

# EVIDENCE-BASED PRACTICE IN FORENSIC MEDICINE

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**CHAPTER 7:**  
**IMPACT**



## Relevance

The research described in this thesis was performed to assess the possibility of incorporating evidence-based medicine in forensic medicine more fully as a move towards evidence-based legal decision-making. Because forensic medicine, and indeed all branches of forensic science, is very closely intertwined with the legal system, any new methodology used in forensic medicine will impact legal proceedings [1]. Furthermore, forensic medicine is a unique branch of medicine in that it does not only have the health of the individual in mind but has the ultimate goal of helping to create a safe and just society. In that aspect, forensic medicine is akin to public health because of its potential use in policy-making. Therefore, it is particularly fitting that this thesis focuses on the potential application of epidemiological principles, methods, and data in forensic medicine, *i.e.*, forensic epidemiology [2–4].

## Activities/Products

The application of forensic epidemiology in this thesis is performed through two different approaches. First, a novel method to medicolegal causal analysis (*i.e.*, INFERENCE) was developed to enhance the transparency, validity, and reliability of forensic medical expert opinions. The second approach is developing a consensus-based reporting guideline (*i.e.*, PERFORM-P) in forensic pathology, a major branch of forensic medicine. Research reporting guidelines are now prevalent in medicine and are increasingly being adopted by journals as a standard for publication. These guidelines have been shown to improve the quality of published research and maximizing their impact [5–8].

INFERENCE and PERFORM-P were developed to be used in various settings. Both products were designed to be versatile enough to be used in daily practice, research, and education. Furthermore, although both products would be most beneficial in complex cases, the basic principles of INFERENCE and PERFORM-P can be used in all cases of varying complexity.

To facilitate the adoption of the INFERENCE and PERFORM-P, the endorsement of several professional associations has been sought out. Indeed, the Swedish Association for Forensic medicine and the Indo-Pacific Association of Law, Medicine & Science (INPALMS) have supported PERFORM-P since its development stage.

## Target Groups

The results of this thesis are tailored to be directly used by forensic medical practitioners and forensic medical institutions and organizations. Their impact, however, can also influence the work of other forensic practitioners, law enforcement agencies, public health officials, policy-makers, and ultimately, indirectly impact the general public.

First, forensic medical practitioners could use the recommendations to improve the quality of their expert opinions by increasing their validity, transparency of methods, and rationale of their opinions. Peer review, auditing, and quality assurance processes in forensic medicine could also benefit from the results of this thesis by providing a common ground for causal analysis and reporting. A ripple effect starting in forensic pathology and spreading to other branches of forensic medicine can be expected, and then other forensic disciplines will hopefully follow suit. There are potential benefits for legal proceedings as well. The standardization of methods could reduce the variability in the quality of the reports produced by different forensic medical practitioners. Thereby, legal factfinders can be more confident in using forensic medical expert opinions as “evidence-based evidence” in legal decision-making.

To maximize their impact, close interaction and collaboration with different stakeholders of the justice system are needed. In using INFERENCE and PERFORM-P to produce evidence-based expert opinions, forensic medical practitioners must always keep the customers’ need (*e.g.*, legal practitioners, public health officials, etc.) in mind. It is not enough to produce expert opinions that are valid, but they must also be easily communicated to the recipient. For this reason, INFERENCE and PERFORM-P are designed to be simple enough to be used in daily practice by forensic medical practitioners in various settings.

## **Innovation**

This thesis presents an innovation in forensic medical practice in two forms. The first one is a novel systematic, evidence-based, but still practical, causal analysis method. The INFERENCE approach provides a systematic approach that can be used to follow the cognitive process of the expert, thereby increasing the transparency of the formulation of an expert opinion. Two experts can (and usually will) in good faith come to a different conclusion even if analyzing the same set of facts due to different educational backgrounds and experiences. The recipient of the opinion (*e.g.*, legal factfinders) should, however, be able to follow the expert’s train of thought by which he/she comes to a conclusion. There should be no cognitive leap from the objective part of an expert report to the subjective part of their opinion. INFERENCE is also grounded in epidemiology and thereby can and should reflect the epidemiologic characteristics of the local population. The INFERENCE approach is also practicable in various settings and scenarios and for the whole spectrum of case complexity.

The second innovation is the PERFORM-P, which is a set of reporting recommendations based on an international consensus of what elements should be in a high-quality forensic pathology report and how they should be reported. If used correctly and consistently, the PERFORM-P guideline can benefit quality assurance processes by providing guidance to produce forensic pathology reports. It can also help peer review by enabling the reviewer to focus on the content rather than having to navigate different formats

of reports. This issue is particularly important in the age of globalization, where the report of a forensic medical practitioners can be scrutinized by peers from different countries.

### ***Implementation***

To maximize their impact INFERENCE and PERFORM-P need the support of various stakeholders. INFERENCE and PERFORM-P must be adopted widely, which will facilitate the drafting of expert opinions, the appraisal of the guideline, and ultimately contribute to better legal decision-making. Therefore, a dedicated website has been established upon publication. All stakeholders can provide feedback on the website to improve the method and guideline based on real-world experience.

INFERENCE and PERFORM-P will also be widely disseminated, such as through presentations at national and international events. Continuous publications related to the application of INFERENCE and PERFORM-P within the broader theme of improving evidence-based medicine in forensic medical practice will also be prepared.

Furthermore, validation studies of both tools in different countries with different languages will be conducted. Apart from assuring that INFERENCE and PERFORM-P be appropriately translated into the country's official language(s), this validation process is also meant to ensure that both tools fit the local condition of forensic medical practice and legal system. The first validation study is currently being performed in Indonesia, with encouraging preliminary results.

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