

Perspective of Forensic Medical Laboratory Science Diagnosis

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ABSTRACT

Forensic Medical Laboratory Science diagnosis is the use of scientific processes and methods in criminal investigation. It consists of the collecting, identifying, preserving, and examining of scientific evidence during an investigation. This can involve being present at the scene of the crime to physically collect the evidence samples and the analyzing procedures that can be carried out in a laboratory. The Forensic Medical Laboratory Science diagnosis holds connotations of modern trials in courts of law and the judicial system. It is the most important areas of forensic science. Forensic Medical Laboratory scientists analyze and interpret evidence found at a crime scene. Such evidence can include blood, saliva, fibers, tyre tracks, drugs, alcohol, paint chips, explosive residue, and so on. In this review article, the role, history, and ethical issues associated with Forensic Medical Laboratory Science diagnosis are X-rayed for more information and understanding.

Key words: Diagnosis, forensic, medical laboratory science, role

INTRODUCTION

Forensic Medical Laboratory Science diagnosis is the gathering of data for analysis and for use in legal proceedings, depending on the laws of particular jurisdictions. “The legal aspect of Forensic Medical Laboratory diagnosis separates it from clinical diagnosis. This legal perspective requires some ways of handling samples, use of specific diagnostic technique as required by law, and following a “chain of custody.” This chain of custody concerns with documentation of every person who has handled the sample and everywhere it has been. If the chain of custody procedure is handled correctly, Forensic Medical Laboratory evidence can be admitted in court with the assurance that the item was collected from the stated location and/or person in question without compromising the evidence.^[1]

The application of the methods of the natural and physical sciences to issues of offence or crime and civil law is known as Forensic Science, it can be involved not only in investigation and prosecution of wrong doing such as rape, killing, and drug marketing but also in matters in which a crime has not been committed but in which someone is charged with a civil wrong. In addition, Forensic Medical Laboratory scientists testify as professional witnesses in both criminal and civil cases and can work for either the trial or the defense.^[2]

The person who handles and processes such specimens mainly acquires special training that is relevant to both medical laboratory science and the legal demands of forensics. Forensic Laboratory scientists often have clinical training and they are professionals involved in technical work inside a forensic laboratory. Much of their job includes preparing and analyzing samples as to maintain forensic research.

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Furthermore, they are involved in quality control and quality assurance checks on laboratory equipment and instruments.^[3]

They simply apply a body of knowledge related to laboratory methods, policies, procedures, regulations, and practices when processing evidence for criminal and civil investigations.^[4]

ROLE OF FORENSIC MEDICAL LABORATORY SCIENTISTS

Forensic Medical Laboratory Scientists provide scientific evidence for use in courts of law to support the prosecution or defense in criminal and civil investigations. They concerned with searching for and examining contact trace material associated with crimes. This material can include: Blood and other body fluids, hairs, fibers from clothing, paint and glass fragments, tyre marks, and flammable substances used to start fires. However, evidence is usually presented in writing as a formal statement or report, you may have to attend court to give your evidence in person as an expert witness. Forensic Medical Laboratory Scientists play a great role in a laboratory, as they ensure that evidence is not compromised and that the rules and regulations within the laboratory are followed at all times. They are involved in analysis of biological, chemical, hematological, and serological on a variety of samples obtained at crime scenes as well as operate, adjust, and maintain scientific instruments; they record samples and other pertinent information and prepare reagents and media.^[5] Forensic Medical Laboratory Scientists prepare exhibits and specimens for testing, return evidence to the appropriate agency as well as receive and log evidence. Other roles include: Prepare and package biohazard wastes and materials for external disposal, perform tests and analyses, monitor and maintain an inventory of supplies for laboratory use, maintain technical records and prepare reports, enter appropriate data and information into automated forensic databases, including the Integrated Ballistics Identification System, the Automated Fingerprint Identification System, and the Combined DNA Index System. Furthermore, they schedule and oversee the maintenance or calibration of laboratory equipment.^[6]

HISTORY OF FORENSIC MEDICAL LABORATORY SCIENCE

Truly, the area of Forensic Medical Laboratory Science has come a very long way since its recorded beginnings where fingerprints were used to establish the identity of documents and clay sculptures. This area is one of the few areas of law enforcement where science, technology, and crime-solving meet.^[7]

Forensic Medical Laboratory Science arises from a long tradition of links between the law and medicine and now embraces a wide variety of needs and skills intertwining medicine, pathology, science, the law, and ethics. Each

Forensic Medical Laboratory Scientist should be aware of their responsibilities, not only to their patient or the deceased, but also to society as whole, and be able to utilize their medical skills in the pursuit of fairness and justice within the framework of legal requirements and ethical values.^[8]

ETHICAL ISSUES IN FORENSIC MEDICAL LABORATORIES

The principle of doing good and not doing harm is the essence of Forensic Medical Laboratory Ethics. The basic ethical principles in Forensic Medical Laboratory Science include: Respect for persons which is autonomy, beneficence, and justice. These core principles must be adhered to in Forensic Medical Laboratory Science. Informed consent is vital to maintain patient autonomy.

Medical laboratories are among health service providers that are intensely responsible for the life and wellbeing of patients. The increase in the number and variety of medical laboratory^[6] diagnosis recently has highlighted the role of medical laboratory science in identifying and assessing causes of diseases. The performing of medical laboratory tests with utmost accuracy, precision and speed, using latest technology and protecting patients' rights, integrity and dignity are among the characteristics of a good medical laboratory that highly influence patient satisfaction. These are foundation for the establishment of quality management systems. The principle ideas of beneficence and non-maleficence as well as justice are at the main code of medical laboratory science ethics.^[9]

CONCLUSION

Forensic Medical Laboratory Science is the application of science, and the scientific technique to the judicial system. Forensic it is an important field in diagnosis of hidden crime. It should be done with sincerity and integrity. All the basic ethical principles must be adhered to for the benefit of the society. Forensic Medical Laboratory scientists use cutting-edge scientific techniques to examine and interpret evidence in connection with civil and criminal proceedings. Hence, Forensic Medical Laboratory Science can be of importance in proving the guilt or innocence of the defendant. Forensic it can also help to resolve a broad spectrum of legal issues through the identification, analysis, and evaluation of physical evidence.

REFERENCES

1. Ribaux O, Walsh SJ, Margot P. The contribution of forensic science to crime analysis and investigation: Forensic intelligence. *Forensic Sci Int* 2006;156:171-81.
2. Saks MJ, Faigman DL. Failed forensics: How forensic science lost its way and how it might yet find it. *Ann Rev Law Soc Sci* 2008;4:149-71.

3. Holmgren JA, Fordham J. The CSI effect and the Canadian and the Australian jury. *J Forensic Sci* 2011;56:S63-71.
4. Malkoc E, Neuteboom W. The current status of forensic science laboratory accreditation in Europe. *Forensic Sci Int* 2007;167:121-6.
5. Morgan RM, Cohen J, McGookin I, Murly-Gotto J, O'Connor R, Muress S, *et al.* The relevance of the evolution of experimental studies for the interpretation and evaluation of some trace physical evidence. *Sci Justice* 2009;49:277-85.
6. Walsh SJ. Recent advances in forensic genetics. *Expert Rev Mol Diagn* 2004;4:31-40.
7. Crispino F. Nature and place of crime scene management within forensic sciences. *Sci Justice* 2008;48:24-8.
8. Coyle H, Lee CL, Lin WY, Lee HC, Palmbach TM. Forensic botany: Using plant evidence to aid in forensic death investigation. *Croat Med J* 2005;46:606-12.
9. Walsh SJ. Legal perceptions of forensic DNA profiling Part I: A review of the legal literature. *Forensic Sci Int* 2005;155:51-60.

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