



F35 Looking to the Future: Opportunities for Research in Forensic Dentistry

*Veronique F. Delattre, DDS **, University of Texas Dental Branch at Houston, 10238 Grove Glen, Houston, TX 77099; *Robert E. Wood, DDS*, University of Toronto, Faculty of Dentistry, 124 Edward Street, Toronto, Ontario M5G 1G6, Canada; and *Richard A. Weems, DMD*, University of Alabama at Birmingham, School of Dentistry, 1530 3rd Avenue South, Birmingham, AL 35294

After attending this presentation, attendees will learn the results of a research study designed to determine specific research topics that need to be studied to increase scientific knowledge in the field of forensic dentistry. The attendees will be presented with a list of specific research questions that they may consider when planning new research studies of their own, and will be presented with information on obtaining grant funds to implement their future research efforts.

This presentation will impact the forensic community and/or humanity by providing practical and timely information about the research topics that are considered to be the most relevant to the field of modern forensic dentistry. It is anticipated that the presentation of the results of this research and study will serve to stimulate an increase in the quantity and quality of future research conducted in the field of forensic dentistry.

This research study is the work of the members of the Research Committee of the American Board of Forensic Odontology. The study was conducted in an effort to encourage researchers to conduct scientific studies on topics of importance to the forensic dental community by giving them ideas for studies to conduct, as well as providing them with information on funding sources available. It was conducted in a concerted effort to stimulate the increase in the quantity and quality of research conducted in the field of forensic dentistry. Prior to its implementation, this research project was reviewed and approved by the Committee for the Protection of Human Subjects of the University of Texas Houston Health Science Center as HSC-DB-06-0377. All responses were grouped and no individual was identifiable, thus all responses were completely confidential.

Respondents to the survey, members of the American Board of Forensic Odontology, were asked to rank a list of eight general research topics in their order of importance. The respondents were next asked to list specific research questions that they felt would be important areas to study in each of the eight general topics. Two of the topics stood out as being the most important areas in need of future study. The field of patterned injury/bite mark analysis was ranked as the area most in need of modern research data, with the field of dental identification a very close second. The remaining topics in order of most need for further research were ranked in the following order of importance: mass fatality incident management, person abuse, expert witness consultation and testimony, age determination, dental jurisprudence, and facial approximation.

Specific research questions that respondents felt would be important to study in each of the eight listed general research areas were compiled, and a small sampling of them follows. A more detailed analysis of the survey results will be presented during the scientific session's oral presentation.

In the area of patterned injuries and bite marks, respondents felt that the following specific questions would merit further research data: 1) what is a quantitative measure of the individuality of the human dentition; 2) how might pain from a bite mark be measured for legal purposes; 3) studies on three-dimensional analysis of bite injuries; 4) studies on the validity of bite mark analysis; 5) confidence levels in analyzing bruise marks from any source; 6) develop a database of large populations to give statistical relevance of tooth position and dental anomalies; 7) can techniques such as transillumination and alternate light source be proven valid in a large group of observers?

In the area of dental identification, respondents felt that the following specific questions would merit further research data: 1) tooth morphology in reference to race determination; 2) degree of certainty of identification of test cases; 3) do computer aided methods of dental record comparisons really save time in the long run over traditional manual methods; 4) factors other than radiographic that forensic dentists use to perform dental identifications; 5) are individuals truly unique dentally; 6) reliability of dental identifications using only orthodontic models; 7) value of digital radiography vs. traditional dental film.

In the area of mass fatality incident management, respondents felt that the following specific questions would merit further research data: 1) the role of the forensic dentists in incident management at all levels; 2) development of a psychological test specific to forensic dentists for the impact post traumatic stress after a mass incident on experienced vs. less experienced dental personnel; 3) comparison of results of DNA analysis vs. dental information during a mass fatality incident.

In the area of person abuse (child, elder, and spousal), respondents felt that the following specific questions would merit further research data: 1) comparison of issues common to child, elder, and spousal abuse; 2) the incidence of abuse reported in dental offices; 3) current demographics of abusers and those abused; 4) frequency of reporting elder abuse in institutional vs. private care facilities.



Odontology Section – 2007

In the area of expert witness consultation and testimony, respondents felt that the following specific questions would merit further research data: 1) how is an expert witness defined in different jurisdictions; 2) study on trial aids used during testimony; 3) data on fees charged by forensic dental consultants in various regions.

In the area of age determination, respondents felt that the following specific questions would merit further research data: 1) dental differentiation of age among various races; 2) reliability of occlusal wear in age determination; 3) third molar root development; 4) age of majority among different jurisdictions; 5) use of dental age determination for legal purposes, i.e. immigration; 6) reliability of hand/wrist radiographs vs. dental radiographs.

In the area of facial approximation, respondents felt that the following specific questions would merit further research data: 1) data on how forensic artists and forensic anthropologists determine facial approximation; 2) with what frequency does facial approximation result in identification of an individual.

In conclusion, this survey of experienced forensic dentists revealed a wide range of suggestions for research questions that merit exploration through scientific investigation. A thorough analysis of the survey results and suggestions for funding sources will be presented during the scientific session's oral presentation.

Forensic Science, Forensic Dentistry, Research