Recording, Editing and Uploading Surgical Videos – Becoming an AAGL Star! (Didactic)

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Professional Education Information

Target Audience
Educational activities are developed to meet the needs of surgical gynecologists in practice and in training, as well as, other allied healthcare professionals in the field of gynecology.

Accreditation
AAGL is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The AAGL designates this live activity for a maximum of 3.75 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

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# Table of Contents

Course Description ........................................................................................................................................... 1

Disclosure .......................................................................................................................................................... 3

Recording Video, Overview of Video File Types, and Uploading Videos  
C.D. Cocca/R. Bojorquez ....................................................................................................................................... 5

The Surgical Video – What’s Important  
S. Mansuria ................................................................................................................................................... 7

Video Editing: Tips and Tricks – Part 1  
N.M. Donnellan ........................................................................................................................................... 10

The Role of Surgical Videos in Surgeon Education & Integrating Video into Your Practice  
M.T. Siedhoff .................................................................................................................................................. 15

Video Editing: Tips and Tricks – Part 2  
N.M. Donnellan ........................................................................................................................................... 18

Cultural and Linguistics Competency ............................................................................................................. 26
PG 214
Recording, Editing and Uploading Surgical Videos –
Becoming an AAGL Star! (Didactic)

Suketu Mansuria, Chair
Assia A. Stepanian, Co-Chair
Faculty: Roman Bojorquez, Craig D. Cocca, Nicole M. Donnellan, Matthew T. Siedhoff

Course Description

This course is designed for surgeons who want to understand the basics of recording and editing surgical videos, as well as for more experienced practitioners who want to hone their editing skills and maximize the potential of their videos. We will explain the pros and cons of different video file types, give an overview of the uploading process, and demonstrate multiple editing techniques that will enhance the quality of the participants’ videos. There will also be a discussion regarding the grading process employed by AAGL so that participants better understand how their videos will be judged. We will also discuss the future of video-based education and utilization of videos in the education of the next generation of surgeons. The program will conclude with the presentation of various submitted videos and critique by the expert panel to demonstrate common pitfalls and effective editing.

Course Objectives

At the conclusion of this course, the participant will be able to: 1) Prepare well organized surgical videos for presentation; 2) implement various editing techniques to enhance their surgical videos; 3) integrate video based education into their practices; and 4) discriminate between effective surgical videos and ineffective videos via direct observation of the critiquing process by the expert panel.

Course Outline

1:30 Welcome, Introductions and Course Overview
   S. Mansuria

1:35 Recording Video, Overview of Video File Types, and Uploading Videos
   C.D. Cocca/R. Bojorquez

2:00 The Surgical Video – What’s Important
   S. Mansuria

2:25 Video Editing: Tips and Tricks – Part 1
   N.M. Donnellan

2:50 The Role of Surgical Videos in Surgeon Education
   M.T. Siedhoff

3:15 Questions & Answers
   All Faculty

3:25 Break

3:40 Video-Based Education – Integrating It into Your Practice
   M.T. Siedhoff

4:05 Video Editing: Tips and Tricks – Part 2
   N.M. Donnellan
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30</td>
<td>Critical Review of Videos – Part 1</td>
<td>All Faculty</td>
</tr>
<tr>
<td>4:55</td>
<td>Critical Review of Videos – Part 2</td>
<td>All Faculty</td>
</tr>
<tr>
<td>5:20</td>
<td>Questions &amp; Answers</td>
<td>All Faculty</td>
</tr>
<tr>
<td>5:30</td>
<td>Course Evaluation</td>
<td></td>
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PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop and have no conflict of interest to disclose (in alphabetical order by last name).
Art Arellano, Professional Education Manager, AAGL*
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Consultant: Conceptus Incorporated
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Other: Proctor - Intuitive Surgical

FACULTY DISCLOSURE
The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the “best available evidence” from medical literature (in alphabetical order by last name).
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Consultant: Gyrus ACMI (Olympus)
Assia A. Stepanian*
Roman Bojorquez*
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Nicole M. Donnellan*
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Asterisk (*) denotes no financial relationships to disclose.
Navigating the World of Digital Video: Understanding file formats, bit rates, resolutions, and more

Disclosure

- I have no financial relationships to disclose.

DURING THIS PRESENTATION...

- Discuss the “life-cycle” of a video
- Review of devices for capturing video
- Demystifying file formats – Why are there so many, and which one should I use?
- Explain image resolution – How do I make my video look “HD” quality?
- Bit rate and bandwidth – Understanding these two concepts
- Video Compression

THE “LIFE-CYCLE” OF A VIDEO

1. Capture Video
2. Edit Video
3. Distribute Video via Online Video Hosting Services

DEVICES FOR CAPTURING VIDEO

- Surgical Towers – Most surgical towers now offer the ability to record surgeries to an internal capture device like a DVR, with outputs to blue-ray, DVD, flash memory, or hard drive.
- Video cameras – Modern video cameras record in “HD”, or high definition. Most cameras no longer record to video tape, but now record to flash memory, hard drive, or DVD
- Smart phones – Video cameras in smart phones have improved dramatically over the last two years. High-end devices now offer full HD quality recording.

DEMYSTIFYING VIDEO FILE FORMATS

- There are over 100 known video file formats. Some of the more popular ones: WMV, AVI, MOV, VOB, MPG, ASF, 3GP, MP4, M4V, MP2, MTS, TS, PS....really enough to make your head spin!
- Why? Because every company doing video out there was trying to get the whole world to use their standard so that they could get rich...
- Which format should I use to save my video?

ALWAYS USE MP4

Its small, the picture looks great, and it works on almost any device now made.
VIDEO COMPRESSION

- Video compression is a technology that has made it possible to squeeze very high resolution video over limited capacity Internet connections.
- Compression works in one of three ways:
  - It finds the parts of the video that are changing from frame to frame and ONLY stores those frames (think of a newscaster who is moving very little)
  - It analyzes the motion in the video to find elements moving but are not changing shape, and moves those elements around without resending the whole image
  - It stores repetitive elements of the video only once.

BIT RATE AND BANDWIDTH – TWO KEY CONCEPTS

- “Bit Rate” refers to the number of bits that need to be stored for every second of video that is displayed. Think of it like the number of words you use to tell a story. The more words you use, the better defined your story is:

  Example:
  A red rectangle
  with 6 white stripes
  with a blue rectangle in the corner
  …that contains stars

  THE MORE INFORMATION WE USE TO TELL THE STORY, THE CLEARER THE PICTURE BECOMES

BIT RATE AND BANDWIDTH – KEY CONCEPTS

- “Bandwidth” refers to how much information we can send through an Internet connection each second. Think of bandwidth as the size of the hole through which all of your video data must pass as it travels over the Internet:

  All this data... ...must fit through this keyhole.
The Surgical Video-What’s Important

Suketu Mansuria, M.D.
Assistant Director of Minimally Invasive Gynecologic Surgery
Chairman of AAGL Video Committee
University of Pittsburgh Medical Center

Disclosures

• Consultant: Gyrus ACMI (Olympus)

Objectives

• At the conclusion of this presentation, the participant will be able to:
  – Implement “tricks” to improve the raw footage for their videos
  – Prepare well organized surgical videos for presentation;
  – Integrate various editing techniques to enhance their surgical videos;
  – Discriminate between various editing techniques to maximize the impact of their videos

Getting Started

• What type of video do you want to make
  – Educational
  – Interesting case
  – New Technique/Procedure
• Know your audience

Educational Videos

• Break down your topic to its most basic elements
• Discuss real-life applications of what you are teaching
• Focus on the most important steps

Interesting Case

• Give adequate background to illustrate why this is an interesting case
• Thoroughly explain and defend your approach
• Describe the outcome
New Technique or Procedure

• Give a detailed description of the application of this new technique
• Justify why this new technique or procedure is necessary or superior
• Thoroughly explain the steps
• Detail outcomes

“Pre-Operative” Tips

• Video Quality
  - Use the highest quality video
    - The video may be viewed on a screen bigger than yours
• Minimize fogging
• Minimize smoke
• Clean the scope—have the sharpest image
• Adjust the “circle” on the camera so that the entire screen is filled with your image
• Have a “clean” field

“Pre-Operative” Tips

• Realize while taping a surgery that you may use it in a future video
  - “Point out” relevant structures/anatomy
  - “Film” the case—put yourself in the audience’s shoes
    - Give the best perspective
  - When dealing with complex anatomy
    - Global view→Focused view→Global view
    - Orient the audience to relevant anatomy each time you switch to operating in a “new” field
  - Use the start/stop function to minimize editing later

Introductions

• Minimize irrelevant information
  - History
  - Previous treatments
  - Background information
• Maximize the “surgical” aspect of the surgical video
• Include preoperative imaging if it adds to the case

The Surgery

• Video
  - Only include what is relevant
    - i.e. only include port placement if it critical to the case
  - Eliminate repetitious portions of the case
    - i.e. only include one side of the hyst if its not the focus of the video
    - i.e. narrate that a pedicle was coagulated three times but only show coagulation once
  - Substance outweighs fancy editing

The Surgery

• Video
  - Effective editing tools
    - Change speed of video
    - Freeze frame
    - Composting
      - Animation/text overlays
      - Use overlays sequentially so image isn’t too busy
    - Picture in picture
  - Consider using simple “cartoons” to explain difficult anatomy
  - Ineffective editing tools
    - Unnecessary transition effects
The Surgery

- Audio
  - Narration is key
    - Have a script
    - Be clear and crisp-over articulation works best
      - Minimize background noise
    - Minimize unnecessary silence
    - Consider recording every sentence separately
      - Insert sentences wherever appropriate
      - Makes editing easier without having to rerecord entire narration

- Audio
  - Music
    - Should be in the background and fill in gaps
    - If I notice it, its too much
    - Not too loud!
    - Use two tracks (one for narration, one for music)
      - Gives you the ability to adjust the volume of music separate from volume of narration
      - Decrease volume during narration, increase volume when there is no narration
Video Editing: Tips and Tricks Part 1

Nicole Donnellan, MD
Assistant Professor, Dept. of OB/Gyn
University of Pittsburgh Medical Center

Learning Objectives

• Outline the basic steps necessary to complete a successful surgical video, from OR filming to final product
• Review how to improve video quality by optimizing raw footage filmed in the operating room
• Discuss how to develop a storyboard for a video topic
• Discuss tips and techniques essential to raw editing

Disclosures

• I have no financial relationships to disclose.

Outline

• Optimizing Video Production in Your OR
• Creating a Storyboard for Your Video
• Tips and Tricks for Raw Editing

Optimizing Video Production in Your OR

• Your video STARTS in your OR
• Don’t be afraid to record...so...
• AWLAYS record!
Optimizing Video Production in Your OR

- Ultimate product is only as good as your raw clips
- Focus on optimizing quality of raw footage

Optimizing Video Production in Your OR

- Ultimate product is only as good as your raw clips
- Focus on optimizing quality of raw footage
  - Become familiar with your laparoscopy system and recording settings
    - Color
    - Zoom
    - MPEG vs other settings
  - Keep view clear and pristine
    - Defogging techniques
    - Hemostasis
  - Have a skilled assistant driving the camera
    - Avoid shaking/jerking movements
    - Keep upright orientation

Optimizing Video Production in Your OR

- “FILM” your case
  - Try to tell a “story” as you record
  - Give a global survey when you otherwise may not
  - Focus on global view→focused view→global view
  - Don’t forget to record accompanying cystoscopy and “extracorporeal” techniques/procedures
  - Film/photograph retrieved specimens
- Develop a system to organize video clips for easy access

Outline

- Optimizing Video Production in Your OR
- Creating a Storyboard for Your Video
- Tips and Tricks for Raw Editing

Creating a Storyboard

- Decide upon type of story
  - Case report/Interesting Case
  - Case series
  - Tip/Trick/Technique/Educational “How to”
- Type of story dictates number of video clips
  - Case report/Interesting Case → ONE VIDEO
  - Case series → MULTIPLE VIDEOS
  - Tip/Trick/Technique/ “How to” → MULTIPLE VIDEOS
Creating a Storyboard

- Background information
  - Patient/case history
  - Supporting literature
- Diagrams/animation
  - Use photographs from prior publications
  - Create own diagrams/animation
- Conclusion
  - Patient outcome
  - Supporting literature

Creating a Storyboard: How to Do a TLH

- Title (ppt#1)
  - “Resident Guide to Fundamentals of a TLH”
- Background Literature (ppt#2, 3)
  - Find info on increased #s TLHs
  - Find info on resident training in MIGS
- Patient Info (ppt#4)
  - Provide case info on patient

Creating a Storyboard: How to Do a TLH

- Conclusion (ppt#8)
  - Provide succinct, strong statement to summarize your last 8 minutes

Creating a Storyboard: How to Do a TLH

- Diagram 1 (ppt#5) → Video 1 → Video 2
- Diagram 2 (ppt#6) → Video 3 → Video 4
- Specimen Photo (ppt#7) → Video 5
- PPT: Diagram of uterus
- VIDEO: Round ligament video
- VIDEO: Bladder flap video
- PPT: Diagram of uterine blood supply
- VIDEO: Uterine artery video
- VIDEO: Colpotomy
- PPT: Specimen Photo
- VIDEO: Cuff Closure

Creating a Storyboard

- Outline your actual narration
  - Focus on a draft of your narration sooner rather than later in the process
  - Compose drafts of individual “soundbites” to accompany each slide/diagram
  - Compose drafts of individual “soundbites” to accompany all streaming surgery
  - Early drafts of narrative allows you to determine if your story is “complete”
Outline

• Optimizing Video Production in Your OR
• Creating a Storyboard for Your Video
  • Tips and Tricks for Raw Editing

Tips and Tricks for Raw Editing

4 hour surgery = 8 minutes AAGL video

Tip #1: Stabilize Source Video
• Removes inherent “jumpiness” or “shakiness” of final product
• Allows for a more “smooth” look

Tip #2: Speed Up Source Video
• Decreases length of video clips
• Allows for a more “proficient” look

Tip #3: Be High Yield
• Eliminate instrument changes
• Eliminate “cleaning” of surgical field
• Show steps only critical to understanding of topic/case
• Avoid showing redundant steps

Tip #4: Splicing
• Eliminates “dead time”
• Eliminates need for “transitions”
• When properly aligned and edited, “fool” your audience into a streaming surgery
• INSERT AAGL SPICING VIDEO (concept of 1:13 down to 40 seconds)
Tip #5: Transitions

- Insert AAGL Vid 1b Transitions Example

Summary

- Don’t be afraid to film your OR cases
- Optimize video at time of initial recording
- Start your project with a storyboard
- Stabilize and speed up source video
- Use splicing and transitions to assist in editing down lengthy cases

Questions?
The Role of Surgical Videos in Surgical Education & Introducing Video into Your Practice

Matthew Siedhoff, MD MSCR
Division of Advanced Laparoscopy & Pelvic Pain
University of North Carolina at Chapel Hill

Objectives

- At the conclusion of this activity, the participant will be able to:
  - Use video to instruct trainees
  - Use video in the context of CME presentations
  - Use video to refine and expand his/her surgical practice

Use of video in Education

- Accepted value in:
  - Sports
  - Music
  - Public speaking and presentation skills

Surgical Video Education

- Educating others
  - Residents and fellows
  - CME audiences
- Self-education
  - Refining the way you do a procedure
  - Reminder of the steps of a rare procedure
  - Incorporating a new procedure into your practice

Disclosures

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- Educating others
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  - Refining the way you do a procedure
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Disclosures

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• 29 orthopedic residents, PGY 1 – PGY 5
• Videotaped while performing laboratory simulated procedures
  – Assigned to:
    • No feedback (control)
    • Video and self-review
    • Video and expert feedback
• Videotaped repeating the same laboratory tasks
• Evaluated on a global rating scale and task-specific checklist
• No difference in time or ratings
  – Limitations: small numbers, variable pre-task experience, only completed tasks one time

Video in Surgical Education - UNC
• Minimally invasive surgery
  – Video feedback readily available
  – Easily use actual surgical footage
  – Faculty and residents perceive limitations in their surgical feedback
    • Video instruction perceived as feasible approach to providing better feedback

Video in Surgical Education - UNC
• Vaginal cuff closure after laparoscopic hysterectomy
  – Current model: observation followed by supervised practice in the OR
  – Pilot study
    • Videotape residents' first attempt at cuff closure
    • Expose to supervised tablet-based simulation training
    • Videotape cuff closure at the end of the rotation
    • Pilot: feasibility, acceptability, outcomes assessment, face validity, construct validity, predictive validity
    • Planned controlled trial

Video Surgical Education - UNC
• Didactic library
  – Patient positioning
  – Laparoscopic access
  – Port placement
  – Procedures

Video Surgical Education
• CME audiences
  – Examples:
    • This talk
    • Laparoscopic myomectomy
    • Procedures for pelvic pain

Video Surgical Education
• Self-education
  – Refining the way you perform a procedure
    • Example: excision of endometriosis, paravesicle space dissection, appendectomy
  – Reminder of the steps of a rare procedure
    • Example: presacral neurectomy
  – Incorporating a new procedure into your practice
    • Example: oophoropexy, tubal reanastamosis

Resources

• YouTube (www.youtube.com)
• IASP (http://www.academyofpelvicsurgery.com/)
• SURFF (www.surgicalfilmfestival.com)
• Medclip (www.medclip.com)
• AAGL endo-exchange (http://www.lsoft.com/scripts/wl.exe?SL1=AAGL-ENDO-EXCHANGE&H=LISTSERV.BROWN.EDU)
• SurgeryU (www.aagl.org/surgeryu)
• AAGL (congress.aagl.org)

References

• Caliendo E, Kopacz R. Improving student motivation and performance in music programs. Musical action research project, Saint Louis University, April 1999.
Video Editing: Tips and Tricks Part 2
Nicole Donnellan, MD
Assistant Professor, Dept. of OB/Gyn
University of Pittsburgh Medical Center

Disclosures
• I have no financial relationships to disclose.

Learning Objectives
• Review how to appropriately incorporate PowerPoint text and diagram slides into your video
• Describe how to label streaming video clips
• Discuss how to optimize audio/narration components of the video production

Outline
• Tips and Tricks for Incorporating PowerPoint Slides into Your Video
• Tips and Tricks for Enhancing Streaming Video with Labels and Diagrams
• Tips and Tricks for Adding “Picture in Picture” to Your Video
• Tips and Tricks for Optimizing Audio in Your Video

Tip #6: Use PowerPoint for Text Slides
• Essential for
  – Title
  – Intro/Background
  – Delineating difficult concepts mid-surgery
  – Conclusion/References/Acknowledgements
• Be wary of amount/length of text slides – you still want the focus of video to be surgical clips
Tip #6: Use PowerPoint for Text Slides

- Create text slides in PPT
- Save as
  - xxx.ppt
  - xxx.mov
- Import into event library
- Alter length of this clip once incorporated into video project

Tip #7: Use PowerPoint for Diagrams/Animation

- Helps orient audience to difficult concepts
- Underscores important “teaching” points
- Provides a means of good transitions
Tip #7: Use PowerPoint for Diagrams/Animation
• Add in AAGL Vid2 Animation Demonstration

Outline
• Tips and Tricks for Incorporating PowerPoint Slides into Your Video
  • Tips and Tricks for Enhancing Streaming Video with Labels and Diagrams
  • Tips and Tricks for Adding “Picture in Picture” to Your Video
  • Tips and Tricks for Optimizing Audio in Your Video

Tip #8: Use Freeze-Frames
• Helps orient audience
  – Provides a “breather” or “time-out” in the action
  – Delineates complex concepts/anatomy
• Provides ability to instruct with “real-life” diagram as oppose to OR in addition to animation

Tip #8: Use Freeze-Frames
• Select video frame of interest in your project
• Right-click over this frame
• Select “Add Freeze Frame”
• This will automatically create a 4 second clip of a freeze frame in your streaming video
Tip #8: Use Freeze-Frames
• Insert AAGL Vid3 Freeze Frame Demonstration

Tip #9: Label Freeze-Frames
• Helps orient audience
  – Provides a “breather” or “time-out” in the action
  – Delineates complex concepts/anatomy
• Provides ability to instruct with “real-life” diagram as oppose to OR in addition to animation
• Right-click over freeze-frame
• Select “Reveal in Finder”
  – This creates a JPEG file of the freeze-frame
• Cut and paste JPEG into PPT
• Add labels/arrows/lines to create diagram
• Import PPT slides are previously discussed

Tip #9: Label Freeze-Frames
• Insert AAGL Vid4 Label Freeze Frame
Tip #10: Label Streaming Video

- Helps direct audience to point of interest without disrupting video play
- Useful in conserving overall time

Tip #10: Label Streaming Video

- Click on “Title” icon
- Choose title option that aligns closest to area of video you wish to label
- Use strategic spacing to align labels appropriately to base video

Outline

- Tips and Tricks for Incorporating PowerPoint Slides into Your Video
- Tips and Tricks for Enhancing Streaming Video with Labels and Diagrams
  - Tips and Tricks for Adding “Picture in Picture” to Your Video
- Tips and Tricks for Optimizing Audio in Your Video

Tip #11: Picture-in-Picture

- Allows another video or still image to be embedded into the base video
- May be useful when:
  - comparing two procedures
  - showing position of hands externally in relation to spatial relationships of instruments internally
  - further enhancing specific anatomy
Tip #11: Picture-in-Picture

- Select “iMovie” followed by “Preferences”
- Check box labeled “Show Advanced Preferences”
- Drag desired picture or video clip over segment of base video you wish to transform into “picture-in-picture”
- In the contextual menu that appears, choose “Picture in Picture”

Outline

- Tips and Tricks for Incorporating PowerPoint Slides into Your Video
- Tips and Tricks for Enhancing Streaming Video with Labels and Diagrams
- Tips and Tricks for Adding “Picture in Picture” to Your Video
- Tips and Tricks for Optimizing Audio in Your Video

Tip #12: Test Out Your Microphone

- Record test sound bites to experiment
  – Actually record, import, export and LISTEN!
- Internal vs External microphones can make big difference depending on your computer
- Record in multiple sections to allow editing without re-narrating entire video
Tip #12: Test Out Your Microphone

- Optimize voice recording by:
  - Paying attention to distance from microphone
  - Muffling external microphone with paper/tissue
  - Speaking slowly, deliberately and ENUNCIATING
  - Minimizing large fluctuations in tone and level of voice

Tip #12: Don’t Overdo the Music

- Background music can be a nice touch, but..
- Make sure it isn’t overpowering – voice narration is of #1 importance
- Make sure it doesn’t fluctuate in volume/intensity throughout the piece
- Audience really shouldn’t “notice” the music, ie, it should NOT be a distraction
- Background music == Background music!

Tip #12: Don’t Overdo the Music

- Select a single score (ie, don’t mix classical pieces)
- Upload “.wav” or “.mp3” audio file into your video project
- Be sure to set at a continuous, LOW LEVEL default

Summary

- Don’t be afraid to film your OR cases
- Create a storyboard before diving into the details of video editing
- Remember Some Key Tips and Tricks
  - Stabilizing and speeding up raw clips before importing
  - Splicing techniques to eliminate “dead” time
  - Incorporating PowerPoint slides for Text/Diagrams
  - Using freeze frames
  - Labeling streaming video
  - Optimizing narration

Questions?
**Cultural and Linguistic Competency**

Governor Arnold Schwarzenegger signed into law **AB 1195** (eff. 7/1/06) requiring local CME providers, such as the AAGL, to assist in enhancing the cultural and linguistic competency of California’s physicians (researchers and doctors without patient contact are exempt). This mandate follows the federal Civil Rights Act of 1964, Executive Order 13166 (2000) and the Dymally-Alatorre Bilingual Services Act (1973), all of which recognize, as confirmed by the US Census Bureau, that substantial numbers of patients possess limited English proficiency (LEP).

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**California Business & Professions Code §2190.1(c)(3)** requires a review and explanation of the laws identified above so as to fulfill AAGL’s obligations pursuant to California law. Additional guidance is provided by the Institute for Medical Quality at [http://www.imq.org](http://www.imq.org).

**Title VI of the Civil Rights Act of 1964** prohibits recipients of federal financial assistance from discriminating against or otherwise excluding individuals on the basis of race, color, or national origin in any of their activities. In 1974, the US Supreme Court recognized LEP individuals as potential victims of national origin discrimination. In all situations, federal agencies are required to assess the number or proportion of LEP individuals in the eligible service population, the frequency with which they come into contact with the program, the importance of the services, and the resources available to the recipient, including the mix of oral and written language services. Additional details may be found in the Department of Justice Policy Guidance Document: Enforcement of Title VI of the Civil Rights Act of 1964 [http://www.usdoj.gov/crt/cor/pubs.htm](http://www.usdoj.gov/crt/cor/pubs.htm).

**Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency”,** signed by the President on August 11, 2000 [http://www.usdoj.gov/crt/cor/13166.htm](http://www.usdoj.gov/crt/cor/13166.htm) was the genesis of the Guidance Document mentioned above. The Executive Order requires all federal agencies, including those which provide federal financial assistance, to examine the services they provide, identify any need for services to LEP individuals, and develop and implement a system to provide those services so LEP persons can have meaningful access.

**Dymally-Alatorre Bilingual Services Act** (California Government Code §7290 et seq.) requires every California state agency which either provides information to, or has contact with, the public to provide bilingual interpreters as well as translated materials explaining those services whenever the local agency serves LEP members of a group whose numbers exceed 5% of the general population.

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