

# HELP

# Author's Guide

Lynn T. Staheli, MD

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Dr. Lana Staheli writing for Global-HELP

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## Preface

Welcome to this guide for authors. I produced this guide to supplement the Global-HELP organization (HELP) workshops conducted in Seattle. This guide provides a summary of how-to information covering the production of publications. These publications may be published in printed form, distributed in pdf format on CDs, posted on the web or formatted for PDAs.

The first section provides an overview of desktop publishing for the health care professional as an alternative to publishing through a commercial publisher.

The second section covers the design issues which must be addressed before embarking on producing a publication. The output determines how the publication is designed and constructed.

The third section deals with writing. Whether one *writes to a page* or *to an outline* is a basic decision that should be made in the beginning. I give suggestions on writing and the importance of establishing proper headings and subheadings.

The fourth section covers illustrations. Illustrations are increasingly important, inexpensive, and practical ways of enhancing communication and making the material inviting. Digital photography brings imaging into the realm of do-it-yourself capability. Simple drawing programs are now part of basic layout programs and allow the author to create simple or complex illustrations more easily than was possible in the past.

Finally, managing references and illustrations, and creating an index are technical requirements that the author/producer can automate, making it easier than ever before.



## About the Author

Dr. Staheli is professor emeritus from the University of Washington. He is a pediatric orthopedist with a long-term interest in publishing. He was the editor of his university yearbook, and in 1980 Founded and is currently Co-Editor of the J. of Pediatric Orthopedics. He published *Writing and Speaking for Physicians* in 1986.

In 1990 during a sabbatical, he learned desktop publishing and produced the 4 color book, *Fundamentals of Pediatric Orthopedics*. This book is currently in its 3rd edition and commercially available. In 2002 using desktop publishing he produced the *Practice of Pediatric Orthopedics*. This has recently been translated into Spanish. This publication has nearly 3000 color illustrations produced by the author. Dr. Staheli has 85 journal articles and 16 books published.

In 2001, together with his wife, Dr. Lana Staheli, founded Global-HELP organization (HELP). This is a not-for-profit organization that promotes the use of desktop publishing to create low-cost books for use in developing countries. Dr. Lana Staheli, an author of four books, self-published her first book in 1995. In 2003, Dr. Staheli, edited and produced *Clubfoot: Ponseti Management*. This book was distributed in over 25 countries within three months of its completion.

Dr. Staheli now shares what he has learned during his experience in self-publishing to make this technology more widely available.

## Publisher's Information

### Published by

Global-HELP Organization

### Copyright

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## Note to the Reader

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**This is a Global-HELP publication**

**Visit our web site at [global-help.org](http://global-help.org).**



## What is Electronic Publishing?

Electronic publishing provides the capacity to produce a complete publication on a personal computer. This empowers the author/producer to exercise total control of the output.

### Traditional publishing

Traditional publications depends on a team to accomplish this objective. The author is contracted to produce text and illustrations. These are then submitted to the publisher. Text editors revise the text, graphic artists design the publication and flow the text and arrange the illustrations. Indexing and cover design are usually performed by specialists. All of the basic decisions are a compromise between cost of production and estimated revenue from sales. The objective is profit for the publisher. As the market is often limited and expenses significant, cost per book is usually high. This cost is usually prohibitive for health care providers in developing countries. For most medical books, the total sales usually numbers in the hundreds or a few thousands.

### Desktop publishing

Desktop publishing has changed this. As the author/producer creates the publication, only the author's time and computer expenses are involved.

**Web** Publishing a book in pdf format on the web costs only the price of maintaining the web site.

**CD** As a single CD has a capacity of a small library of health care books in pdf format. Most books require between 5-10 mb in screen resolution. A CD has a capacity of 600 mb. The cost of producing a CD is about US \$.50.

**Black and white books** may be printed at affordable costs. For example, a 250 page 8.5 x 11 (letter size) gray scale (only color on cover) book with a standard binding costs about US \$3.50 a unit in lots of 2500 books. This is much less if printed overseas. *On demand* printing makes feasible the production of small numbers of books and eliminates the problem of inventory.

**Four color books** are considerably more expensive and cost in the \$15 to \$20 range per book for the same book as described before. These books are most cost effective for books with few pages and large print runs.

**Personal Desktop Assistance** (PDAs) are another method of publishing that is well suited to desktop publishing. The material requires only to be reformatted for a smaller screen. It is then readable on these devices. This technology is likely the media of the future.

These output options including new streaming internet technology will increasingly make desktop publishing the way of the future.

## HELP Author's Guide

Publishing for Global-help will be a rewarding and efficient experience. This publication details why and how this is done.

### Why publish through HELP?

There are many reasons why HELP publishing is so rewarding:

1. HELP authors work has worldwide distribution to insure maximum impact. You share your experience and knowledge with colleagues throughout the world. HELP publications are likely to reach many times more readers than those produced for commercial publications.

2. HELP authors have broad control over content. This includes text and illustrations. HELP publications are heavily illustrated. There are no surprises.

3. HELP authors publications are electronically created and published. This allows revisions and corrections.

4. HELP authors contribute to a sustainable improvement in health care worldwide. Knowledge is the only leveraged resource.

5. HELP authors enjoy working on projects with others who share similar values. HELP publications are produced by a team which includes the authors) and contributors. The contributors include those who have donated financially or volunteered their time or expertise to make the project successful.

6. HELP is a not-for-profit organization that encourages participation of all peoples regardless of race, religion, gender or other personal preferences.

### Features of HELP publications

These unique features include:

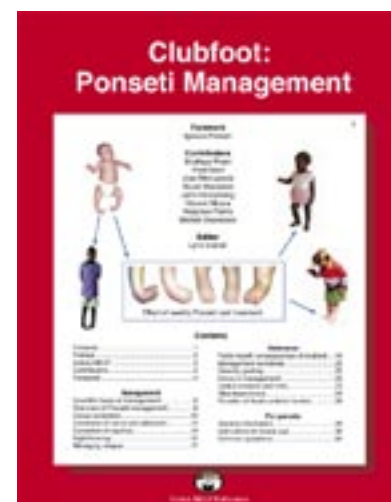
1. HELP publications are space efficient. Making compact publications is least expensive, most easily transported and convenient for the reader.

2. HELP publications are graphic and concise. The liberal use of illustrations, concise, first person writing style is encouraged. This makes publications most understandable to the widest range of readers.

3. HELP publications are colorful. All publications are initially produced in 4 color and exported in pdf format. Printed material may be in 4 color or gray scale based on economic requirements.

4. HELP publications are authoritative. We require that authors be acknowledged experts on the subjects they publish.

5. HELP publications are scientifically based. We encourage publications which promote management which is evidence based and suitable for widespread use.



## Why Publish Through Global-HELP?

There are several reasons that publishing through HELP is attractive to health care writers.

### Widest possible distribution

Many authors welcome the opportunity to publish with the goal of reaching the largest number of people. Often the motivation for writing is altruistic, a desire to make a difference. Whereas traditional health care publishers may distribute a few thousand copies, HELP publications are unlimited and may reach tens or possibly hundreds of thousands of readers.

For example our book *Clubfoot: Ponseti Management* was used in Uganda [A], Vienna [B] and over 25 different countries [C] within two months of publication.



### Author has control over design and content

With traditional publications the content is provided by the author but the design is left to others. The opportunity to make the publication reflect the wishes and taste of the author is appealing to many.

### Participate in a humanitarian project

Great satisfaction is experienced in giving and exceeds the loss of the small honorarium of commercial projects. The opportunity to work with others who share common values is rewarding. The opportunity to work as part of a team allows establishing friends in different disciplines.

### Opportunity to learn a new skill

Learning how create a publication is interesting, satisfying and enjoyable work. The author/producer may learn the bare essentials and by using a template produce an excellent publication. Others may learn more sophisticated skills allowing unlimited potential for creativity. Learning how to use the digital camera, honing writing and organizational skills will increase satisfaction.

### Satisfaction of seeing the results quickly

Seeing a published outcome quickly is exciting and rewarding. This is possible with desktop publishing through HELP. A typical work is usually published first in pdf format on our web site. This can be accomplished in a week or two. Outputting in CD or printed format may take a few months.



## What is the Intended Output Mode?

Before undertaking a publishing project, it is essential to make a number of decisions. Although the design of the publication can be revised to allow outputting in different media, it is much more efficient to make these decisions in the beginning.

### CD publication

Most publications can be published in CD format. A CD [A] holds about 650 mb of information and can be produced for less than one US dollar. A single CD may contain a small library of books making the output very inexpensive. Publications are recorded on the CD in pdf format. CDs are inexpensive to publish and distribute and require no internet connections.

### PDA publication

Personal digital assistant (PDA) technology and use is expanding rapidly [B]. This technology requires different planning as screen size is small and memory is less than a conventional computer. To prepare your publication for PDA output requires some planning. Output to a PDA and for direct reading on the internet require similar formatting.

### Web publication

All publications should be accessible from our web site [C]. There are options for presenting the information. Web publications are suitable especially if the file size is small.

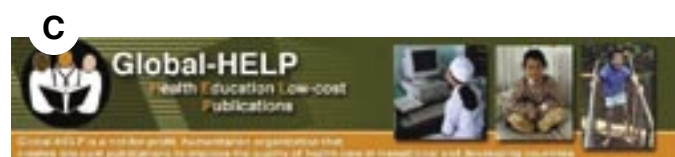
**Pdf format** This is the primary format for our site. The user downloads the pdf file onto their hard drive and can view it at their convenience. File size is reasonably small but sometimes poses a problem if the publication is long. For example, the file size of a 32 page full color publication is about 1.5 mb.

**HTML format** In this format the viewer may read the material as it is being downloaded. The file size is also small.

### Book publication

Books remain the most convenient and practical way of providing information [D]. HELP books are designed with the objective of providing the greatest information with the least cost in production and time required by the reader. Before undertaking your project some important decisions should be made.

**Book dimensions** The size of the printed page is a basic consideration in which the cost and use are important elements. The most cost effective size is either the standard letter size (8.5 x 11 inches) or half that size (5.5 x 8.5). Other common sizes include pocket books with a width of 5 inches, conventional trade size (4.25 x 7) and 6 x 9 inches manual size. Letter sized books are often two column design, provide more layout options in design and give a sense of authority. Pocket books may be useful for those in training in providing a convenient reference source. When converting to PDA output, pocket books require the least reformatting.



**A** Cast application technique**Cast Application, Molding, and Removal**

Success in Plaster management requires good casting technique. These well-proven children casting experience may lead to more difficult than those having children casting for the first time.

No measurement that plaster material to use because the material is less expensive and plaster can be more precisely molded than the glass.

**Steps in cast application**

**Preparatory manipulation.** Before each cast is applied, the limb is manipulated (1).

**Applying the padding.** Apply only a thin layer of cast padding (2) to make possible effective molding of the foot. Make sure the foot is in the moderate external position by holding the foot while the cast is being applied.

**Applying the cast.** First apply the cast below the knee and then extend the cast to the upper thigh. Begin with three to four turns around the cast (3), and then work proximally up the leg. Apply the plaster smoothly. Add a little more (4) to the area of plaster above the foot. The foot should be held by the cast and plaster wrapped over the "hook" (5) fingers to provide ample space for the toes.

**Molding the cast.** Do not try to force connection with the plaster. Use light pressure.

Do not apply constant pressure with the thumb over the heel of the foot, rather press and release repeatedly to avoid pressure areas of the cast. Hold the plaster over the heel of the foot while holding the foot in the moderate position (6). Note that the thumb of the left hand is molding over the outer foot while the index finger of the left hand is molding above the calcaneus. The arch is well molded to avoid flatness or underfoot deformity. The index finger of the right hand is maintaining the connection. There is no pressure over the calcaneus. The calcaneus is more molded during the manipulation or casting. Molding should be a dynamic process, constantly move the fingers to avoid excessive pressure over any single site. Continue molding while the plaster is setting.

**Extend cast to thigh.** Use much padding at the proximal thigh to avoid skin irritation (7). The plaster may be tapered back and forth over the anterior knee the straight (8) and the providing a large amount of plaster in the proximal knee area, which makes cast removal more difficult.

**Trim the cast.** Leave the plaster placed to support the toes (9), and trim the cast distally to the moderate physiological growth, as marked on the cast. Use a plaster knife to remove the excess plaster by cutting the corner of the plaster foot and then the medial and lateral growth (10) over the dorsum foot. Note the appearance of the foot cast when completed (11). The foot is in equinus, and the heel is fully supported.

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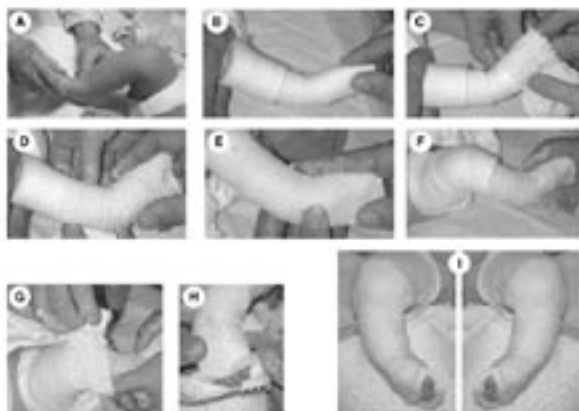
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**Black and white or color?** Color [A] increases the cost of the publication but also enhances communication. Color makes the material more engaging, allows more information to be presented on each page and provides a professional appearance to the work.

**Black and white books** Most books will be published in black and white [B] because of cost. This printing is relatively inexpensive. For example, printing a black and white book can be done for a few dollars as compared with a color book which would be about four times more. Black and white books can be printed on demand. On demand printing is new technology which makes possible printing a few books at a time. This avoids inventory expenses and allows the author the opportunity to make corrections or changes between printing small numbers of books.

**Color** Use color for all non-printed output. When publishing to CDs, the web, for PDAs, use color. It is no more expensive and just about as easy to produce. Compare the same page printed in color and black and white [A and B].

For book publication, color remains expensive. With time, color printing will likely become more affordable and on demand color printing will become more practical. Color may be appropriate if the number of pages is small, a large output is anticipated and sale in developed countries is an option. The attractiveness of color may make sense if the book will be sold in developed countries to subsidize the cost of books in poorer countries.

**Number of pages** HELP books tend to be short to maximize efficiency. HELP books tend to be topic oriented, compact, and space efficiently. Illustrations are designed and used to present material in the least amount of space. Shorter books are less expensive to print and transport. Both are important for HELP publications.

**Cover type** Most HELP books will have soft covers to minimize cost of printing and transport. Covers will often be printed in full color. This makes the books more attractive with a minimal increase in cost.

**Paper quality** A major factor in book production is the cost of paper. Paper quality is defined by the weight, opacity, surface features. Most books are printed on 60 – 80# paper with a matte surface.

**Binding** So called *perfect binding* is standard. This is inexpensive and adequate. If the book is being used for reference, a spiral binding allows the book to lay flat. Spiral bindings are also inexpensive.

## What Computer Equipment do I Need?

The hardware and software options are numerous.

### PC or Mac?

Select the platform thoughtfully. The Macintosh system is the favorite of publishers and artists. It is more expensive and more reliable. PC equipment is more widely used, less expensive, provides more options in software and is commonly used in business. I am partial to Macintosh because of its reliability, ease of use, and my personal experience.

### Desktop or laptop?

Again this is personal choice. Desktop computers are less expensive and more expandable. Laptop computers are more versatile and have become capable of performing all of the function necessary for electronic publishing. I recommend the laptop option for most individuals.

### Computer requirements

Standard equipment is usually adequate. Processor speed is not critical, the hard drive should be 20 GB or greater, internet access is important, and the RAM should be at least 500 Mb. Firewire and monitor ports are useful.

### Accessories

A few accessories will be useful.

**Additional RAM** is an inexpensive addition that speeds work and reduces malfunction of the computer.

**Optical wireless mouse** Is inexpensive and handy.

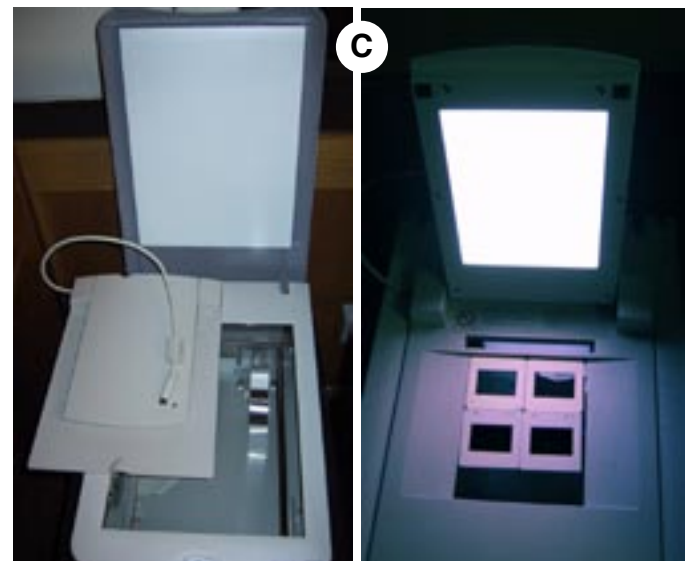
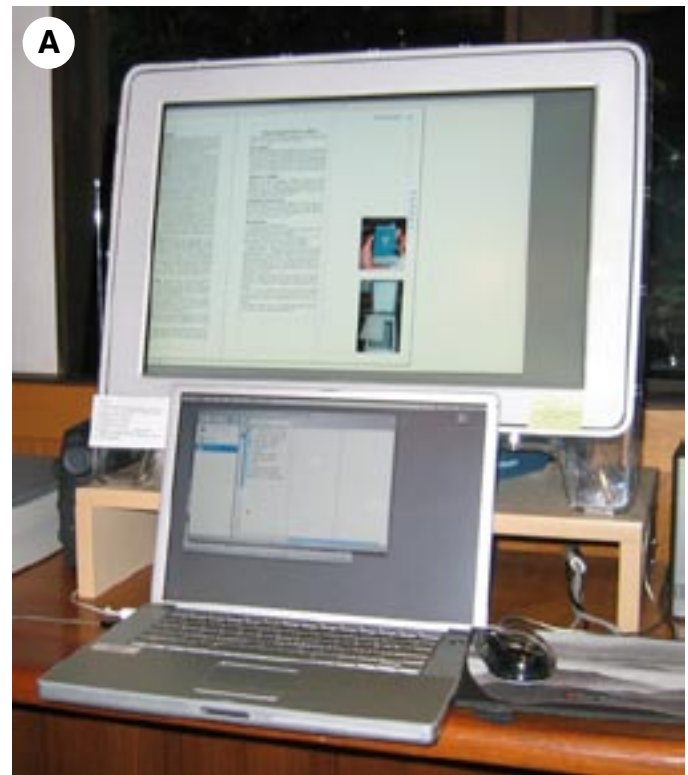
**External monitor** I find that my second monitor makes my laptop equivalent to a desktop computer [A]. Place the external monitor above the laptop screen. Work on the external monitor using the laptop screen for tools. It's efficient and inexpensive. The external monitor may be a conventional type which is inexpensive or a LCD or flat screen type which is more expensive but requires less space.

**Firewire external hard drive** A backup hard drive is important insurance [B]. Plan to back up to the drive weekly.

**Scanner** A flatbed scanner with a transparency option allows scanning of printed material and 35mm slides [C]. An inexpensive scanner is adequate as the images for publication will be small in size.

**Printer** A inkjet printer is versatile and inexpensive unless a large volume of color printing is planned. The cost of color laser printers has declined dramatically. I consider my color laser printer an excellent investment .

**Broadband internet access** Broadband will make researching information on the web more efficient and practical.







## What Software Do I Need?

The choice of software is more straightforward.

### Page layout software

Page layout software is the basic tool of electronic publishing. It provides the tools necessary to create text and drawing, as well as importing photographs to create publications.

I produced my commercial books using *QuarkExpress*, the industry standard for many years. I switched to Adobe's *InDesign* [A] because of cost and flexibility. Most authors have access to academic software pricing. Adobe products are available with a substantial academic discount making the program much less expensive than *QuarkExpress*. Furthermore, *InDesign* is part of the Adobe system simplifying transfer of information between applications. For example, illustrations created in *InDesign* are easily opened in *Photoshop* or *Illustrator*. Files created in *InDesign* are easily exported in pdf format. The pdf format was developed by Adobe.

### Image enhancing software

Images from scanner or digital camera require modification before they can be used in *InDesign*. I recommend *Photoshop Elements* [B]. It is inexpensive and adequate. It is also an Adobe product that can be purchased with an academic discount. For PC users, I recommend adding *Photoshop Album* for image management. These two programs are sold in a bundle reducing the price.

### Additional useful software

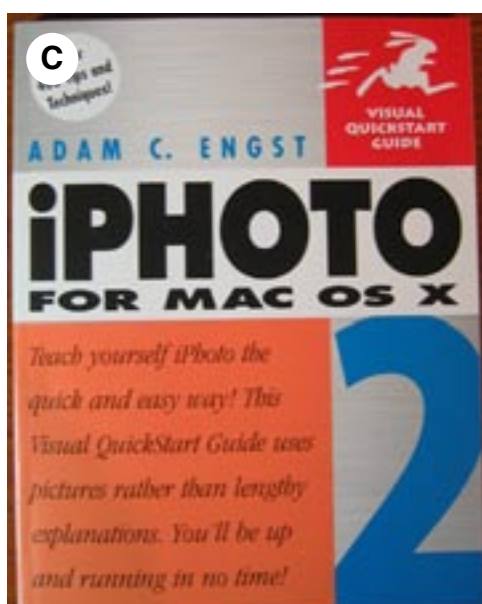
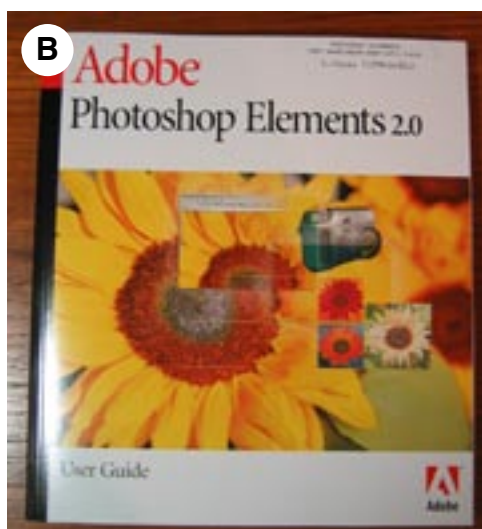
Consider several optional additions.

**Word processing** *MS Word* is the standard that most users have access. Some prefer to write initially in *MS Word* because of the built in features such as outlining and spell checks capabilities.

**Image management** These programs streamline the management of multiple images required in producing complex publications. For Mac users, OS X has an excellent image management application *iPhoto* [C] built in. For PC users, *Photoshop Album* is an inexpensive addition and adequate.

**Reference management** Programs such as *EndNote* save an enormous amount of time for those with long bibliographies.

**Illustrating programs** These programs such as Adobe *Illustrator* provide professional level capabilities. The drawing program within *InDesign* is adequate for most authors.





## What is a HELP Team?

HELP publications are unique because of their wide distribution. This makes for an exciting project but the diverse nature of the readers makes the project more challenging. The HELP organization provides the structure and facilitates the production, publication and distribution of the publications.

### Composition of a HELP team

HELP teams classically include the author/producer, colleagues in the field, sponsors and volunteers for special projects. For example, our clubfoot book was produced by a team that included authors, financial contributors and a volunteer text editor. Each of these team members were acknowledged in the preface [A].

Each project may have a different type of team. Some projects are produced by an author/producer who may have the experience, ability and resources to complete the project alone. Others may require a large team.

### Author/producer

The author or author/producer is the central member of the team. This person is an authority on the subject and the one responsible for the publication. Ideally this person will be someone with publication experience, a passion for the project and the time necessary for completion. The author may invite contributors or a co-author to share the load.

### Overseas colleague

A challenge facing HELP authors is to insure that books are authoritative and relevant. Enlisting help from colleagues in the field [B] is often helpful to insure that the material will be useful and can be applied.

**Relevant** The content should focus on problems commonly encountered by the audience. The scope and type of problems may be quite different from western medicine.

**Feasible** Management must employ resources widely available, simple and inexpensive in the destination countries.

**Culturally appropriate** Ideally each publication would be tailored to the region of use. This may not always be possible. Strive for culturally generic illustrations. Adopt intermediate skin colors and non descriptive facial features and clothing when possible.

**Mainstream treatment methods** HELP books promote management which can be widely applied and has a scientific basis whenever possible.

### Contributors

Equally important members of the HELP team are those who support the project in a variety of ways.

**Financial contributors** Make the project possible and are core members of the team. The cost of publication may vary greatly from one project to another. Publishing on our web site in pdf format is least expensive. At the other extreme, is publishing a book in four colors.

**Technical contributors** Text editing, indexing, illustrating and other special talents make production more efficient and enhance the quality of the final product.

**Translators** Books may be published in a variety of languages. Translators become an important part of the team. Ideally the translator will be a health care specialist working in the same speciality as the author.



## Starting a Project

## Make basic decisions

Plan ahead by identifying the target audience, publication size and length, the modes of publication, and the resources available.

## Template or original?

Decide whether or not to use a template. HELP provides templates that provide a basic book design.

**Templates** Templates facilitate book production and provide greater uniformity of HELP publications. The template provides the framework for the book. Formatting is provided. The author deletes space holding text or illustrations and replaces them with new material.

**Original style** More experienced authors/producers may elect to develop their own design.

### Author/producer, author, or editor?

Publications may be produced in a number of ways.

**Author/producer** The author will complete the publication without additional help. HELP prefers the author/producer approach so we can produce publications more efficiently and have greater content integration.

**Author** Others authors will elect to write in word and utilize the technical assistance of another team member to place the material into the layout program template to produce the final output.

**Editor** Some more complex publication are produced by a team of content contributors headed by the author.

## Planning the content

Advanced planning simplifies the project.

**Writing in MS word** Use the outline capability of *MS Word* if writing is done in a text editing program and then importing the material into *InDesign*. Be aware that sometimes the formatting may carry over into *InDesign* and complicate the transfer.

**Writing to the page** I prefer to *write to the page*. This guide was written this way. Page allotment is established in advance. In this case, the outline was created in the table of contents on the cover. The advantages to writing to the page are several.

*Greater integration* The author/producer allots a page or often a double page spread to a topic and then organizes the text and illustrations to fill the space. Those experienced in producing *powerpoint* presentations are often skilled in this concept. The text and illustrations are presented together in a defined space.

**Simpler** Writing directly in *InDesign* provides an immediate view of the final output. There is no guessing. The length of the text is adjusted to fill the space.

*Illustrations* Illustrations are planned to supplement the text. Placing illustrations in this way assures that they are adjacent to the text and are of a size and number that fit the allotted space.

*Layout* The layout is adjusted to the ratio of text and illustrations. Generally, illustrations occupy about half of the printed space. This may be more or less depending upon the topic and available figures. Writing to the page makes this decision much simpler as one decides on the layout with the creation of each spread.



## Page allotment

When writing to the page, it is essential to assign the number of pages or fraction of a page to each topic. This is done in several steps.

**Estimate the size and length of the publication** This determines the cost if the publication is printed or the file size if the output is planned for web or CD distribution. Consider the budget and how the publication will be distributed.

Full sized books (letter size) provide more space per page than smaller books. Letter sized books will have two or possibly three columns. Smaller books may have double or single column designs.

**Efficient book lengths** Books are usually printed on sheets of paper that are equivalent of 4 letter size pages. For efficiency, plan letter sized books in multiples of 4 pages and half letter sized books in multiple of 8 pages. This eliminates paper waste reducing the production cost of each page.

**Determine the number of topics to be included** Allocate space for presentation based on the importance and complexity of the topic. A minor topic may be presented in a fraction of a page. A complex topic may require several pages. Plan about half of the space for text and the other for illustrations.

**Consider pages and spreads as units** Two pages is referred to as a *double page spread* and is an ideal size for presentation of a topic of moderate length. Avoid orphans, or small fragments of a topic that spill over to another page or next spread.

**Make page assignments** Previsualize the book to establish a sense of the space available for each topic.

## Page Design

HELP books are designed using a style that has evolved over the past decade while creating commercially successful medical books. This style includes a number of elements that assure efficient use of space and clear presentation of the content.

**Place text at the top of the page** The standard layout includes a text box in the medial column and illustrations placed on the outside [A]. If the page or spread includes much more text than illustrations, the text may start on the upper left outside column. By placing the text boxes at the top of the page the reader will always know where to look first.

**Place illustrations on the outside or bottom of the page** Large illustrations may occupy both columns and are placed at the bottom of the page. Most illustrations will fit in a column. Small illustrations may fill half a column and can be placed side by side to use the space efficiently.

**Adjust content to fit the space** By writing to a page, the author can adjust the content to fit the space available. The author can balance the importance of the text and illustration if a cut is necessary. This is the beauty of the system as this decision rests with the author/producer, the best person to make these important decisions.

**Consider the options for layout** Look at the range of options by reviewing publications such as *Ponseti: Clubfoot Management* as shown on these two pages below. Note that as the text decreases from [A] through [F] the layout changes. Also flexibility is exercised to meet certain layout needs [G].





**A****Avoid****Use**

Ancillary	additional
Attenuate	weaken
Elucidate	clarify, explain
Endeavor	try
Expire	die
Facilitate	assist, support
Initiate	begin
Modifications	changes
symptomatology symptoms	
Terminate	end
Utilize	use

**B**

actual, actually  
Exceptionally  
very  
really  
truly  
quite  
rather

**C**

thus  
however  
moreover  
therefore  
furthermore  
nevertheless  
on the other hand

**D****Avoid****Use**

due to the fact that	
as a consequence of	because
based on the fact that	
in order to	to
with the exception of	except for
during the period from.to	from.to
in spite of the fact that	although
for the purpose of	for
it is interesting to note that	
it should be pointed out that	
the point here is that	“just say it”
needless to say	
take into consideration	consider
subsequently to	after
prior to	before
has the capacity of	can
in a satisfactory manor	satisfactorily
in the event that	if
lacked the ability to	couldn't
a majority of	most
at the present time	now
during the course of	during
give rise to	cause
smaller in size	smaller
with the possible exception of	except
end result	result

**Writing Text**

The author has the choice of making the text or the illustrations the priority.

**Priorities**

When producing an atlas, the illustrations are the priority and placed first. The text is then added. Most writing, as with this guide, the text is the priority. I wrote the text first usually filling the middle column and then added the illustrations.

**HELP publications**

The readers of HELP publications will have varied backgrounds. HELP writing is to communicate information, not to impress the reader with the skill or creativity of the writer. The best writing is that which conveys the information without attracting attention to the process of writing. Efficient writing is simply cost-effective communication. Communicate to provide information in the shortest possible space and in the least time for the reader. Here are some suggestions to make writing most efficient.

**Use simple words**

Short simple words require less space and are easier to read and understand. Their meaning is often more precise and better suited for clarity than elaborate words favored by pretentious writers. Because health care writing tends to be heavy with complex, technical terms that are unavoidable, use simple words when they will do the job [A].

**Omit unnecessary words or phrases**

Most adjectives can be omitted without affecting the meaning of a sentence. Some adjectives are so overused that they have lost their intended impact [B].

If ideas and sentences flow in a logical sequence, most empty transitional phrases can be omitted. Use transitional phrases sparingly – only when necessary to add extra impact to a thought. Clean, precise writing will eliminate the need for tedious transitions [C].

Many phrases that begin with or include a preposition, burden the sentence with excess words that add no content. Long phrases can often be replaced by one word [D].

**Use active verbs**

Active verbs have greater impact and produce more efficient writing than passive verbs. The passive voice is often used in medical literature because many writers and some editors mistakenly assume that the passive voice is more scientific or objective, because it avoids use of the personal pronouns I or we.

Use the active voice when you want to stress your experience, opinions, or actions. Even if you wish to avoid “I” out of the text, you can usually write in the active voice.

Use the passive voice only when you wish to emphasize the action or object of action rather than the doer.

Write primarily in the active voice to achieve greater life, clarity, directness and impact [A opposite page].

## Avoid jargon

Every discipline has its characteristic idioms that obscure rather than clarify. Health care is no exception, and jargon is all too pervasive. Ask yourself: *how can I say this in the fewest words?*

Consider this paragraph: *If the organism is demonstrated to be a staph on gram stain, one may consider drilling the femoral neck for prophylactic decompression as this may be secondary to a metaphyseal osteomyelitis.*

Better: *If the gram stain shows staphylococci, consider drilling the femoral neck to drain the metaphyseal abscess.*

## Use proper terms for age and sex

Use terms such as girl, boy, woman or man. Describe persons based on age, prenatal: fetus; birth to 1 month as a neonate; 1 month to 2 years as an infant; 2 to 13 years as a child (girl or boy); 13 to 17 years as an adolescent (teenager, girl or boy) and 18 years or older as adult (woman or man).

## Select words carefully

Consider the meaning of each significant word. Consider options that are more precise by looking reviewing synonyms. Categories of words are frequently misused [C].

*Misuse of "ologies"* The suffix ology denotes a science or the study or knowledge of a science.

*Diagnose, evaluate, identify, follow and observe.* A condition or disease is diagnosed (a patient is not); a case is evaluated or followed; a pathogen is identified; and a patient is observed.

*X-ray, radiograph, roentgenogram, radiation and irradiate* These terms are frequently misused. X-ray is the noun form and x-ray is the adjective form. Xray is a unit of radiation. The terms radiograph and roentgenogram are often used interchangeably, however radiograph is a shorter word and more commonly used.

## Use abbreviations carefully

Readers of HELP publications are less likely to know abbreviations. Unless the abbreviation is a standard, spell out the term, especially if it is used only a few times in the text.

## Use proper order of data, words and sentences

Present data in a logical order. Several options for deciding order include:

**Chronological sequence** Omit the dates in most situations.

**Clinical order** Present the history, physical then laboratory findings.

## Create parallel structure

Within a sentence or paragraph, information presented as a series should follow parallel structure. Each component of the parallel should have the same grammatical structure [D]. A unit that does not fit the parallel structure should be placed in a separate clause or sentence. Failure to organize information in this manner leads to awkward writing.

## A

### Passive

an appendectomy was performed

It is thought that this technique might carry a high risk of infection

### Active

We performed an appendectomy

We found this technique carries a high risk of infection

## B

### Poor

this result would seem to indicate

it has been reported by Smith

it is suggested that

after having been treated

a diagnosis consistent with diagnosed or diagnosis of

### Better

this result indicates

Smith reported

I think

after treatment

## C

### Incorrect

The etiology of the pain is unknown  
There was no pathology

After close observation, the patient was diagnosed with manic depression

The x-ray showed

### Correct

The cause of the pain is unknown  
There were no abnormalities

Close observation of the patient led to the diagnosis of manic depression

The radiograph showed

## D

### Incorrect

The tests should include hemoglobin level, sedimentation rate and a red blood cell count should also be done

### Correct

The tests should include hemoglobin level, sedimentation rate, and red blood cell count.



## Photographic Basics

Digital photography provides a practical media for illustrating HELP publications. Photographs are produced in color but can also be rendered in gray scale. They are inexpensive to create, flexible in presentation and easily modified or replaced. The digital camera is simple to use and adequate for health care publications. Digital images may come from several sources.

### 35mm film library

Many health care professionals have a library of images collected over the years of practice. These images can be digitized and placed in HELP publications. The process of digitalization of film based images has become much similar and inexpensive. There are several options.

**35mm film scanners** These dedicated film scanners are now available for a few hundred dollars. The least expensive scanners are adequate. More expensive scanners [A] have the capability of scanning batches of slides [B] and include software that eliminates scratches and fingerprints on the final output.

**Flatbed scanners with transparency adapter** This combination is practical and relatively inexpensive and allows scanning of printed material as well as 35mm slides [C].

**Copying with a digital camera** This approach has several advantages.

*Use what you already have* Many health care providers already have a camera and some are suitable for this purpose.

*Copying is fast* Once the setup is established, slides can be copied in less than a minute.

**Commercial conversions** Slides may be digitized and recorded on a CD for less than US \$1 each. The quality is excellent and this is a good option for those with limited numbers of slides.

### Digital camera selection

The digital camera provides the best media for illustrating HELP publications. The camera can record clinical features, operations, copy radiographs and printed material. This is done with the minimum of expense and great flexibility to modify or enhance images.

**Camera choice** Having used many cameras, the one I use most is a Cannon Elf [D]. There are several other makes of small cameras with similar attributes.

*Size* is most important. These small cameras can be carried on your belt [E] or in a pocket or purse so they are always available. *The best camera is the one you have with you.*

*Capacity* Two megapixel capacity is adequate.

**Macro or close-up capability** This capability is necessary if you plan to copy small images such as MRI or CT scans.

*Copying 35 mm slide capability* If you plan to copy 35mm slides with your digital camera, the macro capability must be greater than the capability of most digital cameras. Cameras, such as the Nikon Coolpix have close focus capability. Some provide a slide copying adapter [F] that simplify copying. In others it is necessary to use a copying stand and illuminate the slide on a small light box [G].



**Useful accessories** These additions are not expensive and make digital photography more efficient [A].

**Memory card 128 Mb [B]** Most cameras come with a memory card that is inadequate.

**Card adapter** This small device allows the camera's memory card to be inserted into the card slot of most laptop computers. Image transfer is rapid and convenient.

**Extra battery** Keep a fully charged extra battery [C] available to avoid missing some important opportunities.

## Image management

Once the digital camera and accessories are purchased, making images costs nothing. This leads to the rapid acquisition of large numbers of images and this poses a problem of management. Here are some suggestions on how to manage images.

**Make use of a image management program** For mac users, use *IPhoto*. PC users, purchase Adobe's *Photo Album* [D] software.

**Discard all but the best images** This is difficult but necessary. Immediately discard any image that is not sharp. Compare equivalent images and keep only the best.

**Label images** Devise a method of labelling that reflects your professional needs [E]. I use a system that includes the anatomical location, the disorder and the feature. For example, a dislocated hip in the infant complicated by avascular necrosis is labeled: *hf.ddh.avn*. The *hf* for *hip/femur*, the *ddh* for *developmental hip dysplasia* and the *avn* for *avascular necrosis*.

**Backup images** Plan to make a backup of new saved images on your firewire external hard drive. This is cheap insurance.

## Image enhancement

Digital images must be modified before they can be imported into a page layout program. Do not making these modifications until it is certain that they will be used. Make these modifications in a program such as Photoshop Elements [E] .

**Convert to tiff format** Most images from digital cameras are recorded in jpeg format. Jpeg images are compressed to reduce file size. Modifying images while in jpeg format results in a reduction of image quality. Tiff images can be modified without such a loss and are therefore described as *loss less*.

**Convert images to CMYK format** This is the format required for publication of printed material. Images are created in RGB format which is used for non printed publications. Conversion to CMYK will require a more sophisticated program than Photoshop Elements.

**Reduce dimensions of image** Reduce the image size to about 3 inches in photoshop. This allows placement of a size that is easily imported into the layout program.

**Convert radiographs to gray scale** In photoshop convert the image to a grayscale image. This reduces the image size by 75% and eliminates the risk of the image color cast when reproduced.

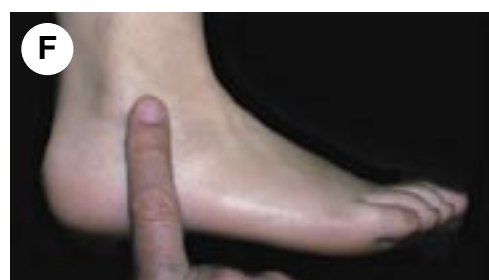
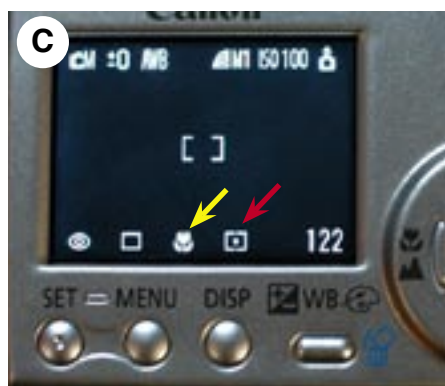
**Modify image file size** Plan an image size of colored pictures of about 1 Mb and for gray scale of about 0.3 Mb. Most images will be changed to about 200–250 dpi to achieve this objective.

**Crop the image** Make the first crop just to eliminate parts of the image that are unnecessary. Delay final cropping until the image is placed on the page.



## E Labeling Principles

- Intuitive
- Simple
- Expandable
- Comprehensive
- Makes key words unnecessary
- Usable for all information
- Minimal need for key
- All lower case
- Write out when uncertain



## Making Photographs

The digital camera is a versatile tool. It creates clinical photographs, copies radiographs, copies illustrations from printed publications or even records images projected on a screen during a powerpoint presentation. These are all options are possible with a digital camera. Before taking any photographs, make certain the camera setting are correct [A].

### Camera settings

Each camera is different but some generalizations can be made.

**Resolution or image size** Set the resolution that allows provides an image capacity of about 1.5 to 2 times the memory capacity of your card [B]. For example, if you have the 128 mb card, set the resolution to deliver about 200 to 250 pictures. These pictures will be recorded in jpeg (compressed) format. When expanded in the tiff format, the image size will increase to over 1 mb.

**Flash setting** For clinical photographs use a red-eye reduction flash setting. Turn off the flash when copying radiographs or slides.

**Metering** Some cameras have the option of spot [C, red arrow], center weighted or matrix metering. Use matrix metering for clinical photographs and spot metering for copying radiographs.

**Macro setting** Set the macro mode [C, yellow arrow] when copying small images such as a MRI or photographing a small object such as a finger.

### Clinical photography

Make it a habit to carry your camera along with your PDA and cell phone. Accumulate images to create a library before you will need the images. Acquaint yourself with your institution's policies regarding consent for photographs. The following are suggestions to improve the quality of the images.

**Remove excessive clothing** Attempt to show the problem clearly while being sensitive to the patient's response [D]. Respect cultural values.

**Find a neutral background** Make the subject the center of interest.

**Position camera to subject** Take images at a right angle to the subject. Position the camera as an Xray technician would to make a radiograph. Make anteroposterior [E] or lateral views. Avoid obliques.

**Come close to subject** Place the camera so the subject fills the viewfinder [F]. This eliminates the need for excessive cropping what will degrade the quality of the image.

## Copying radiographs

Accumulate a library of images as part of your clinical practice. With a digital camera images may be copied during a conference when cases are discussed. Document the effect of time by showing a sequence of images [A]. Download the images to your computer before you forget the details. The following are tips in making these copies.

**Conventional radiographs** Set the camera to spot metering with the flash off.

*Position the camera* at right angles and central to the radiograph [B].

Activate the autofocus mechanism by depressing the shutter slightly. Be certain that the autofocus indicator shows the focus is locked.

*Take the photograph* by gently depress the shutter.

**MRI or CT scans** These images are smaller and require that the macro and spot [C] setting be applied. Otherwise the process is the same.

**Apply exposure lock** If the image to be copied includes large areas that are black or clear [D] under or overexposure is common. Prevent this problem by first centering the camera on the area of interest (red arrow) while the shutter is slightly depressed. The camera will establish the exposure based on reading. While continuing to hold the shutter depressed reposition the camera to the desired position and depress the shutter completely to make the exposure.

## Copying printed material

The camera is useful to record material from books, journals and posters.

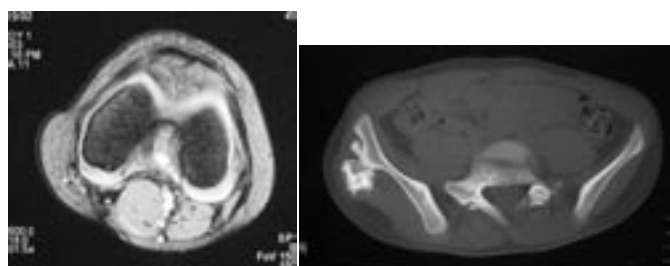
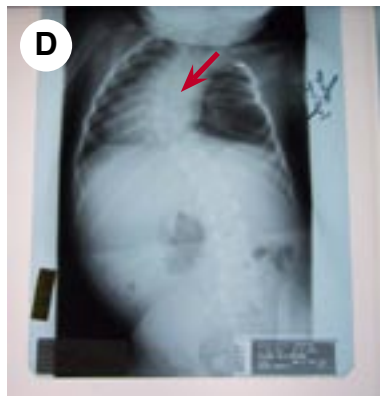
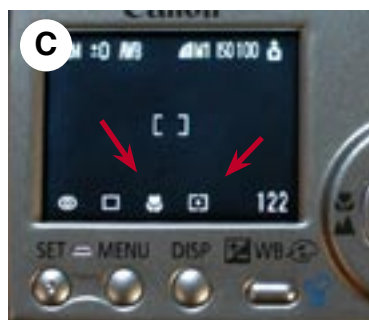
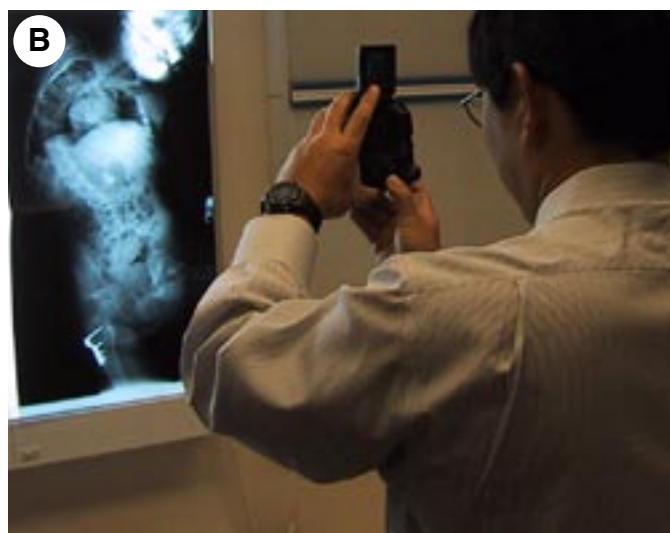
**Camera settings** Set the camera to matrix metering with the flash off. If the image is small, apply the macro setting.

**Avoid reflections** The major problem is reflection from the paper from overhead lighting. These reflections can be minimized by experimenting with camera and subject positions.

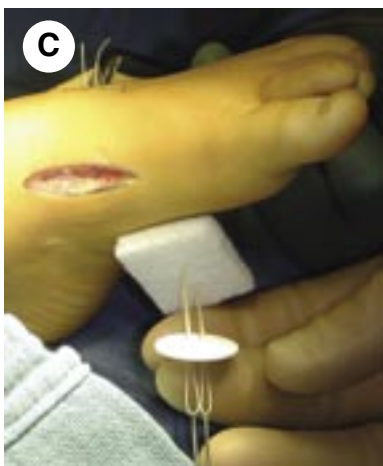
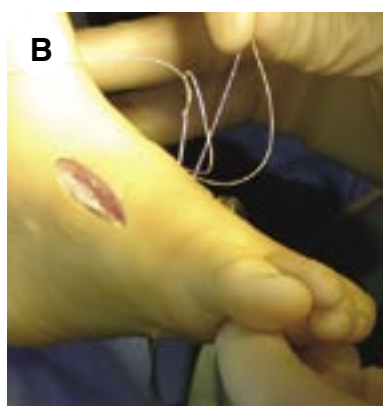
**Position camera** Make certain the camera body is parallel to the material to be copied and the page is as flat as possible.

**Steady** Be careful to hold the camera as still as possible to avoid blurring the image as the exposure time may be longer than usual.

**Several exposures** Consider making one or two additional exposures to increase the likelihood of a good image.







### Operative photography

The close-focus capabilities, zoom, long-focus lenses, and LCD monitors of most digital cameras make operating room photography feasible and simple. Some suggestions include:

**Show the operative setup** Include the entire operative scene to introduce the viewer into the operating room [A].

**Show sequences** This helps demonstrates the steps in performing the procedure [B, C]

**Turn the overhead lighting away from the subject** Make most photographs with flash illumination and the overhead lighting off. If the overhead light is on the operative site, the field will be overexposure with a serious loss of detail.

**Carefully position the camera** Place the camera at right angles, and centered on the subject. Move the camera position close enough and *zoom in* to just show the operative field [B].

**Enhance depth** Operative photographs often show only a flat red field with few defining features. Consider using the overhead lighting without flash and spot metering activated. Move the overhead light slightly to the side to create shadows that enhance the sense of depth in the operative field [D]. This gives each structure greater definition and may record the procedure more clearly.

### Miscellaneous uses

The digital camera may record anything seen by our eyes if the proper technique is used. These are some additional uses.

**Copying slides** Copying slides is like copying radiographs but on a macro level. Because of the close position, camera support is necessary. Set the camera on macro mode, matrix metering with the flash off.

**Projected images** Copying images during *powerpoint* presentations is possible. Set the camera on telephoto, matrix metering and flash off. Seat yourself as close as possible to the screen. Hold the camera very still while taking the photograph. Images will usually be good enough to allow a review of the subject [E].

**Models** Copying of objects such as the skeletal or models may be done with the flash activated.



## Drawings

Layout programs include basic drawing tools. These tools are adequate for making the simple drawing that are adequate for health care publications. The use of drawing is limited as drawing requires more time and skill than photography.

### Advantages of drawings

Drawings have several advantages over photographs.

**Small image size** Drawing creates what are called *vector images*. These images require much less memory than *raster images* as required by photographs.

**Drawing can be embedded** The drawing becomes part of the InDesign file requiring no linkages to an external image file. This simplifies management.

**Drawings focus on the subject** Unlike photographs that may show too much distracting detail, drawing focus on the problem and often are more effective in communicating the idea to the reader [A–E].

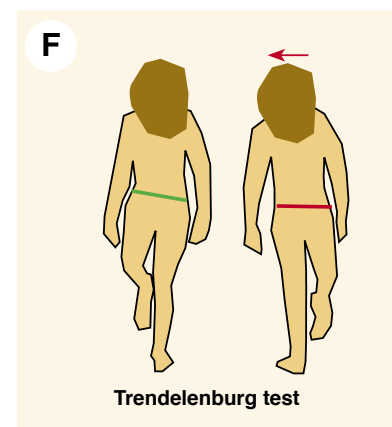
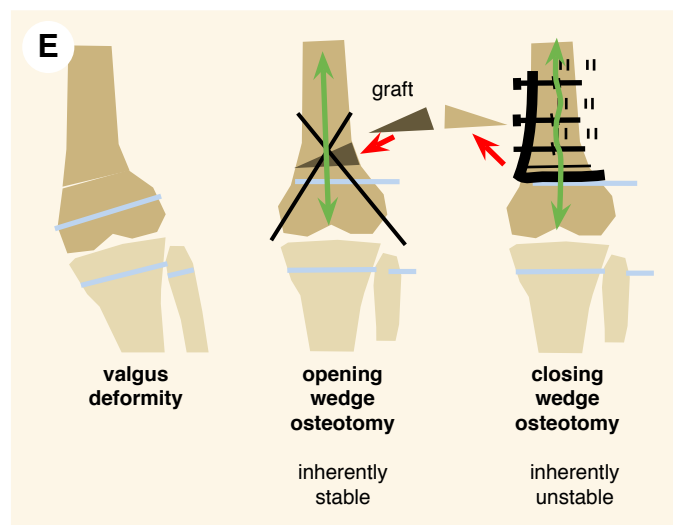
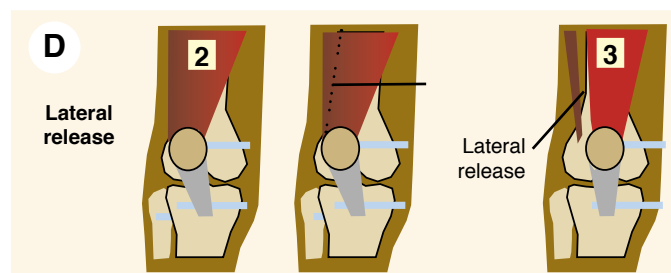
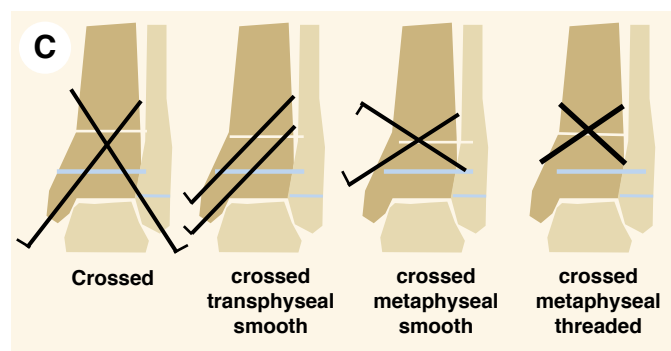
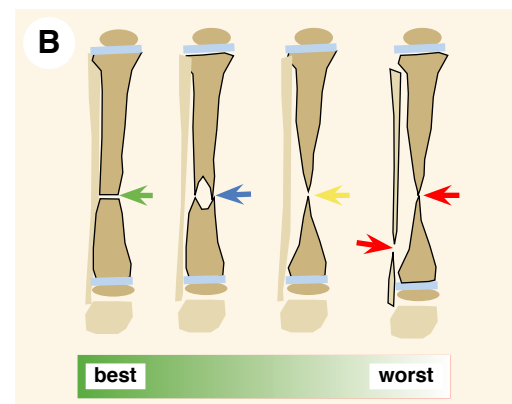
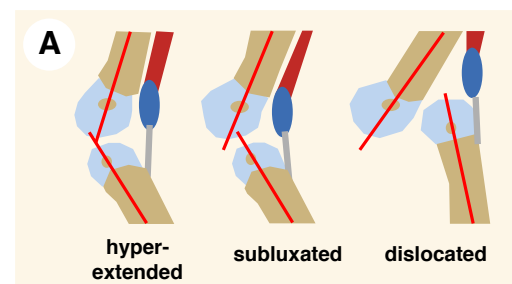
**Drawings are easily integrated** Drawing may be integrated into to flowcharts or tables, or can be combined to create schematic illustrations. Such illustration are efficient methods of communicating.

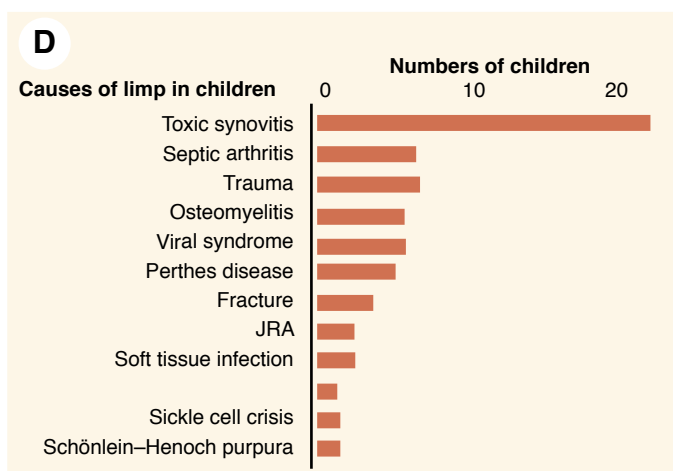
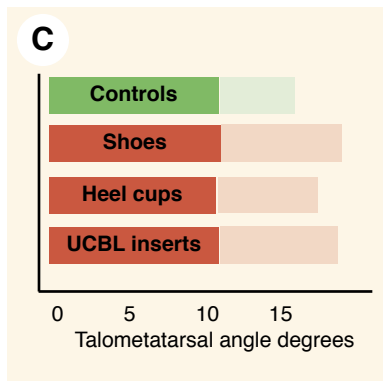
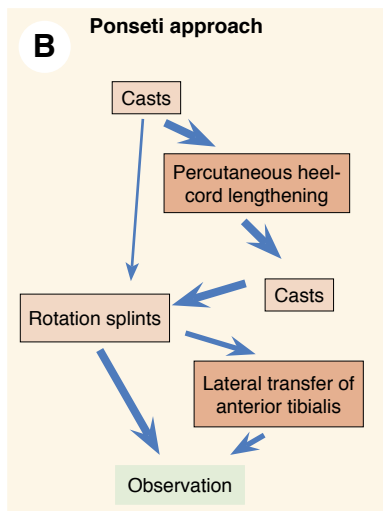
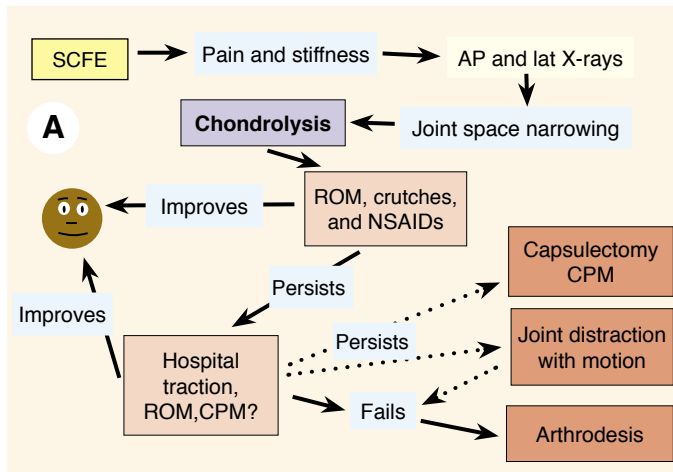
### Making drawing

Making drawing can be enjoyable and more creative than making photographs. The producer must have an interest, possibly some talent and be willing to practice.

**Use a template** Import a photograph, use it as an outline to draw an illustration, then delete the photograph [F]. Add the details. Use color to enhance differences. Be aware that if drawings are made to look good in color they may look flat when rendered in grayscale.

**Label drawings** Label drawings using a style sheet font and size. This provides uniformity.





## Charts and Graphs

Several types of charts are easily created using the simple drawing tools in InDesign. Consider creating a library of chart styles. For each new chart, copy the desired style and replace the data.

### Flow charts

Flow charts or algorithms are useful to show sequences in a space efficient form that often simplify complex problems. These charts are ideal for showing the steps in diagnosis or treatment [A]. Complex charts may be broken down and shown in segments [B]. Flow charts move from top to bottom or from left to right.

### Graphs

Select the type of graph based on the objective. Graphs take a number of forms

**Column** Compares one or more sets of values by using rectangles whose lengths are proportional to the values.

**Stacked column** Similar to a column graph, but stacks the columns on top of one another, instead of side by side. This graph type is useful for showing the relationship of parts to the total.

**Bar** Similar to a column graph, but positions the rectangles horizontally [C and D] instead of vertically.

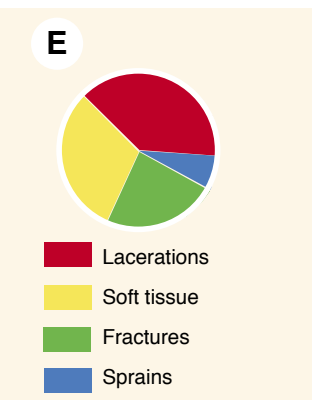
**Stacked bar** Similar to a stacked column graph, but stacks the bars horizontally instead of vertically.

**Line** Uses points to represent one or more sets of values, with a different line joining the points in each set. This type of graph is often used to show the trend of one or more subjects over a period of time.

**Area** Similar to a line graph, but emphasizes totals as well as changes in values.

**Scatter** Plots data points as paired sets of coordinates along the x and y axes. Scatter graphs are useful for identifying patterns or trends in data. They also can indicate whether variables affect one another.

**Pie** A circular graph whose wedges represent the relative percentages of the values compared [E].





## Tables

Tables consist of rows and columns creating *cells*. Add text to each cell. Create tables either by using the dedicated table features of InDesign or simply by making a text box, tabs and a fill background color.

### Text box table

Create a text box and add a color. Add a fill color with about 15% saturation to make it distinctive [A]. The background is cyan 15% and white lines separate the groups.

### Table feature of InDesign

The table feature in InDesign simplifies the creation of tables. Simple and complex tables are quickly created. Follow these steps to get started.

**Follow simple steps.** Use the T tool to create a new text frame. Choose table/insert table. Specify the number of rows and columns then click OK.

**To add text** Place the insertion point in a text box and type the text. Use the tab key to move to the next text box [B].

**Flow chart boxes** Make a single cell table [C].

### Table graphic combinations

These may be complex [D] and may be created in InDesign or an illustration program such as Illustrator.

## A

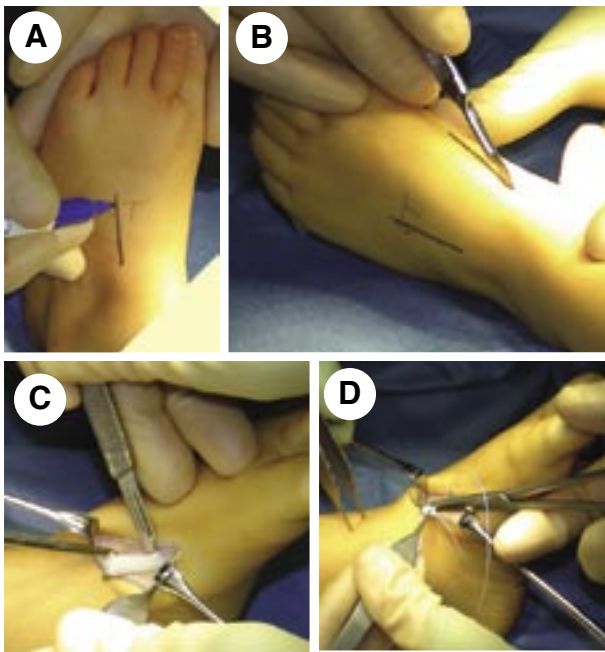
Feature	Growing Pain	Serious Problem
History	Often	Usually not
Localized	No	Often
Bilateral	Often	Unusual
Alters activity	No	Often
Causes limp	No	Sometimes
General health	Good	May be ill

## B

Feature	Growing pain	Serious Problem
History	Often	Usually not
Localized	No	Often
Bilateral	Often	Unusual
Alters activity	No	Often
Causes limp	No	Sometimes
General health	Good	May be ill

## C Flow chart

D	AGE yrs.	SIZE mm.	Shape	Form	Bones	Muscles	Nerves
E m b r y o				Trilaminar notochord			Neural plate
				Limb buds	Sclerotomes	Somites	Neural tube
				Hand plate	Mesenchyme condenses	Premuscle	
	12			Digits	Chondrification	Fusion myotomes	
	17			Limbs rotate	Early ossification	Differentiation	
	23			Fingers separate		Definite muscles	Cord equals vertebral length
F e t u s	12	56		Sex determined	Ossification spreading		
	16	112		Face human	Joint cavities	Spontaneous activity	
	20-40	160-350		Body more proportional			Myelin sheath forms; cord ends L3



## Linking Text and Illustrations

Linking text with illustrations may be done in several ways. Select the method based on the output and style of the publication. Most pages in HELP publications will be text driven. The reader will read the text and link the text to an illustration. Arrows are also a form of linkage. Arrows may be referred to in the text or in the caption.

### Citing illustration

There are several options for citing illustrations.

**Using captions** This is the traditional method. Illustrations are cited in the text by an assigned number such as *fig 8.21*. The reader finds the number and studies the illustration and caption in an adjacent text box. In this style the figure and the caption may stand alone from the text as an independent combination. A reader may return to the figure for review without making reference to the text. The same description of the illustration may appear twice, once in the text and again in the caption. This repetition is less space efficiency but increases readers options.

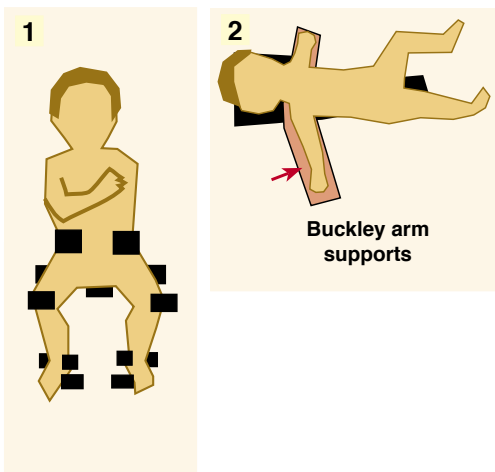
Illustrations are numbered sequentially for each chapter. The chapter number and figure number may be separated by a dash *fig 8-21* or period *fig 8.21*. Adding or deleting illustrations is difficult because with each change all of the figures must be renumbered.

**Modified figure identification** To simplify citing figures, consider assigning sequential letters to the illustration on each page. This is possible in author/producer generated publications as illustrations appear on the same page as the text. The figures are simply referred as A, B, C, D, or 1 and 2, etc. To identify the figure in the book, simply list the page number followed by the letter. An example, would be 109-B or the second figure on page 109. The full figure identification is given in the rare situation where the figure is cited in the text on a different page than where the figure is placed.

**Elimination of captions** Omitting the caption has several advantages. It is more efficient and the illustration description is integrated in the text providing continuity. This may be achieved by two methods.

**Citing the figure by letter** Cite the figure using a letter such as [A], [B] or [C] with the figure positioned somewhere on the same page. A full description of the figure is given in the text.

To eliminate the need for any letters or numbers, place the figure within the text box adjacent to the description. The text simply wraps around the illustration [E]. This eliminates the need for giving the figure a letter or number. This format works well for large or small figures but creates problems for moderate sized images. Moderate sized figures leave only space for a narrow column for text. The narrow column of text is more difficult to read.



## E

**Gaucher Disease** Autosomal recessive cerebroside lipidosis. Mutation in gene encoding glucocerebrosidase linked to chromosome 1q. Glucocerebrosidase-laden macrophages, known as Gaucher cells, accumulate in bone marrow, spleen, liver, and ocular limbus, leading to anemia, thrombocytopenia, hepatosplenomegaly, pingueculae. Three types of disease with different ages of onset. Orthopedic problems include osteolysis, bone crises, osteonecrosis of femoral head, pathologic fractures. Widening of the distal femoral metaphyses produces "Erlenmeyer flask" deformity, shown on radiograph (arrows).



- 1882 De l'épithélioma primitif de la rate Gaucher P: (thesis) p 212. Paris  
 1987 Fractures in children who have Gaucher disease. Katz K, et al. JBJS 69A:1361  
 1995 Gaucher disease--the orthopaedic aspect. Report of seven cases. Tauber C, Tauber T. Arch Orthop Trauma Surg 114:179  
 1996 The natural history of osteonecrosis of the femoral head in children and adolescents who have Gaucher disease. Katz K, et al. JBJS 78A:14

## Placing arrows

Placing arrows requires more thought than is first imagined. Here are some considerations:

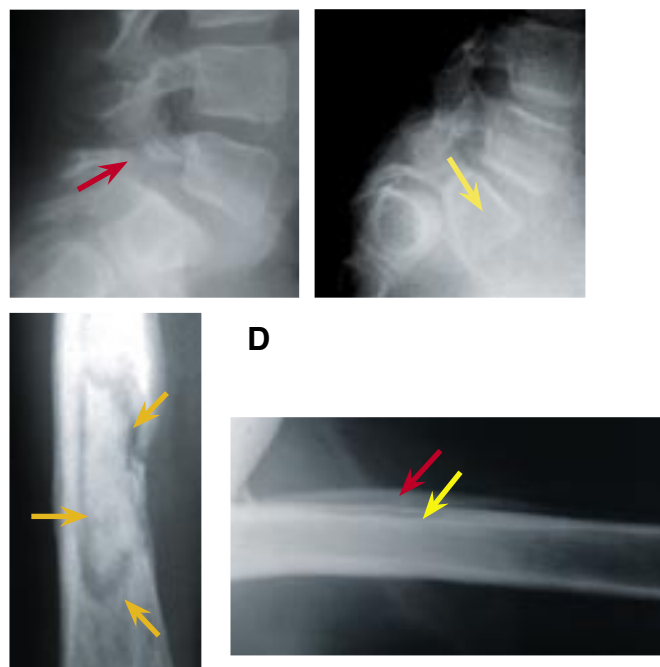
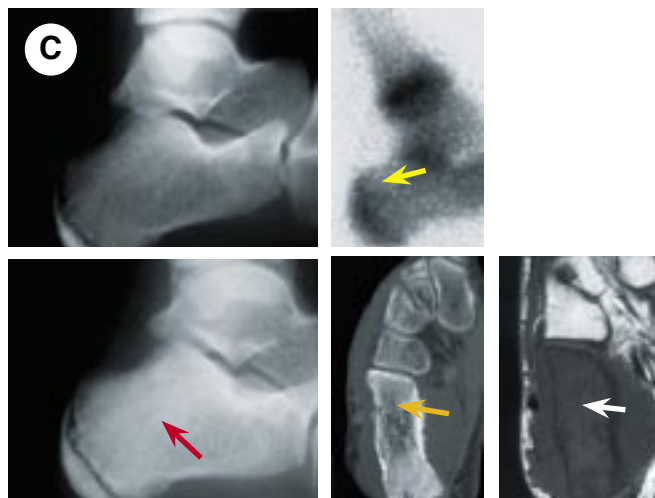
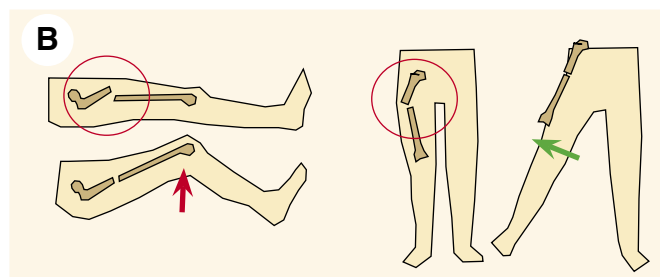
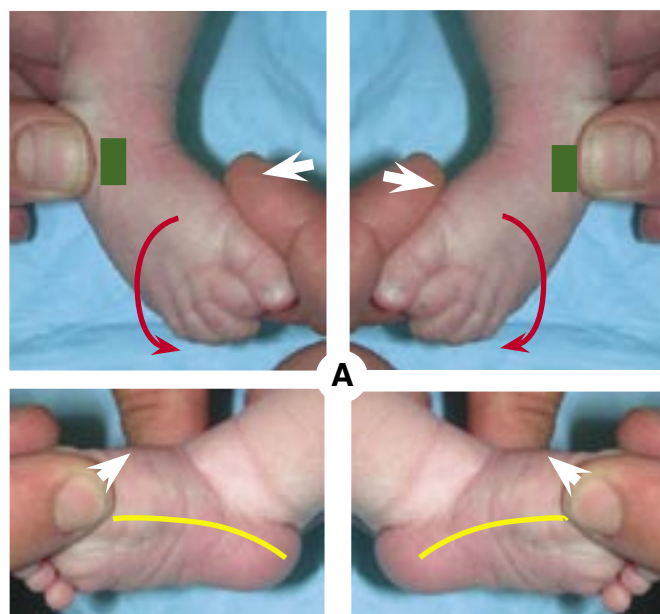
**Make the arrow of varied size and length** InDesign has an assortment of arrow styles [A]. I suggest using a *barbed* end.

**Place the arrow at right angles to the subject** This allows the eye to follow the arrow to the point of interest.

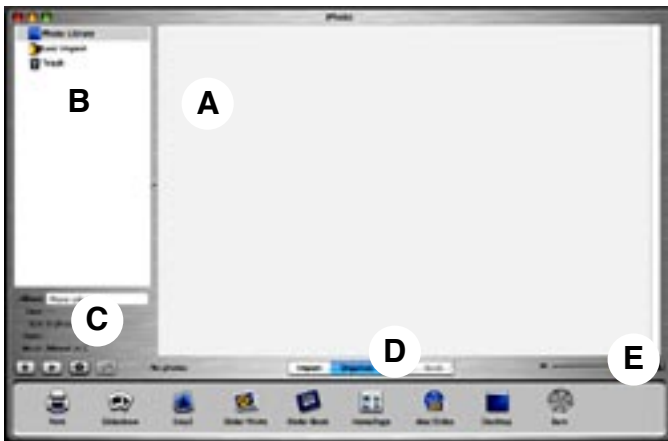
**Place arrow in neutral field** Avoid obscuring important details by the arrow.

**Use contrasting colors** Most arrows will be red, green, blue or sometimes yellow [B].

**Consider using multiple arrows/colors** The color may differentiate the arrows for description in the text [C and D]. A different approach is necessary for gray scale images. Differentiating features identifiable in gray scale may need to be substituted. The arrow may be black, grey or white. It may be short or long, wide or narrow.







## Using iPhoto

Use Photo (or Photo Album for PC) to manage your images. Follow these steps in making use of iPhoto.

### Interface overview

Note the major sections of the screen.

**Display pane** This is the area for the images [A].

**Album pane** Create and work with collections of images [B].

**Information pane** Provides details about images [C].

**Rotate image** Click to rotate, option + click opposite [D].

**Mode buttons** Switch modes [D].

*Organize mode* to view and arrange.

*Edit mode* to change.

Adjust size of image of individual images [E].



### Import images onto display pane

Follow these steps.

**Insert memory card** Using the adapter insert memory card into the laptop [F].

**Identify icon** Note the icon on the desktop. Click on the icon to select it for iPhoto import [G].

**Import into iPhoto** Click on import in iPhoto [H] to import the images onto the display pane. The images can also be imported by dragging the icons from the desktop icon to the display pane. Note that the images now appear in their native form before modification.

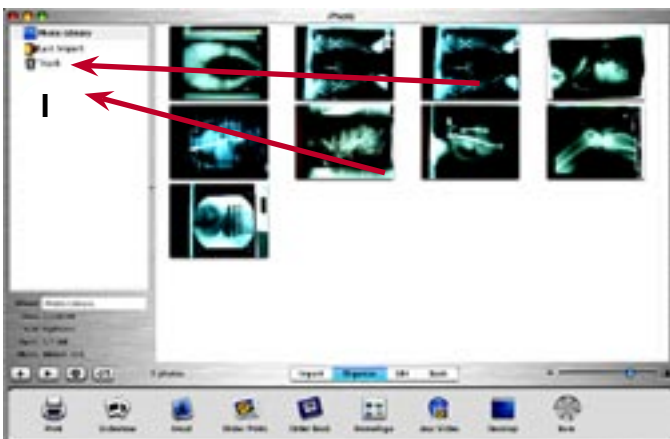
### Discard unusable images

Remove images that are out of focus, duplicates or unusable first before spending more time deal with them [I].

**Drag images to trash**

**Recover images in trash** Sequence: file/remove item from trash.

**Empty trash** Sequence: file/empty trash.



## Enhance Images

IPhoto allows basic image manipulation and is adequate for the first step of image management. Make more sophisticated corrections in photoshop. All of these changes can be made in the *edit* mode.

**Convert to black and white** While in the edit mode, select the image and click on the *B & W* button. This converts the image from color to grayscale [A]. This conversion is most commonly done for radiographs. The conversion reduces the file size to about a third and also eliminates the risk of unwanted distracting color casts.

**Rotate images** Rotate 90° by clicking on the button [B] or the opposite direction with the option key + rotation button.

**Crop image** Remove unusable segments of the image using the crop tool [C]. Drag with the mouse to outline the area to be removed. Then click the crop button.

**Remove red eye** Drag the cursor over the area of the eyes. Click the *red eye* button to make the correction [D].

**To open image in photoshop elements** Open IPhoto/P references/double click/open in orther/Photoshop Elements. and set Photoshop Elements as application to open in the window.

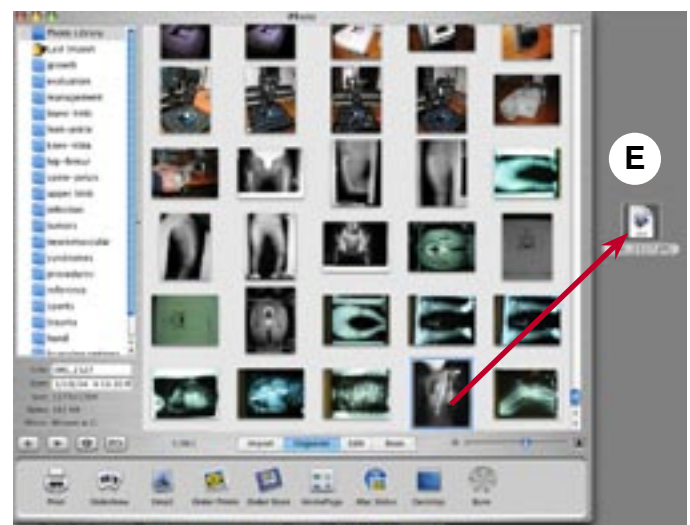
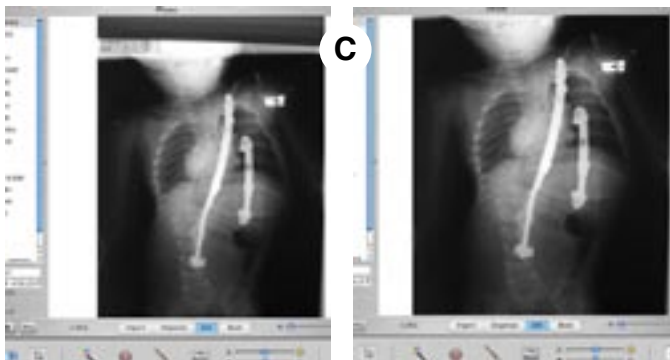
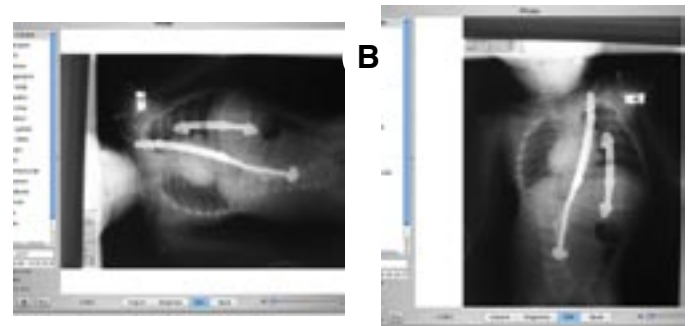
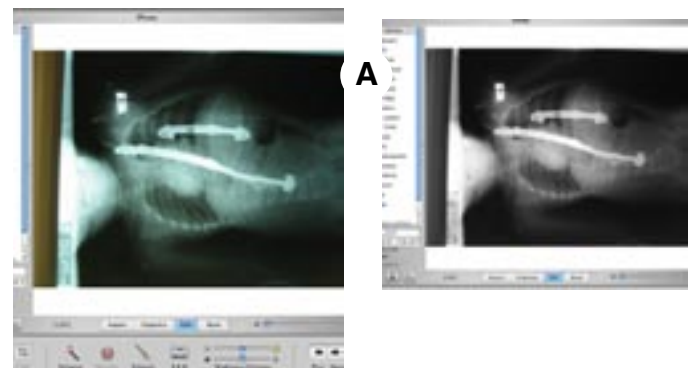
## Exporting images from IPhoto

Images may be exported several ways

**Drag from display pane** Drag the image from the display plane to the desktop [E]. This is the simplest method.

**Export** Select images in display pane and export under file/export. Specify the file characteristic and location of destination.

**Save from photoshop** Open in photoshop. After the enhancements *save as* to the desktop or other location.



## Image Enhancement

Applications such as Photoshop Elements provide the tools necessary to manipulate images optimizing their educational effectiveness. Modify the image to show the significant features clearly and remove any distractions.

After each step be certain the save the image key using the command + S keys. To reverse any action key command + Z keys.

### Enhancing radiographs

Radiographs or other images require several steps to optimize their presentation.

**Opening the image in Photoshop Elements** The image may be opened in photoshop by two methods. The simplest way is to double click on the image. If the preference is set properly the image will open automatically in Photoshop Elements.

The second method requires that the image be moved to the desk top [A]. It is then opened from within Photoshop.

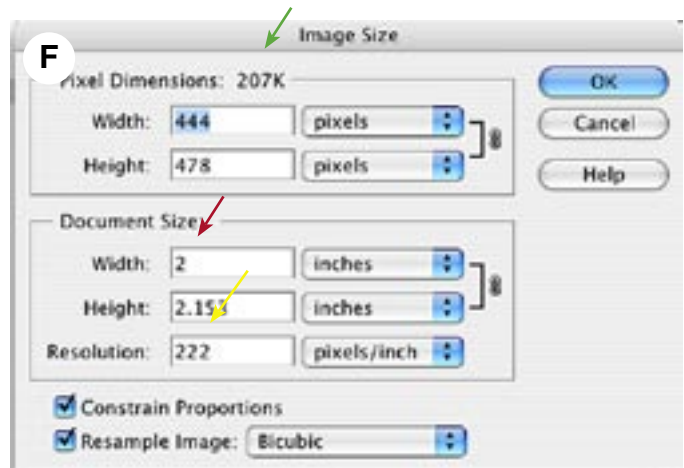
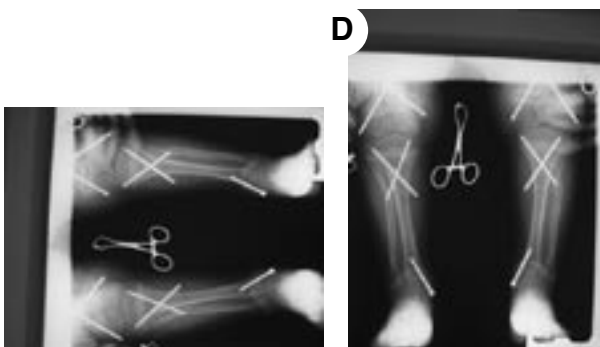
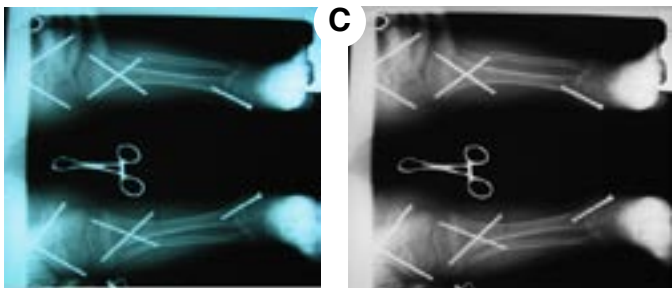
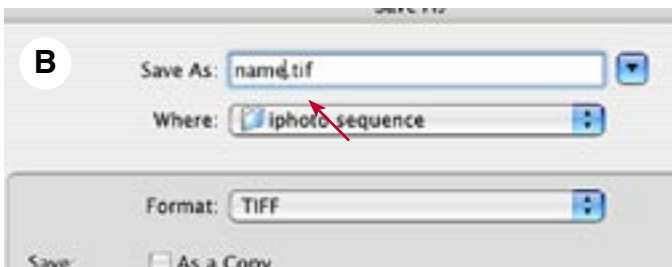
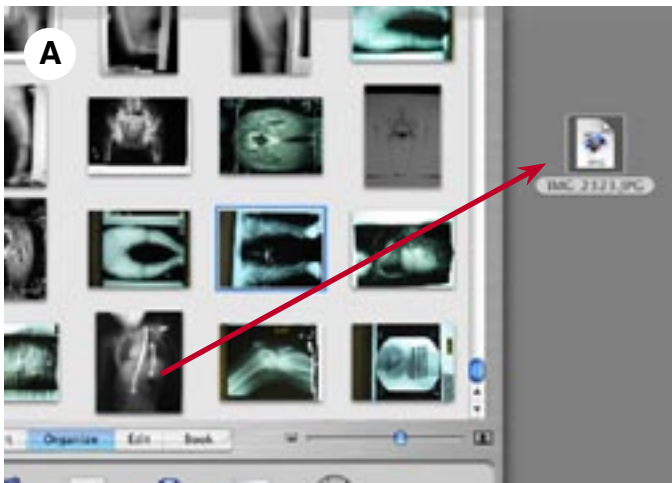
**Convert image to tiff format** Convert from the jpeg format, the standard for most digital cameras, to the tiff format. The tiff format is most stable and allows image modifications with the loss of quality [B].

**Convert to gray scale** Perform this by: image/mode/ grayscale [C].

**Rotate if necessary** Perform this by choosing: image/rotate/ left or right [D].

**Crop** Click on the crop tool and drag to outline the desired size and shape of the image [E]. Perform the crop by: image/ crop.

**Resize** Perform this by image/resize/image size/ then select the document size [F]. Select 3 inches for the width (red arrow) and 222 for resolution (yellow arrow) Select 222 because it is quick to enter. This should create an pixel dimension of about a quarter of a megabyte image size (green arrow).





**Adjust brightness and contrast** Select enhance/brightness/contrast then select brightness/contrast (red arrows). Adjust until the most important part of the image is most clearly rendered [A].

**Remove distracting features** Clean up the image by moving elements which do not contribute useful information [B]. These film edges, markers, artifacts, etc.

**Set foreground color** Click on the eyedropper tool (red arrow). Sample a spot on the image adjacent to the object to be removed. Click the eyedropper tool on this site to sample and set the level of grey for the paint brush. This will ensure that the area removed with match the surrounding image.

**Paint out distractions** Use the paint brush (yellow arrow) to paint out the distracting features.

**Sharpening** Sometimes the only available image is not sharp. Sharpen the image by applying filter/sharpening option.

## Enhancing colored clinical photographs

Most of the steps just described are applied to these photographs with a few exceptions.

**Color mode** The color mode for Photoshop Elements is RGB, the most common mode for general use. Professional color printing requires the CMYK mode. The printer may require conversion of the images into CMYK mode before printing.

**Blurring face** Sometimes it is desirable to remove identifying features of a subject when material is being published. This can be accomplished by blurring the face [C]. Use the lasso tool to outline the face or part to be blurred. Select the filter/blur/Gaussian blur. Adjust the bar on the menu to achieve the desired degree of blur. Attempt to apply just enough blur to effect a loss of identity but without calling undue attention to the face.

**Color correction** Correct color by enhance/adjust color/hue saturation. This brings up a window with a slider for hue, saturation and lightness. Adjust these bars until the image appears most natural [D]. Note the difference in the image before and after the correction.

