

Commentary on: Lewis C. WinID2 versus CAPMI4: two computer-assisted dental identification systems. J Forensic Sci 2002;47(3):536–538

Sir:

Lewis's paper may leave the reader with several misconceptions of how computers are used in dental mass disaster identification.

Lewis undertakes to place two computer-assisted dental identification systems in head-to-head competition. Anyone undertaking this exercise should have a thorough understanding of dental identification systems being investigated. She uses the term algorithm but does not understand that the algorithms used by each system return the same results in any given situation.

Lewis does not realize that CAPMI is able to rank possible identifications by *least number of dental mis-matches*. She does not seem to be aware of the existence of this ranking and does not use it in her comparison of the two systems. It also seems that the reviewers of the paper were also unaware of the existence of this feature.

She does not mention WinID's ability to generate odontograms and to display digital images. Users familiar with WinID rely heavily on these two comparison features.

Finally, when CAPMI returns a list of matching records with all virgin teeth and then WinID returns the same list, Lewis somehow manages to find the CAPMI analysis superior. Any differences here would be due to the index numbers she assigned records or the alphabetic order in which she entered the records into one system or the other.

When I first worked on WinID, I used CAPMI as my template. CAPMI was a DOS-based program that I wanted to migrate to a Window's platform. WinID makes use of the graphical user interface and display features of Microsoft Windows. These features were not available when CAPMI was developed.

With a given pair of antemortem and postmortem records, WinID and CAPMI will each return the same number of dental hits, the same number of dental mis-matches and the same number of possible hits. The WinID comparison algorithm was finalized only when it returned the exact values that CAPMI yielded in a given situation.

A significant difference between the two systems is that WinID can rank comparisons between records in two more ways than CAPMI. WinID will return a ranked list of *identifier matches*.

Identifier matches are defined as matches of non-dental data such as race, sex and age. CAPMI does not have this feature. WinID also returns a ranked *most restoration hits* (referred to by Lewis as *most dental hits minus V=V and X=X*) list. In the *most restoration hits* WinID culls dental hits attributable to matching virgin teeth and also culls dental hits attributable to matching missing teeth. What is left are hits due solely to matching dental restorations. This feature was developed during the identification effort that followed the loss of EgyptAir flight 990 in October 1999. In that endeavor, it became apparent that while many records had similar dental hit patterns, they could be best discriminated by looking only at the dental restorations present. From flight 990, it was learned that WinID's *most dental hits* was most appropriate early in the investigation. In time, after many identifications had been completed, the *most restorations hits* proved the most useful. It was found that the *least dental mis-matches* would have the best ranking in some instances. A rule as to when to utilize the *least dental mis-matches* has not as yet been defined. These observations from Flight 990 were confirmed when WinID was used in the three identification efforts following September 11, 2001.

Lewis takes me to task for a purported personal correspondence where I say that "the *least number of dental mis-matches* list is most useful when there is fragmentation of the postmortem dental records." This simply is not the case. She may have misunderstood a conversation we had. I do not believe that the *Journal of Forensic Sciences* is a suitable platform for "he-said/she-said" arguments in the guise of scientific research.

The *most restorations hits* list has the most value late in an identification effort, and in situations where there is fragmentation. I have stated this in lectures at the Emerging Dental Technologies Course at the AFIP, at the ADA's Mass Disaster Symposium, at many DMORT training sessions and at the Symposium on Forensic Dentistry at UTHSC San Antonio. This is why WinID contains a *most restorations hits* ranked list.

I hope that the next time a review of dental identification software is offered to the readers of the *Journal of Forensic Sciences*, it be undertaken by individuals who have experience with computers and with dental identification software.

Jim McGivney, DMD
Saint Louis