

## Effective Graphics and Figures for Journals

*Moderator:*

**Susan H Mitmesser**  
Mead Johnson Nutritionals  
Evansville, Indiana

*Speakers:*

**Asha R Kays**  
Golgeon Group, Inc  
Richmond, Virginia

**Michael Havranek**  
MediVisuals Inc  
Richmond, Virginia

*Reporter:*

**Lynelle Korte**  
Elsevier  
St Louis, Missouri

The primary goal in creating effective figures and graphics is to communicate the greatest number of ideas in the shortest time using the smallest amount of ink in the smallest space. That was the theme that Asha R Kays, president of Golgeon Group, Inc, introduced during the “Effective Graphics and Figures for Journals” session at the 2006 CSE annual meeting. Michael Havranek, a certified medical illustrator and designer at MediVisuals Inc, expanded on the theme and explained how to apply it to graphics used by the scientific community.

Graphics in journals serve many purposes that guide design. Graphics may be included in publications to add interest and variety, clarify complex information,

summarize large amounts of information, provide examples of topics mentioned in the text, serve as evidence of results or data, and boost retention of information. Graphics should be designed with a clear purpose in mind for the benefit of the users. “You need to know who is going to be viewing your graphics”, Havranek said.

To ensure the appropriateness of graphics, style and format must be considered. For example, charts and graphs can be designed to put data into a context that can be more quickly interpreted. Line art is the least expensive to create and print, but photographs and computer-generated images and models also may be appropriate, depending on the audience. It is important to understand that interpretations can depend on individual background and experience. Finally, it is helpful to communicate by using standardized visuals. For example, an audience accustomed to interpreting data in one fashion, such as bar charts, will most easily interpret new data presented in the same fashion.

Clear and concise graphics allow readers to grasp the intended message quickly. Displaying only the essential information avoids confusion. As Havranek said, “Get rid of all the ink that is not part of the data.” Graphics also should be self-explanatory. That can be achieved by using effective titles, placing clear labels properly, and avoiding ambiguous images.

Of course, in designing or editing graphics, it is crucial that all data be accurate and that the material can be trusted. To

that end, it is important to keep size and quantities proportionate and to use comparable sets of data. A pie chart displayed in perspective is a good example of a distorted message. The most accurate way to present pie charts is head-on, not tilted or three-dimensional.

In addition to providing clarity, labels can be effective in ensuring accuracy. “Labeling your image with the actual data values helps to counteract any graphical distortion that may be going on”, Havranek said. Color also can affect the presentation of graphics, with red indicating alarm, yellow indicating caution, and so on. To further ensure accuracy of data, it is recommended that scales be included with photographs. In short, data variation should be the focus of graphics, and design variation should be avoided.

In addition to good design, it is important to consider the purpose, appropriateness, clarity, and accuracy of the graphics. Titles and captions are important in drawing the user into a graphic. Line weights, font types and sizes, and color all affect the delivery of information and should be chosen carefully. The limitations of users who may be color-blind should be accommodated as well.

Keeping these tips in mind when developing or editing graphics and figures for journals will help to ensure better understanding of the material for readers while presenting a more inviting layout. 