considered to be at greater risk of infection-concluded that because patients given prophylaxis had the same rate (or an even higher rate) of wound infection than patients who were not given prophylaxis, that surgical antimicrobial prophylaxis is of no value. Such incomplete analyses delayed appreciation of the efficacy of surgical antimicrobial prophylaxis, which only came with the first prospective, controlled, randomized trials.

To address Kapadia and Rodrigues' concern satisfactorily would require a ***randomized trial*** in which septic ICU patients who need central access are randomized to have a CVC inserted with minimal barrier precautions or with maximal barrier precautions, similar to the study done by Raad et al.[2] But, it would be essential that the study be sufficiently large to have statistical power to detect 25% to 50% differences in rates of CVC-related bloodstream infection with 80% to 90% certainty. Given their reservation, I would encourage the writers to undertake such a trial.

I would assert once more that my editorial conclusion was based on ***multiple*** sources of data[3]: 1) a large prospective study of risk factors for catheter-related infection with Swan-Ganz catheters in ICU patients done in my center[4] which showed, using multivariate analysis, that insertion of these catheters with minimal barrier precautions (sterile gloves and a small sterile drape, without a long-sleeved sterile surgical gown and large sheet drape) was associated with a significantly increased risk of catheter-related infection (odds ratio = 2.2; $P = 0.03$);2) comparative trials of IV therapy teams that found that more stringent asepsis at the time of insertion of a CVC, which usually included barrier precautions beyond the norm, was associated with greatly reduced rates of IV catheter-related bloodstream infection; 3) multiple prospective studies, which have shown that the prophylactic use of barrier precautions in high-risk ICU populations-vis-a-vis protective isolation-reduced the incidence of device-related nosocomial infections of all types[5-9]; and 4) the study by Raad et al,[2] which provides the first data, based on a randomized trial, confirming the benefit of maximal barrier precautions during insertion of a CVC.

Kapadia and Rodrigues are correct in their assertion that the findings of a study in one subset of patients may not necessarily apply to all patients who require a CVC. However, until a study of the efficacy of maximal barrier precautions is done in ICU patients that refutes the extrapolation, for the reasons stated above and in the editorial,[3] I continue to believe it is justified to conclude, "maximal barrier precautions, as Raad and his colleagues have shown, are inexpensive and highly cost effective, and should now be considered the standard of care for insertion of central venous devices of all types" and, I would further add, "in all patient populations."

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Three-Dimensional Graphs Misleading

To the Editor:

Presenting one- or two-dimensional data in three dimensions is misleading. Unfortunately, many posters and slides at the Society for Healthcare Epidemiology of America 1994 annual meeting in New Orleans did exactly that. In an analysis of bar and pie charts from posters and slides I saw on the second and third days of the meeting, 12 of 38 bar charts (32%; binomial CI_{95}, 18% to 49%) were "enhanced" with depth. The situation with pie charts was worse: of the 10 pie charts, nine were portrayed in three dimensions (90%; CI_{95}, 56% to 100%).

Advertisers use presentation graphics to distort (emphasize) points. One of the most dangerous techniques is the "third dimension" presented on a flat surface. "Three-dimensional" pie charts are an obvious problem. By placing the chart at an angle, the size of slices in the front is enhanced by the visible chart edge (Figure 1). When employed, perspective further shrinks the size of slices rotated to the distant part of the chart. (Most programs, like Excel, omit perspective calculations in these pseudo-3-D graphs.)

Adding depth to a bar chart also obscures the data. The back edge of the bar appears higher than the front edge; it is difficult to find the actual value on the Y-axis. Small differences that are easily seen presented flat become harder to notice when imaginary depth is added. Though adding depth may seem eye-catching, this maneuver confuses the point (Figure 2).

I am not suggesting that we abandon presentation graphics programs. The general availability of graphics

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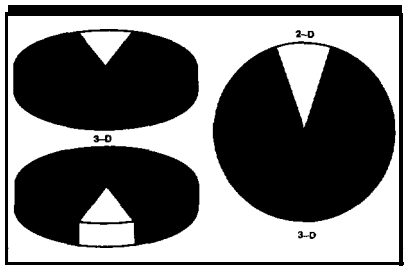


FIGURE 1. Three-dimensional pie charts make front slices appear larger.

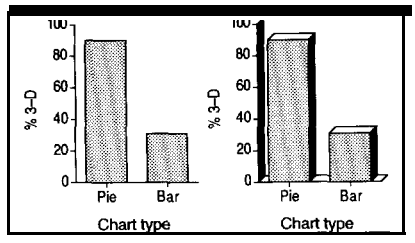


FIGURE 2. Adding depth obscures data; three-dimensional charts observed at SHEA meeting.

software has freed us to express complex tables as understandable images, This is a boon to those of us who learn from pictures. A well-done graphic is far better than a slide with a thousand words! However, as epidemiologists, our priorities should be accuracy in our data and clarity in its presentation.

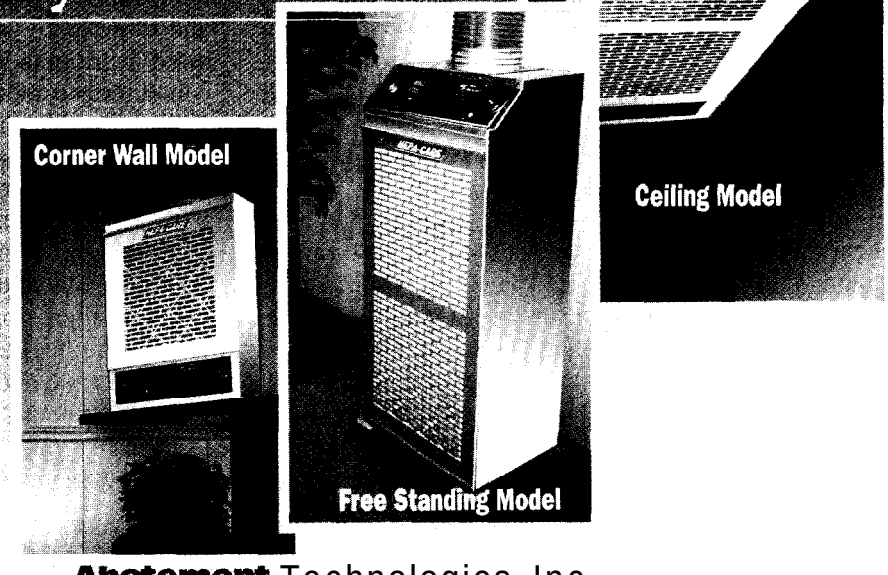
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