

Developing guidelines and standards for reporting and evaluating forensic evidence at the activity level (DNA)

A discussion document

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Introduction

NRGD acknowledges that forensic practitioners are being increasingly requested by the Courts in the Netherlands to evaluate DNA evidence using propositions at the Activity Level – a reference to a step in the recognised Hierarchy of Propositions⁴.

Activity Level reporting requires a consideration of the issues surrounding DNA transfer, persistence, prevalence and recovery by using available data and subjective opinion to assign probabilities for observing the evidence if the alternative propositions were true.

At present NRGD only provides a practitioner standard for reporting DNA profiles at Source Level.

NRGD is therefore considering demarcating DNA Activity Level reporting as a separate competency. This document highlights a number of areas for group discussion which will help inform the issues and formulate a strategy for developing the requirements.

Objective

To provide information and opinion which will assist NRGD in formulating consensus guidelines and a framework of standards for scientists to achieve competency by NRGD registration / accreditation⁵ to report DNA profiling results at the 'activity level'.

Q1: Why is such a standard being considered?

Feedback from Dutch courts suggests that reporting officers are being requested to evaluate the probability of evidence at the activity level. The time seems right to initiate a programme of work to address the court customer requirement. Although we will focus on activity in DNA cases, any guidelines should be cross-transferrable to other similar forensic disciplines such as gunshot residue, fibres, particulates etc.

Having a quality standard which assesses the competency of an individual to provide opinion at the activity level will:

- improve quality of evaluations by providing a consistent recognised and agreed approach
- provide assurance to the court regarding the capability and competency of the reporting officer to report on such matters

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⁴ *A model for case assessment and interpretation*. Cook R, Evett IW, Jackson G, Jones PJ and Lambert JA (Science and Justice 1998; 38: 151-156) <https://www.ncbi.nlm.nih.gov/pubmed/9800430> and <https://www.ncbi.nlm.nih.gov/pubmed/12051330>

⁵ Accreditation in this document is defined as individual accreditation by an acknowledged body, e.g. NRGD.

- add value to the courts in relation to DNA evidence and ensure that reporting officers are able to assist the Courts as much as possible with regard to the issues involved rather than leaving these considerations to other, less well informed, parties
- reduce the risk of misunderstanding the probative value of the evidence
- it will provide some assurance to the reporting scientist that they have the required knowledge to be addressing such questions, i.e. they have a standard to base their training on and they can present this accreditation to the court as evidence of this level of knowledge.

Q2: What is the scope of activity level reporting?

For the purposes of this discussion we define activity level reporting as:

“the provision of a numerical and/or verbal strength of support for the probability of the evidence given the truth of two competing propositions formulated at the activity level” (Evaluative reporting at activity level).

Opinions that lead to probability assignment can be based on data obtained from controlled experiments, or can be purely experience based, or can be a combination of both. Any expert who is asked to report on the activity level must be able to make explicit the boundaries of their knowledge; they must be able to clarify when evidence can be evaluated using scientific data (for instance obtained from experiments) regarding the relevant propositions, or when they would predominantly use their (limited) experience and subjective intuition. If no relevant data is available, or crucial information on case circumstances is lacking, it may be that the scientist should not attempt to report at the activity level.

Investigative reports (formulating explanations for observed results and ranking those) are outside of the scope of the proposed competency testing. Proper training and knowledge on methodologies of case assessment and interpretation may be required for reporting officers to provide such investigative reports.

Requests by courts to provide generic statements on issues like secondary transfer are also outside of the scope of the proposed competency testing. Basic knowledge of these issues may be expected from reporting officers and as such may be included in competency testing at source level.

In setting a standard it is important therefore to have clarity regarding what the final outcome of Activity Reporting would look like.

The ENSFI guideline⁶ provides a useful framework for Activity Level reporting. *It is understood that further guidance is being produced in the near future by the ISFG*⁷. This guideline provides a framework for activity level reporting which is based on the principles of the Casework Assessment and Interpretation Model (CAI)⁸ (Evet et al 1998).

⁶ ENSFI Guideline for Evaluative Reporting in Forensic Science (2015)

<http://www.unil.ch/esc/files/live/sites/esc/files/Fichiers%202015/ENFSI%20Guideline%20Evaluative%20Reporting>

⁷ International Society for Forensic Genetics <https://www.isfg.org/>

⁸ [http://www.scienceandjusticejournal.com/article/S1355-0306\(98\)72099-4/abstract](http://www.scienceandjusticejournal.com/article/S1355-0306(98)72099-4/abstract)

Documents such as the ENSFI guidelines can be used as the basis for identifying standards against which assessment can be made:

- specifying sources for data supporting probabilities on DNA transfer, persistence, background, prevalence and recovery
- what a statement should contain
- how a statement should be presented
- a declaration of the limitations of the approach

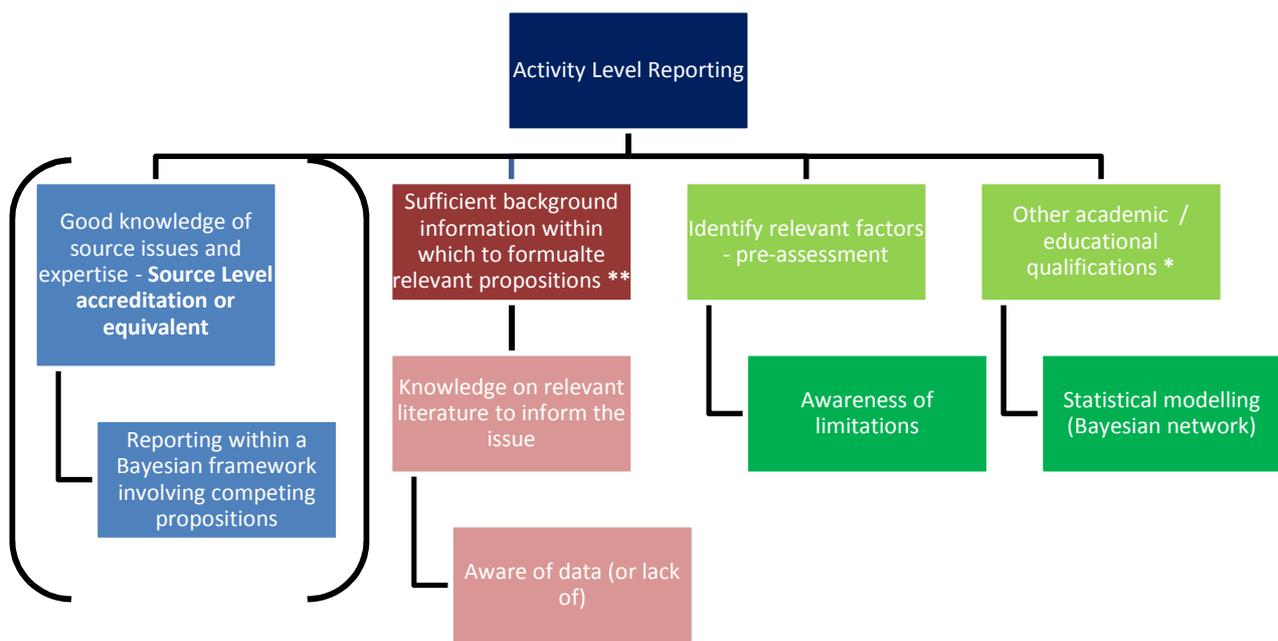
As a European Guideline this provides a clear model for reporting which is recognised by the European forensic community.

Q3: What are the requirements of a scientist reporting at Activity Level?

Reporting at the DNA Activity Level is seen as a progression from reporting at DNA Source since it requires knowledge about transfer and persistence mechanisms, probabilities and training to effectively deal with the issues. Therefore, reporting at activity, or reviewing a case and providing an evaluative opinion, requires a solid source level expertise which should be a mandatory and demonstrable. Therefore, as a pre-requisite, individuals seeking activity level reporting registration should be expected to already possess NRGD Source Level accreditation or be able to demonstrate an equivalent measurement of competency which shows that they have acquired the 'basic' DNA reporting knowledge required e.g. evaluating within a Bayesian framework, attribution of DNA to a specific body fluid. At the moment the onus for establishing this competency is left to the court if they conduct an examination of the credentials of a witness who purports to be or is nominated as an expert on such matters.

Additional expertise can be gained through being actively involved in R and D work, therefore a further pre-requisite could be that all activity level reporters must be required to be involved in R and D work on the activity level. However this may be regarded as being too restrictive and prescriptive since it is not a usual requirement for expert witnesses that they have funding and facilities for carrying out practical research.

Additional areas of requirement can be identified in the pathways below.



* It is recognised that some courses exist which can be used as demonstration that additional knowledge has been gained in order to supplement the learning required for Activity Level reporting e.g. compiling reports, approach. However, some of the existing courses are very protracted and expensive. One solution might be for NRGD to tender for a course to be developed as a requirement for practitioners to receive learning in the additional skills e.g. pre-assessment, proposition setting and have this course affiliated to a recognised university / accredited forensic provider or to acknowledge an institutional training programme which has similar educational goals as an external course.

** Setting propositions requires a thorough knowledge of the conditioning information i.e. the background information and case circumstances. Propositions should ideally be set by the Court and other case specific stakeholders e.g. investigators and the defence. However, this may require education and learning (independently acquired or in discussion with the forensic provider) to achieve the right balance e.g. to clearly communicate what it is that they want the scientist to address and for them to understand the limitations of what can be provided. Proposition setting requires a framework of discussion involving the court and scientist and which takes full appreciation of the case circumstances and the defence alternative.

An activity level opinion is always best when it has been considered and reviewed in advance of a trial rather than being provided on an ad hoc basis from the witness box.

Q4: How can an individual's competency for Activity Level reporting be assessed?

The specific standards required for assessment against the ENSFI guideline could best be assessed in the following ways:

	Advantages	Disadvantages
Competency assessment using a case example and marking against a model answer.	<ul style="list-style-type: none"> Ensures consistency and allows benchmarking against specific standards to be measured 	<ul style="list-style-type: none"> Difficulty in defining the ground truth. Ensuring non-disclosure to other candidates Cost of set-up Rapidly changing knowledge through new research
Submission of reported casework (as per Source level assessment)	<ul style="list-style-type: none"> Removes the costs for designing and setting up a competency assessment 	<ul style="list-style-type: none"> Practitioners are reporting in the field prior to registration or assessment
Assessment should also include general scientific knowledge and experience relevant for this particular area of reporting. It should also include demonstrable knowledge of limitations of activity level reporting and available (up to date) scientific knowledge on databases and results from (experimental) research.	<ul style="list-style-type: none"> Underpins quality 	<ul style="list-style-type: none"> Difficult to assess in a dynamic research environment

Q5: What are the current rate determining steps?

Lack of sufficient and relevant data may be seen as a major obstacle in being able to address propositions at the activity level.

Scientists will therefore have to conduct more evaluation using a subjective approach which leads to greater inconsistency in opinion. However, if the data or experience which is relied upon to form the opinion is clearly defined on the case file or in the report this will allow transparency in the approach.

It is a requirement in the UK, as part of the Criminal Procedure Rules (part 19.4 (c))⁹ that all scientists should provide details of any literature or other information which the expert has relied on in making the report. This is also a specified requirement in the ENSFI guideline 2015.

This seems a reasonable way of ensuring transparency.

⁹ <https://www.justice.gov.uk/courts/procedure-rules/criminal/docs/2015/crim-proc-rules-2015-part-19.pdf>

Q6: Feasibility of aims. Is demarcation at activity level achievable?

The ENSFI guideline and position and role of NRGD makes it possible for registration for scientist's to report at the activity level to be achieved.

However other considerations are:

- Is demand sufficient at present to justify the resources
- Are relevant assessors available
- Can assessment be conducted to provide sufficient assurances regarding the competency and approach of the individual
- Is activity level reporting on DNA sufficiently evolved and is the scientific knowledge base sufficiently developed and validated to justify this area becoming a new competency area for NRGD registration

Thank you for attending and contributing to this discussion.