects were not turned inwards enough when the oblique exposures were made. Later studies elsewhere in Europe confirmed the above findings concerning PA exposures. However, the problem of the adjustment angle of oblique exposures has never been addressed elsewhere, though the applicability of other examination techniques such as CT or MRI scans has been considered. Australian and Italian research groups have recently rejected the use of conventional X-rays of the clavicle for this purpose, while a Belgian study suggested that MRI scans might be appropriate. The search for a reliable method is being continued.


AGE ASSESSMENT FROM A HEALTH LAW PERSPECTIVE

According to Treaty Law, the interests of the child must take precedence when the age of unaccompanied minor migrants is being assessed.

_in all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities legislative bodies, the best interests of the child shall be a primary consideration._

This principle is included in EU Directive 2013/32/EU on minimum standards on procedures in Member States for granting and withdrawing refugee status. In line with this, the Action Plan on Unaccompanied Minors (2010-2014) of the European Commission states: _Children should be treated as such until the contrary is proven._ This implies that age assessment should be performed in a scientific, safe, child- and gender-friendly and fair manner. Risks of infringing the child’s physical integrity must be avoided.

Legal preconditions for the performance of age assessment are thus the necessity, effectiveness and proportionality of the method to be used. If there are various options, the one that places the least load on the child and is least invasive (but still effective) should be chosen. It should be noted in this connection that acceptable radiation dosage for medical applications cannot be used as the point of departure for the use of radiation for non-medical purposes.

The use of radiation must be justified (and the conditions of use must be optimized). Administrative judges have so far assumed that the clavicular method used in the Netherlands is sufficiently reliable. This does not alter the fact that, as mentioned above, the validity of this method has been questioned. As a result, the legal admissibility of this method is also open to doubt.

The Dutch National Ombudsman stated in 2002 that the aim of age assessment using the clavicular method was limited: it did not permit a reliable judgment on whether a given person was older or younger than 18 year, while the policy in relation to unaccompanied minor migrants is based on exact ages where the 18-year cut-off plays a crucial role. The Commissioner for Human Rights of the Council of Europe pointed out in 2011, in response to comments from various organizations representing paediatricians, that X-rays are not appropriate as one of the means used to estimate chronological age. He stated: _X-rays can never determine exact age. Bone maturation varies_

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32 Convention on the Rights of the Child, General Comment No. 6 (2005), Treatment of unaccompanied and separated children outside their country of origin, CRC/GC/2005/6, 1 September 2005.
33 This condition is included in Directive 2013/32/EU, Article 25 (Guarantees for unaccompanied minors), paragraph 5.
34 The clavicular method is used in cases of doubt concerning the stated age, if indicated by the X-ray of the hand/wrist region.
35 Latest decision in the case AWB 08/15291 of 22 April 2011.
Drastically from one adolescent to another. Physical development nowadays depends on numerous factors including ethnic and geographical descent, nutrition and socio-economic situation, and previous and current illnesses.\textsuperscript{36}

The current practice in the Netherlands is that rather than estimating the age of the person concerned as accurately as possible, a pronouncement is made as to whether the person concerned is “highly likely to be a minor, aged at most 19 (if a woman) or 20 (if a man), or at most 32 years old but not proven to be an adult, or alternatively at least 20 years old”. The age of 20 is taken as the lower limit for complete ossification of the clavicular epiphyses.\textsuperscript{37}

This does not however resolve all the problems associated with the method used: the problem of correct choice of the adjustment angle in oblique exposures, and the question of whether three X-rays of the clavicles in addition to one of the hand/wrist region is not excessive, still remain. It is furthermore unclear how the age assessment method currently used works in practice in relation to the granting of special facilities for young unaccompanied migrants, where the age range from 15 to 18 plays a crucial role. Another question is whether there is a need for further research on the procedure used at present, despite the current unwillingness of the IND to concede this.\textsuperscript{38}

**LEGAL REPRESENTATION OF UNACCOMPANIED MINOR ASYLUM SEEKERS**

Further comments may be made about the legal aspects of age assessments, in relation to the interests of the child in question. The first issue concerns the legal representation of the young person. He or she is entitled from the outset to independent legal representation (a guardian), who also has a role to play if age assessment is called for. The Statement of Good Practice (2009) of the Separated Children in Europe Programme (SCEP)\textsuperscript{39} makes the following comment about the role of the guardian:

*Immediately a separated child is identified – regardless of whether further assessment of their age is required by the authorities, an independent guardian must be appointed to advise and protect them. The appointed guardian should be consulted and informed regarding all actions taken in relation to*

\begin{itemize}
  \item \textsuperscript{36} Methods for assessing the age of migrant children should be improved. Commissioner. cws.coe.int
  \item \textsuperscript{37} With effect from mid-February 2010, maturation of the hand/wrist region is no longer used for upward correction of a stated age, and reports no longer include details of subjects who state their age to be lower than it actually is. As a result, the IND only offers age assessment to young unaccompanied asylum seekers who it suspects to be adult, and no longer to minors who are suspected of understating their age. Source: Dutch Age Assessment Commission, Report, April 2012, p. 26-27.
  \item \textsuperscript{38} Dutch Age Assessment Commission, Report, April 2012, p. 8-9.
  \item \textsuperscript{39} The Separated Children in Europe Programme (SCEP) was set up in 1997 to improve the situation of unaccompanied children through research, policy analysis and advocacy of reform aimed at full implementation of the UN Treaty on the Rights of the Child.
\end{itemize}
the child. Where the child, subject to their age and maturity, gives consent, the guardian should have the authority to represent the child in all planning and decision making processes.\textsuperscript{40}

This principle of Treaty Law was adopted in 2011 by the Parliamentary Assembly of the Council of Europe in a resolution stating: Every unaccompanied child should be provided immediately with a guardian mandated to safeguard his or her best interest.\textsuperscript{41}

It was also incorporated in the EU Directive on common procedures for granting and withdrawing international protection and the EU Action Plan for Unaccompanied Minors (2010-2014). The Netherlands does not comply with this requirement: only children younger than 12 are assigned a guardian immediately on arrival.

The purpose of the presence of a guardian at the age assessment is to provide the child with support and assistance during all phases and in relation to all relevant aspects of the age assessment, in particular to ensure that the unaccompanied minor migrant has fully understood the scope and possible consequences of the assessment. It may be noted in this connection that the Dutch Youth Care Inspectorate commented in a report dated September 2011 concerning the guardianship agency NIDOS that the contact frequency with the young person concerned should be intensified, especially during the first few weeks.\textsuperscript{42}

A second point is that age assessment is a medical examination, which is in principle subject to the provisions of the Medical Treatment Contracts Act (WGBO).\textsuperscript{43} With the proviso that WGBO is only applicable if the nature of the legal relationship involved is not incompatible with this. One implication of this is that the representative of the young asylum seeker (the guardian) must give consent on an individual basis for the examination. In current practice, however, the guardian only gives consent on an individual basis if there is no doubt that the young person concerned is a minor, but it is uncertain whether he or she is younger than 15. In all other cases, the NIDOS guardianship agency grants blanket consent for all examinations. In accordance with the provisions of WGBO, both the minor and the parents or guardian must give consent if the minor is aged between 12 and 16.\textsuperscript{44}

Because of the relationship of dependency in which the unaccompanied minor asylum seeker is placed, good guarantees are needed – especially when it comes to granting consent for a given intervention. In the above-mentioned situation, it does not seem appropriate to maintain the age limit of 16 stipulated in WGBO above which the young person concerned can give consent independently. Instead, the guardian should also grant consent up to the statutory age of majority of 18.\textsuperscript{45}

\textsuperscript{40} Statement of Good Practice of the Separated Children in Europe Programme, 4th revised edition, \texttt{2009, www.separated-children-europe-programme.org}

\textsuperscript{41} Resolution 1810 (2011), unaccompanied children in Europe, issues of arrival, stay and concern, par. 5.5.

\textsuperscript{42} Inspectie Jeugdzorg, De voogdijtaak van NIDOS, Utrecht, September 2011. The minister concerned has promised that the means required for this purpose will be made available. Kamerstuk II, 2011-2012, 27062, No. 72 of 27 September 2011.

\textsuperscript{43} Insofar as the nature of the legal relationship is not incompatible with this (WGBO, Article 446, par. 5).

\textsuperscript{44} WGBO stipulates that consent of the parents or guardian is required in the case of a minor aged under 12.

\textsuperscript{45} It follows that the legal relationship in this case is incompatible with literal application of the provisions of WGBO.
Hence, a blanket statement of consent is no longer legally appropriate in this situation. Moreover, such a statement is not compatible with the guardian’s responsibility to ensure that the unaccompanied minor asylum seeker has received sufficient comprehensible information, has understood the procedure properly and is aware of his or her rights. Doubt must thus be cast on the ruling of the Amsterdam Regional Disciplinary Council dated 26 August 2004\textsuperscript{46} that the interests of the asylum seeker in question were not inadequately protected by a blanket consent.

In accordance with the prevailing standard, the unaccompanied minor asylum seeker must be informed not only about the kind of examination that will take place but also for example about the possible effects on his or her health, the legal and other consequences of refusing to undergo the examination and the legal and other consequences of the outcome on the application for asylum.\textsuperscript{47} The Age Assessment Commission reaffirmed in its latest report that there is room for improvement in the provision of information.\textsuperscript{48} According to the EU Directive on common procedures for granting and withdrawing international protection, the decision to reject the application for asylum may not be based solely on refusal to undergo the examination.\textsuperscript{49} In Dutch practice, refusal to undergo the examination means that the young asylum seeker in question is regarded by the IND as an adult.

The fact that age assessment is a precondition for being granted the right to special facilities places the unaccompanied minor asylum seeker in a position of dependency, as mentioned above. That can have an effect on his or her decision-making, which makes support from the guardian even more essential. The guardian is expected to provide active support for any migrant claiming to be an unaccompanied minor. The responsibility of the guardian cannot be delegated to the migrant’s authorized representative (the lawyer).

The Dutch National Ombudsman had good reason to point out the need for solid guarantees when it stated: The IND has the obligation to ensure proper procedures provided with the necessary guarantees.\textsuperscript{50} The guardian should moreover take early steps to ensure that the IND does not abuse the possibility contained in the EU Directive on common procedures for granting and withdrawing international protection\textsuperscript{51} of not appointing a representative if it is expected that the young migrant in question will most probably reach the age of 18 before the initial decision on the asylum application has been taken. This conflicts with the principle that children should be treated as such until the contrary is proven.

\textsuperscript{46} No. 03/026, par. 5.8.
\textsuperscript{48} Age Assessment Commission Report, April 2012, p. 8-9.
\textsuperscript{49} Directive 2013/32/EU, Article 25, par. 5, section c. This does not however mean that the application may not be rejected, if there are other grounds for this.
\textsuperscript{50} De Nationale Ombudsman, Openbaar Rapport nummer 2002/2386, 17-12-2002.
\textsuperscript{51} Article 17, par. 2 section a. This principle is maintained in the proposed amendment of the EU Directive on common procedures for granting and withdrawing international protection.
Moreover, the guardian must ensure that a medical age assessment is only performed when doubt still remains about the age of an unaccompanied minor asylum seeker despite the statement he or she has made or other relevant evidence, and that if doubt still exists after the age assessment has been performed the young person should be given the benefit of the doubt.\textsuperscript{52}

The young asylum seeker will also benefit from active involvement of the guardian in connection with his or her right to be the first to be informed of the results of the X-ray examination.\textsuperscript{53} Appendix 1 of the Dutch Protocol on age assessment includes the following statement in this connection: \textit{The undersigned [asylum seeker] declares that he/she wishes to be informed of the results of the examination, but that he/she does not wish to be the first to be informed of the results of the examination in order to decide whether this information should be passed on to others.}

If the unaccompanied minor asylum seeker refuses to give up the right to be the first to be informed, he or she will be regarded as an adult.\textsuperscript{54} This sanction deprives the unaccompanied minor asylum seeker of valuable options, while it may not be his or her intention at all to veto transmission of the results of the examination to others. First inspection can be useful for requesting an early second opinion.\textsuperscript{55} Failure to grant the right to inspection of the results of the X-ray examination is a disproportionate, unnecessary infringement of the private life of the young person concerned.\textsuperscript{56}

Finally, the guardian must ensure that the statement by the asylum seeker gets the same legal status as the outcome of the age assessment. The statement made by the EURODAC Supervision Coordination Group in 2009 is of importance in this connection: \textit{The argument that statements made by the asylum seekers may not be correct or even be untrue should be weighed against the fact that medical examinations as such may lead to incorrect results or mistakes.}\textsuperscript{57}

\section*{DISCIPLINARY APPRAISAL OF RADIOLOGISTS}

The Dutch Central Medical Disciplinary Council declared in 2006 that the radiologist who examines X-rays is to be regarded as a physician who is performing a medical examination in accordance with the terms of the Dutch Individual Health Care Professions Act (BIG) and is thus subject to disciplinary appraisal.\textsuperscript{58} Failure of the radiologist to reveal his or her identity is a breach of medical discipline.

\textsuperscript{52} This provision is included in Article 25, section 5 of Directive 2013/32/EU.

\textsuperscript{53} WGBO, Article 464, section 2.

\textsuperscript{54} This does not mean that the asylum application will be automatically turned down.

\textsuperscript{55} The unaccompanied minor migrant will be able to appeal against the finding of the assessment and to request a second opinion (at his or her own expense) at a later stage.

\textsuperscript{56} Pursuant to the right to a private life as laid down in Article 8 of the European Convention on Human Rights.


One of the main rules within the health care system is that health care professionals may not provide their services on an anonymous basis, since these health care professionals must be accountable for the actions they perform.\textsuperscript{59}

Failure to disclose their identity makes the actions of the radiologists insufficiently accountable and transparent. In the view of the disciplinary judge, use of a summary procedure to force disclosure of the identity is an excessively complicated and expensive measure.

The Dutch Central Medical Disciplinary Council has also suggested that it might be possible for the radiologists to initiate a voluntary disclosure procedure, if the administrative burden were to become untenable due to the large number of appeals made by asylum seekers. This has not happened yet, however.

The Council of State has also become involved in the discussion. In its view, the minister has a duty to ascertain that the report of the results of age assessment satisfies the requirement of due care in a decision-making procedure (pursuant to the provisions of the General Administrative Law Act (AWB), Article 3.2). This implies that the minister must make sure that the examination is performed in a thorough, careful manner, so as to sustain the conclusions drawn from it.

In order to be able to judge whether the examination was performed competently and fully, the minister should be provided with a report of the findings for which the expert involved takes responsibility as evidenced by his signature of the report, even though for reasons of his own he may not wish to make his name known beforehand.\textsuperscript{60}

If the decision not to grant a residence permit to an unaccompanied minor asylum seeker is based solely on the age assessment, then providing that unaccompanied minor asylum seeker or his or her legal representative on request with a copy of the relevant X-rays for the purposes of a second opinion\textsuperscript{61} forms part of the due care expected of the authorities.

So far, however, anonymity of the radiologist examining the X-rays is still the practice. Without a name and a work address, no medical disciplinary complaint can be made against the person or persons concerned, and it is impossible to ascertain his qualifications and other relevant data (including possible previous convictions by a disciplinary council or other body). No procedure for ascertaining the facts in such cases as indicated above has yet been established.\textsuperscript{62} In addition, it

\textsuperscript{59} Regionaal Tuchtcollege Amsterdam, 26 August 2004, decision in case No. 03/25. This ruling has been confirmed by the Centraal Tuchtcollege voor de Gezondheidszorg, 19 January 2006, decision in cases No. 2004/225 and 2004/227.

\textsuperscript{60} Raad van State, Afdeling bestuursrechtspraak, 23 October 2003, case No. 200304904/1 concerning an appeal against the ruling of the court of The Hague, Dordrecht branch, dated 17 July 2003.

\textsuperscript{61} Rechtbank ’s-Gravenhage, nevenvestiging Dordrecht, afdeling bestuursrecht, vreemdelingenkamer, ruling of 22 April 2011, concerning the decision in case No. AWB 08/15291.

\textsuperscript{62} Paragraph 6 (Signature) of the Dutch age assessment protocol of January 2011 contains the following statement: “In order to protect the personal privacy of the radiologist, the assessment form may not be signed in a way that would reveal any information about the identity of the person concerned. The signature takes the form of a 2-letter code at the bottom of the form, accompanied by the initials of the radiologist in question. One or more authorized officials of the Dutch Ministry of Justice can ascertain the name of the radiologist examining the X-rays, his/her work address and his/her phone number from this code.”
appears that the examination of the X-rays by a radiologist has now been moved to outside the Netherlands. That does not make review of the actions of the radiologists any easier.

**EXPERTISE OF Dutch Forensic Institute (NFI) STAFF**

Unlike radiologists, NFI staff who determine the chronological age of the young person concerned for the IND on the basis of the findings of the radiologists are not subject to appraisal by medical disciplinary bodies. Nevertheless, the age assessment protocol requires NFI staff to have some medical expertise in addition to expertise in the field of physical anthropology in order to judge whether the X-ray examination was carried out properly or whether some or all X-rays have to be repeated. The staff member concerned must be able to assess not only the quality of the X-rays but also the judgment of the radiologists, since he interprets the X-rays and judges the radiological findings from a position of expertise. The Council of State ruled in 2003 that the NFI staff member cannot assume the responsibility for assessment of the X-rays from the radiologist without the necessary expertise. In addition, the NFI performs scientific research for further validation of the methods used, maintains contact with physical anthropologists and radiologists in the Netherlands and abroad, and modifies the methods of examination used if recent publications indicate the need for this. Such tasks require an unambiguous expertise profile, but that has not yet been defined. This makes it difficult to judge whether the age assessment tasks delegated to the NFI are performed properly.

The Secretary of State for Security and Justice gave a written response on 22 February 2013 to the report of the Advisory Committee on Migration Affairs ACVZ entitled “Expertise getoetst” (Assessment of Expertise). This report contained recommendations concerning guarantees for and assessment of various expert opinions submitted to the authorities (in this case the IND). The Secretary of State replied that in his opinion there were sufficient guarantees of the quality of the experts and of the expert opinions in general and in the case of age assessment in particular, because the experts not only give advice in the field of asylum but are also backed up by their own professional standards and quality controls. As indicated above, however, this is definitely not true in the case of age assessment, where the experts work anonymously, and the appraisal of clavicular X-rays for the IND does not fall within everyday radiological practice. In addition, it may be doubted whether NFI staff possess the required expertise, since the age assessment protocol demands medical skills from them.

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63 This follows from the Dutch Age Assessment Protocol dated January 2011.

64 Raad van State, Afdeling bestuursrechtspraak, 23 October 2003, case number 200304904/1.

SUMMARY

There are gaps in the procedure for age assessment in the Netherlands from both a medical and a legal perspective. The procedure does not comply with internationally formulated legally binding guidelines. While the procedure and the protocol for age assessment have undergone some modification since age assessment first began in the Netherlands in 1999, some changes that are essential from a medical and a legal point of view have not yet been completely implemented. There is a need for scientific debate on this topic, involving experts from various disciplines. The DA-AAR expert meeting held in May 2012, which also considered the medical ethics aspect of the Dutch approach, was a first step in this direction. It is undesirable to base age assessment exclusively on four X-ray images – especially as various researchers have expressed serious doubts about these images that have not yet been the subject of public scientific discussion. If age assessment is necessary, it should at least be performed by a multidisciplinary team using various methods, under the leadership of an independent child development expert.

Shortcomings have been observed in the present approach from a medical perspective, with special reference to methodology, epidemiology and radiology. Studies have shown that the use of conventional X-rays does not provide a reliable basis for the assessment of clavicular maturation. Better imaging methods need to be found, and there is as yet no gold standard for each method used. The assignment of a chronological age on the basis of X-ray images that have been found to be inadequate for this purpose will have to be re-assessed, and the application of a sharp lower limit for the age fails to take into account the gradual nature of the maturation of the clavicular epiphysis. Further attention must also be paid to the use of X-rays of the hand and wrist for age assessment, where the radius is currently used as the only maturation criterion for the hand-wrist region; this aspect is not considered further in the present report, however.

From the perspective of health law, age assessment may be regarded as expert advice to the authorities, provided by the Dutch Forensic Institute (NFI) on the basis of a medical examination. This advice can have far-reaching consequences for unaccompanied minor asylum seekers. Flaws have been identified in this procedure, in which radiologists whose identity is undisclosed assess the age on the basis of the presence or absence of a single biological characteristic and an NFI official who has no medical training assesses the work of the radiologists and uses it to estimate the chronological age of the asylum seeker and thus to determine whether the person in question is a child or an adult.

There is further not enough scope for proper appraisal of the medical behaviour of the experts concerned and of the conversion from skeletal age to chronological age. The fact that the identity of the radiologists involved is not disclosed may be seen as obstructing the due administration of justice. Moreover, minor asylum seekers have hardly any opportunity to request a re-assessment, various legal aspects of the NFI age assessment protocol are open to criticism, the legal representation of unaccompanied minor asylum seekers is inadequate, and discussion of whether the clavicular maturation method meets the requirements of need, proportionality and effectiveness is avoided. All in all, it must be concluded that the interests of the child are not the prime consideration in the current approach to age assessment in the Netherlands.
**FUTURE DEVELOPMENTS**

Various influential European bodies have made suggestions over the years about the optimum procedure for age assessments, in the light of the legal position of unaccompanied minor asylum seekers and the fact that age assessment is not an exact science. Their opinions may be briefly summarized as follows:

- Age assessment should only be carried out if there is real doubt whether the asylum seeker in question is a minor, as a last resort and not as routine practice,
- Age assessment must be performed by the least invasive method possible,
- The procedures must be multidisciplinary, performed by independent professional experts who know the ethnic and cultural background of the child,
- The relevant physical, developmental, psychological, environmental and cultural factors must be taken into account,
- The margin of error associated with the age assessment must be stated,
- If any doubt remains about the age of the young person concerned after the examination is completed, he/she must be given the benefit of the doubt.

The role of the guardian, the professional standards and the expertise of the persons responsible for the age assessment and the rights of the child concerned have been defined on the basis of the six above-mentioned principles. An expert in the field of child development must be given a central coordinating role in the multidisciplinary age assessment procedure.

The European Commission proposed the drawing up of guidelines for the development of good age assessment methods in its *Action Plan on unaccompanied minors*, in order to promote greater unity between EU Member States in this field. According to the Commission, such best practices should be developed in consultation between scientists and lawyers. The European Asylum Support Office, EASO, then held a number of meetings in 2012 and 2013 where various aspects of age assessment were discussed. To the best of our knowledge, these meetings focused on differences in legal procedures and bottlenecks. DA-AAR provided EASO with written information in response to an EASO survey. In our written response, we expressed our concern about the Dutch practice of determining chronological ages solely on the basis of X-ray examination, where in particular the conventional X-ray of the clavicle is associated with a number of serious problems. A handbook on age assessment based on the results of the EASO discussions will appear in the second half of 2013.

The Separated Children in Europe Programme (SCEP) issued a 4th revision of its Statement of Good Practice on age assessment in 2009. It recently (in May 2012) published another Position Paper on age assessment. After inventorying the state of affairs in 16 EU Member States, the authors of this...
position paper amplified their previous recommendations in this field\textsuperscript{67}. Dutch age assessment as practiced in 2013 only meets a few of the more than 25 SCEP recommendations. Seen from this European perspective among other things, there is an urgent need to develop new professional medical and legal guidelines for age assessment in the Netherlands that take the medical, legal and other problems in this field into account.

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