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Letters

Standardization of Video and Digital Equipment for Diagnostic Imaging

The growth of digital imaging and video (electronic) imaging feels more like an explosion in diagnostic imaging departments. Our profession faces a significant problem if we do not make our concerns known to those who are selling imaging equipment. Most of the equipment sold by one vendor cannot display images from another vendor's equipment, nor can the different brands easily be made to communicate with each other. This is particularly meaningful from the point of view of cost.

Vendor X sells an add-on digital radiographic system for cardiac applications. Because the fluoroscopic image is generated by conventional equipment, it uses "standard" video signals that are displayed on a room TV monitor. After image processing, the signal from vendor X must be displayed on a special TV monitor, because his equipment produces a "nonstandard" signal. Also, vendor X's TV signal will not be accepted by a standard multiformat camera for recording, so a multiformat camera from vendor X is needed, at whatever price is asked. If you want to show an interesting 10 sec cardiac series to cardiologists and residents at conference, your conventional U-Matic tape recorder (or VHS or Betamax) will not accept the TV signal provided by vendor X, so the conference must convene in the cardiac catheterization laboratory.

Vendor Y offers an add-on digital radiographic system that can interface to two or three rooms of x-ray equipment, providing digital capabilities at a reasonable cost. However, after installing the system, the vendor informs you that unless you purchase a new TV camera for one of the rooms, he cannot interface to that particular room because the video signal is "nonstandard," and his computer will not function with that TV signal.

Perhaps you would like to consider a central, digital storage facility in which all of your digital images can be stored on digital laser disk so that any computer-based imaging system could have access to all images generated in the department. This would facilitate intermodality comparisions of images for diagnostic purposes and allow for a central, high-density digital storage facility, probably obviating digital magnetic tapes while providing for relatively instant access to stored digital images. However, no two vendors use the same digital information format, and, therefore, the systems are not digitally compatible. In addition, one vendor actually uses several digital information formats, and his models of equipment cannot communicate among themselves!

Have we fabricated these scenarios to predict potential problems caused by nonstandard TV systems? Definitely not! We have had these experiences when implementing digital imaging at our institution.

Well defined standards in the television industry detail the format for video signals [1, 2]. A large quantity of video equipment (TV monitors, cameras, tape recorders, etc.) is available off the shelf at, in most cases, lower costs than manufacturers incur when developing their own nonstandard systems. If manufacturers designed equipment incorporating these standard components, the savings could be passed along to the health-care consumer.

There are two lights on the horizon. The American Association of Physicists in Medicine (AAPM) recently published a report on the standardization of digital data formats [3]. The Society of Motion Picture and Television Engineers (SMPTE) recently formed a Subcommittee on Recommended Practices for Medical Diagnostic Devices that is working on a document [4] addressing how to evaluate these signals. The SMPTE subcommittee is made up of members of the SMPTE and AAPM as well as representatives of several vendors. Many vendors are interested in addressing the problem, but their motivation would be enhanced if they were more aware of the marketplace concern.

Neither the AAPM report nor the SMPTE subcommittee can be as effective as the diagnostic imaging community as a whole. We users must work together and talk to the vendors, individually and through the National Electrical Manufacturers Association (NEMA), to express our concerns about the proliferation of diverse, noncompatible TV and digital formats. Letters to key individuals in the x-ray industry would be helpful in expressing concerns and indicating our needs for using the television industry's accepted standards for video signals and for assuring that digital systems can communicate with one another readily. In addition, when purchasing equipment, specify that the video signals must meet the RS-170 or RS-343 standard and accept only equipment that does meet that standard on delivery.

By working together, our efforts will be rewarded with the best diagnostic images and service possible at the lowest cost.

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Recognition of Preenhancement Ring Density on CT in Resolving Intracerebral Hematoma

In the July/August 1983 issue of *AJNR*, Eric J. Russell [1] wrote regarding the observation that a complete ring of increased density on noncontrast computed tomography (CT) could indicate aging hemorrhage. His letter was in response to an article by Braun et al. [2].

We have also noted this preenhancement ring density and its significance in the differential diagnosis of ring lesions. In 1979, we published two cases with histology demonstrating the etiology of the increased density [3].

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