

## **EFFECTIVE SCIENTIFIC PRESENTATION**

Tom Hazinski, MD  
Professor and Associate Chair  
Department of Pediatrics  
Vanderbilt University

**A boring lecturer is one who  
talks in someone else's sleep.**

### **EFFECTIVE SCIENTIFIC PRESENTATION**

#### *Outline*

- Organizing your presentation.
- Choosing audio-visuals.
- Making effective slides.
- Presenting data.
- Handling questions.
- Practical hints.

### **SCIENTIFIC PRESENTATION**

#### *Why is it Important?*

- Colleagues infer your scientific ability from the clarity and quality of your presentation.
- In science, something is true only when peers are convinced.
- Presentation skills can be improved by preparation, practice, and observation of good speakers.

### **Key Elements of a Successful Scientific Presentation**

- **Explicit statement of hypothesis or study question.**
- **Good Data**
- **Good Audiovisuals**
- **No Technical Problems**
- **Clear Presentation**

### **SCIENTIFIC PRESENTATION**

#### *Typical Format*

- Introduce general field and the gaps filled by your work; praise work done by others.
- Pose the specific questions/ hypotheses.
- Present methods and design in sufficient detail to lend credibility to your results.
- Show data, linking each result/experiment to a posed question/hypothesis.
- Summarize and interpret results; consider alternative interpretations.
- Discuss future research plans.

## SCIENTIFIC PRESENTATION

### *Format*

- Introduce topic.
- Pose questions/hypotheses.
- Present methods.
- Show data.
- Summarize and interpret results.
- Discuss future plans.

## SCIENTIFIC PRESENTATION

### *Most Common Errors*

- Failure to consider purpose, site and audience.
- Illogical flow of ideas.
- Ineffective slides.
- Mismatch of slide text and spoken words.
- Poor pointer technique.
- Lack of periodic and final summaries.

## SCIENTIFIC PRESENTATION

### *Planning*

- Who's in the audience?
- How big is the audience/room?
- How much time do I have?
- What 3 things do I want the audience to remember?  
–*Make the "final summary" slide first*
- What audio-visuals will I use?

## SCIENTIFIC PRESENTATION

### *Audio-Visual Aids*

- Chalkboard with cup of coffee.
  - Handout
  - Transparencies
  - Slides
  - Computer-generated projection
  - Combinations
- Best? Simple slides + detailed handout

## PURPOSES OF SLIDES

- To teach and convince the audience.
  - To help speaker with organization and timing.
  - To depict data accurately.
  - To help the audience understand and remember the main ideas.
- Slides are not intended to amuse, impress, or overwhelm.

## ELEMENTS OF A GOOD SLIDE

- Brevity (but not too brief).
- Simplicity (but not too simple).
- Informative title.
- Accurate spelling.
- Consistent key words and syntax.
- Enthusiastically explained in sufficient detail.
- Text size proportional to room size.
- Requires no apology.

## SLIDEMAKING HINTS

- Don't use complicated tables or graphics from journals.
- Minimize words.
- Fill screen area with largest text possible.
- Review drafts with colleagues.
- Number slide in lower left corner with marker, not stickers.
- Avoid vertical slides, ALL CAPS, and all italics.

## SLIDEMAKING HINTS

- *Don't use detailed journal graphics .*
- *Minimize words.*
- *Number slide in lower left corner with marker, not stickers.*
- *Fill screen area with largest text possible.*
- *Review drafts with colleagues.*
- *Avoid vertical slides, all caps or all italics.*

## SLIDEMAKING HINTS

- *Don't use detailed journal graphics .*
- *Minimize words.*
- *Number slide in lower left corner with marker, not stickers.*
- *Fill screen area with largest text possible.*
- *Review drafts with colleagues.*
- *Avoid vertical slides, all caps or all italics.*

## SLIDEMAKING HINTS

- DON'T USE COMPLICATED TABLES OR GRAPHICS FROM JOURNALS.
- MINIMIZE WORDS.
- FILL SCREEN AREA WITH LARGEST TEXT POSSIBLE.
- REVIEW DRAFTS WITH COLLEAGUES.
- NUMBER SLIDE IN LOWER LEFT CORNER WITH MARKER, NOT STICKERS.
- AVOID VERTICAL SLIDES, ALL CAPS OR ALL ITALICS.

Version 1  
Good

## TGF-Beta

- TGF-beta is a new signaling peptide.
- Involved in growth, differentiation, cancer, wound repair, inflammation, aging, host response, etc.
- 3 TGF receptors are ubiquitous.
- Located on chromosome 7.
- Mechanism of action is to activate threonine kinases and Phosphoinositols.

Version 2  
Better

## TGF-Beta

- New signaling peptide
- Growth, wound repair
- Differentiation
- Cancer, aging
- Inflammation
- 3 Receptors
- Ubiquitous
- Chromosome 7
- Mechanism

Version 3  
Best?

## **TGF-Beta**

### *New Family of Signaling Peptides*

- Influences growth, differentiation, injury, and repair.
- Interacts with 3 receptors.
- Activates threonine kinase and PI system.

## **USING COLOR IN SLIDES**

- No consensus; a good slide can be any color.
- **Black letters on white:** Modest, versatile, visible in many lighting situations; essential for international venues.
- **White/Yellow letters on blue:** Fancier, sensitive to ambient light; attractive.
- Beware the over-decorated multi-colored slide! Some people are color-blind.

## **LINE AND BAR GRAPHS**

### *Are They Clear?*

- Look at axes; is (0,0) suppressed?
- x-axis: Note units (msec or months?)
- y-axis: Note units; Beware of ratios or "normalized" values.
- Is SD or SE depicted? What is n? Is there data drop-out over time?
- Are statis. sig. results evident?

## **EXPLAINING A GRAPH**

### *Stepwise Approach*

- Introduce the slide; e.g., "This slide shows the effect of ( ) on ( )"; link result to hypothesis.
- Identify/explain units of both axes, pointing to each axis.
- Point to the control data. Then point to the experimental data, showing the difference.
- If a result is statistically significant, expected, surprising or controversial, say so.
- Prepare audience for next slide.

## **TABLES IN PRESENTATIONS**

- Avoid if possible.
- Difficult to read and remember.
- Visually dull.
- Perhaps useful to show comparability or to dispense with non-significant data.
- If used, speaker should spend extra time, point carefully, and indicate clearly the 'take-home message'.

## **YOUR SLIDES ARE MADE**

### *Now What?*

- Rehearse:
  - Develop smooth slide transitions.
  - Work on timing and pauses.
- Develop contingency plans:
  - Be prepared to stop early or to speak longer.
- Know when to stop editing/revising.

## HAZARDOUS LECTURE STYLES

- Encouragement of audience participation when audience is large or easily intimidated.
- Two-projector technique.
- Mixed media: e.g., slides plus overheads.
- Use of cartoons, art, your kids, vacation photos, pets, landscapes, etc. as a substitute for logical transitions.

## COMMON MISTAKES

- Wave the pointer around wildly.
- Apologize repeatedly for poor quality slides.
- Use slides overloaded with data or text.
- Switch frequently between slides and overheads.
- Use the phrase "And finally..." three or four times.
- Raise and lower room lights frequently.
- Talk fast or read your lecture.
- Long time to first slide or long time to first data slide.

## USING HUMOR

- Humor is appropriate if:
  - You have a sense of humor.
  - The topic and audience are predisposed.
  - It is not offensive or embarrassing.
  - The joke or cartoon is brief and requires no lengthy explanation or caption.
- Offbeat or mean-spirited humor will distract audience; self-effacing humor shows confidence, maturity and warmth.

## ANSWERING QUESTIONS

- A modest clear talk prompts good and bad questions. Be patient with the questioner.
- Acknowledge flaws in your data before your audience does.
- Don't present methods or data you can't explain.
- Say "I don't know" if you don't know. It increases the credibility of things you do know.
- Expect the questions:
  - "What are you going to do next?"
  - "What is the mechanism?"

## OTHER PRACTICAL HINTS

- Arrive early; examine A-V equipment, pointer, room lights, etc.
- Preload carousel or program; check slide orientation.
- Anticipate A-V problems; bring a pointer and copies of slides, text, or slide list.
- Acknowledge mentors/co-workers and local scientists; thank your hostess or host.
- Prepare opening and closing remarks.
- Wear comfortable clothes and a watch.
- Finish on time, or even better, a little early.

## TRAVELING WITH SLIDES

- DON'T:
  - Pack slides and notes in checked luggage.
  - Prepare a complicated mixed media presentation.
- DO:
  - Pack slides carefully in carry-on luggage.
  - Bring a pointer and reliable carousel.
  - Take extra slides and adjust your talk to meet last-minute changes in time or topic.

## **ANTICIPATE TECHNICAL PROBLEMS**

- The dark or bright room.
- Big room with small screen.
- No pointer or slide-changer at podium.
- Computer incompatibility.
- Incompatible/No carousel.
- Slides jam in projector.
- Bulb burns out/no back-up projector.

## **EFFECTIVE PRESENTATIONS**

### *Summary*

- Consider purpose, audience, site, and time.
- Learn to use graphics software.
- Tell a logical story with appropriate a/v material, transitions, and periodic summaries.
- Rehearse.
- Be enthusiastic about your subject.
- Anticipate A-V problems.
- Use pointer effectively.
- Provide final summary of key points.