

Creating Scientific Posters

THE HANDOUT

Division of Creative Services
 National Center for Health Marketing
 Coordinating Center for Health Information and Service



DEPARTMENT OF HEALTH AND HUMAN SERVICES
 CENTERS FOR DISEASE CONTROL AND PREVENTION



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PART I.

Creating Content for a Scientific Poster

Overall Considerations

Characteristics of an Effective Poster

An effective poster is not a journal article hung on a wall. Almost everyone who writes or talks about posters includes this statement in one form or another—because it's true.

An effective poster is a clear, simple presentation that will be read and remembered. (The study may not be simple; the description of it should be both clear and simple.)

Although ideally, you—the author (or one of your coauthors or a delegate)—will be available to answer questions, a poster should be self-explanatory. Day and Gastel (1996) said that if you have to spend most of your time explaining the poster rather than responding to scientific questions, “the poster is largely a failure.”

If the poster is unattended during the time scheduled for viewing posters, the poster **must** be self-explanatory.

Risks in a Poster Presentation

Your goal is to strike a balance between too much information and too little information.

A pared-down presentation may distort or inflate study results, and it may truncate language to a point at which it's not understandable (Peterson & Eastwood, 1999).

The most common flaw in posters is too much information (too many words, too many graphic displays, too much data).

Dense text or graphics don't attract viewers. Coming upon such a poster, viewers are all too likely to say to themselves, “I'll come back later when I have more time.” Alas, later may never come.

The next time you attend a conference, walk through the exhibit hall, looking at the numbers of viewers of various posters—chances are that you will readily see why the viewers are (or are not) attracted to specific posters.

Presenter's Role at the Poster Session

Now, let's assume that you're present to talk with viewers.

At least one person is bound to approach your poster and then turn to you and say, “So, tell me about your study.” This is your moment (or the moment of one of your coauthors or your delegate—whoever is present to talk about the poster). It's not the time to fumble for words.

Consider preparing a short (2 or 3 minutes) oral presentation to describe your study. Even if you never give that presentation, it may focus your thinking about how to engage your viewers.

The alternative is to prepare a 1-sentence summary of your study. That's a seductive idea, but it's typically more difficult to prepare a 1-sentence summary than to prepare a summary that can be delivered in 2–3 minutes. (As you know, shorter is always more difficult than longer.)

Watch for the areas of your poster that draw the most attention. Use those observations for additional explanations or to elicit comments from your viewers. Think of this as an **on-the-spot peer review**. Encourage viewers to ask questions, and ask questions to encourage discussion.

Handout for Viewers

You may want to provide a handout for your viewers. The handout may be simply a copy of the abstract you submitted to the conference (although the abstract is typically included in the program book). Or you might provide a reduced photocopy (11 × 17) of the poster, or you might break the poster into sections that fit on 8 ½ × 11 pages.

Or you might use the handout to provide **additional information**, such as acknowledgments or references (sometimes the acknowledgments and references must be included on the poster).

Better safe than sorry: If you'd like to provide additional information in your handout, it may be wise to provide general rather than specific information (Peterson & Eastwood, 1999). Be aware that if you plan to publish a paper on your research, some journals consider a detailed handout at a major conference duplicate publication (Day & Gastel, 2006). Your call, but if you provide a detailed handout at the conference, you might want to offer, in your cover letter to a journal, to provide a copy of that handout.

When you submit your paper for journal publication, you are of course expected to include a footnote explaining that the information was presented as a poster at the XYZ Conference (remember to specify the location and the date of the conference).

Content: General

Don't try to put everything on the poster that you would say in an oral presentation.

IMRAD Format

Poster presentations are summaries of scientific studies. Typically, an article is presented in IMRAD format, or structure. Similarly, the main sections of a poster are typically presented in IMRAD format.

Introduction (or **B**ackground or **O**bjectives)

Methods

Results

and

Discussion (or **C**onclusions and **R**ecommendations)

Unless required by the conference guidelines, an **abstract** is not necessary. In a sense, the poster is an abstract of your work.

Objectives are often substituted for the **Introduction** section. A good title and clearly stated objectives may preclude the need for an Introduction section. Some posters have both a **Background** section and an **Objectives** section.

Unless yours is a methods study, the **Methods** section may be just a couple of sentences describing the type of approach you used. You do not need to name the sources of supply or manufacture. If you prepare a handout, you can include that information there (Peterson & Eastwood, 1999).

The **Results** section may be considered the reason for the poster (Peterson & Eastwood, 1999). In a paper, this is often the shortest part. In a poster, it's the main part: most of the available space will be used to **illustrate** the results. This section may or may not include a passage of text. In this section, the emphasis is on tables and graphs.

The **Discussion** section is often unnecessary. A **Conclusions** section (or Conclusions and Recommendations) is usually sufficient. Keep in mind that your conclusions are not a restatement of the results. Present only the conclusions that are supported by the data. A few statements (perhaps 2 or 3 bullets) ought to be enough.

You may include a **Limitations** section before the **Conclusions** section.

References

If possible, omit references from your poster. Viewers aren't likely to make a note of your references, and viewers are even less likely to remember them. If you prepare a handout, include the references there.

Disclaimer

All CDC posters bear a disclaimer. The poster templates (available from Graphics Services, Division of Creative Services) include the disclaimer.

The most recent version is as follows (the words in bold are the ones that have been changed): "The findings and conclusions in this poster are those of the author(s) and do not necessarily represent the **official position** of the Centers for Disease Control and Prevention."

Context

Audience (Viewers)

Remember that your viewers are

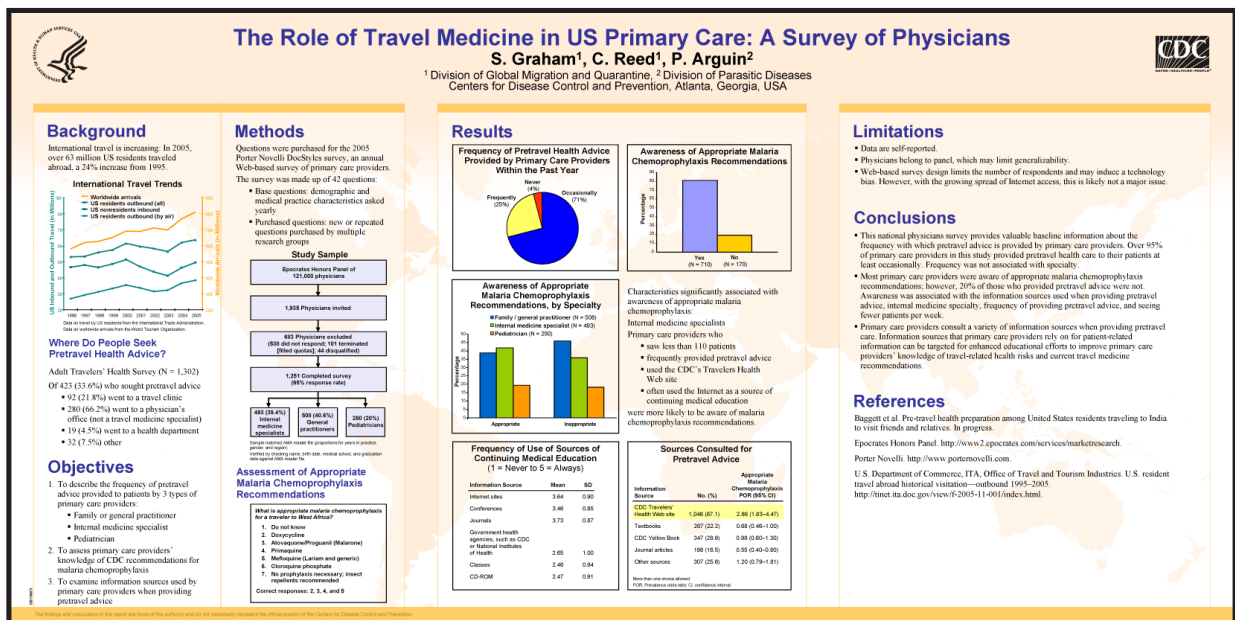
- walking by
- distracted by conversation and the passage of other viewers
- looking for interesting poster presentations to return to for closer examination

Viewer's Perspective

Posters are read from a distance of 3 to 4 feet (some say 4 to 5 feet), but the banner is read from farther away (as much as 15 feet). The title is probably your first opportunity to attract viewers.

Content: Specific

Here's the poster we used as a model for this presentation. We thank the authors for permission to use it (see Acknowledgments). See the Appendix for a larger view.



The "bad" graphs in this section were created for the purposes of illustration: they should not be attributed to the authors of our model poster.

Title

If you find it difficult to write a clear, concise title, you might start with a title that you'd use for a journal article; then condense it, condense it again, and finally, reduce it to its essence. Think of the result as a marketing device or a “sound bite” to attract viewers (Peterson & Eastwood, 1999).

A Survey of Primary Care Providers in the United States to Assess Frequency, Source of Information, and Knowledge of Pretravel Advice About Malaria Chemoprophylaxis

Version 1: This version has too many words, too many details, and malaria chemoprophylaxis is not the main topic of the poster (it's the topic the authors used to illustrate the main topic).

A Survey of US Primary Care Providers to Assess the Characteristics of Pretravel Advice About Malaria Chemoprophylaxis

Version 2: This version is better, but it's still not concise enough or broad enough to convey the main topic.

The Role of Travel Medicine in US Primary Care: A Survey of Physicians

Version 3: This is the final title.

Text

A well-designed poster has little text; most of the space is used for illustrations.

Keep straight text to a minimum (no more than 20–25 lines in a section).

Words

Every word has to work hard.

Use bulleted lists when they are appropriate for your information. Use numbered lists only if numbers are necessary to denote sequence (e.g., steps) or priority.

If you use bullets, try to use words or phrases instead of sentences. Remember to keep the language parallel: bullets should be all words or phrases or all sentences.

The next 3 recommendations apply to all text, not just bulleted lists:

- ✦ Place noun or verb at or very near the beginning of phrases or sentences.
- ✦ Avoid adjectives and adverbs.
- ✦ Be consistent in capitalization and use of terms (don't use synonyms, e.g., *patients* and *participants*).

Limitations

- Data are self-reported.
- Physicians belong to panel, which may limit generalizability.
- Web-based survey design limits the number of respondents and may induce a technology bias. However, with the growing spread of Internet access, this is likely not a major issue.

Conclusions

- This national physicians survey provides valuable baseline information about the frequency with which pretravel advice is provided by primary care providers. Over 95% of primary care providers in this study provided pretravel health care to their patients at least occasionally. Frequency was not associated with specialty.
- Most primary care providers were aware of appropriate malaria chemoprophylaxis recommendations; however, 20% of those who provided pretravel advice were not. Awareness was associated with the information sources used when providing pretravel advice, internal medicine specialty, frequency of providing pretravel advice, and seeing fewer patients per week.
- Primary care providers consult a variety of information sources when providing pretravel care. Information sources that primary care providers rely on for patient-related information can be targeted for enhanced educational efforts to improve primary care providers' knowledge of travel-related health risks and current travel medicine recommendations.

Compare the length of the bullets in these 2 sections (above). Although the bullets in Conclusions are within the recommended word limit for a section of text, at least some of the sentences might be more concise.

For example, bullet 1 might be reworded as follows: "This survey provided valuable baseline information about the frequency with which primary care providers offer pretravel advice. Over 95% provided pretravel health care at least occasionally. Frequency was not associated with specialty."

Punctuation

Use punctuation only when it helps the viewer.

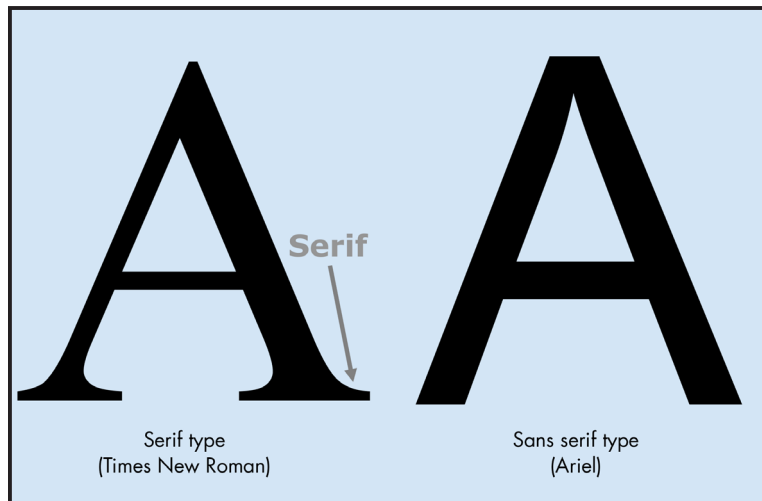
Do not use punctuation at the end of bullets that are not complete sentences.

Do not use periods in abbreviations (if you feel strongly about the periods in US, use them, but they aren't necessary).

Do not use punctuation at the end of a display line (e.g., a heading or a subheading on a line by itself).

Always use the serial comma (the one before the word and in a series of 3 or more, e.g., red, white, and blue). In scientific writing, you will rarely be misunderstood if you use the serial comma; you may often be misunderstood if you do not use it. (The omission of the serial comma is common in newspapers and magazines.)

Typography



Serif type (e.g., Times New Roman) is characterized by strokes at the top or the bottom of the letters. Use serif type for text.

Sans serif type (e.g., Ariel) is unadorned (plain). Use sans serif type for headings and titles and for the content of tables and graphs. (Numerals in tables are easier to align in a sans serif type.)

Do not use all-caps (too hard to read, whether the type is serif or sans serif).

Do not justify type (unjustified, or ragged right, type, is easier to read).

Notes about tables and graphs: cap vs. lowercase for titles, column heads, labels

If you prefer **centered** titles for tables and graphs, use cap and lowercase. In cap-and-lowercase (headline) style, cap all main words. That is, lowercase articles (*a, an, the*), conjunctions (e.g., *and*), and prepositions (e.g., *of, for*).

If you prefer **flush-left** titles for tables and graphs, use sentence-style capitalization (cap first letter of first word and proper nouns).

Use a consistent capitalization style for **labels** on graphs (either cap-and-lowercase style or sentence style).

Notes about consistency

If you prefer cap and lowercase style for labels and column headings, use cap-and-lowercase style for the title of the graph or table.

No matter which cap style you choose for the title, you may use sentence style for labels. In the long run, sentence style for labels is a good choice because you'll need to express measures (usually in parentheses) in conventional forms (e.g., "mL/min" or cells/ μ L").

Introduction to Tables and Graphs

Avoid visual clutter. Rather than loading a lot of data into a single figure or a single table, make several figures or several tables.

In hierarchical terms, tables and graphs (especially in the Results section) are preferable to text. Graphs are somewhat preferable to tables (graphs are definitely preferable to long tables).

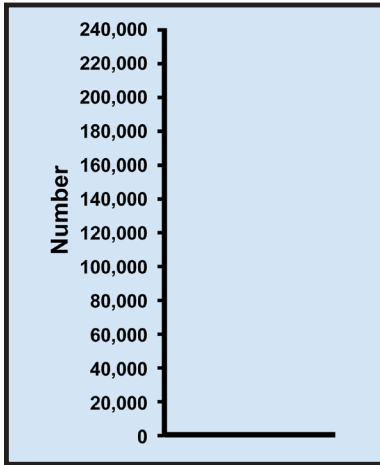
Most viewers need more time to comprehend a large number of specific values. Graphs (pictures, if you will) can be comprehended more quickly.

Avoid **footnotes**. If they are essential, do your best to

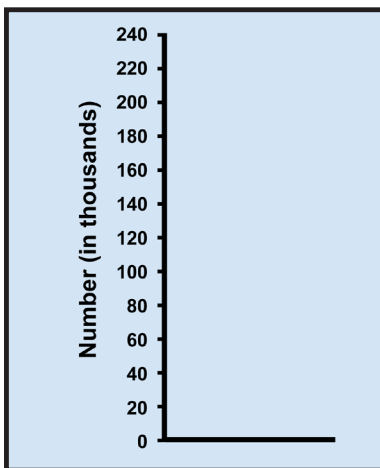
- keep them to a minimum
- keep them short
- use a type size that is large enough to be read at a distance of 3 feet.

Percentages: Try to avoid percentages for numbers of less than 100, especially when the viewer can easily grasp the relationship of the numbers (e.g., no need to express the percentage for 20 of 25).

Expression of numbers: To express large numbers (thousands, millions), especially in a table or the scale for a y axis, avoid trailing zeroes (the zeroes after a comma).



In this version, the numbers have trailing zeros.



In this version, the numbers are expressed in thousands. The label is “Number (in thousands),” and the range is 20 to 240 instead of 20,000 to 240,000.

Tables

On a poster, tables that contain enough data to be useful are likely to be difficult for the viewer to assimilate. Depending on your study, you may find it difficult to create a table that’s short enough to work well on a poster.

Graphics staff recommend that you consider 10 rows and 4 columns the maximum for each table.

Editor’s note. If possible, use even fewer.

A viewer’s ability to comprehend table values quickly depends greatly on the order of the row entries. Order row entries in a clearly discernible pattern, perhaps by ordering the rows so that the numbers in column 1 are ranked from largest to smallest. See the following examples.

Cases by Serotype and Period, United States, 2006

Serotype	Period 1 cases, (%)	Period 2 cases, (%)	Period 3 cases, (%)
14*	228 (29)	7 (10)	-
6B*	115 (15)	3 (6)	1 (1)
18F*	80 (10)	2 (4)	-
9A*	58 (7)	1 (2)	1 (1)
23F*	49 (6)	3 (6)	-
4*	49 (6)	-	-
18C*	41 (5)	2 (4)	-
16A*	40 (5)	11 (20)	37 (51)
1*	22 (3)	-	-
6A*	18 (2)	3 (6)	6 (8)
7F*	14 (2)	-	22 (30)
26	1 (0.1)	5 (9)	1 (1)
24F	5 (0.6)	3 (6)	5 (6)
14C	7 (0.9)	3 (6)	2 (3.7)
3*	3 (0.4)	2 (4)	6 (8)
23F*	5 (0.6)	2 (4)	3 (4)
8	1 (0.1)	2 (4)	-
12F	6 (1)	1 (2)	7 (9)
16A*	1 (0.1)	1 (2)	4 (5)
23B	-	-	4 (5)
15B	5 (0.6)	1 (2)	3 (4.6)
9N	6 (0.8)	-	2 (3.7)
15A	5 (0.6)	-	2 (3.7)
16F	2 (0.3)	-	2 (3.7)
17F	-	-	2 (3.7)
22A	1 (0.1)	1 (2)	2 (3.7)
35F	3 (0.4)	-	2 (3.7)

This table has 27 rows—a lot of values for a viewer to assimilate. And the rows might be ordered in a more clearly discernible pattern (also possible that the order is perfectly clear to persons knowledgeable about serotypes).

Sources Consulted for Pretravel Advice

Information Source	No. (%)	Appropriate Malaria Chemoprophylaxis POR (95% CI)
CDC Travelers' Health Web site	1,046 (87.1)	2.86 (1.83–4.47)
Textbooks	267 (22.2)	0.68 (0.46–1.00)
CDC Yellow Book	347 (28.9)	0.88 (0.60–1.30)
Journal articles	198 (16.5)	0.55 (0.40–0.80)
Other sources	307 (25.6)	1.20 (0.79–1.81)

More than one choice allowed
POR, Prevalence odds ratio; CI, confidence interval

This table is excellent in terms of the amount of data and the wording of the column headings and row entries. It might, however, be clearer if the rows were reordered to continue the pattern of decreasing values (begun in the first row entry).

Graphs

This handout covers only 3 types of graphs—line graphs, bar graphs, and pie graphs—all of which are used in our model poster. Obviously, your poster might include other kinds of figures: photographs, decision trees, maps (in general, a figure is any element that isn't text or a table).

Line Graphs

The ideal number of lines is 3 (consider 5 the maximum).

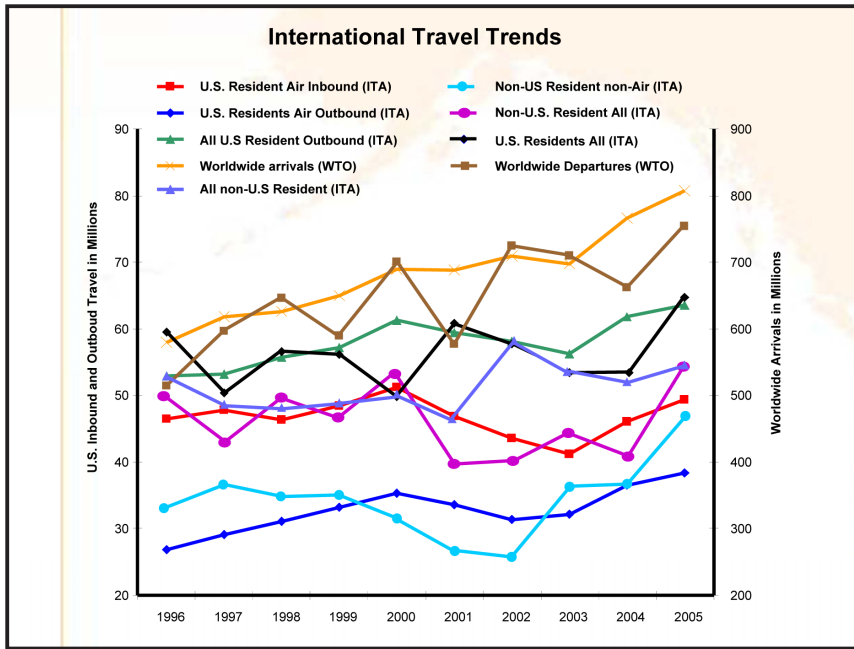
If possible, begin scales at zero.

It's better to use 1 y axis, not 2, but if you really need 2 y axes, try to make it easy for the viewer to understand how to read the graph.

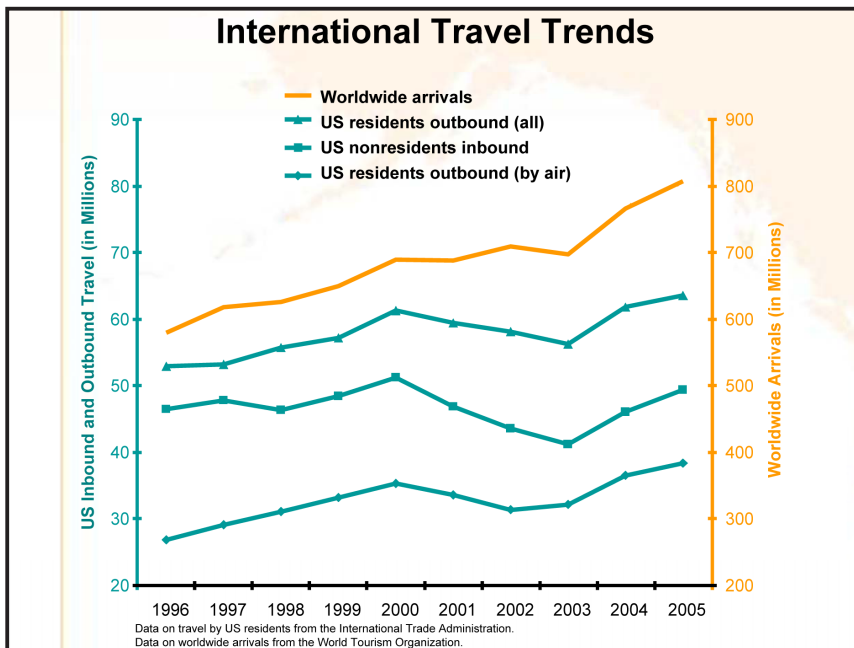
If you create multiple line graphs, try to make the scale for the y axis the same for all line graphs.

Don't crowd too much information into an axis label. Try especially to avoid diagonal labels on the x axis. For example, if the label of the x axis is years, display only the alternate years (won't work if first year is an odd number and final year is an even number or vice versa).

When the explanations in the are short enough and there's enough space between the lines, label the lines and delete the legend.



This graph has too many lines, and it's difficult to discern quickly the reason for the 2 y axes (i.e., difficult to figure out how to read the graph).



This graph has only 4 lines (bravo!). Although the graph has 2 y axes, the axis on the right (scale and label) is color-coded to the top line on the graph (the line that is explained by the axis on the right). Similarly, the axis on the left is color-coded to the other 3 lines on the graph.

Bar Graphs

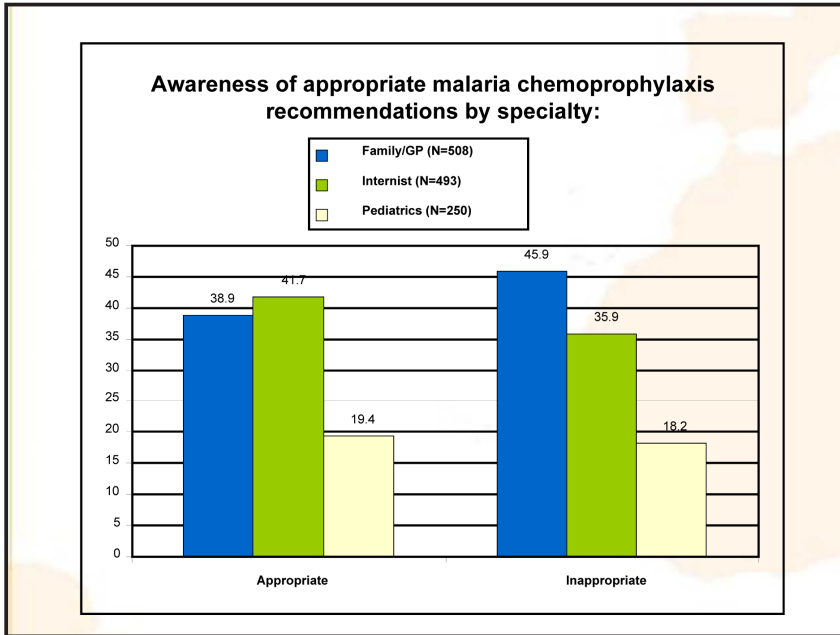
No need to put a specific number at the top of each bar (a bar graph is somewhat like a picture; if the viewer needs specific values, create a table).

For a clustered bar graph, the conventional limit for each cluster is 3 bars.

Avoid 3-D graphs: they distort the data.

Avoid component (stacked) bar graphs: the only component the viewer can assess (quantitatively) is the component at the bottom. (If you use a component bar graph, put the most important component at the bottom.)

Avoid diagonal labels on the horizontal baseline. (On a bar graph, the horizontal baseline is a place for the bars to rest; it's not an axis per se.)



Title: Pair placement and capitalization style this way:

- ✦ Use sentence-style capitalization in flush-left titles.
- ✦ Use cap-and-lowercase style in centered titles.

Don't put a mark of punctuation at the end of a title.

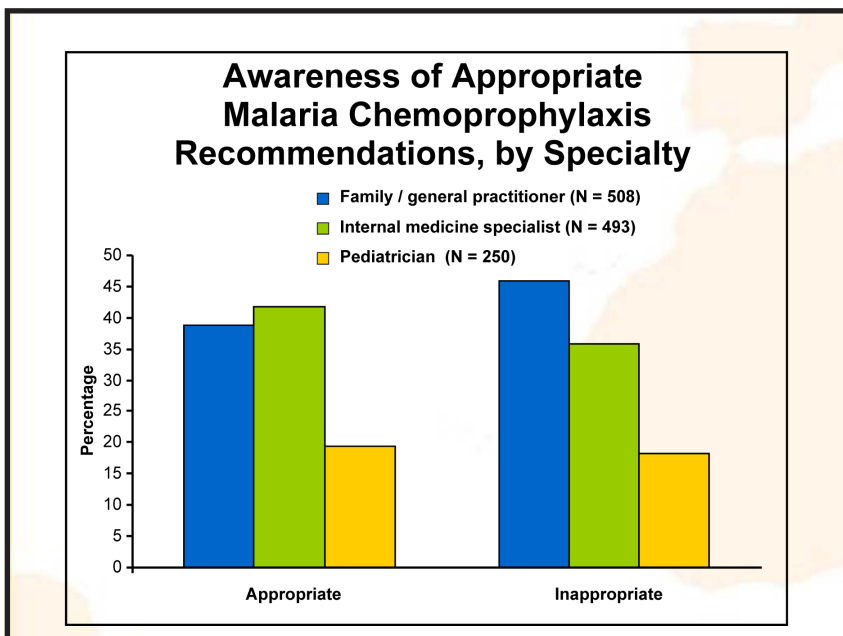
Legend: Family is an incomplete designation; the abbreviation GP has not been established; Internist is not the term used elsewhere on the poster, and Pediatrics is not parallel with the other terms (type of specialty vs. type of provider).

It's better to space expressions containing operational signs as if the sign were a word ("N = 508" is read as "N equals 508").

The numbers at the tops of the bars are unnecessary. The scale on the y axis should be sufficient.

No need for lines behind the bars (visual clutter).

The y axis has no label.



In this version, the problems described above have been corrected.

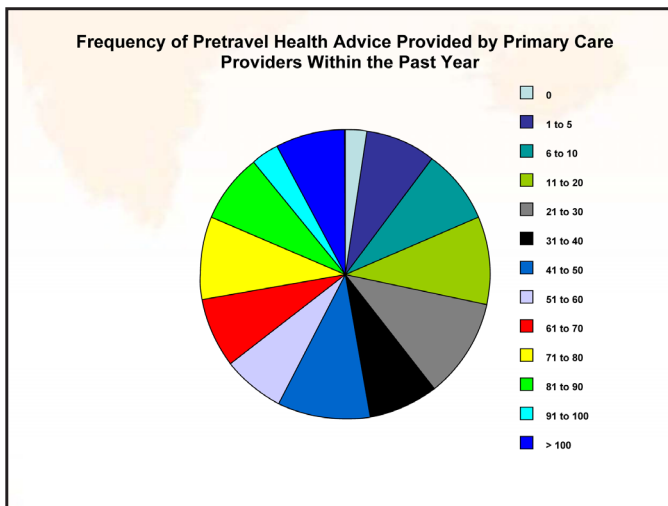
Pie Graphs

In general, pie charts are not the best way to display scientific data, primarily because we evaluate angle and slope poorly. Pie charts are more typical of presentations for a lay audience (e.g., in newspapers, magazines), not scientific presentations.

Pie graphs are especially not the best way to show the proportions of 5 or more elements. If you need to display 5 or more elements, consider creating a bar graph.

Pie graphs can, however, be useful for emphasizing the larger or the smaller proportion (e.g., 2 slices—1 for males, 1 for females).

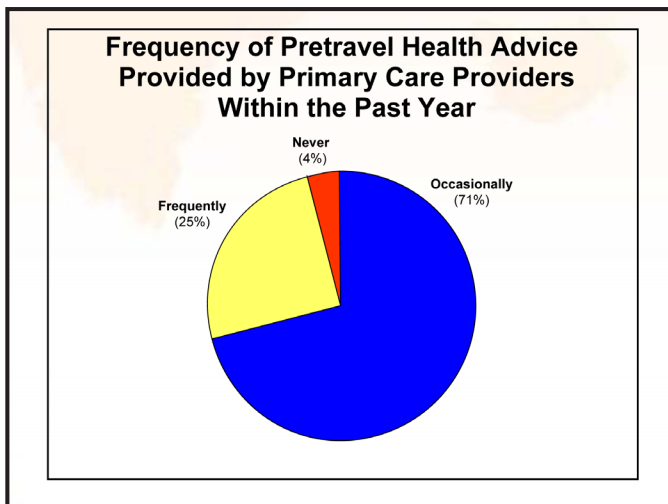
If you include a pie chart, begin with the largest slice at noon and continue clockwise to the smallest slice.



In color, this is a gorgeous pie graph, but it's not very useful:

It has too many slices.

The largest slice (whichever one it is) does not begin at noon, and slices don't decrease in size as one reads clockwise.



In this version, the problems described above have been corrected.

Proofreading

Proofread. Proofread again. And then ask someone else to proofread, too (because you know the material, you'll see what you expect to see).

PART II. Designing and Printing a Poster

Ways to Create a Poster Design

The Division of Creative Services (DCS) has several helpful resources and tools for designing scientific posters. There are two ways you can have a poster design created: by a Creative Services graphic artist or by you.


By a Creative Services Graphic Artist

To have an artist create the design, you need to enter a Creative Services CreateIT request by going to the **CDC Connects home page**, then selecting **Creative Services**, then selecting **Graphics Services**, then selecting **Scientific Poster DCS Developed**, and then completing the CreateIT request form.

CDC Connects home page ⇒ **Creative Services** ⇒ **Graphics Services** ⇒ **Scientific Poster DCS Developed**


Note that the content you provide for your poster needs to have been completely reviewed by relevant co-authors, supervisors, managers, and partners (both inside and outside CDC).

If you allow 10 or more working days, then the artist will have time to give careful attention to visual elements of, and can suggest enhancements to, the design. Below is an example of a poster resulting from that level of response.



Analyzing Collection of Medical Data from EMR to Disease Registry: Based on Cancer Registration Examples

Timothy Jay Carney, MPH, MBA (Northrop Grumman IT, Atlanta, GA); Sandy Thames, (CDC, Atlanta, GA); David Lyalin, PhD (Northrop Grumman IT); Mary Burolla (VCUHS, Richmond, VA); Wendy Scharber, RHIT, CTR (Northrop Grumman IT); Minal Agrawal, MS (Northrop Grumman IT)



OVERVIEW

NPCR-MERP Vision
To advance cancer surveillance practices through the automated capture of available data from electronic medical records and other data sources.
To enhance the efficiency, completeness, timeliness, and quality of cancer surveillance data, information, and knowledge resource development and distribution.

The NPCR-MERP Statements of Purpose

- Contract a comprehensive model that can make NPCR to best use the potential of electronic cancer reporting systems to their greatest and partners
- Identify new capabilities offered by the electronic capture of patient information (EMR, CPE, EHR, etc.)
- Incorporate national standards
- Identify ways to improve completeness, timeliness, and quality
- Identify opportunities to automate manual processes
- Present models in multiple levels of granularity and specificity
- Reflect current industry best practices

NPCR-MERP Modeling Parameters

A collaborative project to identify and test a national model for the electronic capture and reporting of cancer registry data that will:

- Standardize the capture of data from hospital's EMR and other hospital-based data sources (such as reference lab, inpatient, ambulatory, and other cancer registries)
- Use commonly available data sources in standardized format
- Capture data elements to meet cancer registry standards (NAACCR)
- Identify opportunities for automation in the capture and transfer of data throughout the cancer information data flow

What Models Can Do?

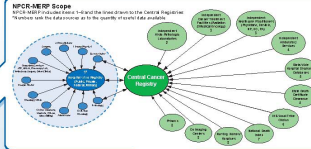
- Provide specialized view of the business
- Reduce complexity
- Expose secondary details
- Capture facts and provide answers - "Who? Where? How? When? What? Why?"

How is NPCR-MERP Different?

Customer & End-user Efforts	NPCR-MERP Efforts
<ul style="list-style-type: none"> Focus on automated reporting from pathology labs and data capture at the ambulatory level Focus on automated enhancement Focus on enhanced capture of patient identifier data elements Standardized message format for cancer registries and ambulatory reports 	<ul style="list-style-type: none"> Focus on automation initiated at the hospital level Improve timeliness, accuracy, and efficiency of hospital reporting Specify the implementation of changing registry standards Offer extensibility of data collected as other information becomes critical (comorbidity, genetic data, treatment, subsequent care, where for diagnostic systems, length of stay) Focus on integrating electronic screening methods to increase sensitivity and specificity Focus on including unmet patient capture of key required data items beyond care taking including: Home address, Billing, Social treatment, Follow up (visit status) Other data items related to cancer surveillance: <ul style="list-style-type: none"> Reporting accuracy and efficiency of data on initial and subsequent treatment (Genetic Data) Reporting capture of following data (prevention) Value for clinical diagnosis and prognostic indicators Develop standard messaging formats and required data items for non-traditional reporting sources

TECHNICAL VIEW

NPCR-MERP Scope
The model includes data to be used for the transition to the Central Registry Model and the transition to the quality of the data.



Central Registry Model Diagram
A flowchart showing the integration of data from various sources (Hospital, Ambulatory, etc.) into a central registry model, which then feeds into the National Cancer Registry.

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A flowchart showing the integration of data from various sources (Hospital, Ambulatory, etc.) into a central registry model, which then feeds into the National Cancer Registry.

Central Registry Model Diagram
A flowchart showing the integration of data from various sources (Hospital, Ambulatory, etc.) into a central registry model, which then feeds into the National Cancer Registry.

NPCR-MERP Logic Model
A flowchart showing the process from data capture to reporting, including steps like Data Capture, Data Integration, Data Validation, and Data Reporting.

STRATEGY

Functional Impact of NPCR-MERP

Registry (Hospital and Central)	Registry Activities
<ul style="list-style-type: none"> Increase opportunity for real-time through automated integration of data from multiple sources Improve completeness, timeliness, and quality of data datasets (increase overall case finding) Potential for real time reporting and rapid case ascertainment Capture of additional data items: <ul style="list-style-type: none"> Follow-up Clinical diagnostic parameters Subsequent therapy Re-occurrence 	<ul style="list-style-type: none"> Enhance CTR quality, timeliness Classical data-layer work Increased base for existing datasets that are not adequately performed (Quality control and audit) E-report generation Training of reporting source staff Enabling data work Additional data capture performed without increase in register's workload

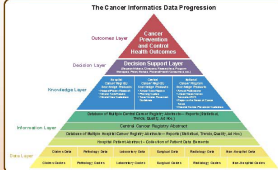
Other NPCR-MERP Impact Measures

- Hospital Level
 - Clinical Patient outcomes
 - Research (knowledge generation)
 - Operational efficiency – cost, time, quality – Maturity Analysis
- State Level
 - Public Health (surveillance, evaluation, and intervention)
 - Operational (efficiency – cost, time, quality) – Maturity Analysis
- National Level
 - Public Health (national surveillance, evaluation, and intervention)
 - Operational (NPCR objectives)
 - Policy (Programmatic effectiveness, ROI, public health outcomes)

Ongoing NPCR-MERP Project Activity

- Conduct Strategic Modeling & Assessment Sessions (SAMS)
- Conduct Requirements
- Engage Respective Audiences
- Complete SAMS & SAMS
- Planning Future SAMS as necessary to develop or refine components of the model
- Facilitate national partnering meetings to ensure high level of representative participation (CDC, NCI, CCR, others)
- Develop NPCR-MERP Workgroups to foster continued discussion and capture of best practices, guidelines, and recommendations including:
 - Hospital Cancer Registry Operations
 - Central Cancer Registry Operations
 - Reporting, Validity, & Standards
 - E-Path Pilot Program Interface
 - PHC Interface
 - Data Integration & Transition
- Incorporate NPCR-MERP activity with ongoing national and international electronic cancer surveillance projects

The Cancer Informatics Data Progression



A pyramid diagram showing the progression of cancer informatics data from basic data capture to advanced data analysis and reporting.

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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If you allow 5 to 9 working days, then the artist will create a basic, but clear and accurate design. Up to 2 small-format proofs will be provided to you, representing 2 rounds of minor revisions. Below is an example of a poster resulting from that level of response.

National Rates of Provider Advice for Exercise and Weight Loss Among Adults with Arthritis
 Jennifer M. Heetman PhD, ATC, FACSM, Margaret Shih, MD, PhD, Teresa J. Brody PhD
 National Center for Chronic Disease Prevention and Health Promotion, U.S. Centers for Disease Control and Prevention, Atlanta, Georgia

Background
 Arthritis is a large and growing problem
 • 43 million US adults have doctor-diagnosed arthritis
 — 16 million have associated activity limitation
 — 8 million are limited in their work
 • Arthritis costs \$86 billion per year
 • Arthritis and rheumatism is the leading cause of disability
Healthy People 2010
 • First ever arthritis national health objectives for the year 2010
 — 8 total objectives for arthritis
 — Objective 2-4 addresses health care provider counseling for self-management

Healthy People 2010 Objective 2-4
 Increase health care provider counseling for persons with doctor-diagnosed arthritis.
 2-4a. Increase health care provider counseling to **lose weight** among overweight and obese persons with doctor-diagnosed arthritis.
 2010 target = 48%
 2-4b. Increase health care provider counseling for **physical activity or exercise** for persons with doctor-diagnosed arthritis.
 2010 target = 67%

Methods
PURPOSE:
 • To estimate the prevalence of health care provider advice for weight loss and exercise among adults with doctor-diagnosed arthritis.
 • To assess variables associated with receipt of weight or physical activity counseling.
DATA SOURCE:
 2002 National Health Interview Survey (NHIS)
DEFINITIONS:
 • Doctor-Diagnosed Arthritis (DRDX):
 "Have you ever been told by a doctor or other health care professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus or fibromyalgia?"
 • Weight Counseling:
 "Has a doctor or other health professional EVER suggested losing weight to help your arthritis or joint symptoms?" (denominator = DRDX+ and BMI >25)
 • Physical Activity Counseling:
 "Has a doctor or other health professional EVER suggested physical activity or exercise to help your arthritis or joint symptoms?" (denominator = DRDX*)
REGRESSION VARIABLES:
Personal characteristics
 Body Mass Index
 Physical Activity Level
 Smoking status
 Comorbid conditions
 Anxiety/Depression in past year (FAD)
Health care access indicators
 Usual place for health care
 Number of MD visits in past year
Demographics
 Age
 Sex
 Race/Ethnicity
 Education Level
 Income
Arthritis impact indicators
 Arthritis-attributable Activity Limitation (AAAL)
 Arthritis-attributable Work Limitation (AAWL)
 Joint Pain past 30 days
ANALYSIS:
 • National prevalence of meeting HP2010 weight and physical activity counseling objectives
 • Correlates of meeting objectives
 — Multiple logistic regression
 — Separate stepwise selection models for each objective (2-4a and 2-4b)
 • SUDAAN used to account for complex sample design

Results
 Weight Counseling Overall Prevalence 38.2%
 Physical Activity Counseling Overall Prevalence 52.4%
 Weight Counseling Separate Regression Model

Correlate	OR	P-value	#
BMI	1.22	< .0001	1
Chronic Conditions	1.38	< .0001	2
Activity Limitations	0.75	< .0001	3
Sex	1.32	< .0001	4
Work Limitation	0.78	< .0001	5
Smoker	0.77	< .0001	6
Age	0.99	< .0002	7
Joint Pain	0.82	< .0008	8
Usual HC place	1.44	< .0175	9
Income	0.95	< .0453	10

 Physical Activity Counseling Separate Regression Model

Correlate	OR	P-value	#
Joint Pain	0.94	< .0001	1
MD Visit last 12 mos	1.47	< .0001	2
Sex	1.47	< .0001	3
Education Level	1.39	< .0001	4
Work Limitation	0.78	< .0001	5
BMI	3.01	< .0001	6
RA Level	1.11	< .0001	7
USUAL HC PLACE	1.12	< .0001	8
Chronic Conditions	1.13	< .0001	9
Activity Limitations	0.81	< .0002	10
Smoker	0.78	< .0004	11
Age	0.99	< .0009	12

Conclusions
 • Many persons with arthritis who would benefit by health care provider counseling for self-management are not receiving it
 • Arthritis impact variables and access to health care are important factors related to receiving provider counseling for self-management in this population

By You

The second way to have a poster layout designed is to do it yourself. This gives you increased control over the process. It allows you to make many design decisions yourself. And it may be necessary if time is short.

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The following are examples of the templates for 8'x4', 4'x4', and 4'x8' poster display areas.

POSTER TITLE

Authors and Organizations

Background
• Content goes here

Results
• Content goes here

SAMPLE TABLE

Heading 1	Heading 2	Heading 3
Content	Content	Content
Content	Content	Content

SAMPLE CHART

Limitations
• Content goes here

Objectives
• Content goes here

Conclusions
• Content goes here

Acknowledgements
• Content goes here

Methods
• Content goes here

Methods
• Content goes here

Acknowledgements
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The design and contents of this poster are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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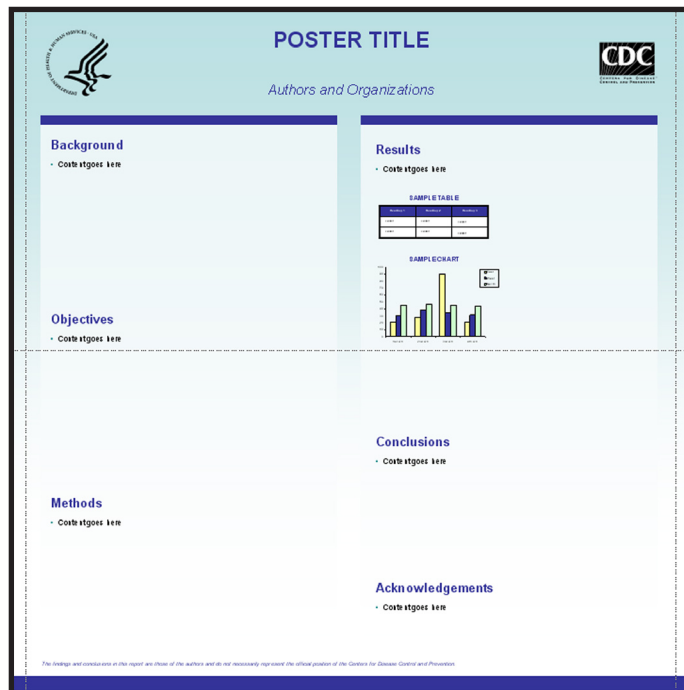
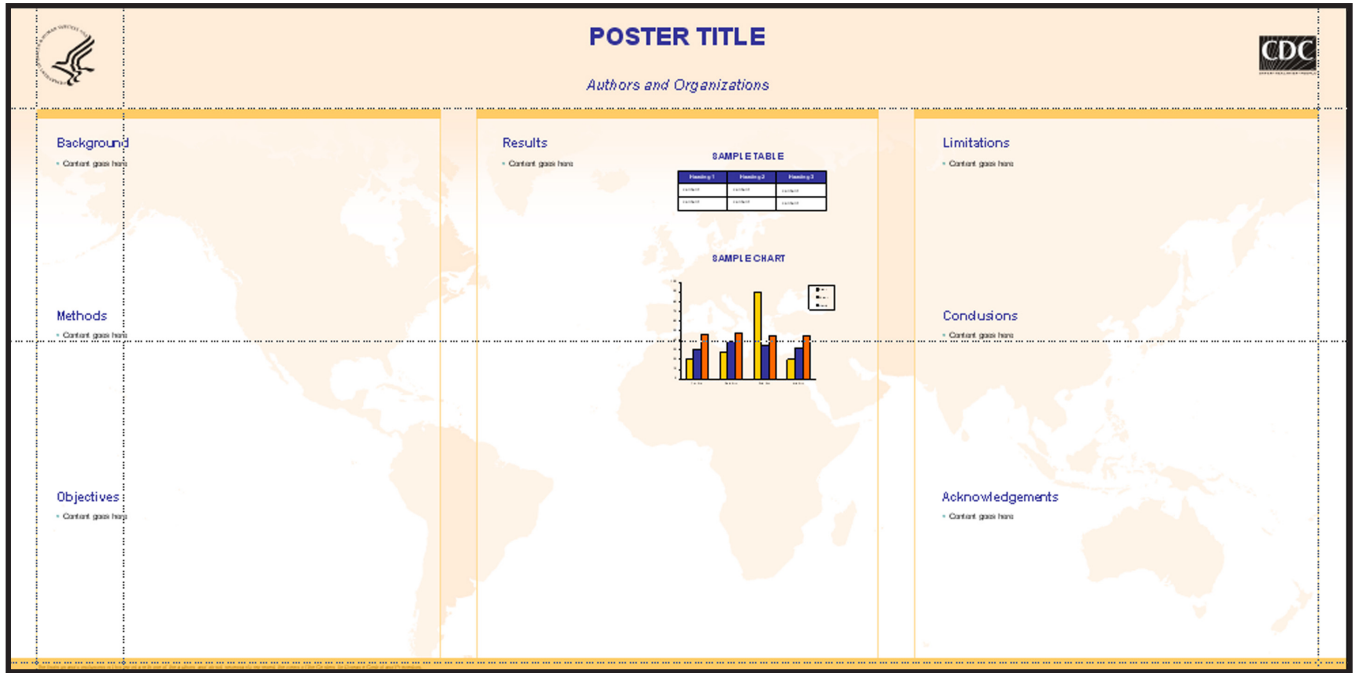
Acknowledgements
• Content goes here


Objectives
• Content goes here

Objectives
• Content goes here

Acknowledgements
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POSTER TITLE

Authors and Organizations



Background

- Content goes here

Methods

- Content goes here

Objective s

- Content goes here

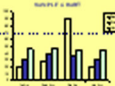
Results

- Content goes here

Number of the staff

Group	Count	Percentage
Group 1	10	20%
Group 2	15	30%
Group 3	20	40%
Group 4	15	30%
Group 5	10	20%

Number of the staff



Conclusion s

- Content goes here

Acknowledgements

- Content goes here

This background research was supported by the National Institutes of Health, Department of Health and Human Services, National Center for Infectious Diseases, Division of Field Epidemiology, Centers for Disease Control and Prevention.

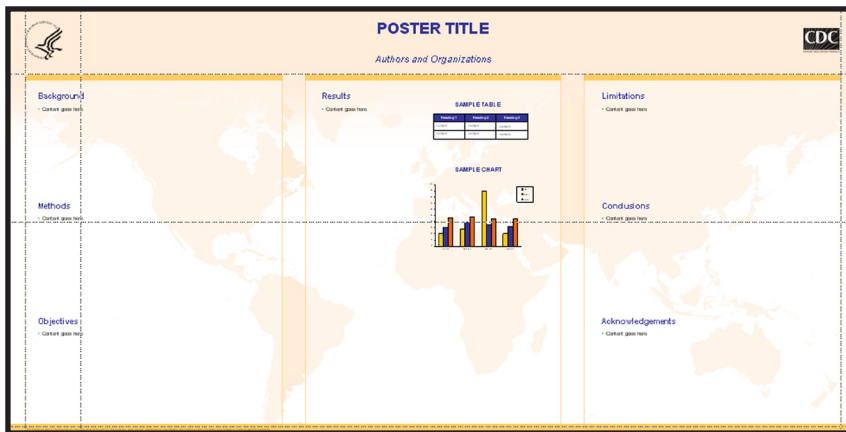
Accessing Templates

To access the templates, go to the **CDC Connects** home page, then select **Creative Services**, then **Graphics Services**, then **Scientific Poster Client Developed**, then click the **Details Page** button, and then select and download the template you want. Finally, click the **Request Form** button to submit a CreateIT request to have your poster printed by us.

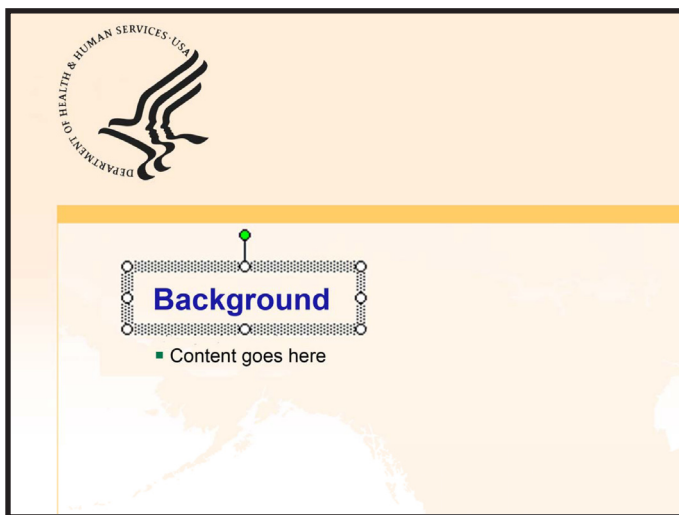
CDC Connects home page ⇨ **Creative Services** ⇨ **Graphics Services** ⇨
Scientific Poster Client Developed ⇨ **Details Page** ⇨ **Download** ⇨ **Request Form**

Using a Template

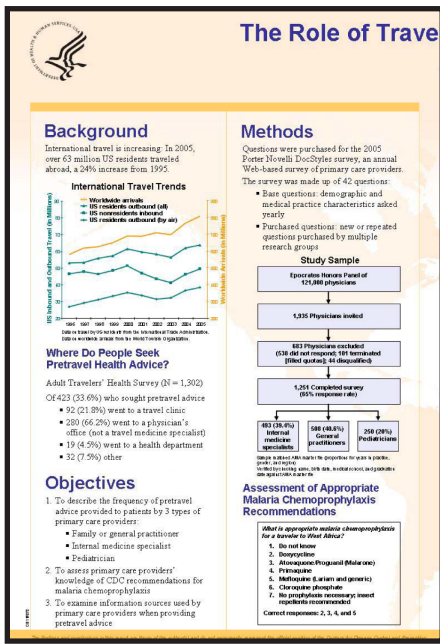
This section will guide you through the use of a template by recreating the model poster introduced near the beginning of this document.



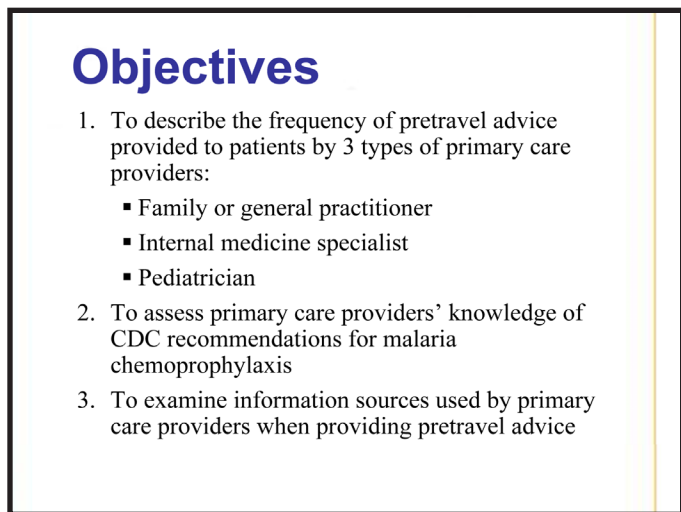
The authors chose the template with a world map in the background. It is proportioned to fit into an 8 foot by 4 foot poster display area. It has 3 panels.



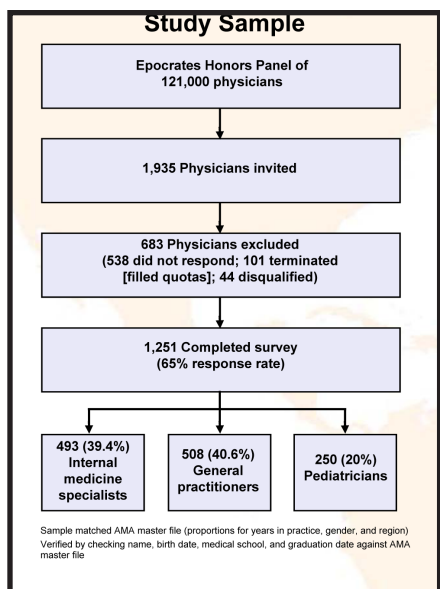
The template comes with text boxes into which text can be pasted. The authors used these text boxes as a starting point. They adjusted text sizes, colors, and so on as needed.



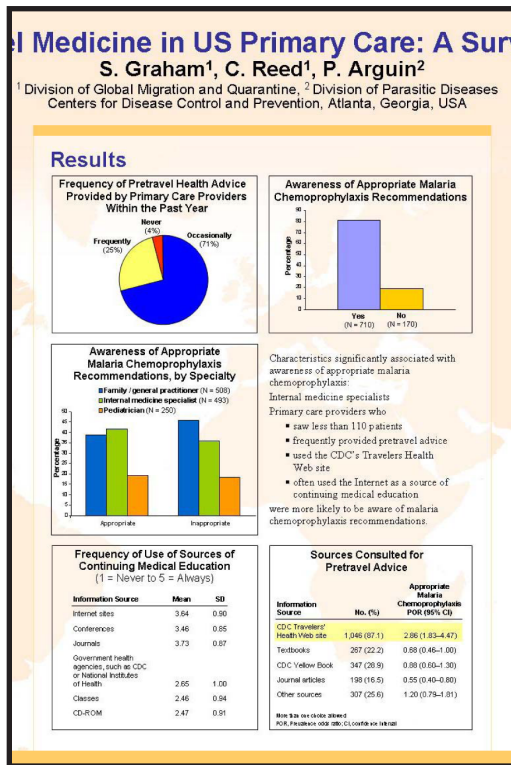
For their poster design, the authors split the left panel into two columns. The left side has the Background and Objectives sections. The right side has Methods.



Notice that the authors used sans serif type for headlines and serif type for body text, as recommended earlier in this document.



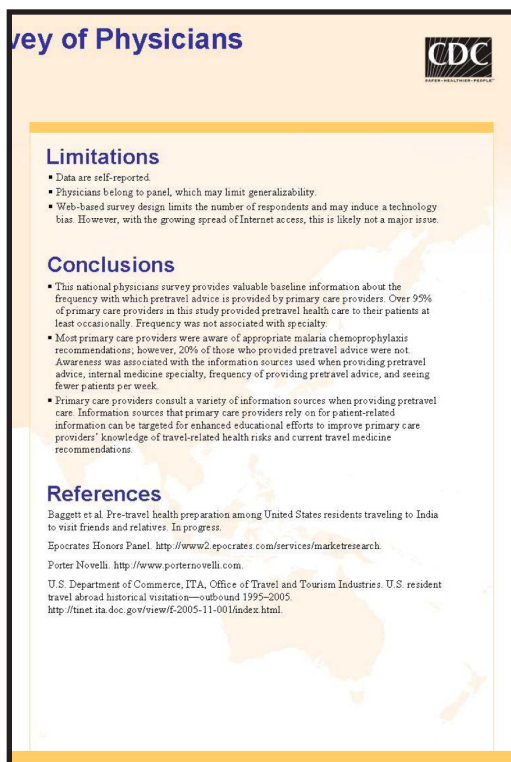
The authors used a flow chart to show how the study sample was derived. This is a nice use of a visual to give relief from solid text. It helps busy conference attendees grasp the information quickly.



The authors reserved the middle panel for the Results section.

Notice that the use of color is kept simple. It is primarily used to help guide the viewer to quickly grasp the significance of the data.

Although not the case in this poster, if the same variables appear in several graphs, they should consistently be coded in the same colors from graph to graph. Also, in bar graphs, cross-hatching or other patterns should not be used to distinguish bars since color can do the job.



The authors completed the poster by adding their Limitations, Conclusions, and References sections to the right panel. (See the Appendix for a large version of the completed poster.)

Contacting Us

To ask a question, call **404-639-4YES**.

To submit a request for graphics services, go to the **CDC Connects home page**, then select **Creative Services**, then select **Graphics Services**, then select the particular service you want, then click the **Request Form** button, and then complete the form.

Acknowledgments

We thank Susan Graham and Christie Reed (both from the Division of Global Migration and Quarantine), and Paul Arguin (Division of Parasitic Diseases), the authors of our model poster, not only for allowing us to use their poster but for allowing us to alter it for the purposes of illustration.

Although *Guidelines for Poster Presentations*, by E Churchill, M Schrader, and J Pledger (published by CDC in 1986) is out of print, we are grateful to have had access to this publication.

References

Day RA, Gastel B. *How to Write and Publish a Scientific Paper*. 6th ed. Westport CT: Greenwood Press; 2006: chapter 28.

Peterson SM, Eastwood S. *Posters and Poster Sessions*. Reston, VA: Council of Biology Editors [now Council of Science Editors]; 1999.

Recommended Reading

Block SM. Do's and don'ts of poster presentation. *Biophysical Journal* 1996;71:3527-3529.

Technology has changed since this article was published, but much of the advice in this engaging article is too good to miss (and it's guaranteed to make you smile).

Purrington C. Poster advice. <http://www.swarthmore.edu/NatSci/cpurrin1/posteradvice.htm>. Created January 20, 1997; updated May 6, 2008.

Trust us. You do want to look at Colin Purrington's wonderful presentation of advice.

Appendix

The model poster used for purposes of illustration in this document

