

Missing children

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Before 1982, it was said that it was easier "to trace a stolen car than to track a missing child." When an automobile is stolen a report is filed immediately and the information is transferred by telecommunication to the National Crime Information Center (NCIC) in Washington, DC. However, "missing" children cases were handled with the general presumption locally that the children had either run away or may have been taken by one parent from another during their battle for legal custody. Federal agencies usually come into a case if a specific local request for aid seems warranted. Today, however, awareness not only of the number of missing children but of highly publicized cases of "mass" kidnappings and murder has begun to force more uniform processing in these cases by legal authorities.

The Missing Children Act, sponsored by U.S. Senator Paula Hawkins and signed into law by the President October 12, 1982, authorized a permanent national clearinghouse for information and identification of all missing children and an unidentified "dead" file. Now ACTION (the national volunteer agency that encompasses the previously named PEACE CORPS and VISTA), and the U.S. Department of Justice Office of Juvenile Justice and Delinquency Prevention (OJJDP) have joined resources to promote child safety through the Missing Children Project. Statistics taken from their booklet, *The Child Safety Program Handbook*,¹ published in 1984, are as follows:

1. Approximately 50,000 children disappear each year and their cases remain unsolved at the end of the year.
2. Approximately 150,000 abducted children each year are victims of custody battles.
3. Each year more than 1 million children are reported as "runaways" or "throwaways," some become victims of crime, others become criminals.
4. Every year hundreds of children are found dead and can't be identified.

Although these figures recently have come under attack and are probably an overestimate of the actual numbers, the problem remains a real one.

Various organizations assist the growing number of concerned parents: Adam Walsh Resource Center, Child Find Inc., Child Keyppers of Florida, Find the Children, Help Find Johnny Gosch Inc., and New England Kids. These organizations have joined with ACTION to develop a series of Child Safety Day Programs throughout the country.

The dramatic NBC special documentary film *Adam* depicting the true story of a child abducted in a department store and found decapitated 6 weeks later, aroused public awareness and an outcry for law enforcement agencies to improve techniques to eliminate this type of crime.

Identification Systems

Dentistry has become involved with the develop-

ment and application of various identification methods utilizing our expertise with children and the child dentition. ACTION sponsored a meeting in Los Angeles in April, 1984, which ultimately led to a combined program by NBC, Safeway Markets, and Pepsi-Cola which photographed, fingerprinted, and dental charted children in Los Angeles County. Meanwhile, The Parent Teachers Association (PTA) developed their own independently funded program in the public schools. All recorded information in both efforts was given back to the parents for safe keeping. The dental charting program, designed by Child Keyppers International, was developed specifically to be compatible for immediate entry into the NCIC computer at the Justice Department. This would allow local law enforcement officials and the FBI to compare data with a child found anywhere in the country. Child Keyppers — as part of the 100 affiliates of the Missing Children's Network — is expected to publicize missing children in a series of nationwide television spots and to make available parent guides for child safety.²

The American Academy of Forensic Sciences is a professional membership of physicians, criminalists, toxicologists, attorneys, dentists, physical anthropologists, document examiners, and others who practice and perform research in the many diverse fields relating to forensic sciences. A complement group, The American Society of Forensic Odontology, has enabled the dental profession to make significant contributions to the area of identification.

Dentistry Documentation

Each child's mouth can give us much information about that individual child. The mixed dentition usually will give a close approximation of the chronological age of the child. In addition, restorations and radiographs are particularly characteristic and can help delineate one individual from another. The rotations, color, or fractures of the teeth and the crowding or spacing throughout the dentition all can be definitive in identification. Even the ridges on the hard palate and the shape of the arches have led some dental researchers to conclude that oral characteristics are as important as fingerprints in identification. In the case of homicide, the body of a child not found for a period of a few months will have started to deteriorate and only hard bony structures will remain unaltered by time. Moreover, until a child is 3 years old, fingerprints are often not very clear and are of negligible quality in identification procedures.

One of the more sophisticated computer systems utilizing dental identification is now in operation at the U.S. Army Institution of Dental Research (AIDR).⁶ The system is designed to record missing teeth and fillings, however it may be less valuable for the identification of a child's dentition.

Recent articles in the professional literature make it clear that arch form and individual tooth position are not exactly the same even in identical twins.^{3,4} The Massachusetts Society of Pediatric Dentists has endorsed a "wax bite" impression concept that will allow dentists to take bite registrations of children and supply them to parents for safe storage. More than 30 pediatric dental offices are participating in the pilot program.

The bite registration will be taken in wax because of the ease of manipulation and the relatively clear landmarks expressed in the material. If desired, these wax bites can be poured up in plaster similar to orthodontic study models as permanent records; they can be updated at certain developmental milestones. The product, developed by a pediatric dentist, is called "Toothprints." The procedure has been praised as an important and reliable identification tool by Dr. Stanley Schwartz, forensic odontologist for the State of Massachusetts and chairman of the Department of Oral Diagnosis at Tufts University School of Dental Medicine in Boston.

The rationale behind the technique is that children have fewer cavities today than previous generations. The emphasis on preventive dentistry, including the use of fluorides and plastic sealants, finds children with far fewer restorations which had been so helpful in identifying individuals.

Radiographs

Radiographs long have been considered a beneficial adjunct in identification. The American Board of Forensic Odontology recently published their position about administrative radiographs. The Committee on Research said, "It is not considered good practice to subject patients, particularly the young, to unnecessarily radiation." The Panorex film taken for identification purposes is not used to diagnose pathology or in any other way to improve the quality of life for an individual and may subject them to unnecessary risk.²

Although radiographs are considered important to identification procedures, the cost and risk factors of routine population exposure have not been evaluated properly. The committee recommends that the concerned parent obtain copies of diagnostic radiographs for the purpose of creating an identification file. Dental charting, photographs and fingerprinting all offer less dangerous and equally valuable methods of aiding the concerned parent.²

Microdisc

Another new development that shows promise is a microdisc attached to a tooth. The microdisc is a small circular plate that is being manufactured now

by various companies. It is bonded to a posterior tooth and is manufactured with either a code that is stored in a central computer or with information imprinted on the disc that is characteristic for that individual. At this writing, no official law enforcement agency has endorsed the concept; however, the Committee on Dental Practice of the American Dental Association (ADA) has decided to begin manufacture and distribution of a disc to its membership. The pilot program tentatively is scheduled to start in February, 1986, in Maryland and the discs should be available to all member dentists by summer. The cost of this disc should be less than the \$15 presently charged by competing companies whose discs take about a week of laboratory time to manufacture. The ADA disc will be supplied to the dentist precoded in groups of 10. The dentist then will apply the disc and send the identifying information back to the central computer at ADA headquarters. The following information is the latest available on the microdisc project endorsed by the ADA.

1. The microdisc will not be permanent but is expected to have a useful life of 3-5 years.
2. The microdisc will be formatted to include:
 - a. A unique patient identification number up to 10 digits
 - b. A national toll-free telephone number
 - c. The ADA logo.
3. The AIDR registry will be computerized and contain basic identifying information including patient name, address, telephone number, and treating dentist. The registry will not contain medical alert information.
4. The microdisc location will be standardized; the middle mesial buccal surface of the maxillary right first molar in adults and the equivalent surface of the most posterior primary molar in children is the first choice of placement.
5. The microdisc is bonded to the tooth surface with commercially available composite resin. This procedure takes approximately 10 min and requires no anesthesia or cavity preparation.
6. An electronic scanning device is not necessary to read the information on the AIDR microdisc. Reading can be accomplished with any readily available magnification device and does not require removal of the microdisc.

The application of these microdiscs will require considerable patience and cooperation of children under age 5. The Research Committee of the American Board of Forensic Odontology has stated that "the routine placement of identity markers, although recommended by numerous investigators, is considered to be premature due to the lack of scientific information on tissue compatibility, durability, optimum place-

ment location, and standardization of contained information. The committee recommends a comprehensive study of the feasibility of dental marker systems before widespread implementation. This study can be a function of the ADA, The American Academy of Forensic Sciences, and/or The American Board of Forensic Odontology."⁵

Photographs

Simple intraoral and facial photographs also may be of value in identifying missing children. Pictures can be reproduced quickly and distributed through the media. They can be digitalized (as with pictures made from dots printed in newspapers) and stored in a computer until such information is requested. Work now is being done to allow computers to integrate sibling and parent photographs with pictures of the child when last seen, and project a representative facsimile of what that child should look like in a specified number of years.⁷

Identification Programs

In various communities, local milk distributors — in conjunction with the National Child Safety Council — are producing pictures of missing children on the sides of half-gallon milk cartons. The child's picture, name, vital statistics, and information regarding their kidnapping are included. For those who might recognize the child, a local telephone number of the sheriff's department or a toll-free 800 number for the National Center for Missing and Exploited Children is appended.

Local television newcasts have volunteered a portion of their broadcast to "missing children." A Los Angeles unified school district is experimenting with videotaping children and maintaining that tape at schools. Nestles Chocolate has set up a "Missing Children Counter" at markets and Parke-Davis division of Warner-Lambert has offered a child care bulletin board to participating pharmacies.

The various organizations involved in fighting child abuse and abduction need to work together to form common goals and form a unified network of procedures to achieve the safety of all children. It is hoped that the newly legislated National Center for Missing and Abused Children in Washington, DC will fill that role. Accurate reporting by police agencies and good analysis and research will help to determine the true number of children at risk. The National Center for Missing and Exploited Children offers a national clearinghouse that collects, compiles, exchanges, and disseminates information. It also acts to provide training assistance to law enforcement and child protection agencies, as well as to ensure coordination among parents, missing children groups, and the

media to distribute photos and description of missing children.⁸

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2. Dentistry Today, 4:26, 1985.
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6. Lorton L, Langley Wm: Postmortem Identification — A Computer Assisted Program. U.S. Army Institute of Dental Research, 1984.
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Because of patent problems, the ADA cannot move ahead with its microdisk program. The ADA continues to support the concept and wafers will be available in the marketplace.

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