

**Standards
Forensic Radiology
(014.0)**

Version: 0.1
Date of approval: [date of Board decision]
Date of effect: [date of publication]

Contents

- Part I. General introduction to the Standards**..... 3
 - § 1. Background to and aim of the Standards** 3
 - 1.1. Factual vs. interpretative investigations** 3
 - § 2. Types of applications** 4
 - § 3. Justification of the Standards** 5
 - § 4. Validity of the Standards**..... 5
 - § 5. Version management and formal revision history** 5
 - 5.1. Version management** 5
 - 5.2. Formal revision history** 5
- Part II. Demarcation of Forensic Radiology**..... 6
 - § 1. Introduction** 6
 - § 2. Core activities** 6
 - § 3. Methodology**..... 7
 - § 4. Boundaries of the field of expertise**..... 8
 - § 5. Registration** 8
 - 5.1. Defined subfields** 8
- Part III. Registration requirements for Forensic Radiology** 10
 - § 1. Article 12(2) sub-paragraph a** 10
 - 1.1. Initial application: independent expert** 10
 - 1.2. Initial application: expert without work of their own** 11
 - 1.3. Application for reregistration: after full registration** 12
 - 1.4. Application for reregistration: after conditional registration** 12
 - 1.5. Application after rejection or after legally expired registration** 13
 - § 2. Article 12(2) sub-paragraph b** 13
 - § 3. Article 12(2) sub-paragraph c** 14
 - § 4. Article 12(2) sub-paragraph d**..... 14
 - § 5. Article 12(2) sub-paragraph e** 15
 - § 6. Article 12(2) sub-paragraph f** 15
 - § 7. Article 12(2) sub-paragraph g**..... 15
 - § 8. Article 12(2) sub-paragraph h**..... 16
 - § 9. Article 12(2) sub-paragraph i** 16
 - § 10. Hardship clause** 16
- Part IV. Assessment procedure for Forensic Radiology** 17
 - § 1. General**..... 17
 - § 2. Assessment procedure per type of application** 17
 - 2.1. Initial application: independent expert** 17
 - 2.2. Initial applicant: expert without work of their own** 18
 - 2.3. Application for reregistration: after full registration** 18
 - 2.4. Application for reregistration: after conditional registration** 19
 - 2.5. Application after rejection or after legally expired registration (fast-track)**..... 19
- Annex A: Case Book requirements** 21

Annex B: Summary of concepts Forensic Radiology 22
Annex C: NRGD Glossary 23
Annex D: Revision history 25

Part I. General introduction to the Standards

§ 1. Background to and aim of the Standards

Reporting forensic experts play a crucial role in the administration of justice. The NRGD aims to ensure justified confidence in forensic expertise for stakeholders. This confidence must be based on the demonstrable independently safeguarded quality of forensic investigators and their reports on the basis of (inter)national forensic-specific standards.

The NRGD is managed by the Board of Court Experts (hereinafter: Board). The Board has the legal duty to manage a public register of forensic experts who do comply with the Board's registration requirements. The registration requirements have been laid down in concordance with the field of expertise and have been demarcated in specific Standards per field of expertise. This is important to inform applicants, assessors and users of the register (e.g. judge, public prosecutor and attorney) about the activities an expert in the field of expertise in question engages in and about the activities that fall outside the field of expertise. The demarcation of the field of expertise is set out in Part II of these Standards.

The Board also determines the criteria based on which an assessment is made for each field of expertise as to whether an application complies with the quality requirements. The generic requirements are set out in the Register of Court Experts in Criminal Cases Decree (*Besluit register deskundige in strafzaken*). These requirements are elaborated further for each field of expertise. This elaboration is set out in Part III of these Standards.

Furthermore, the Board determines the assessment procedure. This procedure is described in Part IV of these Standards.

The NRGD has a system of periodic repeat registration. Court experts must demonstrate every five years that they still meet the requirements in force at that time. The Standards are dynamic and are being developed further in order to enhance the quality of the experts. These Standards set out the current state of the (sub-)field of expertise.

1.1. Factual vs. interpretative investigations

The Board of Court Experts uses the following conceptual framework. In line with the legal concept of 'expert', they distinguish between investigations with or without forensic interpretation of findings.

Factual investigation is a human observation (information) or instrumental measurement (data) during the investigation of a location, object, trace or person and that takes place according to an established protocol. Factual investigation does not require a (context-dependent) assessment or interpretation of findings.

Interpretative investigation involves a professional assessment/opinion/interpretation of the human observation (information) or instrumental measurement (data) that emerged from the factual investigation. This interpretation can be done by viewing the findings in the light of different hypotheses or scenarios or by providing a best explanation of events and activities.

Factual investigation is usually assured by accreditation of the analytical methods, the method of the investigator/institute and the training of the investigator.

Professional assessment, opinion and interpretation of findings depend on the scientific knowledge and the expertise of the expert and the context information in relation to the case. Proper interpretive investigations depend on the competencies of the individual expert. The quality of an expert who carries out such an interpretive investigation can be assured by an

NRGD registration of that expert. The individual expert is assessed on competencies laid down in these standards based on international consensus.

§ 2. Types of applications

The NRGD distinguishes two types of applications: the application for initial registration and the application for reregistration. The application for initial registration is submitted by an expert who at the time of submission of the application is not yet registered in the register for the field of expertise to which the application relates. The application for reregistration is submitted by an expert who is already registered in the register for the field of expertise to which the application relates.

These two types of applications are subdivided as follows:

Application for initial registration:

- (i) independent expert: an expert who has independently written and signed the required number of case reports;
- (ii) expert without work of their own: an expert who has not independently written and signed the number of case reports required for registration.
If the assessment is favourable, the expert without work of their own will only qualify for provisional registration.

Application for reregistration:

- (i) after full registration;
- (ii) after provisional registration.

The application for initial registration is submitted by an expert who at the time of submission of the application does not have an NRGD registration. This might be:

- the independently reporting expert;
- the newly-trained expert;
- the expert whose earlier application has been rejected by the Board;
- the expert whose registration was previously stricken.

In respect of applications for initial registration, it is necessary to make a clear distinction between the independent expert and the expert without work of their own. An example of an expert without work of their own is the newly-trained expert. This expert has completed a forensic training (training on drawing up forensic reports) but has not yet been able to independently write the number of reports required for the assessment because these are written under the supervision of a tutor during the training. Another example of an expert without work of their own is the expert whose earlier application was rejected and who has been working (partly) under supervision following this rejection.

The Board adopts the following principle. Every applicant must draw up a List of Case Information. This list must include a specific number of cases in a period specified by the Board immediately preceding the application. If the List of Case Information includes one or more cases which have been prepared under supervision, the applicant will be qualified as an 'expert without work of their own'. Additional requirements apply to the applicant whose application was rejected earlier: the case reports must have been drawn up after the date of the Board's decision rejecting the earlier application (Policy Framework for Application after Rejection).

The distinction between the various types of applications for reregistration is important in the context of the assessment procedure, e.g. the documents an expert must submit, the composition of the Advisory Committee for Assessment and the assessment method.

§ 3. Justification of the Standards

The draft of these Standards has been published on the NRGD website for public consultation. These Standards have been established by the Board in accordance with the Register of Court Experts in Criminal Cases Decree (Besluit register deskundige in strafzaken).

§ 4. Validity of the Standards

The Standards are valid from the date shown on the cover. The validity runs until the moment of publication of a new version. In principle it will be checked annually as being up to date. This check can lead to a new version. The aim is to publish the new version no more than once a year. Intermediate alterations can be incorporated in an addendum, which will be published on the NRGD website as well.

§ 5. Version management and formal revision history

All changes made to the Standards lead to a new version. Newer versions of (parts of) the Standards are designated with a higher version number.

5.1. Version management

In the case of editorial changes, the version number is increased by 0.1. Editorial changes have no substantive impact. In the case of substantive changes, the version number is increased by 1.

5.2. Formal revision history

The revision history starts with version 1.0 as the first formally approved version. Substantive changes made are briefly described in the revision history (Annex C). This makes it possible to trace which Standards are valid at any given moment at all times.

Part II. Demarcation of Forensic Radiology

§ 1. Introduction

Forensic Radiology can be described as the forensic medical investigation of human bodies based on radiology images. The expertise of experts in Forensic Radiology can be divided in several different categories. First, it can be applied in cases with living persons and in cases with deceased persons. The required knowledge of forensic radiology for the living is different from the required knowledge of forensic radiology for the deceased. Thus, the evaluation and the interpretation of radiological images of living and deceased persons differs. Next to this distinction, a second distinction must be made between adults and children. The evaluation and the interpretation of radiological images of adults and children differs as well.

The current focus of the NRGD in setting the Standards for Forensic Radiology is the use of forensic radiology for deceased adults. Whenever the term 'expert in Forensic Radiology' is mentioned in this document, an expert in the use of forensic radiology for deceased adults, is meant. It is possible that other types of forensic radiology will be standardized in the future and that definitions will change. Below, a description is given of the field of expertise of Forensic Radiology as defined by the NRGD and the activities experts in Forensic Radiology registered in the NRGD engage in.

Within the field of expertise 'Forensic Radiology', the following laymen questions are relevant and could be asked by commissioning parties:

- Did the deceased die of natural or unnatural causes?
- What is the type and possible cause of injury?
- Can the age of the injuries be determined?
- What is the cause and mechanism of death?
- What is the identity of the deceased?

An expert in Forensic Radiology tries to aid in answering these questions based on forensic radiology methods.

§ 2. Core activities

A registered expert in Forensic Radiology conducts an examination of the radiological images made of a deceased person, to (help) answer medicolegal questions in cases of (suspected) unnatural death. The primary focus of the expert in Forensic Radiology is to interpret medical images made by using CT, MRI and/or X-ray. In general, the tasks of an expert in Forensic Radiology are:

- to (help) establish the nature, cause and consequences of injuries;
- to (help) determine the age of injuries;
- to (help) establish the cause and mechanism of death;
- to (help) establish the manner of death;
- to (help) establish the identity of the deceased.

Experts within this field of expertise might be asked for their expertise in different phases of an investigation. Depending on these different stages, different tasks are distinguished and therefore, different competencies are required, but in general, experts for both types of reporting shall:

- have knowledge of the physics of X-ray, CT and MRI;

- have knowledge of the artefacts of X-ray, CT and MRI;
- have knowledge of CT and MRI findings of artefacts of death;
- be familiar with the use of work stations;
- have knowledge of specifics of forensic pathology;
- have knowledge of conditions causing death;
- have knowledge of common radiological manifestations of deceased;
- have knowledge of cross-sectional anatomy;
- have basic knowledge of ID parameters on X-ray, CT and MRI;
- have knowledge of scanning protocols.

Within this demarcation of Forensic Radiology, two different types of reporting are defined:

Type 1: Descriptive reporting

Type 2: Investigative reporting

These two types of reporting can be explained by the two phases of a postmortem radiologic investigation. In the first phase, a descriptive factual report is written to decide what possible further steps in an investigation should be considered. In the second phase, more extensive questions must be answered in an investigative report and, if available, the findings from the descriptive report need to be interpreted.

Within these two types of reporting, there are several major tasks to distinguish. A registered expert should be competent in performing those tasks.

The following competencies are required for an expert in **Descriptive reporting**:

- Case evaluation and intake
- Determine which imaging method should be used
- Investigation of the collected images
- Writing a descriptive report with findings
- Advising concerning possible further (criminal) investigation into the cause of death
- Advising about additional imaging procedures prior to autopsy
- Interaction with forensic pathologists regarding autopsy techniques and interpretation of autopsy findings

In addition to these tasks, the major tasks for **Investigative reporting** are:

- Interpretation of images, including trajectory and mechanisms of injury
- Interpretation of images to (help) establish the nature, cause and consequences of any injuries
- Interpretation of images in order to help establish the cause and/or manner of death
- Writing medicolegal reports with relevant, annotated images
- Giving evidence in court, if required

Experts in forensic radiology may also be required to interact with police (forensic investigators) and other parties to better understand mechanisms of injury or death, based on circumstances or additional information.

§ 3. Methodology

The above-mentioned tasks are performed using images made with e.g. CT, MRI and X-ray. Although it is not currently standard in the Netherlands, an expert in Forensic Radiology might also perform image-guided procedures, including biopsy, angiography, and specimen collection.

An expert in forensic radiology is familiar with the procedure of imaging and the technical aspects, and the pros and cons of the imaging equipment that is used. An expert in forensic radiology must also be aware of the possibilities and limitations of the techniques and equipment.

§ 4. Boundaries of the field of expertise

The field of expertise of Forensic Radiology as standardized by the NRGD is focused on forensic postmortem imaging in adults. Within the Standards, two different types of reporting are distinguished:

Type 1 – Descriptive reporting
Type 2 – Investigative reporting

Within the practice of forensic radiology, specific types of questions exist that require additional expertise and experience and therefore fall outside the scope of Forensic Radiology as standardized by the NRGD. According to e.g. the NRGD Code of Conduct, an expert shall not provide answers to questions that fall outside the scope of the Standards, as set by the NRGD.

The following related fields of expertise fall outside the scope of the field of Forensic Radiology as defined by the NRGD:

- Forensic pathology
- Forensic medicine
- Forensic toxicology
- Forensic anthropology
- Forensic odontology

Although these related fields of expertise fall outside the scope of the field of forensic radiology, an expert in forensic radiology must have knowledge of the principles of the above-mentioned fields of expertise, is able to cooperate with experts within these fields of expertise and to adequately integrate relevant findings in the final expert report.

§ 5. Registration

The register will record the name of the relevant expert as an expert in the field of:

014.1 Forensic Radiology – Descriptive Reporting
014.2 Forensic Radiology – Investigative Reporting

An Investigative Reporting registration requires that an expert is also competent for all Descriptive Reporting requirements. A registered expert in Forensic Radiology can be registered for either Descriptive Reporting or Descriptive Reporting and Investigative Reporting.

5.1. Defined subfields

Experts in forensic radiology have a shared knowledge of forensic radiology, but the use of this knowledge can differ, depending on the work setting. The registered expert for 014.1 Forensic Radiology – Descriptive Reporting reports in a different phase of a (potential) criminal investigation than the registered expert for 014.2 Forensic Radiology – Investigative Reporting. Therefore, a registered expert for 014.1 Forensic Radiology – Descriptive Reporting writes a different type of report about different investigative questions.

The registered expert for 014.1 Forensic Radiology – Descriptive Reporting is usually involved in an early phase of a (potential) criminal investigation. In this phase the expert gives a descriptive report based on the radiology images to the commissioning party (e.g. judge, public prosecutor, police). The report helps to decide whether a further investigation into the cause of death of a deceased person is advisable, or even necessary, or gives information to the forensic pathologist for the autopsy.

The registered expert for 014.2 Forensic Radiology – Investigative Reporting is involved in a later phase of a criminal investigation (as well). An interpretative investigation is often combined with a forensic pathological investigation. The registered expert for this type of reporting may give advice to the forensic pathologist, e.g., prior to an autopsy, and interprets radiological findings to (help to) answer complex questions considering the identity of a deceased person, the manner of death and/or the cause of injuries. The report can be used as evidence in court.

Part III. Registration requirements for Forensic Radiology

The general (repeat) registration requirements are given in the next paragraphs in italics with a reference to Article 12 paragraph 2 in the Register of Court Experts in Criminal Cases Decree (*Besluit register deskundige in strafzaken*).

An expert will only be registered as an expert in criminal cases upon submission of the application if, in the opinion of the Board, the expert:

- a. has sufficient knowledge and experience in the field of expertise to which the application relates;
- b. has sufficient knowledge of and experience in the field of law concerned, and is sufficiently familiar with the position and the role of the expert in this field;
- c. is able to inform the commissioning party whether, and if so, to what extent the commissioning party's question at issue is sufficiently clear and capable of investigation in order to be able to answer it on the basis of their specific expertise;
- d. is able, on the basis of the question at issue, to prepare and carry out an investigation plan in accordance with the applicable standards;
- e. is able to collect, document, interpret and assess investigative materials and data in a forensic context in accordance with the applicable standards;
- f. is able to apply the current investigative methods in a forensic context in accordance with the applicable standards;
- g. is able to give, both orally and in writing, a verifiable and well-reasoned report on the assignment and any other relevant aspects of their expertise in terms which are comprehensible to the commissioning party;
- h. is able to complete an assignment within the stipulated or agreed period;
- i. is able to carry out the activities as an expert independently, impartially, conscientiously, competently, and in a trustworthy manner.

§ 1. Article 12(2) sub-paragraph a

(...) has sufficient knowledge and experience in the field of expertise to which the application relates.

1.1. Initial application: independent expert

Basic requirements:

- a successfully completed medical education and a current registration as medical practitioner (BIG-registration, or equivalent international registration);
- a specialisation registration (also referred to in the Netherlands as RGS registration) in radiology or fulfil the extra requirements below;
- be familiar with the recent publications and literature in the field of expertise and abreast of state-of-the-art developments;
- thorough knowledge of forensic radiology, the interpretation of radiological images, techniques and equipment, causes and consequences of injuries, changes occurring after death and the possibilities and limitations of radiological findings to answer medicolegal questions;
- postgraduate training (on the job) of at least 60 hours of teaching material, for example the Virtopsy-course, which has to include at least the following elements:
 - o forensic radiology
 - o postmortem radiology
 - o forensic reporting
- have spent an average of 40 hours a year over the past 5 years on forensically relevant professional development (e.g. publications, attending conferences, running or attending courses, reading literature).

Extra requirements for applicants without a specialisation registration in radiology (RGS)

- In the past 5 years, you must have practiced the specialisation of (forensic) radiology for at least 4160 hours (16 hours per week) in a sufficient and regular manner;
- In the past 5 years, you must have participated in an evaluation of your individual performance;
- In the past 5 years, you must have participated in external quality evaluation in which the performance of a group of specialists of which you are a member is assessed.

Specific requirements Descriptive Reporting:

- have drawn up at least 50 descriptive reports not older than 5 years which have been subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

Specific requirements Investigative Reporting:

- have drawn up at least 10 investigative reports of which a maximum of 5 may be relevant cases in a casebook¹ used for educational goals, not older than 5 years which have been subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

1.2. Initial application: expert without work of their own

Basic requirements:

- a successfully completed medical education and a current registration as medical practitioner (BIG-registration, or equivalent international registration);
- has a specialisation registration (also referred to in the Netherlands as RGS registration) in radiology or fulfil the extra requirements below;
- be familiar with the recent publications and literature in the field of expertise and abreast of state of the art- developments;
- thorough knowledge of forensic radiology, the interpretation of radiological images, techniques and equipment, causes and consequences of injuries, changes occurring after death and the possibilities and limitations of radiological findings to answer medicolegal questions;
- postgraduate training (on the job) of at least 60 hours of teaching material, for example the Virtopsy-course, which has to include at least the following elements:
 - o forensic radiology;
 - o postmortem radiology;
 - o forensic reporting;
- have spent an average of 40 hours a year over the past 2 years on forensically relevant professional development (e.g. publications, attending conferences, running or attending courses, reading literature).

Extra requirements for applicants without a specialisation registration in radiology (RGS)

- In the past 2 years, you must have practiced the specialisation of (forensic) radiology for at least 1664 hours (16 hours per week) in a sufficient and regular manner;
- In the past 2 years, you must have participated in an evaluation of your individual performance;
- In the past 2 years, you must have participated in external quality evaluation in which the performance of a group of specialists of which you are a member is assessed.

Specific requirements Descriptive Reporting:

¹ The intention of a casebook is to demonstrate that candidates have had an adequate exposure to different types of cases during their training, are capable of drawing appropriate conclusions from the findings and are able to formulate good quality reports with well-reasoned discussions, in the context of the key literature.

- have drawn up at least 20 descriptive reports not older than 2 years under supervision. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

Specific requirements Investigative Reporting:

- have drawn up at least 10 investigative reports which either may all be relevant cases in a casebook used for educational goals, or active cases under an appointed supervisor. The cases may not be older than 2 years and must be subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

1.3. Application for reregistration: after full registration

Basic requirements:

- a successfully completed medical education and a current registration as medical practitioner (BIG-registration, or equivalent international registration);
- has a specialisation registration (also referred to in the Netherlands as RGS registration) in radiology or fulfil the extra requirements below;
- be familiar with the recent publications and literature in the field of expertise and abreast of state of the art- developments;
- thorough knowledge of forensic radiology, the interpretation of radiological images, techniques and equipment, causes and consequences of injuries, changes occurring after death and the possibilities and limitations of radiological findings to answer medicolegal questions;
- postgraduate training (on the job) of at least 60 hours of teaching material, for example the Virtopsy-course, which has to include at least the following elements:
 - o forensic radiology;
 - o postmortem radiology;
 - o forensic reporting;
- have spent an average of 40 hours a year over the past 5 years on forensically relevant professional development (e.g. publications, attending conferences, running or attending courses, reading literature).

Extra requirements for applicants without a specialisation registration in radiology (RGS)

- In the past 5 years, you must have practiced the specialisation of (forensic) radiology for at least 4160 hours (16 hours per week) in a sufficient and regular manner;
- In the past 5 years, you must have participated in an evaluation of your individual performance;
- In the past 5 years, you must have participated in external quality evaluation in which the performance of a group of specialists of which you are a member is assessed.

Specific requirements Descriptive Reporting (level 1):

- have drawn up at least 50 descriptive reports not older than 5 years which have been subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

Specific requirements Investigative Reporting (level 2):

- have drawn up at least 10 investigative reports of which a maximum of 5 may be relevant cases in a casebook used for educational goals, not older than 5 years which have been subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

1.4. Application for reregistration: after conditional registration

Basic requirements:

- a successfully completed medical education and a current registration as medical practitioner (BIG-registration, or equivalent international registration);

- has a specialisation registration (also referred to in the Netherlands as RGS registration) in radiology or fulfil the extra requirements below;
- be familiar with the recent publications and literature in the field of expertise and abreast of state of the art- developments;
- thorough knowledge of forensic radiology, the interpretation of radiological images, techniques and equipment, causes and consequences of injuries, changes occurring after death and the possibilities and limitations of radiological findings to answer medicolegal questions;
- postgraduate training (on the job) of at least 60 hours of teaching material, for example the Virtopsy-course, which has to include at least the following elements:
 - o forensic radiology;
 - o postmortem radiology;
 - o forensic reporting;
- have spent an average of 40 hours a year over the past 2 years on forensically relevant professional development (e.g. publications, attending conferences, running or attending courses, reading literature).

Extra requirements for applicants without a specialisation registration in radiology (RGS)

- In the past 2 years, you must have practiced the specialisation of (forensic) radiology for at least 1664 hours (16 hours per week) in a sufficient and regular manner;
- In the past 2 years, you must have participated in an evaluation of your individual performance;
- In the past 2 years, you must have participated in external quality evaluation in which the performance of a group of specialists of which you are a member is assessed.

Specific requirements Descriptive Reporting (level 1):

- have drawn up at least 20 descriptive reports not older than 2 years which have been subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

Specific requirements Investigative Reporting (level 2):

- have drawn up at least 4 investigative reports of which a maximum of 2 may be relevant cases in a casebook used for educational goals, not older than 2 years which have been subjected to collegial review. These case reports should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise.

The reports must show that applicant has fulfilled the conditions for registration.

1.5. Application after rejection or after legally expired registration

In accordance with the policy framework 'Application after Rejection', registration requirements listed above under *Application for Initial Registration* apply for experts whose registration has been rejected by the Board in an application procedure or for experts whose registration has legally expired within the previous two years. Exclusively (casebook) reports written after the date of the rejection will be assessed. Additionally, also reports of supervision and/or collegial review and/or casebook reports will be included in the assessment (see also Part IV).

§ 2. Article 12(2) sub-paragraph b

(...) has sufficient knowledge of and experience in the field of law concerned and is sufficiently familiar with the position and the role of the expert in this field.

- In general, an applicant should have adequate knowledge of Dutch criminal law:
 - context of criminal law:

- Trias Politica, distinction between civil law, administrative law and criminal law.
 - criminal law procedure:
 - pre-trial investigation;
 - coercive measures;
 - stages of the proceedings;
 - actors in the criminal justice system (tasks/powers/responsibilities);
 - regulations concerning experts laid down in the Dutch Code of Criminal Procedure (position and powers of commissioning party, legal position of expert, position and powers of lawyer, forms of counter-analysis, register of experts in the context of criminal law);
 - legal decision-making framework of the court in criminal cases (decision-making schedule laid down in Section 350 of the Dutch Criminal Code of Procedure), also with a view to the relevance of the commission to the expert and to the question at issue;
 - course of the criminal trial;
 - position of the expert in the court procedure.
 - substantive criminal law:
 - sanctions and grounds for exemption from criminal liability (very basic).
 - knowledge of the legal context of safeguarding the quality of the expert and the analysis/investigation:
 - position and role of the co-operating organisations in the criminal justice system in safeguarding the quality of the reports;
 - professional codes and relevant regulations in relation to the NRGD Code of Conduct.
- In addition to the above requirements, an applicant for the field of expertise of Forensic Radiology should have:
- adequate knowledge of principles of evidence in the context of the Dutch criminal law;
 - adequate knowledge of the *Wet op de lijkbezorging* and the *Besluit op de lijkbezorging* and keep abreast of developments in this regard;
 - adequate knowledge of fundamental principles of forensic investigations (e.g. crime scene investigation, chain of custody and principles of evidence).

§ 3. Article 12(2) sub-paragraph c

(...) is able to inform the commissioning party whether, and if so, to what extent the commissioning party's question at issue is sufficiently clear and capable of investigation in order to be able to answer it on the basis of their specific expertise.

An applicant should have:

- sufficient knowledge of the principles of related fields of expertise forensic pathology, forensic medicine, forensic toxicology, forensic anthropology and forensic odontology to be able to adequately refer the commissioning party when relevant.

§ 4. Article 12(2) sub-paragraph d

(...) is able, on the basis of the question at issue, to prepare and carry out an investigation plan in accordance with the applicable standards.

An applicant shall:

- be able to determine what type of imaging and settings should be used;
- whether an additional investigation is needed (at least forensic pathology).

§ 5. Article 12(2) sub-paragraph e

(...) is able to collect, document, interpret and assess investigative materials and data in a forensic context in accordance with the applicable standards.

An applicant shall:

- be able to adequately deal with and describe the information presented to them by the police and/or the commissioning party;
- be able to describe the findings from the radiological images made and advise the commissioning party based on these findings (level 1);
- be able to interpret the findings from the radiological images made and (help) answer the investigative question(s) provided by the commissioning party (level 2).

§ 6. Article 12(2) sub-paragraph f

(...) is able to apply the current investigative methods in a forensic context in accordance with the applicable standards.

An applicant shall:

- be able to determine which forensic radiology methods should be used and how;
- be able to record, assess and interpret the results;
- have an in-depth knowledge of all methods and be able to explain these methods;
- have knowledge of the state-of-the-art developments in forensic radiology and radiology;
- be aware of the possibilities and limitations of e.g. forensic pathology;
- be aware of the pros and cons of the various techniques, specialisations and scientific methods used in this field and be able to explain the possibilities and limitations of the techniques specialisations and scientific methods;

§ 7. Article 12(2) sub-paragraph g

(...) is able to give, both orally and in writing, a verifiable and well-reasoned report on the assignment and any other relevant aspects of their expertise in terms which are comprehensible to the commissioning party.

An applicant shall:

- be able to write a linguistically correct report which is also understandable and readable for laymen, using neutral, not unnecessarily disqualifying formulations;
- be able to apply the principles of the prevailing formats to the structure and layout of the report;
- be constantly aware of the scope of the report when reporting;
- be able to provide clear information on the field of expertise and the findings of the investigation.

Alongside the required administrative data (name of commissioning party, date of commission, date of report, commissioning party's reference, own reference, number and type of appendices etc.) a report must contain the following elements (when relevant for answering the investigative question(s)):

- a description of the materials received, with information about the date and manner of submission, whether originals were received or copies, and any other conditions of the materials that might be relevant for the examination are mentioned as well (e.g. unreported damage to the documents, whether the documents appear to have been treated with chemicals for fingerprint examination);
- specification of questioned and reference material;
- any relevant background information which could influence the interpretation of the investigation findings;

- question(s) posed by the commissioning party, and where relevant what has been discussed between the commissioning party and the investigator in accordance with article 12 (2) c;
- the hypotheses applied by the investigator;
- the investigation method(s) used;
- the evaluation of the materials under investigation;
- the evaluation of the reference material;
- the results of the examination;
- the interpretation of the results of the examination;
- the conclusions (with the scale used and its explanation).

§ 8. Article 12(2) sub-paragraph h

(...) is able to complete an assignment within the stipulated or agreed period.

§ 9. Article 12(2) sub-paragraph i

(...) is able to carry out the activities as an expert independently, impartially, conscientiously, competently, and in a trustworthy manner.

An applicant shall comply with the NRGD Code of Conduct determined by the Court Experts Board and published on the website of the NRGD.

§ 10. Hardship clause

The Board may decide not to apply or deviate from a registration requirement if application of such requirement would produce very unreasonable results. The hardship clause may only offer a solution in certain exceptional situations. It is up to the applicant themselves to submit facts and circumstances showing that a certain registration requirement is unreasonable in their specific case.

Part IV. Assessment procedure for Forensic Radiology

§ 1. General

In all fields of expertise the assessment will be based on the written information provided, including as a minimum requirement case reports and items of evidence, supplemented in principle with an oral assessment. However, such an oral assessment will not be necessary if the applicant's expertise has already been clearly demonstrated by the written information.

The assessment will in principle be carried out on the basis of the information provided by the applicant:

- general information as part of the application package;
- documentary evidence of competence.

If it is felt necessary in the context of the assessment an additional case report and/or information, for example information about the way collegial review and/or supervision is organized within the organization, can be requested.

§ 2. Assessment procedure per type of application

2.1. Initial application: independent expert

Documents to be submitted:

- NRGD application form;
- Certificate of Good Conduct (not older than 3 months);
- a clearly legible copy of a valid passport or identity card;
- proof of RGS-registration or the extra documents mentioned below;
- overview of the contents and teaching material of the post-graduate training;
- a curriculum vitae (CV), preferably in English;
- Overview Continuing Professional Development in forensic radiology;
- List of Case Information Forensic Radiology;
- 3 case reports from active cases (including (annotated) images) not older than 5 years selected by the applicant from the List of Case Information Forensic Radiology. If the applicant for the subfield Investigative Reporting does not have enough active case reports, and if applicable, the complete casebook must be submitted.

Additional required documents for experts without a specialisation registration in radiology

- Three documents to proof and demonstrate your professional activities and participation in external and internal (quality) evaluations:
 - Forensic Radiology – Statement of Activities
 - Forensic Radiology – Participation in External Quality Evaluation
 - Forensic Radiology – Statement on Evaluation of Individual Performance

Assessment method:

phase a - administrative, by the NRGD Bureau;

phase b - substantive, by an Advisory Committee for Assessment (ACA) made up of at least three people on the basis of the available written material, including possible supplementary written information. In principle this ACA consists of a lawyer and two professional assessors;

phase c - substantive, by the ACA specified at phase b by means of an oral assessment. This oral assessment will be waived if the applicant's expertise has already been clearly established in phase b;

phase d - decision by the Board: unconditional, conditional or no registration.

2.2. Initial applicant: expert without work of their own

Documents to be submitted:

- NRGD application form;
- Certificate of Good Conduct (not older than 3 months);
- a clearly legible copy of a valid passport or identity card;
- proof of RGS-registration or the extra documents mentioned below;
- overview of the contents and teaching material of the post-graduate training;
- a curriculum vitae (CV), preferably in English;
- Overview Continuing Professional Development in forensic radiology;
- List of Case Information Forensic Radiology;
- 3 case reports from active cases (including (annotated) images) not older than 2 years selected by the applicant from the List of Case Information Forensic Radiology. If the applicant for the subfield Investigative Reporting does not have enough active case reports, and if applicable, the complete casebook must be submitted.

Additional required documents for experts without a specialisation registration in radiology

- Three documents to proof and demonstrate your professional activities and participation in external and internal (quality) evaluations:
 - Forensic Radiology – Statement of Activities
 - Forensic Radiology – Participation in External Quality Evaluation
 - Forensic Radiology – Statement on Evaluation of Individual Performance

Assessment method:

phase a - administrative, by the NRGD Bureau;

phase b - substantive, by an Advisory Committee for Assessment (ACA) made up of at least three people on the basis of the available written material, including possible supplementary written information. In principle this ACA consists of a lawyer and two professional assessors;

phase c - substantive, by the ACA specified at phase b by means of an oral assessment. This oral assessment will be waived if the applicant's expertise has already been clearly established in phase b;

phase d - decision by the Board: unconditional, conditional or no registration.

2.3. Application for reregistration: after full registration

Documents to be submitted:

- NRGD application form;
- Certificate of Good Conduct (not older than 3 months);
- proof of RGS-registration or the extra documents mentioned below;
- overview of the contents and teaching material of the post-graduate training;
- a curriculum vitae (CV), preferably in English;
- Overview Continuing Professional Development in forensic radiology;
- List of Case Information Forensic Radiology;
- 2 case reports (including (annotated) images) not older than 5 years selected by the applicant from the List of Case Information Forensic Radiology. If the applicant for the subfield Investigative Reporting does not have enough active case reports, and if applicable, the complete casebook must be submitted.

Additional required documents for experts without a specialisation registration in radiology

- Three documents to proof and demonstrate your professional activities and participation in external and internal (quality) evaluations:
 - Forensic Radiology – Statement of Activities
 - Forensic Radiology – Participation in External Quality Evaluation
 - Forensic Radiology – Statement on Evaluation of Individual Performance

Assessment method:

phase a - administrative, by the NRGD Bureau;

phase b - substantive, by an Advisory Committee for Assessment (ACA) made up of at least three people on the basis of the available written material, including possible supplementary written information. In principle this ACA consists of a lawyer and two professional assessors;

phase c - substantive, by the ACA specified at phase b by means of an oral assessment. This oral assessment will be waived if the applicant's expertise has already been clearly established in phase b;

phase d - decision by the Board: unconditional, conditional or no registration.

2.4. Application for reregistration: after conditional registration

Documents to be submitted:

- NRGD application form;
- Certificate of Good Conduct (not older than 3 months);
- proof of RGS-registration or the extra documents mentioned below;
- overview of the contents and teaching material of the post-graduate training;
- a curriculum vitae (CV), preferably in English;
- Overview Continuing Professional Development in forensic radiology;
- List of Case Information Forensic Radiology;
- 2 case reports (including (annotated) images) not older than 2 years selected by the applicant from the List of Case Information Forensic Radiology. If the applicant for the subfield Investigative Reporting does not have enough active case reports, and if applicable, the complete casebook must be submitted.

Additional required documents for experts without a specialisation registration in radiology

- Three documents to proof and demonstrate your professional activities and participation in external and internal (quality) evaluations:
 - Forensic Radiology – Statement of Activities
 - Forensic Radiology – Participation in External Quality Evaluation
 - Forensic Radiology – Statement on Evaluation of Individual Performance

Assessment method:

phase a - administrative, by the NRGD Bureau;

phase b - substantive, by an Advisory Committee for Assessment (ACA) made up of at least three people on the basis of the available written material, including possible supplementary written information. In principle this ACA consists of a lawyer and two professional assessors;

phase c - substantive, by the ACA specified at phase b by means of an oral assessment. This oral assessment will be waived if the applicant's expertise has already been clearly established in phase b;

phase d - decision by the Board: unconditional, conditional or no registration.

2.5. Application after rejection or after legally expired registration (fast-track)

Documents to be submitted:

- NRGD application form;
- Certificate of Good Conduct (not older than 3 months);
- proof of RGS-registration or the extra documents mentioned below;
- overview of the contents and teaching material of the post-graduate training;
- a curriculum vitae (CV), preferably in English;
- Overview Continuing Professional Development in forensic radiology;
- List of Case Information Forensic Radiology, exclusively listing reports written after the date of rejection by the Board or the date of the legal expiration;

- 3 case reports (including (annotated) images) drawn up after the date of rejection by the Court Experts Board or the date of legal expiration, selected by the applicant from the List of Case Information Forensic Radiology;
- all documents of supervision and/or collegial review related to the submitted case reports.

Additional required documents for experts without a specialisation registration in radiology

- Three documents to proof and demonstrate your professional activities and participation in external and internal (quality) evaluations:
 - Forensic Radiology – Statement of Activities
 - Forensic Radiology – Participation in External Quality Evaluation
 - Forensic Radiology – Statement on Evaluation of Individual Performance

Assessment method:

phase a - administrative, by the NRGD Bureau;

phase b - substantive, by an Advisory Committee for Assessment (ACA) made up of at least three people on the basis of the available written material, including possible supplementary written information. In principle this ACA consists of a lawyer and two professional assessors;

phase c - substantive, by the ACA specified at phase b by means of an oral assessment;

phase d - decision by the Board: unconditional, conditional or no registration.

Annex A: Case Book requirements

The casebook can form a part of the application for registration as an expert in Forensic Radiology - Investigative Reporting.

The intention of the casebook is to demonstrate that the applicant has had an adequate exposure to different types of cases during their training, is capable of drawing appropriate conclusions from the findings and is able to formulate good quality reports with well-reasoned discussions, in the context of the key literature.

Casebook contents

The casebook should be filled with reports on (mock) cases that were covered during the applicant's training. The cases might be provided by the training institute or can be found in databases, such as [the New Mexico Decedent Image Database](#). These casebook reports must contain all the relevant topics of an investigative report and should preferably cover the full spectrum of activities and different types of cases within this subfield of expertise. The required number of cases in the casebook is stated in part III of the Standards.

The reports in the casebook must indicate the date of the report. The reports may not be older than 2 or 5 years, depending on the type of application. The casebook must have a plagiarism statement indicating that the contents are those of the applicant. This statement must state the date and signature of the applicant.

The applicant must state the name of the supervisor/collegial reviewer and may place an acknowledgment section acknowledging the assistance of other appropriate individuals or organisations involved in their training.

Each case must be set out in the style of a medico-legal report. Each must contain:

1. The case number.
2. A clinical summary.
3. The forensic or medico-legal question(s) to be addressed.
4. A description of the radiological images.
5. An interpretation of the radiological findings. These should be illustrated with appropriate annotated screenshots.
6. Interpretation of the findings addressing the question(s) raised.
7. General discussion around the salient point(s) to illustrate why the case was selected for the case book. This discussion should contain selected relevant references to support the discussion and illustrate the wider knowledge base of the candidate.

Assessment

The assessment of the casebook will be done according to the NRGD policy. The assessment must be done on a minimum of three reports, either active cases, or cases from the casebook. For example, if the applicant has submitted two active case reports, one report of the casebook needs to be assessed as well. Assessors are free to choose more reports to assess, if they deem it necessary to determine all competencies of the applicant. The assessed case reports from the casebook will be mentioned on the assessment form.

Annex B: Summary of concepts Forensic Radiology

To be decided

Annex C: NRGD Glossary

Advisory Committee for Assessment	A committee appointed by the Board which advises the Board on the (repeat) applicant's (degree of) suitability for (repeat) registration.
Applicant	Natural person submitting an application to the NRGD in order to be (re)registered in the register.
Application for initial registration	An expert who submits an application to be entered in the register and does not or not yet have an NRGD registration at the time when the application is made.
Application for reregistration	An application submitted by an expert who at the time of submitting the next application already has a NRGD registration, possibly for a provisional registration.
Assessor	A member of an Advisory Committee for Assessment.
Board	The Court Experts Board is the body as referred to in Section 51k(2) of the Code of Criminal Procedure and is charged with managing the register.
Brdis	Register of Court Experts in Criminal Cases Decree (Besluit register deskundige in strafzaken).
Bureau	The NRGD Bureau that supports the Board.
Collegial review	The assessment of another person's work for the purpose of continuous quality control of a person's expertise. There is thereby not a hierarchical but a horizontal relationship between colleagues specialised in the same subject area. The reviewer does not sign the report.
Continuing professional development	All (training) activities that contribute to the ongoing development of knowledge and skills, which is desirable and necessary in order to be able to continue performing the role of court expert in a professional manner.
Expert	An individual who issues a report for the administration of justice and/or gives testimony in court.
Expert without work of their own	An expert who has not independently completed and signed the number of case reports required for registration.
Forensic training on reporting	A coherent and structured arrangement of organised training activities in which the necessary knowledge and experience are acquired to report as a court expert in criminal law proceedings and that is completed by an exam.
Independent expert	An expert who has independently prepared and signed the required number of case reports

Intervision	A structured (interdisciplinary) meeting between people who are working or training in the same professional area, not being an operations meeting. The subject of discussion is in any case the forensic work carried out and the associated problems. The aim is to enhance the expertise of those involved and improve quality of work. Unlike supervision, there is no hierarchical relationship between the participants.
NRGD	The Netherlands Register of Court Experts of which the Board and the Bureau form part.
Provisional registration	The registration of an expert for a period specified by the Board and possibly under certain conditions which must be met within that period. In principle the period to be specified by the Board is two years.
Register	The national public register as referred to in Section 51 k(1) of the Code of Criminal Procedure, which lists the court experts which the Board deems suitable.
Registered expert	An expert who is entered in the register.
Registration	Entry in the register.
Repeat applicant	An expert who at the time of submitting a repeat application already has a NRGD registration, possibly for a provisional registration.
Reporter	An individual who issues a report for the administration of justice and/or gives testimony in court.
Reporter training	A coherent and structured arrangement of organised training activities in which the necessary knowledge and experience are acquired to report as a court expert in criminal law proceedings and that is completed by an exam.
Reporter without work of their own	A reporter who has not independently completed and signed the number of case reports required for registration.
Supervision	The assessment of another person's work, the joint consideration of the work and the supervision of a supervisee as part of a training or additional training process. Supervisor and supervisee are thereby in a hierarchical relationship. The supervisor will observe the subject of the investigation (the investigated person) in such a way that they can check the supervisee's investigation, and can endorse and take responsibility for the conclusions thereof. The supervisor will sign the report in all cases.
User	Someone who uses the register in order to find and potentially engage a registered expert.

Annex D: Revision history

Version	Date	Revisions made
1.0		First version