A Guide to Make Applications for Holistic Surgical Practice

The Computer Enhanced Visual Learning (CEVL) Manual

Max Maizels

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I am delighted to dedicate this book to my wife, Evie, a friend for more than 50 years, son Michael, and his wife Ellie who have helped me along this journey.

Preface

Book Overview

This book bridges the knowledge gap for healthcare workers, newly enabling them to create online learning for ***their*** surgical arena. This skill set will provide knowledge which empowers them to inform each surgical team member of "what they need to know," "what they will be expected to do," and "when they will be expected to do it." Such skills will provide them more opportunity to work closer, sharper, and less expensively with instructional designers, building transparency of knowledge for team members so as to work together in the operating room better.

This book presents surgeons and allied surgical staff a new yet unexplored aspect of surgical practice, making surgical practice *holistic* by weaving together as teaming all the members. This becomes increasingly important as our healthcare, hospital, framework has become shouldered with ever-increasing responsibilities. I show methods to meet these responsibilities. These methods are directed by the surgeon in order to enhance communication with, education of, and training to staff. As such weaving has typically been the domain of hospital administrators, system inefficiencies arise and may persist confounding the system. By having the surgeon in the driver's seat, his/her "team" actually becomes "his/her." After all, the surgeon is ultimately responsible for care extended.

The book heavily emphasizes practical approaches to build training methods to perform procedures codified as they are expected to be done within or across specific institutions or specific surgeons. Chapters are peppered with specific examples showing applications developed to codify training for those procedures. Users may download files to customize to their purposes, and then share with staff.

My Surgical History

My surgical history began in 1980, just completing urology residency training, I began my practice of surgery at Children's Memorial Hospital, Chicago. I had imagined my goal, using my manual skills to repair baby, infant, toddler, and adolescent body parts. It was unspoken, but yet clear, that the profession at that time had yet be clear in how to do: physical examinations, radiological testing, and surgery planning. The hospital workforce understood this and so intuitively bound themselves together into teams to better how the job got done. This "sync" made for excitement and excellence in building a surgeon's craft.

Then a decade later, in the 1990s, a nursing shortage changed the healthcare landscape. Hospitals required new staff replacements; these were "hires" or "travelers." These "newbies" were briefed in hospital policies, but not necessarily with surgeons' routines. To this end, surgeons now became faced with extending care relying on hospital staff who may not be intimately familiar with surgeons' preferences. Yet surgeons were not trained to utilize tools to promote staff skills or knowledge. During this decade, I became despondent. I wanted to quit. Evelyn, my wife, said, "..don't quit, fix it…." Also, about this time, Michael, my son, introduced me to two things new to me, the Internet and text messaging. I came to realize building communication is the fix healthcare needed. So, I stayed and started my new journey. I started focus groups to be private listening posts with my peers, my staff, and to myself so as to understand where the dysfunctions lay.

My History for Training to Educate

Then about 2010, intrigued, and grateful to Dr. Marleta Renyolds, Surgeon-in-Chief, Mr. George Kennedy, ex-officio chairman of the board, Lurie Children's Hospital, along with Dr. W.E. Kaplan, my previous division head, I was provided the opportunity to learn at the University of Illinois In Chicago, School of Biomedical Visualization, how one could communicate using computer pictures and animations and the software required. I learned the "how to" from the Visualizer teaching staff: Scott Barrows, John Daugherty, Christine Young, and Evelyn Maizels.

I took this new knowledge, approach, and computer skills and applied them to my surgical work. I built the concept of "civilizing" how healthcare is done, by building communication using computer enhanced visuals made under the emblem CEVL (pronounced ce'vl). As an educator, tasked with training surgeons, it was clear the trainees around me could be trained to perform manual skills and could also be taught mental concepts, but a plan to combine them lacked. Enter CEVL…. combining manual skills with mental concepts (Fig. 1).

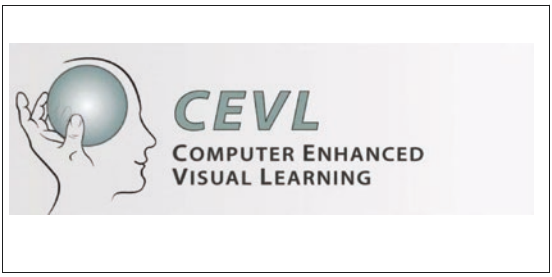

Fig. 1 Enter CEVL….combining manual skills with mental concepts.
https://www.cevlforhealthcare.org/cevl/sn_holistic/ch0_front_book/CEVL_intro.mp4

Intentions

From these perspectives, this book shows examples drawn from various arenas in which a surgeon works. The responsibilities which are placed on the surgeon are shown and a method for their resolution. This resolution is done so as to promote *holistic* practice, involving and weaving all.

Each chapter includes pictures telling the story to get resolution and a sample of the content. Readers may download a typical PowerPoint which they may edit so as to meet their needs. They may view a published Storyline application which shows the content in action. Often there is a "raw" Storyline file which users may download to make their own edits or to provide their hospital-based instructional design team to make such edits.

These files are intended to be modified by readers to fulfill and promote their communications along the care chain among staff. For example, using these templates, surgeons have a tool to newly inform the "scrub tech" (really, operating room technician, ORT) not only the name of an instrument to ready on the Mayo stand, but also its purpose during surgery and the time at which the instrument is expected. Similarly, a circulating nurse may perform a surgical timeout newly customized to suffice the hospital standards, but additionally to reflect the specific needs of the surgeon for that case. The surgeon may create these files or, more realistically, inform his/her staff on the content to be inserted.

The manual draws from the author's methods, pioneered over the past decade, to build platforms to train pediatric urology surgical and non-surgical procedures. This effort has developed surgical pedagogy which was the basis to create practical e-learning for doctors, trainees, and staff. While the manual focuses on personal examples helpful to promote training in pediatric urology, the book audience will realize the principles presented are adaptable to diverse specialties such as orthopedics, obstetrics and ophthalmology, and emergency room. We expect staff surgeons who use this approach will streamline their performance of surgery because their staff becomes more easily informed of the attending surgeon's expectations on how the procedure is to be done.

I am looking to find that your experience with the CEVL method will improve communication thereby improve staff/patient satisfactions and care outcomes. Because of these results, I can't help but wonder if you will find lessening burnout experiences.

Written in the time of Novel Coronavirus-19
Chicago, 2020/2021

Chicago, IL, USA Max Maizels

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Chapter 1
How to Use This Book

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1.1 What Will This Book Do for Me?

Applying the practices this book shows is expected to improve your effectiveness in performing surgical procedures. This is accomplished by creating your surgical "ecosystem." This book shows you how you may inform your surgical and para-surgical staff the knowledge and skills you expect them to know. The content may be made by yourself or under your supervision of your hospital staff. Because you will declare expectations explicitly, staff comfort and your "well-being" are expected to improve.

Sophisticated practice of surgery has gradually evolved over the years beginning with the introduction of general/regional anesthesia. Surgeons would be installed as the hero to do the manual work (surgeon, derived as manual work or surg-eon) and bark orders to the nearby staff. This had been how it was done, and fortunately this "MO" has gradually withered. It gradually became a setting in which the current norm is a "corporate" influence to provide teamwork, evidence basis, training new staff, re-training experienced staff, accountability, and the list goes on.

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This book, a manual really, is aligned with these concepts and so:

- O*rients* you to a fresh concept on how your practice of surgery may be set up to be holistic, involving the entire OR theater as "players." These players may be those staff who are on/off the OR stage. As this mind set is a new *construct* which CEVL has codified, it is referred to as a CEV-ule. This CEV-ule construct is generalizable and not only has been applied to the author's specialty of pediatric urology but also to diverse surgical specialties such as orthopedics, obstetrics, anesthesia, and others.
- S*hows* examples of how to weave in your support staff to make the practice of surgery more effective and pleasant, and because of these innovations, your outcomes will likely improve.
- P*rovides* you with downloadable files as PowerPoint or Storyline3 software. These are DIY (do it yourself) and so you may edit the files to match surgeries you do.

Your OR staff accesses this information build so as to be ready for **your** case; not your partner's case, not how it is shown in a reference textbook, not how you did it last year, but how **you** do it now. This knowledge will translate to new OR efficiency, improve "well-being" in the OR as a surgeon, a surgical nurse, anesthesiologist, or surgical administrator. Increasing your well-being will provide you with more bandwidth to be creative, empathic to your staff/patients, and reduce burnout.

1.2 How to Use This Book

> We all live in a surgical ecosystem…. find your niche, identify others' niches, and make them eco-friendly

This book on surgery does not showcase how to **perform** surgery. If you want to know this, pick up a surgical atlas. Rather, the goal of this book is to showcase a new perspective of considering surgery as a holistic practice, and so I look to invite and enable surgeons to weave a *holistic** perspective into their surgery practice. The term holistic as applied to the context of surgery practice in this book is the view that surgery performance is improved if it incorporates the holistic perspective that …

> …surgery is a process which benefits from: recognizing that there is a diverse group of workers who are integral to surgery, identifying them, and then creating an inclusive space which weaves them into the process…..

This differs from the dictionary definition of holistic.[1] Those intrigued by this approach will utilize this book as a "how to" manual to create a holistic surgical practice in their operating room/institution.

The "how to" begins by surgeons re-conceptualizing their practice of surgery so as to identify those segments which do NOT involve their actual performance of surgery. For example, while surgery requires the use of sterile surgical instruments, it also requires the scrub tech to know the names of the instruments and which part of the case they are likely to be used and understanding how they will be used. Internalizing this importance leads to easy process of providing the "scrub tech" with their vision of how the Mayo stand is laid out (figure below).

Providing the "scrub tech" with the layout of the Mayo stand as a "silverware drawer" provides consistency between staff as they turnover. Figure 1.1a shows the orientation of the information within the surgical procedure; clicking the magnifiying glass show (details) bottom for an enlarged view (Fig. 1.1b).

The overlays assure the instruments are named consistently between staff even if the same instruments are named differently at a different hospital. Here the formal name of foreceps are shown, but also they are labeled as used everday in the authors OR: baby (the smallest), mother (bigger), father (even bigger), grandfather (these are locking forceps so they are expected to be "stiff").

Image technique: image (digital camera), image imported into power point as a slide; slide copied, image enlarged, then labels applied to the duplicate slide. Magnifying glass is a stock image.

So please use this book as a manual which enables you to make applications and promote a holistic environment. This book strives to accomplish this goal by providing instructions and informing tools to achieve this end. While the "application making" in this manual has typically been the realm of "instructional designers," I believe making such applications is better served by the healthcare workers themselves. Who better than they? They know their field and its frailties, so they can fix the surgery practice in their "ecosystem" themselves, really a surgeco system.[2]

---

[1] Online dictionary definition (see below).

A holistic approach means thinking about the big picture. ...

(https://www.google.com/search?q=holistic+definition&oq=holistic+&aqs=chrome.1.69i57j0i433l2j0i457j0i402j46i175i199j0i433j69i61.4928j1j7&sourceid=chrome&ie=UTF-8)

- In a health care setting, holistic refers to addressing the whole person, including their physical, mental, and emotional health, while taking social factors into consideration.
- In medicine, holistic is characterized by the treatment of the whole person, taking into account the mental and social factors, rather than just the symptoms of a disease.

[2] Surgeco is pronounced sərj ē'ko as in surg+the sound you might make if you see a mouse.

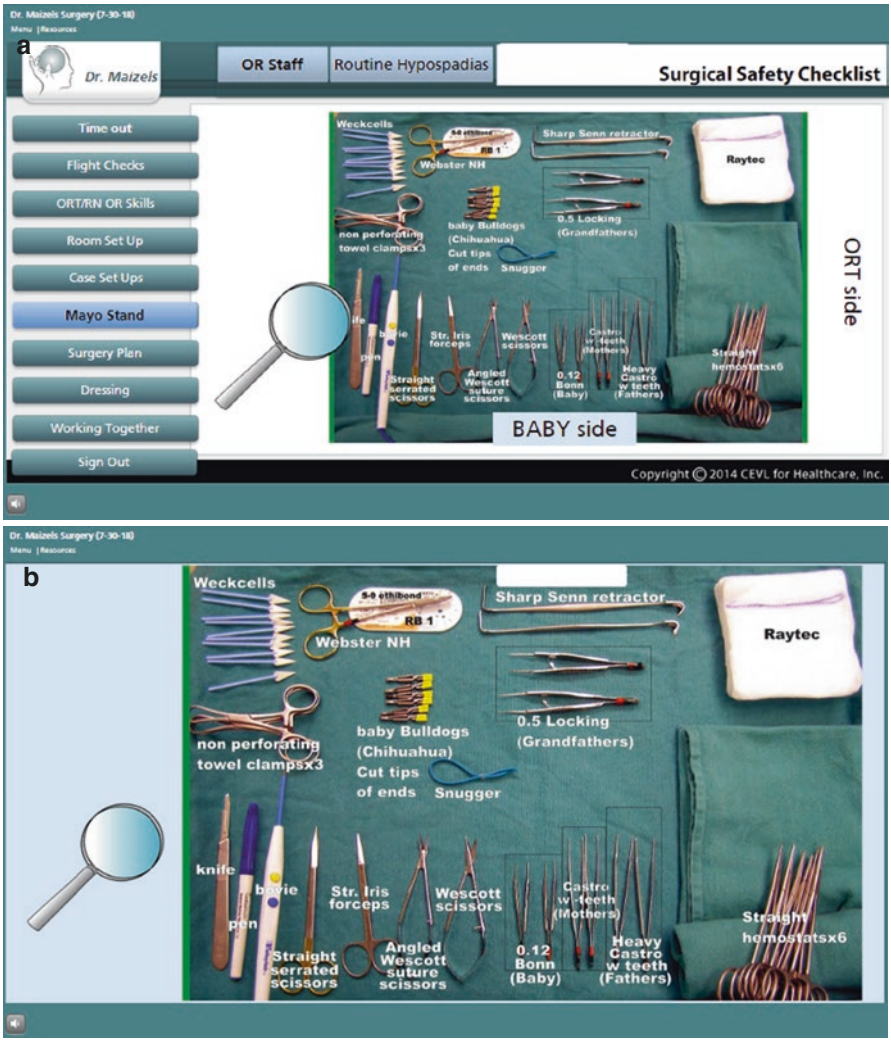

Fig. 1.1 (**a**) Permanent position of instruments in in-room OR monitor (**b**) and magnified view of instruments shown in main panel

Exploring this perspective of surgical practice as an ecosystem, I ask the reader, thinking of him/her –self as a denizen in this space, please identify yourself occupying one or many of these niches below:

Personal place

- Surgeon, circulating RN, ORT, resident in training, medical student, surgical pathologist, radiologist, hospital nurse on a surgical floor, hospital nurse caring for pre-/postoperative patients, and many other professionals in the surgery ecosystem

Group

- "Team" on rounds which may include not only MDs and nurses but also pharmacists and medical librarians
- OR team
- Surgeons, operating room nurse staff, anesthesiologists, pharmacists, surgical pathologists, radiology technician
- The hierarchy of members within a division, department, program, intra-institution, but not limited to inter-institution.

Having placed yourself within one or several of these niches, think of information which all of your niche-mates would like. Use this book to learn how to provide it to them!

1.2.1 Software

I believe the current fund of knowledge as softwares is currently available for grass root healthcare workers to improve the health of how hospitals/healthcare work. It is commonly available without charge or reduced charge through the employer as a hospital/school. This is a time to bridge the knowledge gap for healthcare workers to create online learning for their surgeco. This task had previously been restricted to instructional designers for such opportunities. This book aims to flip this restriction so as to provide healthcare workers the opportunities, encouragement, and tools to do this. I look to "birthing" of a grassroots swell which will create CEVL style content which infuses harmony into our many surgecos (Table 1.1).

Table 1.1 Software and their applications

Assimilating information	Power Point, Storyline
Edit images	Adobe Photoshop
Edit movie	Adobe Premiere Pro
Edit narration/audio	Adobe Audition
Survey data	JotForm

1.2.2 *Examples of CEV-ule*

Many of the examples/samples shown in this manual are available for direct viewing at www.jpurol.com (Fig. 1.2)

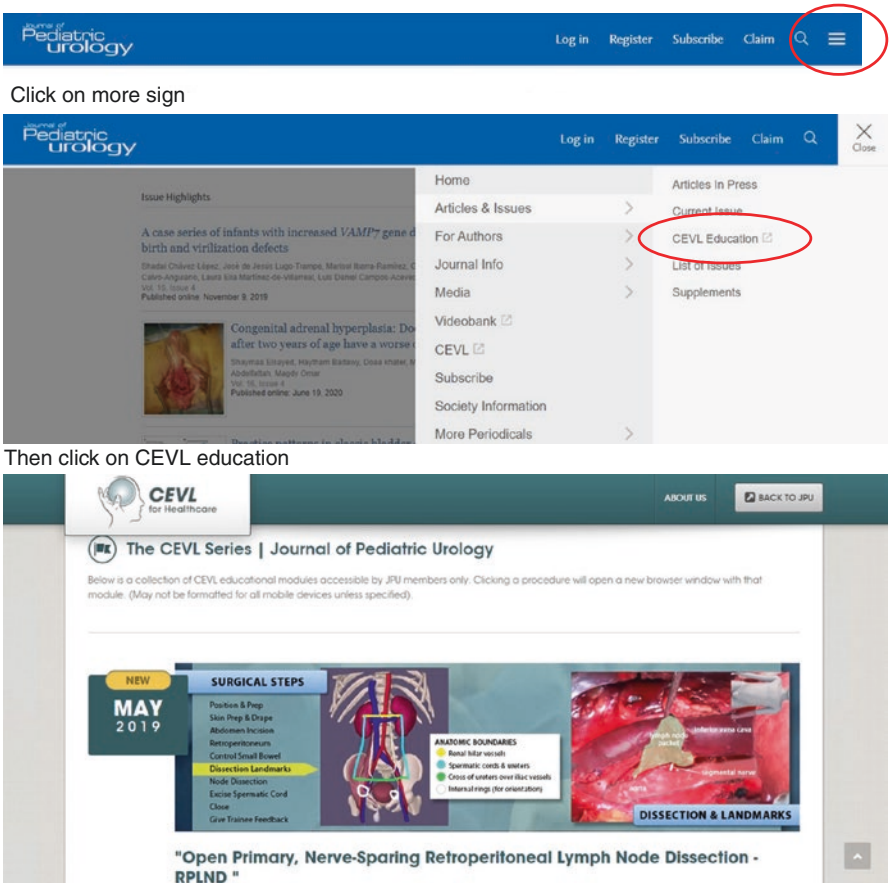

Fig. 1.2 An example of CEV-ule

1.3 From Concept to Launch

You will recognize that the pervasive theme in this manual is shown as a "secret sauce"; we are releasing the secret (Tables 1.2 and 1.3).

Now let's get started.

Table 1.2 The secret sauce of CEV-ule building

CEV-ule building – conforms to the "10 rules" concept. Here is the 'secret sauce" recipe:
1. Gather your thoughts into a PowerPoint
2. Identify the users who you expect to access the information
3. Identify a champion for this CEV-ule
4. Have a focus group with the users
5. Show them your thoughts
6. Ask for their thoughts/perspectives
7. Make update edits against their ideas/views
8. Acquire video/pictures footage to complement the information
9. Make it interactive
10. Your instructional design team web publishes the power point

Table 1.3 Create CEV-ules to promote harmony in your surgeco. CEV-ules are grouped by healthcare sector

Staff surgeons & anesthesiologists	Enable surgeons to work synchronously, as a team, with their operating room staff, even though they may have not worked together previously How to train residents to perform surgery
Resident trainees	How to utilize methods which they may adapt to organize their training needs
Residency program directors	How to objectively show proficiency in skill training
Operating room radiology technicians	How to better integrate into the operating room procedure in which they are asked to provide radiographic images
Office nurses and advanced nurse practitioner	Informing staff of routine procedures, such as interpreting and X-ray
Emergency room physicians & nurses	How to develop uniformity in understanding plan of care between various healthcare providers in the emergency room: ER physician, surgeon, and radiologist
Device manufacturers	How to provide OR staff clarity in utilization of their devices
Patients and their families who receive surgical care	Healthcare providers may create materials which instruct their patients of surgery they consider
Hospital administrators	How to weave staff to set up an outpatient clinic

Chapter 2
CEVL Method to Train

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2.1 Surgeons Build Your Own Surgical CEV-ules

2.1.1 Strategy

The content build stylistically is online learning module, but it is specified as a CEV-ule. This is because CEV-ules show a characteristic structure. We will show this structure shortly. The goal of a built CEV-ule is to promote clear communication in the real-time healthcare space. This is achieved by providing users with content ***away*** from real-time healthcare which is accessible and transparent to all those contributing to a patient's care. Such content is presented using a spectrum of formats: static and animated text, narration, static pictures, pictures with interactivity, clinical video with annotations and stylized animations. Examples shown throughout this manual derive from a pediatric urology workflow, but have already been applied to orthopedics, obstetrics, anesthesia, otorhinolaryngology and others. It is clear then, the method is adaptable to other specialties, including yours. So, as

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you view the examples, simply substitute the key words in your special area of expertise for those shown.

The intention is to empower you and your staff with a "code of conduct" book. Here by conduct, it is not a moral or ethical conduct, rather how you/your staff conduct your activities so as to work with each other with clarity. Building this end goal is meant for your oversight, not necessarily for you to "make." Rather, the book is organized so your ancillary staff can create the content you desire under your "oversight." In this way, they will learn better your "code" and you will have a chance to self-reflect on where you may wish to improve your code.

> Don't be intimidated by computer software …. they are your friends, hug your friends

2.2 CEVL Method for Open Surgery

The key training groups that comprise a CEV-ule are shown in the table below and a working example of various of these training groups is shown on ureter reimplantation (Table 2.1).

Table 2.1 Essential elements contained in a CEV-ule for ENTIRE OR room staff

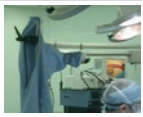
Key Training Groups	Explanation
1. Preparations for the staff to suffice surgery	Surgeon, nurse staff, anesthesiology staff, and ancillary staff (e.g., X-ray tech, pathologist) review preparations they are expected to suffice.
	Scrub tech Instruments needed are identified by components mayo stand organization is stylized skill sets needed are enumerated
	Circulating nurse Patient position is detailed Diverse aspects of surgery planned is presented for nurse oversight
	Anesthesiologist Patient position, details of airway management, regional block considerations, when to expect "wake up," are there medications surgeons plan to use which could affect anesthesiologists medications (e.g., local injected epinephrine)
	Content for ancillary staff X-ray tech How their role to take X-rays is integrated into the procedure Pathologist Agreements on specimen processing

Table 2.1 (continued)

Key Training Groups		Explanation	
5. Surgery plan		Surgical procedure is presented as an explicit plan Begin the plan with a section on strategy to perform the procedure. It is organized to show the broad components of the surgery plan and the specific steps performed in each component The plan is also presented to the OR nurse, scrub tech, and anesthesiologist so they may team their work together "Tips" on the case are embedded and disclosed interactively Procedure practices of other trainers in the "group" are included	
6. Surgery procedure		Present the content as pictures, video, and text as organized in the surgery plan	
7 Pre-/post-surgical nurse		Preop	Nurse staff may access information to reply to patient inquiries preoperatively "on demand"
		Postop	Nurse staff may access information to reply to patient inquiries pertinent to post-surgical procedure care
8 Trainees	Overview		
		Includes background knowledge pertinent to understand the surgery: diagnostic tests, indications, possible diagnoses, treatments	
	Surgical preparations		
	1. CEVi (Computer Enhanced Virtual Interactive)	Trainees are introduced to skills needed through a computer application They perform simulation practice using a computer exercise, a virtual interactive (CEVi)	
	2. Simulation practice	Trainees "sim" practice skills needed using a physical object which takes them through the "toughest" part of the procedure Show trainees how they may make a "low fidelity" sim themselves	
	3. "Readiness" quiz	Trainees complete a computer application which shows they understand the surgical plan	
	4. Feedback/ remediation	Trainees are provided feedback on skills they demonstrated in performing the procedure along with remediation which will guide performing better at the "next" case	

2.2.1 Software to Build Your CEV-ules

The figure below show software you may use. They are categorized based on communication purpose, that is, whether this communication is with tabular information (Power point), images (camera and photo editing software), narration of text or video (Adobe Audition), and others as you will encounter. It is expected that this list will change as companies strive to improve their products. The table below shows items compatible with both PC, MAC, and mobile devices.

Most common tools to create content to communicate to users are given below. For most purposes, relying on the following tools/software suffices.			
pictures and video. cameras			
	Mobile phone	Hand-held digital camera	
			Hand-held digital camera mounted on an overhead boom (e.g., scaffold)
GoPro surgical video recording. Endoscopic videos are natural, but having a simultaneous audio recording (e.g., from a cell phone) will facilitate video editing	"Smart phone" acquires video and pictures	Hand-held digital camera	
E-learning presented as tabular information with interactivity (e.g., sugical plan)			
Articulate Storyline Web publishing; presents learning content with/ without interactivity; hosts video, pictures, audio	Microsoft Power Point Users may input their contents to be routed for online view or to storyline for online publication		
Editing pictures, video, audio (Adobe suite). Software are used to de-identify images, video footage, and make animated overlays			
Adobe Photoshop provides drawing and image editing	Adobe Premiere Pro Linear video editor	Adobe Audition Audio recording and editing	
Data collection based on form creation and distribution			
Feedback – survey data			

FTP server	
	Various commercially available softwares provide file transfer protocols (FTP) which enable transfer files across the web as FTP servers and clients. They are pretty much all the same and compete with each other for lowest prices to advertise. Choose one which provides website security with firewall and backup of data
clip art ppt http://insertmedia.office.microsoft.com	
Conferencing by computer screen sharing	
	Various platforms for screen sharing to meet and discuss progress of CEV-ule building are available. Google and Microsoft also offer competitive products
clip art ppt http://insertmedia.office.microsoft.com	

Table 2.2 shows the workflow to build CEV-ules in ten steps.

Once these steps are accomplished, then provide your instructional design team the file so that the information may be published for online access.

Table 2.2 Workflow to build CEV-ules in ten steps

Start by building a surgery plan		
1	Identify a CEVL "champion" to lead creation/updates/ content acquisition. You and your champion work collaboratively as below	In an academic setting, this could be a trainee. Such a role could suffice a training requirement to build a quality improvement project (QI)
2	Enter your ideas into Microsoft PowerPoint	
3	Share your Microsoft PowerPoint with your colleagues	
4	Make iterative updates to reach consensus with your colleagues	iteration one of several

(continued)

Table 2.2 (continued)

<table>
<tr><td colspan="5">Start by building a surgery plan</td></tr>
<tr><td rowspan="11">5</td><td rowspan="11">This table is made in PowerPoint</td><td rowspan="11">You have reached consensus for surgery plan. It structures the surgery plan for “pyeloplasty” as conceived by the attending surgeon.</td><td colspan="2">Pyeloplasty for UPJ Obstruction</td></tr>
<tr><td>Component</td><td>Steps</td><td>Scrub tech</td></tr>
<tr><td>Cystoscopy/ retrograde</td><td></td><td></td></tr>
<tr><td>Reposition for pyeloplasty</td><td></td><td></td></tr>
<tr><td>Flank incision</td><td></td><td></td></tr>
<tr><td>Expose retroperitoneum</td><td></td><td></td></tr>
<tr><td>Identify and isolate ureter and pelvis</td><td></td><td></td></tr>
<tr><td>Dismember pelvis</td><td></td><td></td></tr>
<tr><td>Posterior wall</td><td></td><td></td></tr>
<tr><td>Prepare/ place KISS catheter</td><td></td><td></td></tr>
<tr><td>Anterior wall</td><td></td><td></td></tr>
<tr><td>Place stent/drain and close</td><td></td><td></td></tr>
<tr><td>Dressings</td><td></td><td></td></tr>
<tr><td rowspan="3">6</td><td rowspan="3"></td><td rowspan="3">Now, you and your champion fill in the steps for each component. “Steps” for cystoscopy are shown here.</td><td colspan="2">Pyeloplasty for UPJ Obstruction</td></tr>
<tr><td>Component</td><td>Steps</td><td>Scrub tech</td></tr>
<tr><td>Cystoscopy/ retrograde</td><td>• Obtain stirrups matched for age
• Place patient into lithotomy position while moving lower limbs symmetrically
• Pad lower extremity
• As many more details as you desire</td><td></td></tr>
<tr><td>7</td><td></td><td>Share your PowerPoint with your colleagues at your institution iteratively to reach consensus</td><td colspan="3">zoom</td></tr>
</table>

(continued)

Table 2.2 (continued)

Start by building a surgery plan

This table presents the surgery plan for Cesarean Section; we show this method applied to Primary Cesarean Section. It shows organization as "Components" and "Steps."
Now
zoom
with your colleagues to agree on components and steps.

Primary Cesarean Section

	Components	Steps	Instruments
OPEN	1. Mark Skin Incision	• Test for adequate anesthesia • Make curvilinear incision line 2 cm above public symphysis	
OPEN	2. Make Skin Incision	• Announce skin incision; incision thru skin and down to fascia • Avoid (or ligate) the epigastric vessels	
OPEN	3. Open Abdominal Wall	• Incise fascia without cutting muscle • "Twist & Shout" to open rectus fascia • Dissect fascia off the muscle; Incise the line alba	
OPEN	4. Open Abdominal	• Identify the peritoneum; Transilluminate before opening it • "Catamaran Hike" Stretch the incision	
OPEN	5.1 Create Bladder Flap	• Palpate uterus position; location of vessels • Incise vesicouterine peritoneum, "twist & shout" again • Bluntly dissect bladder away from incision site	
OPEN	5.2 Uterine Incision	• Judge incision adequacy; judge thickness ofuterine wall • Announce uterine incision; Transverse incision to amniotic sac • Extend hysterotomy, then judge if adequate	
DELIVER	6.1 Deliver Baby (Cephalic)	• Break amnion; Announce color of amniotic fluid • Life baby's head from pelvis safely; Check for nuchal cord	
DELIVER	6.2 Deliver Baby (Breech)	• Break Amnion; Announce color of fluid; Announce presenting part; Place hands on correct bony landmarks of baby to deliver	
DELIVER	6.3 Cord Blood	• Clamp & cut umbillcal cord • Obtain cord blood specimens	
DELIVER	7. Deliver Placenta	• Deliver placenta and membranes • Exteriorize and wrap uterus • Assess uterine tone; mamually curette uterus	
CLOSE	8. Repair Hysterotomy	• Inspect for lacerations; Palpate uterine vessels • Close with running locking suture; sew w/o touching needle • Assess hemostasis; replace uterus	
CLOSE	9. Tubal Ligation	• Identify fallopiann tubes • Ligate 3cm "kunckle" of each tube	
CLOSE	10. Close Abdomen	• Reassess all layer for hemostatsis; Close fascial incision • Close skin with subcuticular suture or staples	
CLOSE	11. Clean up & Move patient	• Help clean the patient; put on sterile dressing • Help transfer patient onto gurney	

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Respect variations on "how the case will be performed" by surgeon

Expect different attendings in your group have "preferences" they would like respected. Explore how to preserve their preferences, yet providing a complete "templated" surgical procedure.

8. Get agreement from your surgery colleagues.
zoom
Next, it is time to weave the Operating Room scrub tech into the conversation. We do this by indicating the instruments which are expected to be used at each component of the case.

Primary Cesarean Section

	Components	Steps	Instruments
OPEN	1. Mark Skin Incision	• Test for adequate anesthesia • Make curvilinear incision line 2 cm above public symphysis	Marking pen, Allis clam/hemostat
OPEN	2. Make Skin Incision	• Announce skin incision; incision thru skin and down to fascia • Avoid (or ligate) the epigastric vessels	Scalpel, lap pad sponge(s)
OPEN	3. Open Abdominal Wall	• Incise fascia without cutting muscle • "Twist & Shout" to open rectus fascia • Dissect fascia off the muscle; Incise the line alba	Mayo scissors, Russians, Kocher clamps
OPEN	4. Open Abdominal	• Identify the peritoneum; Transilluminate before opening it • "Catamaran Hike" Stretch the incision	Metzenbaum scissors, Smooth pickups
OPEN	5.1 Create Bladder Flap	• Palpate uterus position; location of vessels • Incise vesicouterine peritoneum, "twist & shout" again • Bluntly dissect bladder away from incision site	Smooth pickups, Metzenbaum scissors, Blasser blade
OPEN	5.2 Uterine Incision	• Judge incision adequacy; judge thickness ofuterine wall • Announce uterine incision; Transverse incision to amniotic sac • Extend hysterotomy, then judge if adequate	Scalpel, suction, bandage scissors
DELIVER	6.1 Deliver Baby (Cephalic)	• Break amnion; Announce color of amniotic fluid • Life baby's head from pelvis safely; Check for nuchal cord	Allis clamp, prepare mother for pressure
DELIVER	6.2 Deliver Baby (Breech)	• Break Amnion; Announce color of fluid; Announce presenting part; Place hands on correct bony landmarks of baby to deliver	Allis clamp
DELIVER	6.3 Cord Blood	• Clamp & cut umbillcal cord • Obtain cord blood specimens	Curved 6 clamps, bandage scissors
DELIVER	7. Deliver Placenta	• Deliver placenta and membranes • Exteriorize and wrap uterus • Assess uterine tone; mamually curette uterus	Ring forceps, moist laps x 2
CLOSE	8. Repair Hysterotomy	• Inspect for lacerations; Palpate uterine vessels • Close with running locking suture; sew w/o touching needle • Assess hemostasis; replace uterus	T clamps, needle driver, Russian forceps
CLOSE	9. Tubal Ligation	• Identify fallopiann tubes • Ligate 3cm "kunckle" of each tube	Babcock clamp, free ties, Kelly clamp
CLOSE	10. Close Abdomen	• Reassess all layer for hemostatsis; Close fascial incision • Close skin with subcuticular suture or staples	Pickups w/ teeth needle driver, sloppy wet lap, Adson pickups, stures
CLOSE	11. Clean up & Move patient	• Help clean the patient; put on sterile dressing • Help transfer patient onto gurney	wash cloths, gurney

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9 You will come to experience improved efficiency as your OR staff become aware of needs you expect to have sufficed at each component/step of the case. Also, please expect improved staff well-being as part of the case.

10 Lastly, include other members of the team such as:

Anesthesia	Inquire what aspects concern them. Typically it involves: Airway management and so expected position of the patient How to determine when to plan "wake up" Is there significant blood loss expected, if so, at which component
Radiology	How to integrate performing in OR X-rays and X-ray technician
Pathology	Assuring correct labeling of specimen, alerting pathologist of specimen
Post-op recovery room	How are they to understand expectations for the surgical procedure: dressing appearance, bleeding, etc.

2.2.2 *Acquire OR Footage*

Now that you have general agreement on the surgery plan and instruments needed, go to the OR and do your case. Acquire video footage using a camera of your choice as shown in the following figures such as for minimally invasive surgery or open surgery (Fig. 2.1).

Acquiring video for open surgery is more challenging. See the following figures for a few methods (Figs. 2.2 and 2.3).

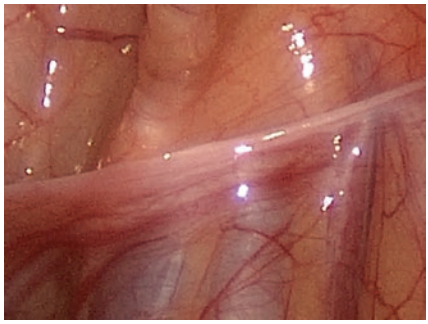
Video taken at "minimally invasive surgery" may be accomplished using the tools in place for such surgery.	
Acquiring video for "minimally invasive surgery" inherently provides video footage. You may need to set up a simultaneous audio recording (e.g., cell phone audio recorder) to be able to interpret video footage at later editing.	
Here at surgery to repair an impalpable testis, a laparoscopic view is used and footage image be acquired from the "lap" camera.	

Fig. 2.1 Repair of an impalpable testis – a laparoscopic view is used and footage may be acquired from the "lap" camera

Fig. 2.2 Author wearing a head mounted GoPro camera. Footage acquired may be viewed by synchronizing wirelessly to a smart phone

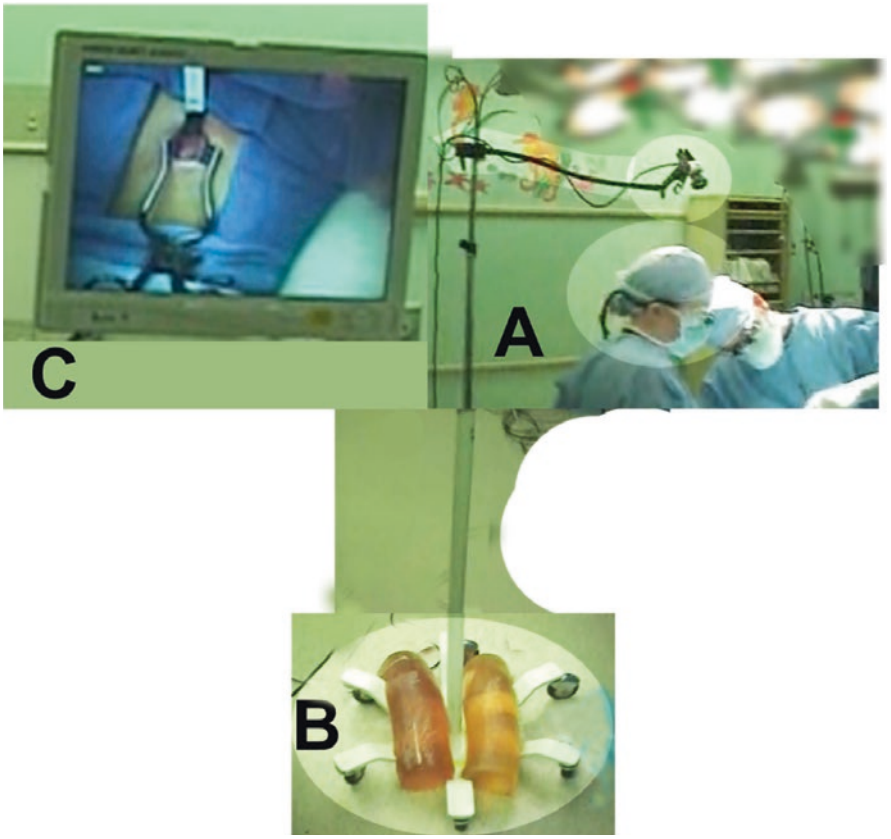


Fig. 2.3 A digital video, "hand-held" camera, or laparoscopic camera head as shown in this figure may provide an overhead view by mounting the camera on (**a**) a modified IV pole with goose neck camera adapter. Camera attachment and author are highlighted. (**b**) Heavy duty patient supports are borrowed from plastic surgery suite to immobilize camera stand. (**c**) Video footage is presented for entire operating room staff to view. Otherwise they may be alienated from the surgery process

As an alternative, OR overhead camera can be used. In room, overhead lights may provide an overhead camera (commonly no audio, so be prepared to have an audio device, your cell phone, to record audio concomitantly).

Figure 2.4 describe the editing process for footage you acquired.

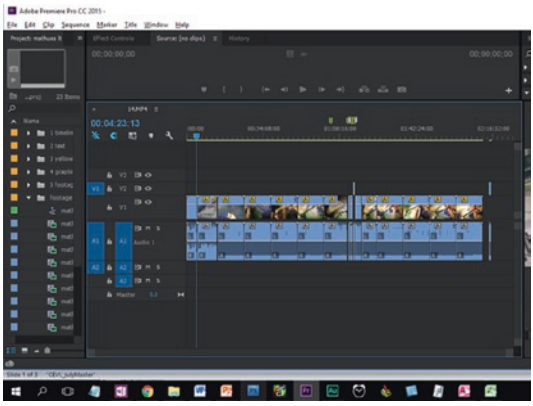
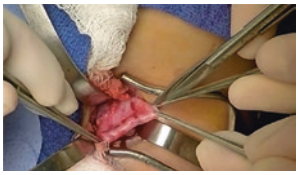
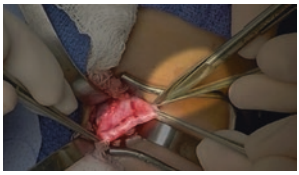
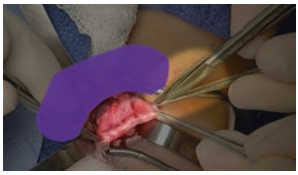
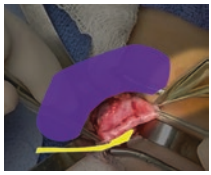
<table>
<tr><td>edit video footage acquired in operating room</td><td colspan="2">  </td></tr>
<tr><td></td><td colspan="2">Adobe Premiere Pro is the tool to edit linear video.</td></tr>
<tr><td>Photoshop is used to edit pictures below.</td><td>  </td><td></td></tr>
<tr><td></td><td colspan="2">raw image above. The anatomy behind this operation on the obstructed kidney pelvis is unclear as only the kidney pelvis is exposed. Photoshop is used to provide anatomic clarity by showing kidney and ureter</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>image brightness and contrast improved</td><td>overlay gives a mental concept of the location of the renal parenchyma (purple)</td><td>overlay gives mental concept of the anatomy behind the high insertion anomaly of the ureter (yellow)</td></tr>
</table>

Fig. 2.4 The figure describe the editing process for footage you acquired

2.3 CEVL for Endoscopic Surgery

Teaching endoscopic surgery utilizes the same principles as for open surgery. The following figures depict content build for the pediatric urological procedure of ablation of posterior urethral valves. The procedure is recognized as difficult for trainees to grasp, as the basic tenets, mental concepts, and preparations to do the case have not been explicitly presented to them in other platforms. I have applied CEVL methods to present this information. I look to learners for feedback on the content and how it may have helped them and nurse staff (Figs. 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, and 2.12).

Fig. 2.5 CEVL – overview. The landing page shows the sections of the CEV-ule. The green shading on the wrist watch is a reference to the location where incision of urethra valves may begin

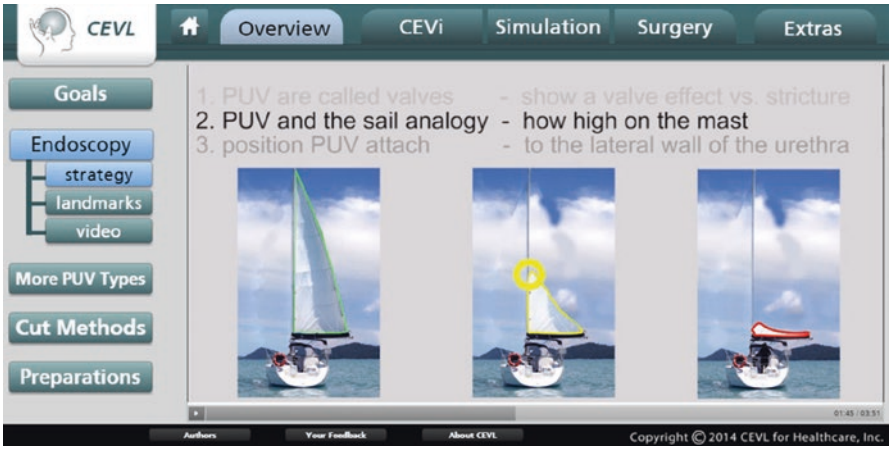


Fig. 2.6 The analogy to provide strategy approach to the procedure is the appearance of sails in a single mast boat is raised fully (left), partially (middle), or not raised (right)

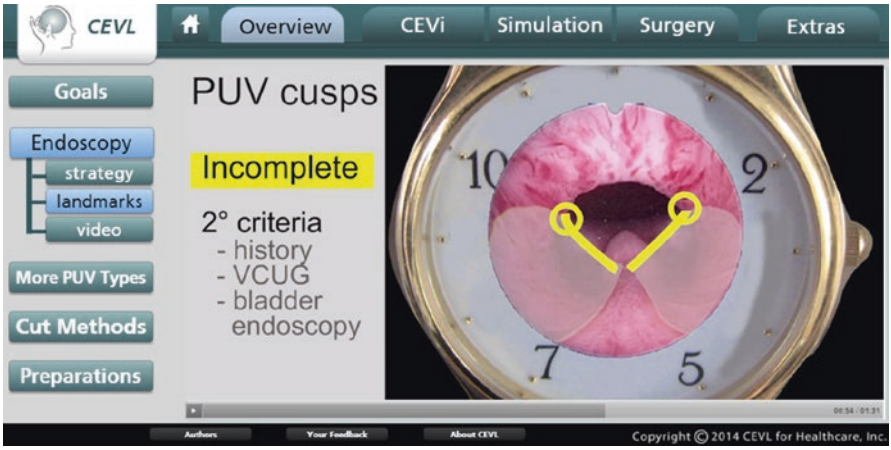


Fig. 2.7 The analogy is taken further to show the landmarks for valve incision as would be depicted by the hands on a clock face

Fig. 2.8 Clinical video now applies the "strategy" and "landmarks" concepts here shown for a complete valve

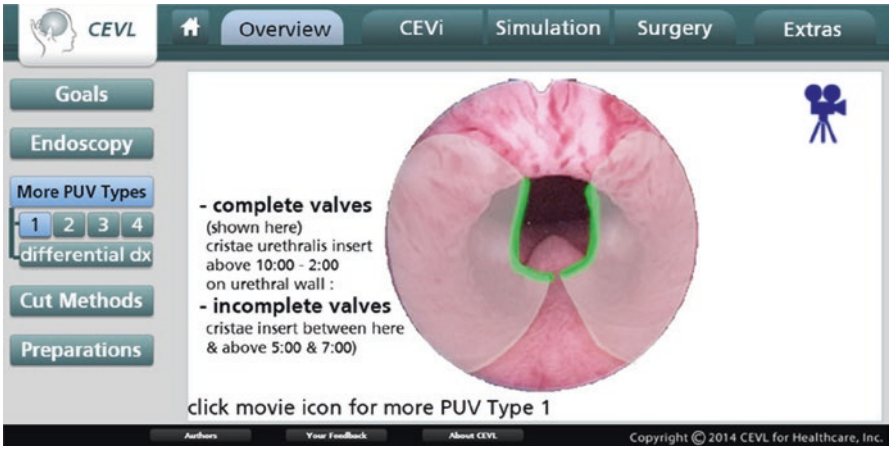


Fig. 2.9 Variants of valve types

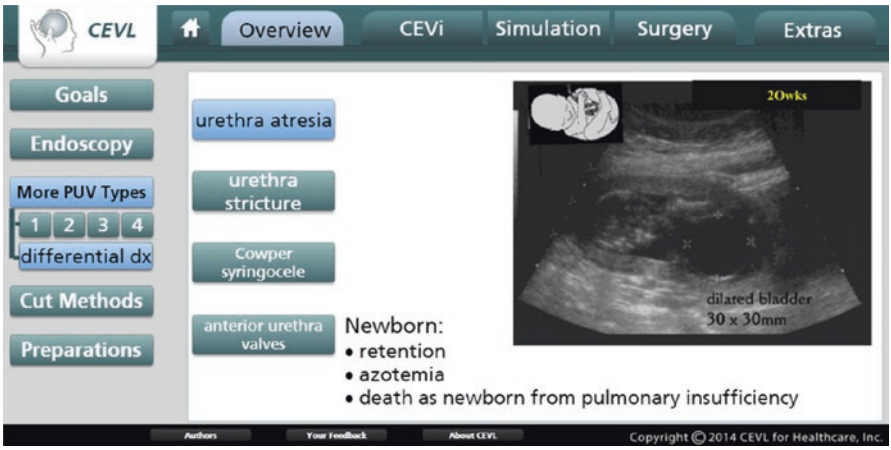


Fig. 2.10 Differential diagnoses are presented (here urethral atresia)

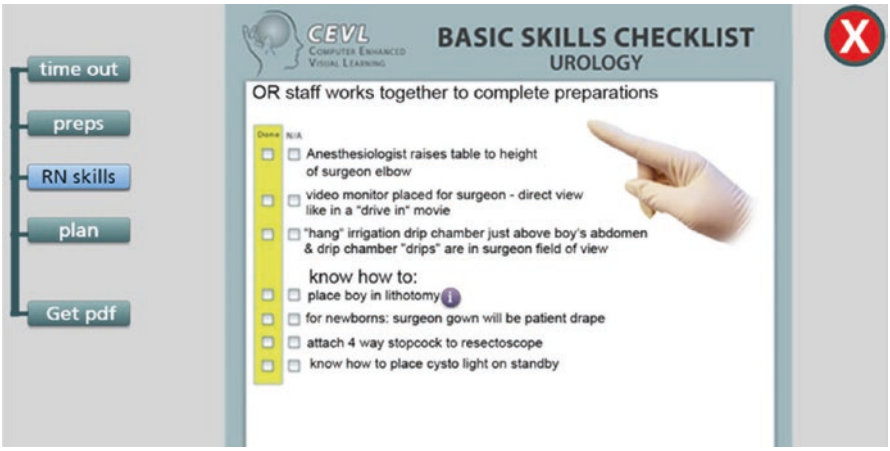


Fig. 2.11 An overview that provides staff with information important to prepare for the case. OR nurse staff skills expected to be performed are shown. They are presented such that the staff may learn them

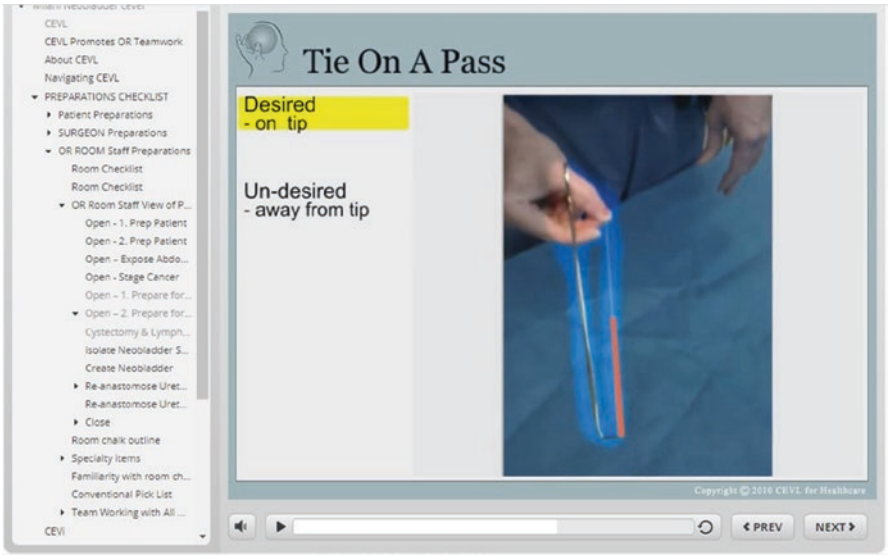


Fig. 2.12 Surgeon informs OR staff, particularly scrub tech, the details on skill sets important to work together. The video and overlay emphasize how to load a Mixter clamp to facilitate tying in a deep hole

Click for entire interactive for NeoBladder

2.3.1 CEVL – CEVi (Simulation as an "i"nteractive)

Providing an interactive to inventory the learners knowledge supports their confidence, especially permitting them opportunity to re-take until they pass (Figs. 2.13 and 2.14).

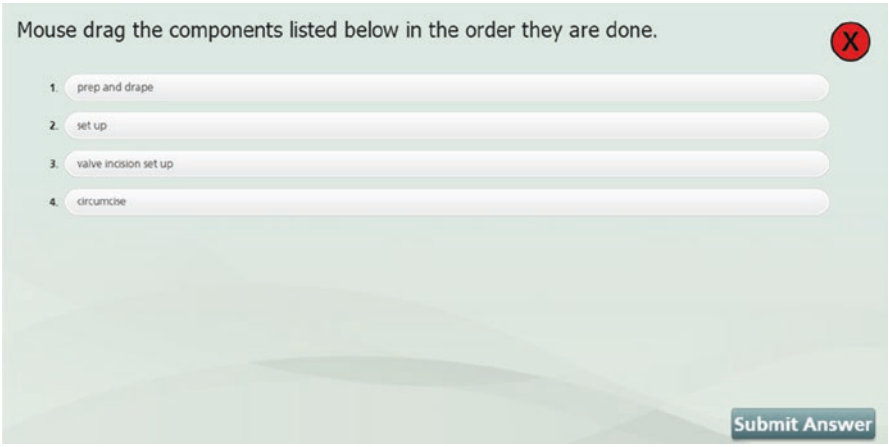


Fig. 2.13 An example of arrange-in-order questions that test learners knowledge of the procedure plan

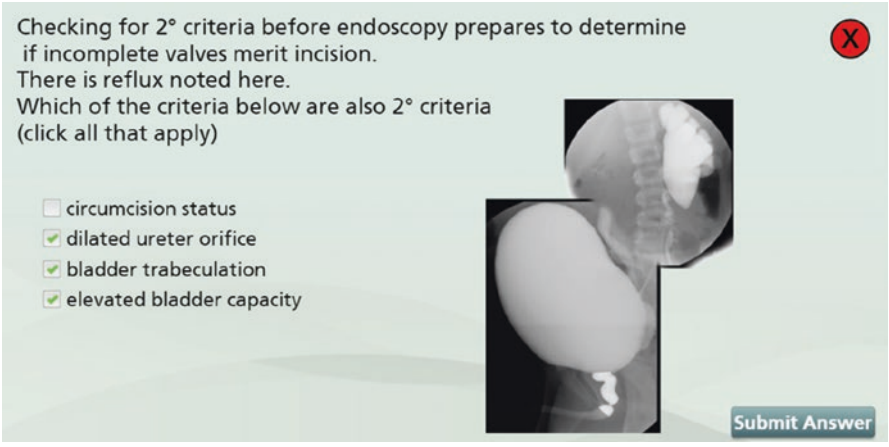


Fig. 2.14 Knowledge questions test learners general knowledge of the procedure

2.3.2 *CEVL – CEVL Simulation of Surgery* (Fig. 2.15 and 2.16)

Fig. 2.15 Various cases are presented to engage the learner in the findings as would be encountered at surgery

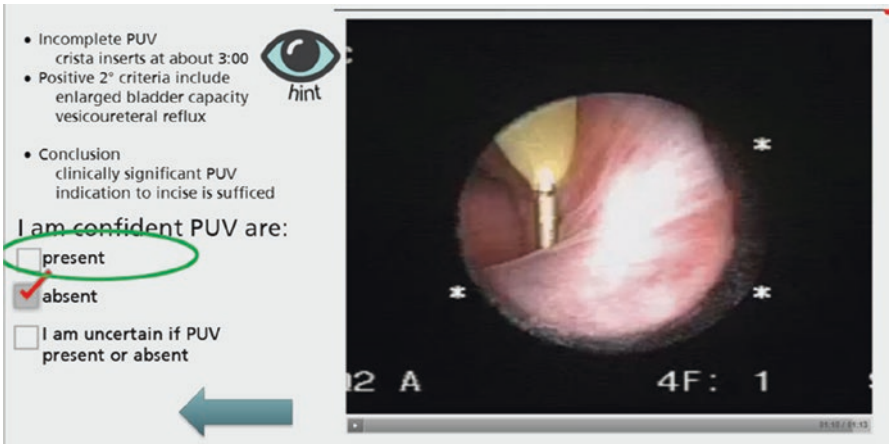


Fig. 2.16 Image showing the confidence of learners on valve status after watching the video. The learner is confident that valves are absent. The correct answer is circled in green as present

2.3.3 CEVL – Surgical Procedure

Presenting the learner with the procedure plan as "components" (left panel, Fig. 2.17a) with accompanying steps (shown on main page of Fig. 2.17a) along with a movie (clickable icon in upper right corner of Fig. 2.17a) gives the learner a strong basis to enter the operating room, knowledge of the procedure, how to do it, what is expected of him, and how to engage the staff.

Fig. 2.17 Procedure plan presented as "components." (**a**) The component "Assess for PUV" is shown with the accompanying steps and clickable video. (**b**) The video displays how to "Assess for PUV"

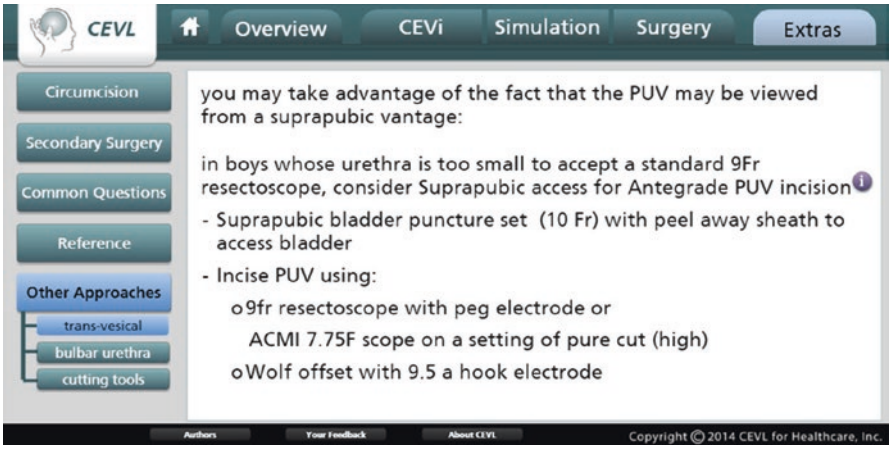


Fig. 2.18 Extras section. An alternate suprapubic approach of is presented in this image

2.3.4 CEVL – Extras

An extras section provides background; many but not all learners find helpful (Fig. 2.18).

view interactive

2.4 Surgeons Build Your Own Nonsurgical CEV-ules

Nonsurgical skill are an important aspect to the daily life of a surgeon and so become important to the allied workers such as PA, NP, and trainees, and the list goes on. So, providing them with a ready reference on "how to" "do it as you would like it done" is important to your practice. This could apply to the following arenas:

- Office nurse staff who reply to patient questions
- Reading and interpreting ultrasound
- Perform specialty consultation
  - Prenatal Pediatric Urological Maternal/Parental consultation

building algorithms to:
Make diagnosis in complex fields using branching tree decision-making such as:

- Assessing genitalia prior to hypospadias repair (GUMS)
- Establishing treatments (vesicoureteral reflux)
- Providing patients with information in your "portal"

2.4.1 Strategy

The strategy is the same "10 steps" as for a surgical CEV-ule as shown in Table 2.2.
Workflow to build CEV-ules in 10 steps (Table 2.2)

2.5 Have a Good Day

Now that you understand the CEVL method to build CEV-ules, you are entitled to expect the modules you make will make your day better. At the time out I will typically ask the OR staff to raise ***a*** hand if they want to have a good day, because you can't have a good day unless your work for it….it doesn't just happen. Routinely, the OR staff raises ***both*** hands (Fig. 2.19).

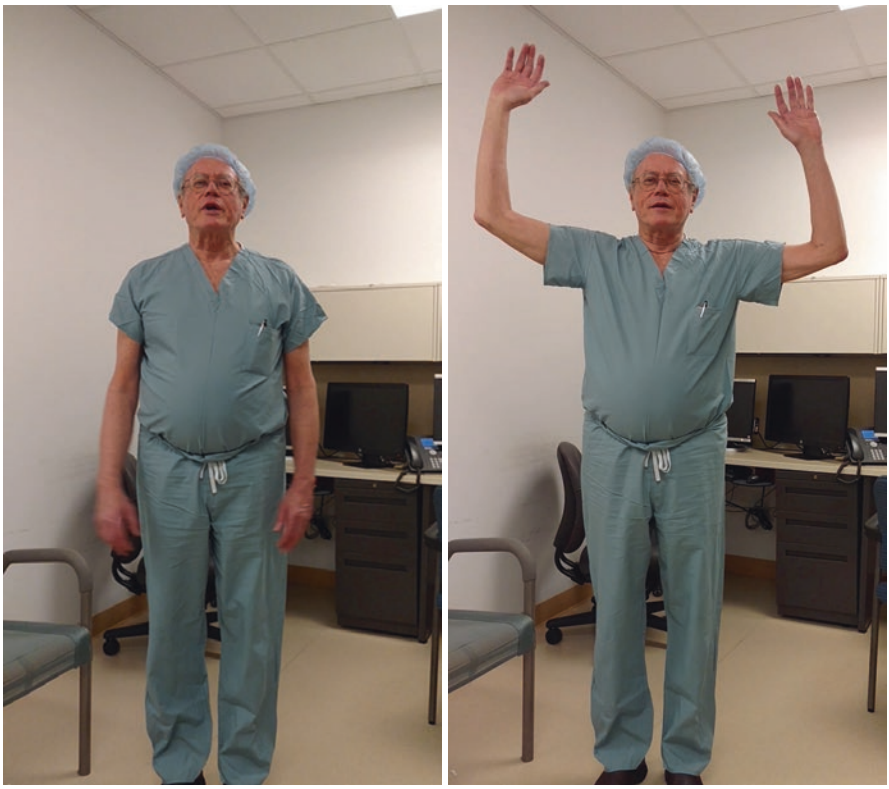


Fig. 2.19 The modules you make will make your day better

2.6 Downloads and Sample CEV-ule

Hernia repair
PowerPoint template to build your own CEV-ule.pptx

2.7 Skills Important to a Surgeon, Yet Not Performed in the Operating Room

Not all skills are performed in the operating room. For example, the skill of intubating the bladder with a catheter is important to be done as the surgeon sees fit. In this regard, nonsurgical skills are an important aspect to the daily life of a surgeon and so become important to the allied workers such as advanced practiced nurses, Physician Assistant, Nurse Practitioner, and trainees, and the list goes on. So, providing them with a ready reference on "how to" "do it as you would like it done" is important to your practice. This could apply to the following arenas:

- Office nurse staff who reply to patient questions
- Reading and interpreting ultrasound
- Performing specialty consultation
  - Prenatal Pediatric Urological Maternal/Parental consultation

building algorithms to

- Make Diagnosis in complex fields using branching tree decision-making (management of congenital hydronephrosis)
- Management plans for treatments (e.g., vesicoureteral reflux)
- Providing patients with information in your "portal"

The strategy to make content to suffice the above is the same as for a surgical CEV-ule.

Assimilate your thoughts as a PowerPoint (download)
Identify the users who you expect to access the information
Identify a champion for this CEV-ule
Have a focus group
Show them *your* thoughts
Ask for *their* thoughts
Make update edits against their ideas/views
Acquire any footage as video/pictures to complement the information
Make it interactive

Chapter 3
Teamwork for Operating Room Procedures

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It is implicit that teamwork skills require staff be equipped with knowledge of the work expected prior to the case.

At a rudimentary level, teamwork shows its head when a scrub tech is prepared to provide the instrument specific to the component of the case. Also teamwork is promoted by recognizing the Mayo stand set up of instruments is unchanged as the current OR scrub techs takes "lunch break" such that the replacement tech understands the Mayo stand set up. A sample CEVL–Mayo stand setup is shown in Fig. 3.1.

Providing OR staff with a layout of the instruments as they are expected to be placed, as in your kitchen silverware drawer may be placed. In this way, as staff turns over, Fig. 3.1 remains as a reference which sets the expectation that instruments will be where agreed.

The information is further detailed explicitly by labels which identify where the patient and ORT are positioned as indicated (labels at the side and bottom of Fig. 3.1). This shared knowledge facilitates teamwork.

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M. Maizels, *A Guide to Make Applications for Holistic Surgical Practice*,
https://doi.org/10.1007/978-3-030-77380-9_3

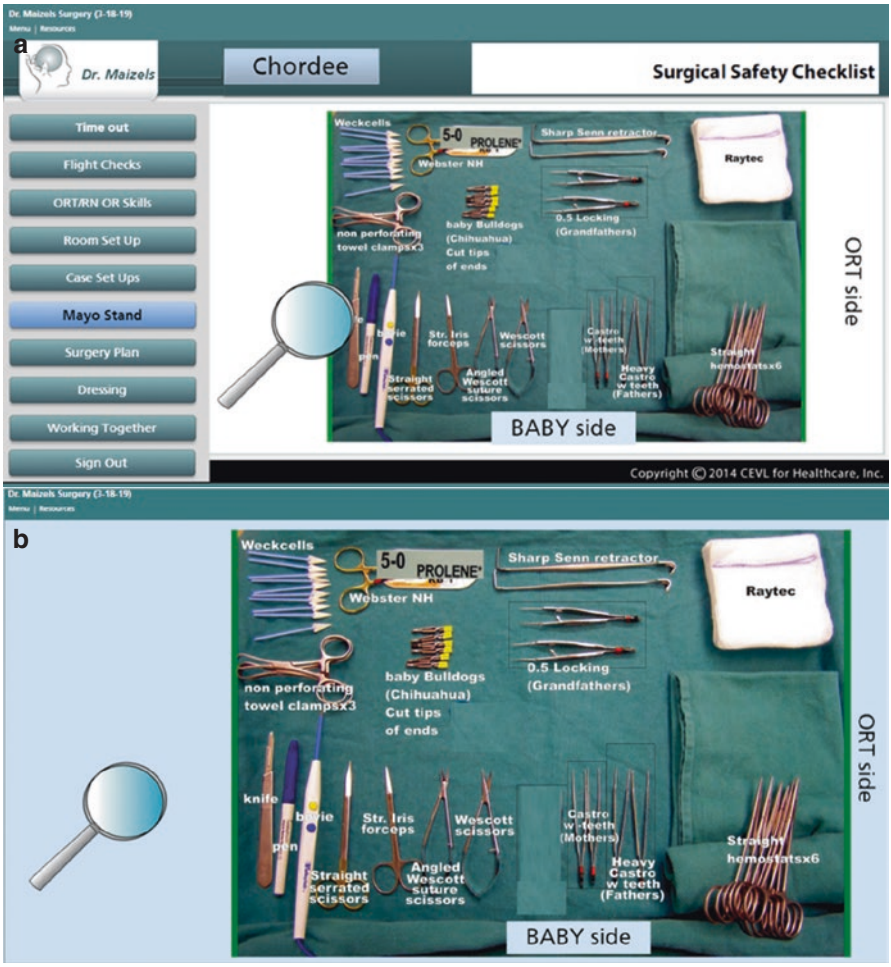

Fig. 3.1 Mayo stand setup. (**a**) Permanent position of instruments (**b**) and magnified view of instruments shown in main panel

3.1 Surgeons

3.1.1 Team Platforms

Team is a common buzzword, a verb, all too often without any "teeth." Coming together as a team to achieve a common goal requires us to be motivated to do so. Team motivation begins with the team leader, the surgeon. The surgeon by simply working to create a platform for OR staff to access will find staff motivation and enthusiasm where it was lacking before. They know you are trying, so they will try

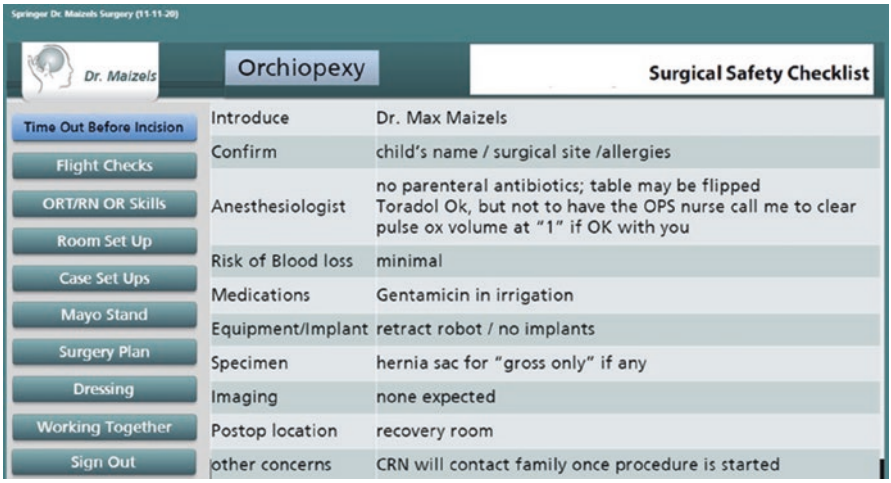

Fig. 3.2 Image showing the surgery plan holistically as a surg-eco

also. By providing the staff with content you expect them to know, they will do their best to know it. One member can now help another. Figure 3.2 shows the surgery plan embedded into the "time-out" and so makes team workflows more evident.

This CEVL time-out customizes the traditional "time out" to now also represent the needs specific to this case "orchiopexy" and surgeon here Dr. Maizels. While each of these items could be included also in the hospital "pick list," typically they would be buried in mounds of hospital oriented checkboxes and are difficult to edit and update. Typically, a surgeon may not edit his own "pick list" and so it is left for others to do, without reliably reflecting the actual need. Using this method, the surgeons/champions have control of their surg-eco, and so are empowered to control the information flow.

3.1.1.1 Downloads and Read Only

Navigate through the CEV-ule.
Download the PowerPoint CEVL template for Team Platform

Table 3.1 Specific situations for cases and action steps to reach resolution

Specific situations for cases	Action steps
It is important to identify personnel who will be staffing the case	So they may review your CEV-ule and that a "huddle" may be planned
It is implicit that after the case is done…	Write down the features which require improvement, either in understanding or technique
Provide opportunity for staff to comment on case components	Make a "jotform"

3.1.2 How to Receive "Tips" From Your Colleagues on Procedures Done Infrequently

Creating a CEV-ule to prepare for procedures done infrequently utilizes the same templates as for those done frequently. In addition, Table 3.1 shows the specific situations for cases and action steps to reach resolution.

3.1.2.1 CEVL Collaboration of Centers of Excellence

An additional example involves surgery for cancer as done by a recognized expert. The procedure performance may be even further improved by soliciting comments from one's surgical peers. For example, while the excision of thyroid cancer could be best done in a centralized facility, as an additional safeguard to promote excellence, such "centers of excellence" could collaborate online to present their views in an organized manner. In this way, aspects of the surgical technique could be rethought, reformatted. Such effort could then be the basis for testing by prospective trials.

So as surgeons/hospital networks vary on techniques and services, presenting the content as an education platform which also provides opportunity to input comments, technical knacks, and diverse opinions is a doable consideration. The following figure provides overview for "thyroidectomy" and how a jotform may be implemented to provide comments which build to consensus. Or perhaps, establish that there is already consensus (Fig. 3.3).

Fig. 3.3 (**a**) Overview for thyroidectomy. (**b**) Overview. (**c**) Step-by-step procedure. Here, "elevate strap muscles" is highlighted. (**d**) Companion video. (**e**) Clicking consensus in the top banner of main menu (see (**a**)). (**f**) Components of the procedure. (**g**) Consensus comment solicited from peers on component "strap muscles". (**h**) Peer provides comment. Here it will be an opportunity for constructive criticism, as the peer indicates a different retractor will be "tried out"

a

CEVL
Overview
CEVi
Surgery
Extras
Get Consensus
Thyroidectomy
*This is an education guide; it does not substitute for clinical judgement
Authors
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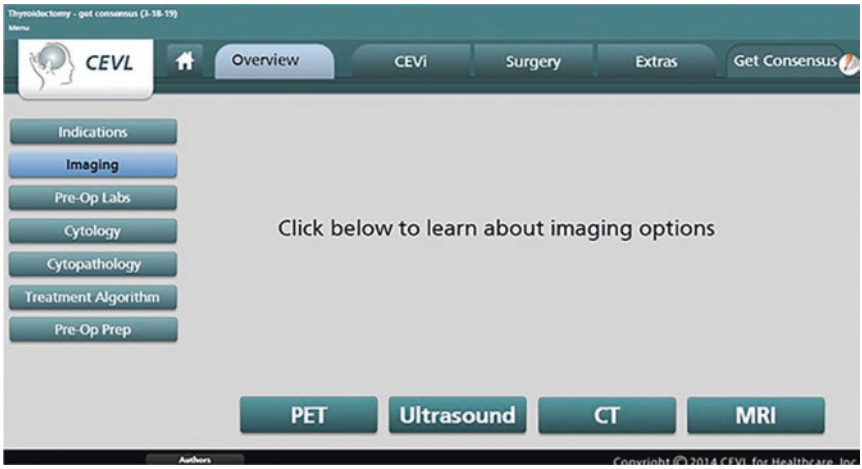
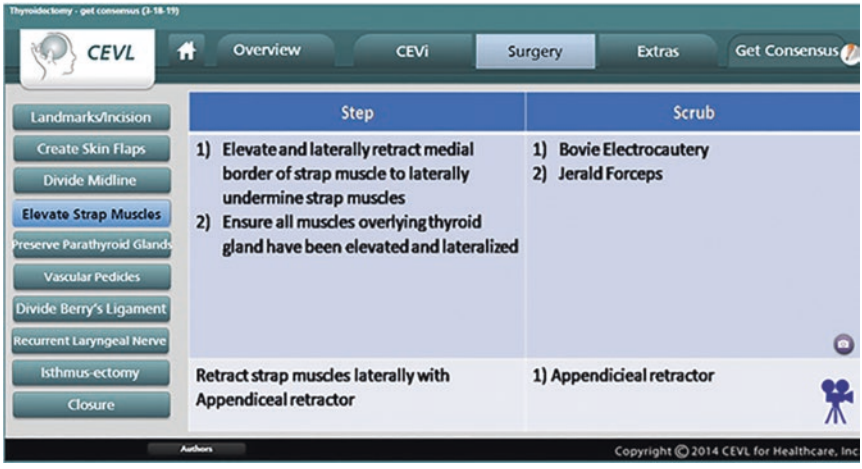
b


CEVL
Overview
CEVi
Surgery
Extras
Get Consensus
Indications
Imaging
Pre-Op Labs
Cytology
Cytopathology
Treatment Algorithm
Pre-Op Prep
Click below to learn about imaging options
PET
Ultrasound
CT
MRI
Authors

c


CEVL
Overview
CEVi
Surgery
Extras
Get Consensus
Landmarks/Incision
Create Skin Flaps
Divide Midline
Elevate Strap Muscles
Preserve Parathyroid Glands
Vascular Pedicles
Divide Berry's Ligament
Recurrent Laryngeal Nerve
Isthmus-ectomy
Closure
Step
Scrub
1) Elevate and laterally retract medial border of strap muscle to laterally undermine strap muscles
2) Ensure all muscles overlying thyroid gland have been elevated and lateralized
1) Bovie Electrocautery
2) Jerald Forceps
Retract strap muscles laterally with Appendiceal retractor
1) Appendicieal retractor
Authors
Copyright © 2014 CEVL for Healthcare, Inc

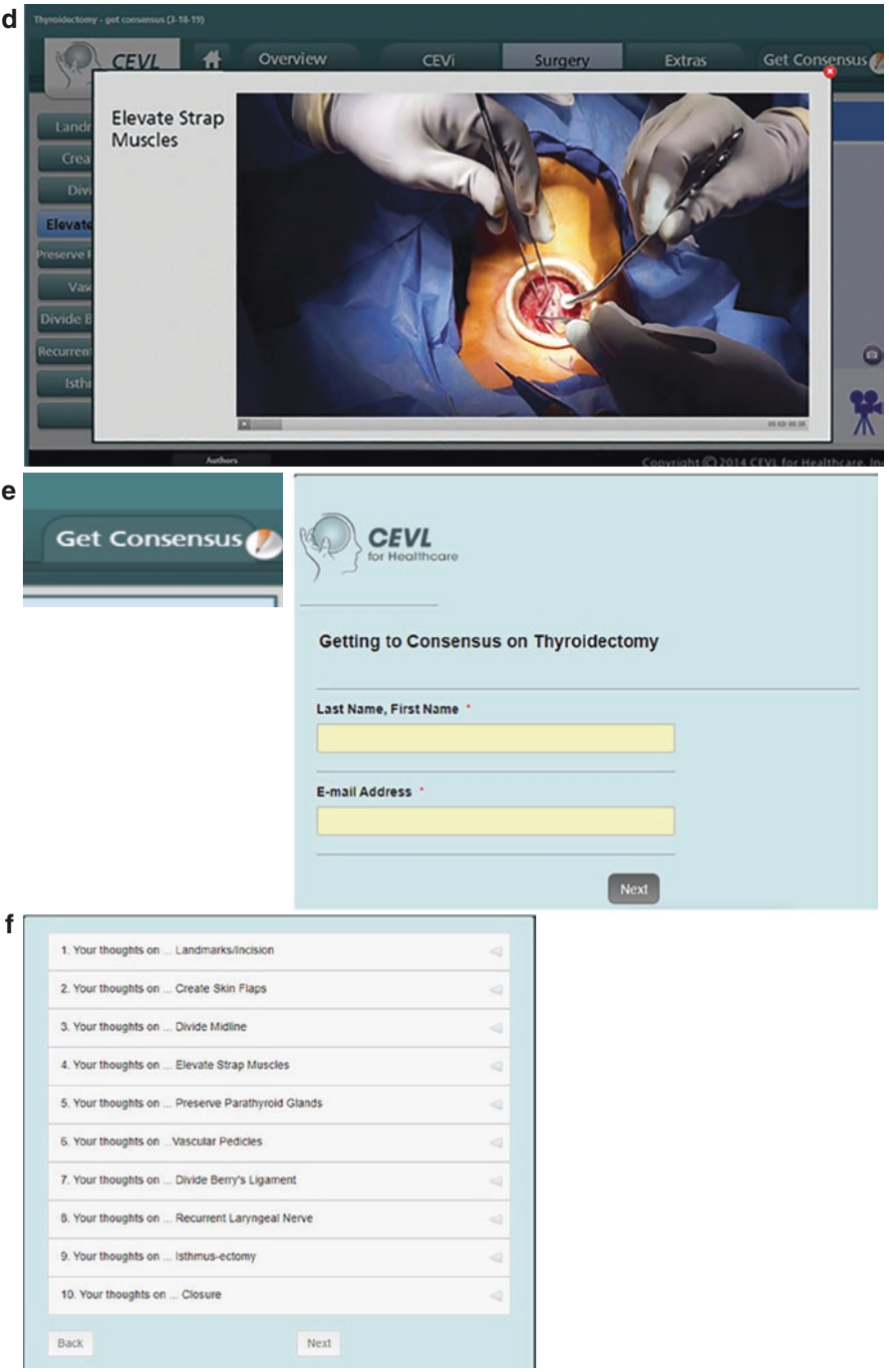


Fig. 3.3 (continued)

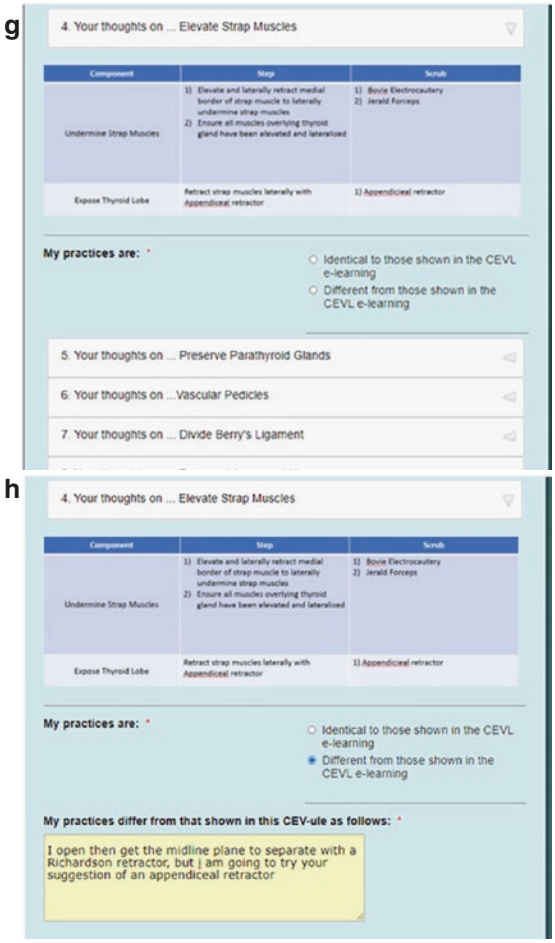


Fig. 3.3 (continued)

CEVL platform for Thyroidectomy
link to jotform for surgical consensus assessment and building

3.2 Pediatric Anesthesiologists

Pediatric anesthesiologists are typically faced with training "trainees as novices" who derive from diverse hospital systems and, therefore, have been exposed to a heterogeneity of training experiences. The "here and now" needs require that the trainees perform techniques as done by their current supervising pediatric anesthesiologist. A boot camp is often provided to trainees to instill such techniques. Using CEVL templates, such training may promote an arm of "institutional memory" such that training is accessible online at and away from the hospital.

Methods to train may be presented as a template format, which are shown in the following figure (Fig. 3.4), for example, regional nerve blocks. Click to access a CEV-ule, and then download a CEVL template to customize the training to ***your*** specific content.

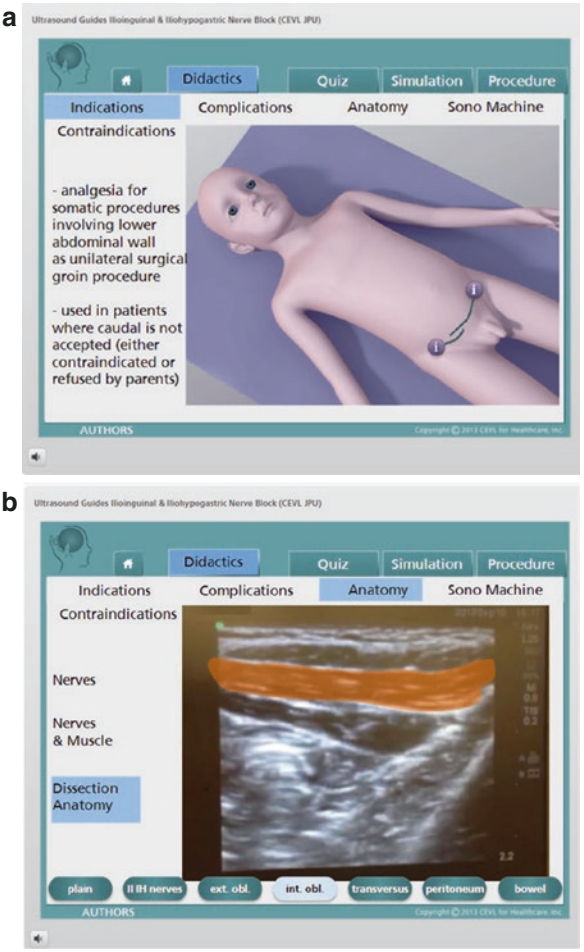


Fig. 3.4 Methods to train regional nerve block. (**a**) Ultrasound-guided ilioinguinal nerve block. Start with didactics and then indications. (**b**) Anatomy. (**c**) Ultrasound machine. (**d**) Simulations. (**e**) Simulation overview. (**f**) Prepare supplies for procedure. (**g**) Landmarks. (**h**) Steps of procedure (camera icons shown in figure lead to video/pictures). (**i**) Offer procedure feedback to trainee. (**j**) Give procedure feedback to trainee

Fig. 3.4 (continued)

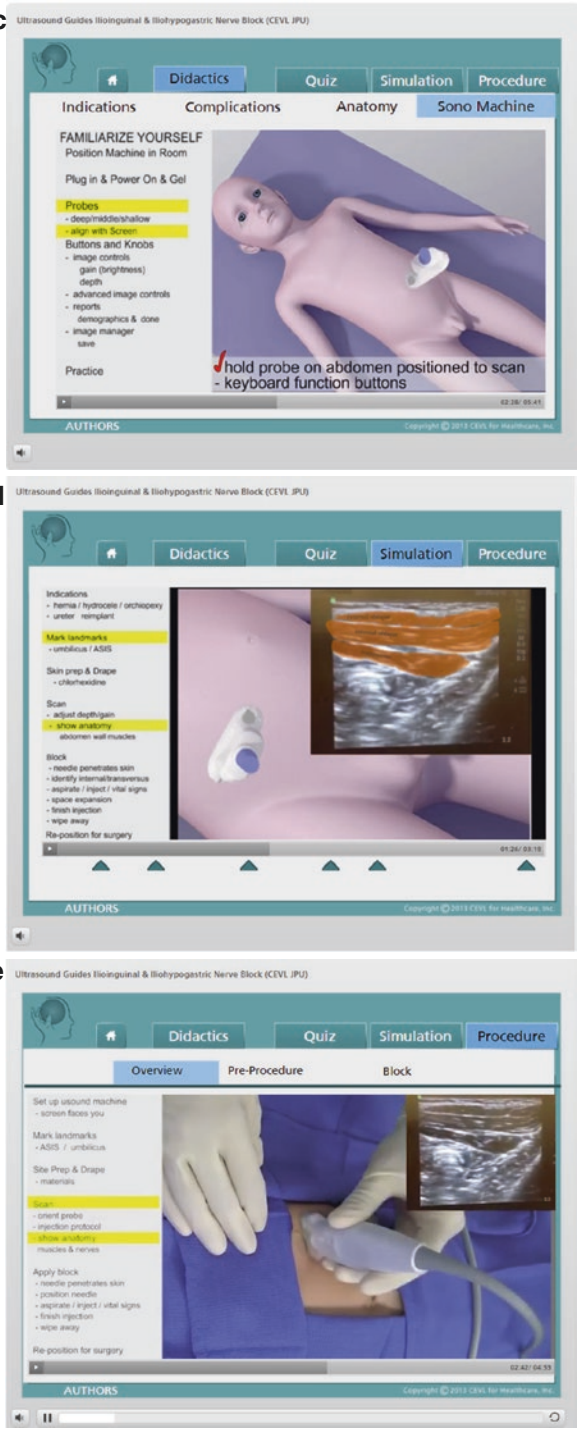
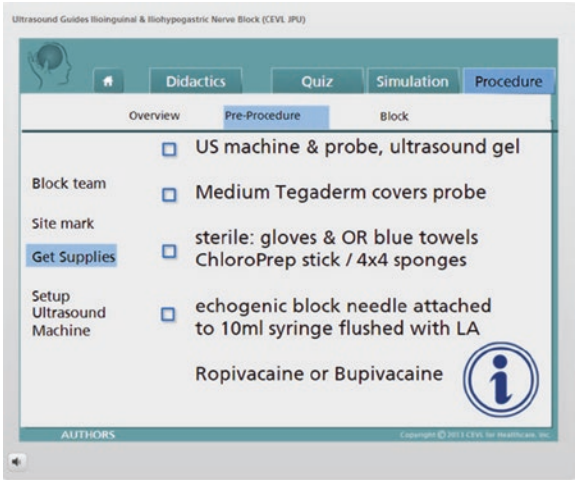
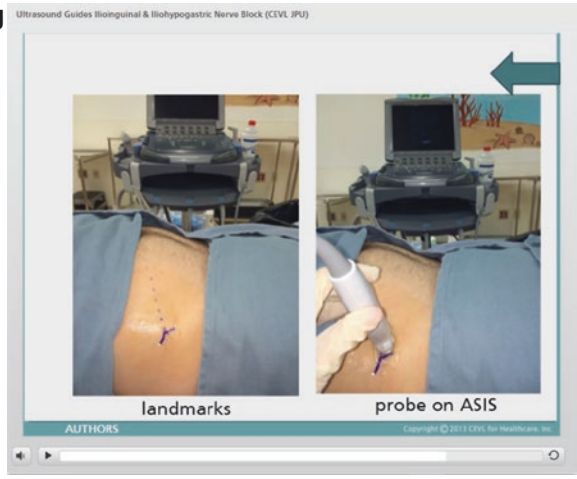


Fig. 3.4 (continued)





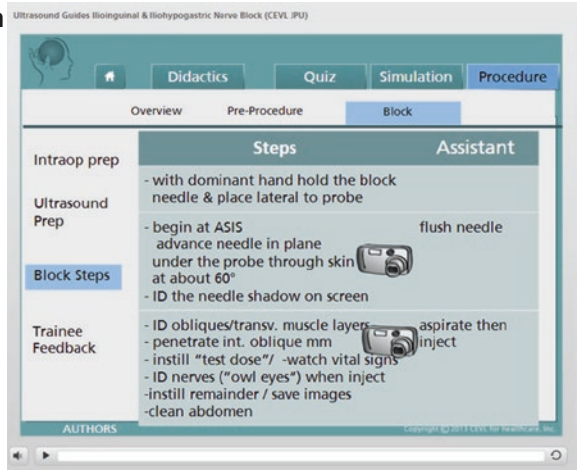
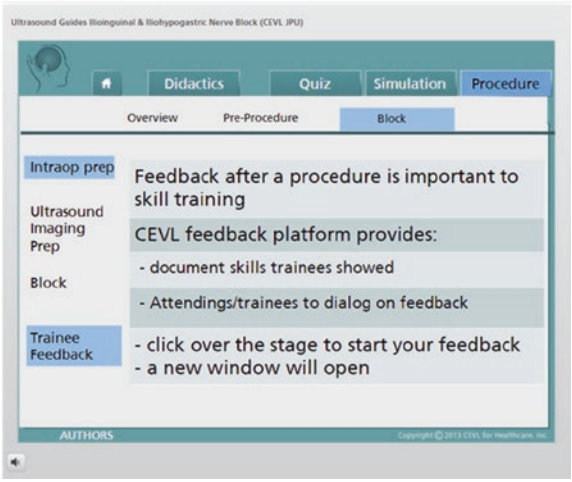
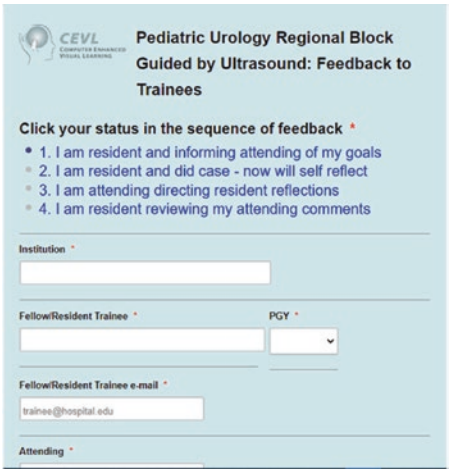


Fig. 3.4 (continued)

i



j



View Regional Nerve block
Download sample as storyline file which you may adapt

3.2.1 *Anesthesiologists Teaming with Surgeon Preferences*

It is an all too often source of dysfunction in OR when anesthesiologists do not clearly understand surgeon preferences. Simply having opportunity for staff to codify routine items such as patient position for a specific procedure will alleviate aggravations. The following figure (Fig. 3.5) shows how critical coordination between anesthesiologist and pediatric urologist for a case of routine hypospadias can be improved by informing the anesthesiologist of content clearly important to the flow of the case. It is critical for the anesthesiologist to be aware of the expectations of the many surgeons in a hospital group. An easy way to suffice this need is to provide the anesthesiologist with a "click" on a cell phone or computer to access this information. "Dr Moi's" preferences are shown in Fig. 3.5a. Should the next case to follow be the same surgical procedure done by a different surgeon, for example, Dr. Cingle, no problem, just click on that surgeon's name. The "next" surgeon will be extremely impressed that the room is concerning itself to be ready for "him/her" (Fig. 3.5b).

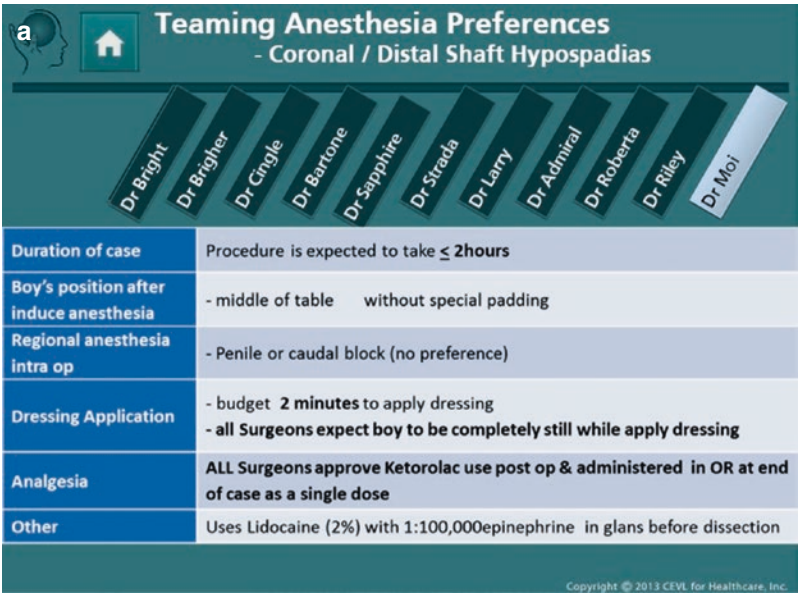


Fig. 3.5 Interactive in action. (**a**) Dr Moi's preferences. (**b**) Image showing that the room is concerning itself to be ready for the next" surgeon

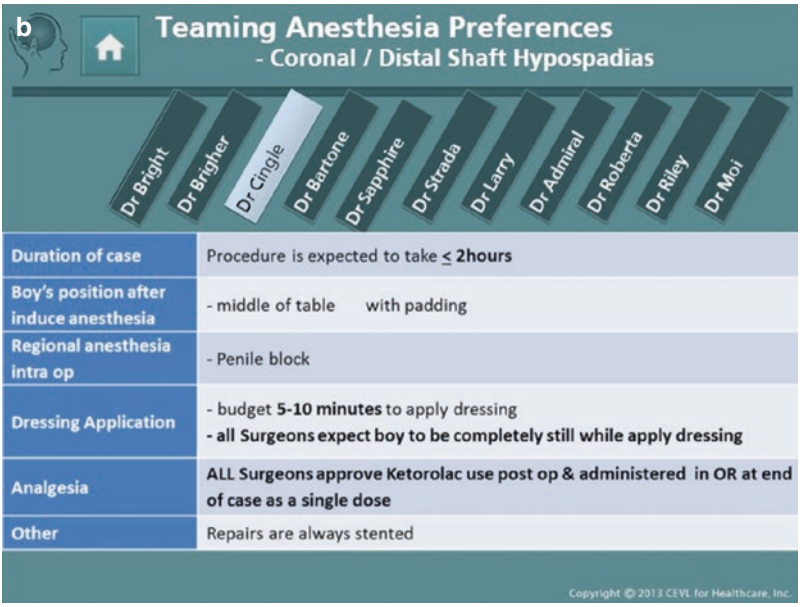


Fig. 3.5 (continued)

You may download a copy of this storyline file and modify to your needs or click to view the interactive in action

3.3 Operating Room Administrators

Let's look at how CEVL surg-eco works to provide operating room administrators opportunity to implement workflows expected to improve efficiency of their staff. The tenet is that by providing them with content accessible prior to their procedure, they will be more confident of the work expectations being placed on them. All too often, the OR is a bit hectic and a staff member could be assigned to perform a task without warning or preparation. Permitting the OR staff to access content pertinent to the case "just in time" will suffice the work need and reduce staff apprehension to "know" what is expected of them. All too often a staffer would say, "Dr. Maizels it's been a while since we worked together, I hope you can tell me what you want me to do." The member is to be congratulated for their honesty. However, providing the room staff members with the content showing the expected work flows for the case will alleviate this pressure. The team can utilize the accessible content to work together as a surg-eco informing the staffer who is "just giving lunch" or "I'm only here to give relief" on how to complete the tasks needed. This could be simply referencing the in-room overhead monitor showing how to do a "hand off." Figure 3.6 shows a case of direct injection into the bladder detrusor with medication. The right column – OR staff – as shown in the figure highlights the workflow expected to be completed by the OR staff. If needed, they may team work together to suffice the needs such as how to prime and then load the injection needle.
Following are the allied staff working in the operating room:

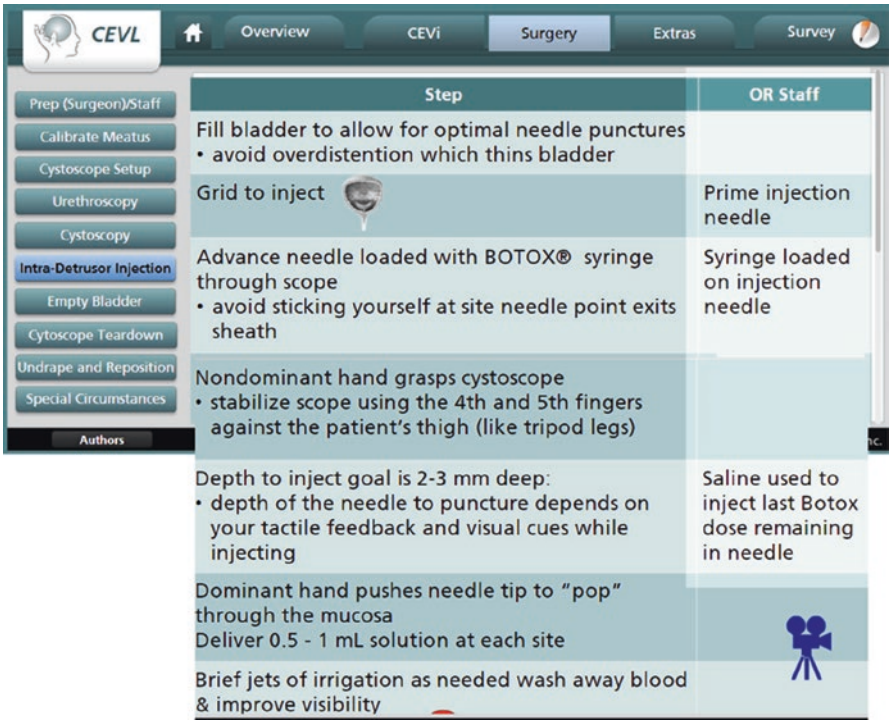


Fig. 3.6 Direct injection into the bladder detrusor with medication

3.3.1 Operating Room Technicians (Scrub Techs)

Let's have a look at how CEVL surg-eco works for robot pyeloplasty. Each "player" in the OR theater stage is enabled to act together better when their concerns are recognized. In this way, "robot" team players can figure out how to work with each other.

3.3.1.1 Team

Operating room staff do not work alone. Work is typically teamed. Many teamworks are ingrained so scrub tech knows "deep down," but their concerns can be presented for the team to recognize.

3.3.1.2 "Dances"

There is interplay between scrub and surgeon, a choreograph, a dance step.

Dances are done between:

- Surgeon (S), who is the resident, and attending (A)
  - SandA (pronounced sand-a) dance
- Surgeon and anesthesiologist
  - SandA dance
- Surgeon and scrub (S) tech
  - A SaS (pronounced sass) dance
- Console surgeon (S) and bedside assistant (BA)
  - A SaBA (pronounced sa-ba) dance

Other dances could also be named with circulating nurse, X-Ray tech, etc.

Figure 3.7 shows the following:

- New way to organize your teamwork
- Catalogues common teamwork dances
- organized by the OR member as the "captain" to lead sufficing the expectations for the task
- Confirm with other staffers
- Inform your members of the tasks you expect them to help coordinate

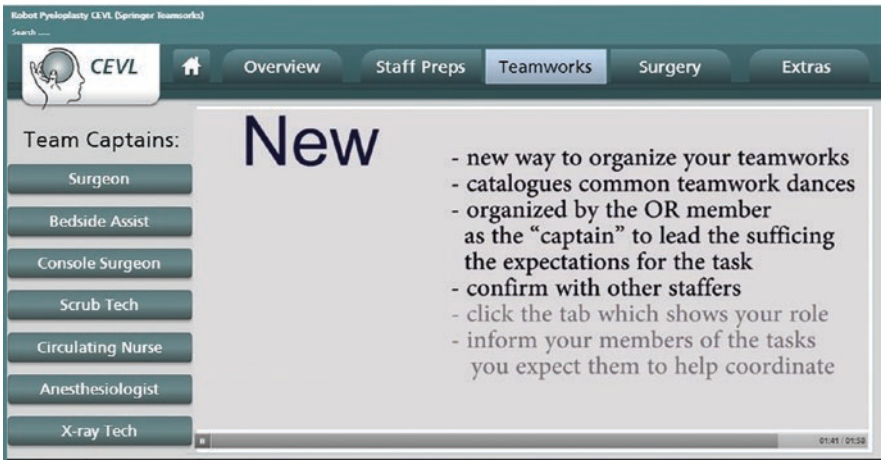


Fig. 3.7 CEVL teamwork

click to view
click to download template

3.3.2 *Operating Room Radiology Technicians*

Typically, X-ray technicians are enabled to perform their task better in your surgeco if they understand what is being asked of them. So, it is prudent to show them the CEVL template and then ask them what additional information they would like to know. Include this information into the CEVL template. This template includes the following (Fig. 3.8):

- Indications for test
- Expected room setup
- Information on X-ray request form to be completed
- How to communicate on flow of taking and saving pictures

CEVL teamwork is also presented as a CEVL sample and as a downloadable Powerpoint Template.

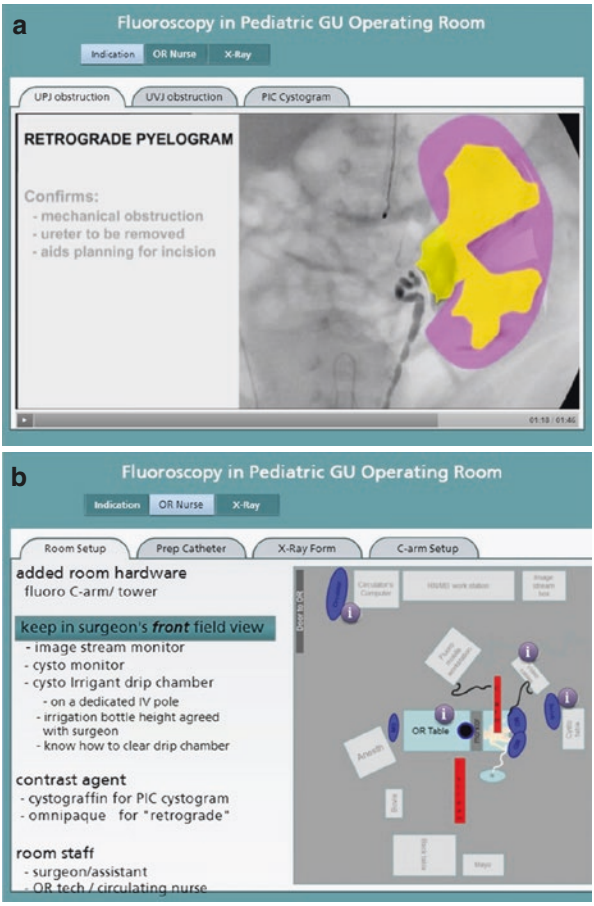
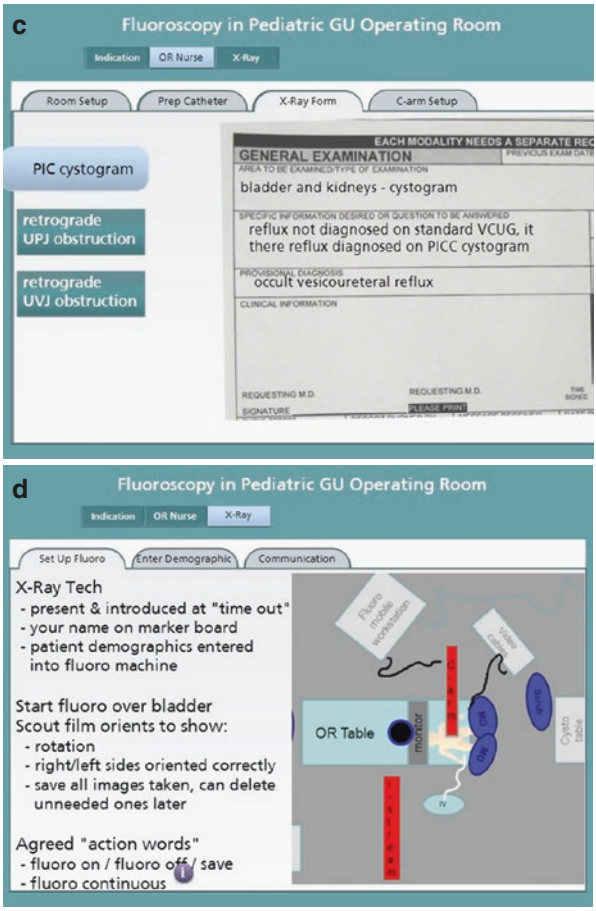


Fig. 3.8 CEVL template for radiology technicians. (**a**) Indication. (**b**) Room setup. (**c**) OR nurse may complete the form information prior to the case to be efficient. (**d**) X-ray tech is presented with the expected room setup for the hardware

Fig. 3.8 (continued)



CEVL sample
Download PowerPoint CEVL Template for Radiology Technician

3.3.3 *Surgical Pathologists*

CEVL templates provide surgical pathologists an opportunity to show their "voice." While surgical pathologists may not often show a real presence in the OR, their voice needs to be heard. Marking, labeling, and orientating surgically excised specimens are keys to facilitate specimen processing and examination so as to formulate a correct pathological diagnosis.

Make a CEV-ule for surgical procedures which are expected to provide surgical specimens which require detailed pathological examinations.

The nurse room staff may prepare for specimens by knowing the specimens to be expected. This may not be different from a typical "time out" where such information may be exchanged. However, also stating the need "just in time" to where it is expected aids OR efficiency (Fig. 3.9).

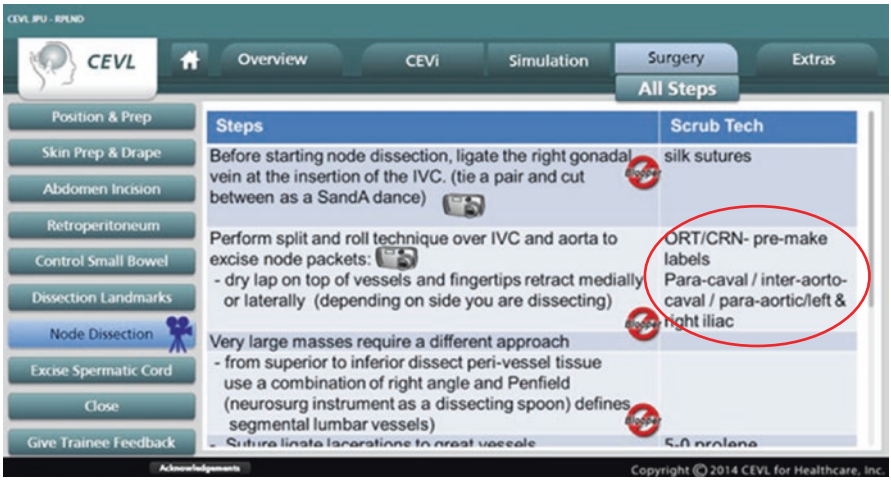


Fig. 3.9 A CEV-ule for surgical procedures

3.4 Surgery Involving a Manufactured Device

During the surgery involving a "device," the in operating room salesforce for device manufacturers not uncommonly interface directly with the surgical team who will be utilizing a device. It is all too often that the surgical team and device manufacturer do not share the same set of information on device specifications pertinent to the surgical procedure, surgery plan for the implantation, handling of the device, and use of antibiotics, and the list could go on. Furthermore, the specific disconnects in communication may differ between hospital systems, so the salesforce may be uncertain of the exact plan at hospitals at which they "call on." CEVL templates may be completed by the manufacturer for review by the surgical staff/administration such that agreements on details of surgery plan, antibiotics, and others pertinent to surgery may be established. In this way there is certainty on these topics, such that implementation of devices is expedited. From this backdrop, the entire OR and device manufacturer representative visiting the OR are in sync with the surgery plan. A CEVL- sim could be simply putting together/taking down a manufacturer's device in the "sim lab."

Such a CEV-ule could be created by the surgeon in conjunction with the device manufacturer.

The CEV-ule shown in Fig. 3.10 on implantation of prosthesis was prepared collaboratively with Drs. Carson & Udell, University of North Carolina.

a

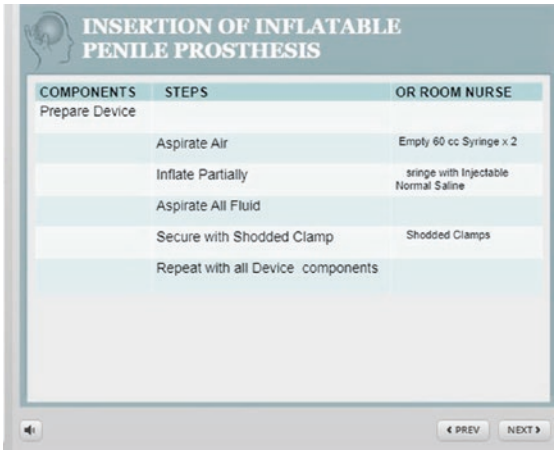


Fig. 3.10 A CEV-ule on implantation of prosthesis. Procedural steps for preparation of device: (**a**) Surgical plan gives clarity to the procedure steps. (**b**) Aspirate air from reservoir. (**c**) Inflate the aspirate. (**d**) Once prepared, check for "no" air bubbles. (**e**) Repeat steps

Fig. 3.10 (continued)

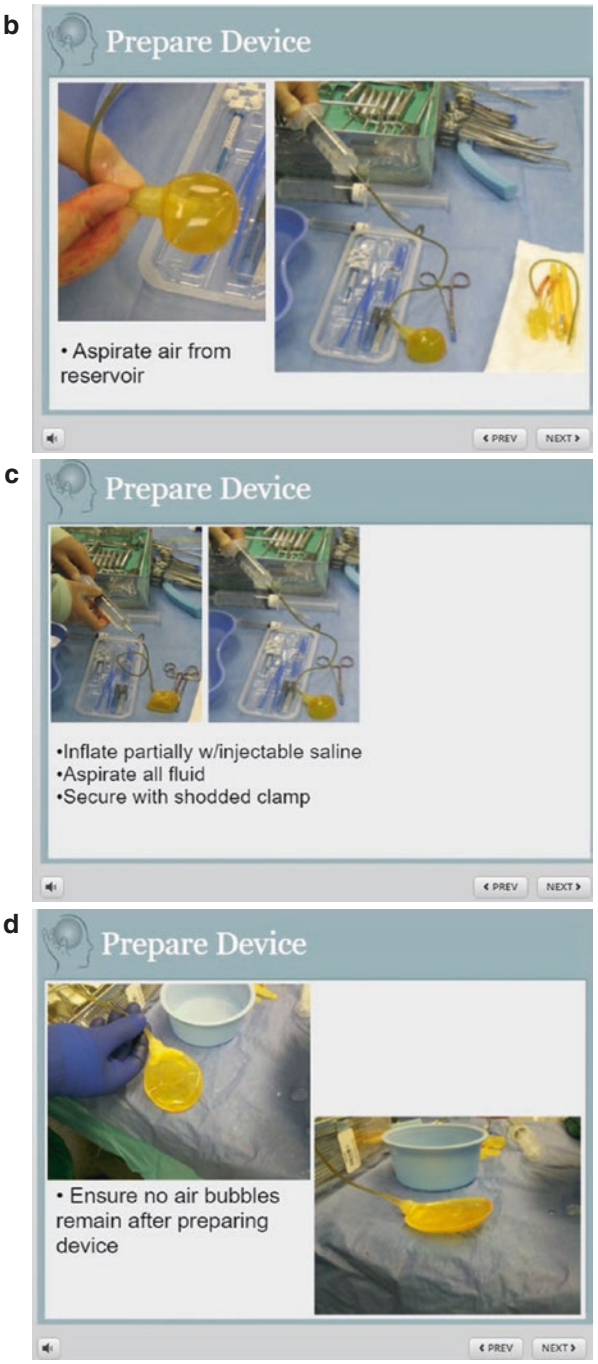
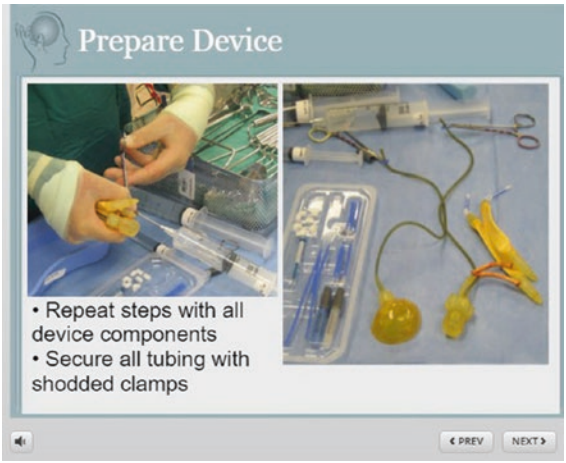


Fig. 3.10 (continued)



3.4.1 Downloads and Read Only

View Sample
Download the Storyline file as template for surgery involving devices

Storyline 3 is used to assemble the content. Logic is created using Storyline variables. Video is edited using Adobe suite. Audio is edited with Adobe Audition. Adobe Photoshop was used to archive and edit still images. Storyline 3 was used to build interactive content and publish to an online server using WS-FTP, an FTP client. Jotform was used to construct the test. Your contents could be created by your staff using Microsoft PowerPoint and then relayed to your hospital instructional design team.

Chapter 4
Surgical Residency Program Directors and Trainees

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M. Maizels, *A Guide to Make Applications for Holistic Surgical Practice*,
https://doi.org/10.1007/978-3-030-77380-9_4

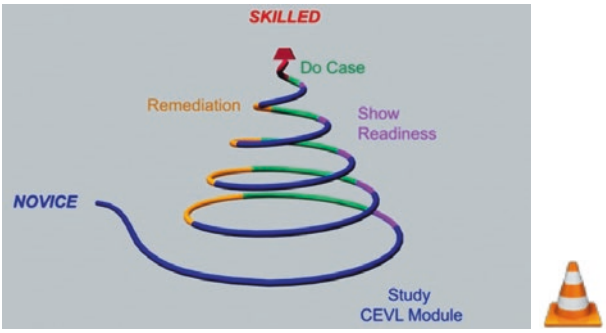

Fig. 4.1 CEVL method that fosters training. https://www.cevlforhealthcare.org/cevl/sn_holistic/ch4_rtp/3dspiralanimation.mp4

Resident/trainee/fellow program directors are charged to document their trainees are learning! Milestones to achieve may apply. However, how to easily document their training advancements is up to the individual institution and is not always as clear as one would like.

CEVL methods can foster training. Think of it as a spiral from entry as a novice to skilled as shown in Fig. 4.1.

4.1 Foster Training Using Methods Which Provide Objective Assessments

Objective assessment of resident performance as ratings facilitates making feedback and thereby facilitates making remediation, so training could become more effective.

CEVL applies the method of Zwish [1] and rating performance scale as in order to complete the task trainee required: being shown and told (1), active help (2), passive help (3), or supervision only (4). This approach facilitates feedback to be given on mental concept, skill performance, and global ratings. Once feedback is provided (see Fig. 4.2), then how to structure giving remediation is clearer. In this workflow, trainee gets to the next case at a higher performance, such that training becomes more effective.

The computed score could be used as a reflection of resident skill at case and a minimum value be assigned by program director which reflects "competency." In this way, program directors could troubleshoot identifying the trainee to help as there is not satisfactory progress, namely, computed score below the establish norm for that program.

a

Procedure Plan	Key Details
Open	skin incision (control undescended testis) to expose external inguinal ring
Explore inguinal canal	open external ring to internal ring Identify ilioinguinal nerve
Expose hernia sac	identify hernia sac control hernia sac to preparation to ligate
Ligate hernia sac	suture ligature of hernia sac to transect sac
Hydrocelectomy	filet t. vaginalis drain hydrocele manage hydrocele sac
Orchiopexy	Advance testis to scrotum
Close	Deep -Inguinal canal close internal oblique to close external oblique Superficial skin

b

Mental Concepts For Surgery	Likert Ratings		
name:	poor	good	best
any tissue which is grasped or cut	1	2	3
next step after completing the current step	1	2	3
next component to do after completing the current one	1	2	3
total			

c

Grasp of Global Skils	Likert Ratings		
	poor	good	best
Able to name instruments requested	1	2	3
Able to name suture materials requested	1	2	3
total			

Fig. 4.2 Sequence of training events. (**a**) Begin by providing a clear plan for the procedure and outline the key details. (**b**) Then, establish the method to reward resident for mental concepts shown in Fig. 4.2a. (**c**) Define ratings for global skills important to grasp. (**d**) document skill performance using Likert ratings based upon Zwish scale. Sum the component scores for a total raw score. You may adjust the total raw score based upon case difficulty; doubling the raw for hard cases. (**e**) Computed score. An incidence of the method as shown in one resident who has performed three different cases. The cases vary from 5 to 7 components so each case provides a maximum raw score of 4X the number of components. In addition there is point value for mental (3 + 3 + 3) and global (3 + 3) concepts. This analysis provides a computed score. This score could be used as a reflection of resident skill at case and a minimum value be assigned by program director which reflects "competency"

d

Component	Surgical Skill Shown (Likert)			
	shown /told	active help	passive help	supervise only
Open	1	2	3	4
Explore inguinal canal	1	2	3	4
Expose hernia sac	1	2	3	4
Expose hernia sac	1	2	3	4
Hydrocelectomy	1	2	3	4
Orchiopexy	1	2	3	4
Close	1	2	3	4
Toatal raw score				
Case difficulty	routine	hard		
	1	2		
Computed score				

e

Surgical Procedure	# Components	Raw Max Score Routine Case	Mental Concept	Global	Computed Score (Total)
Orichiopexy	7	28	9	6	43
Hernia	5	20	9	6	35
hydrocele	6	24	9	6	39

Fig. 4.2 (continued)

4.2 Show Objective Feedback and Remediation

The CEVL method includes provisions for feedback and remediation. The underpinning concept is that "ping-pong" online communications of skill assessments (i.e., global and procedure skills shown along with free text comments) are done between trainee and supervisor:

1. Trainee declares his or her goals to accomplish for the case
2. At the case the attending and trainee work to suffice the resident's declared goals which provides the resident opportunity to self-reflect on performance shown
3. Attending reviews resident self-reflection and informs trainee
4. Trainee reviews attending comments. If there is a discrepancy in opinion of rating of skills shown, then a personal conversation could be held. This method is shown in Fig. 4.3.

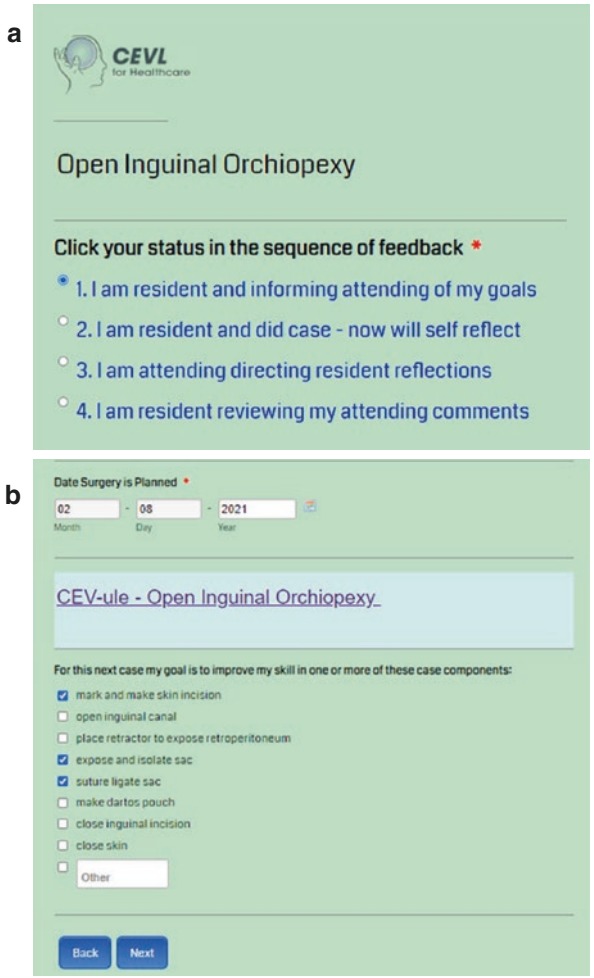

Fig. 4.3 Provisions for feedback and remediation. (**a**) Trainee declares goals for upcoming case. (**b**) Of the several possible goals, this trainee has identified three goals as shown in the figure. (**c**) The case having been done to suffice the trainee expressed goals, the trainee may now self-reflect on performance shown. (**d**) The trainee has indicated from trainee perspective the percent of case trainee did, and that only passive help was required. (Zwish scale is shown as a reminder for self-reporting). (**e**) Global and surgery skills are self-reported. (**f**) Finally, trainee can provide free text comments before submitting information to attending. (**g**) Now, attending may input attending ratings and compare against those of trainee. (**h**) Attending assessments (bottom half of figure) may be compared against trainees (top half of figure). If assessments differ, a radio box may be checked, otherwise no further attending assessment is required. (**i**) Attending may input free text to communicate to trainee. (**j**) Trainee may now review (without editing) comments. If trainee views differ from those of attending, then a personal conversation may be scheduled

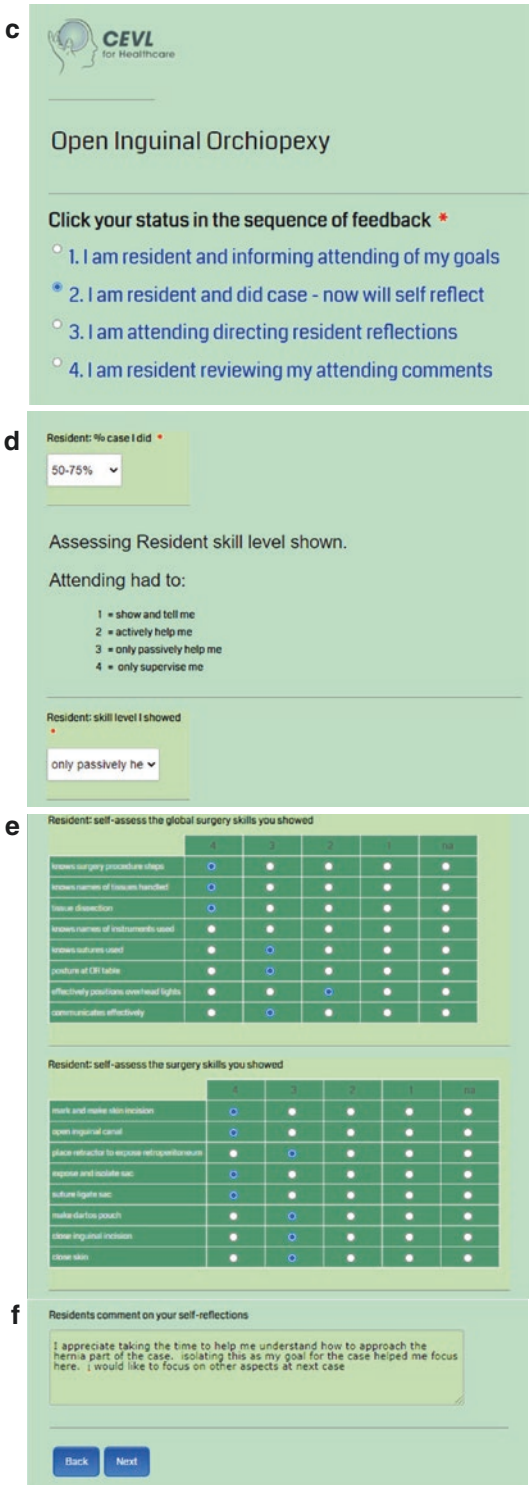

Fig. 4.3 (continued)

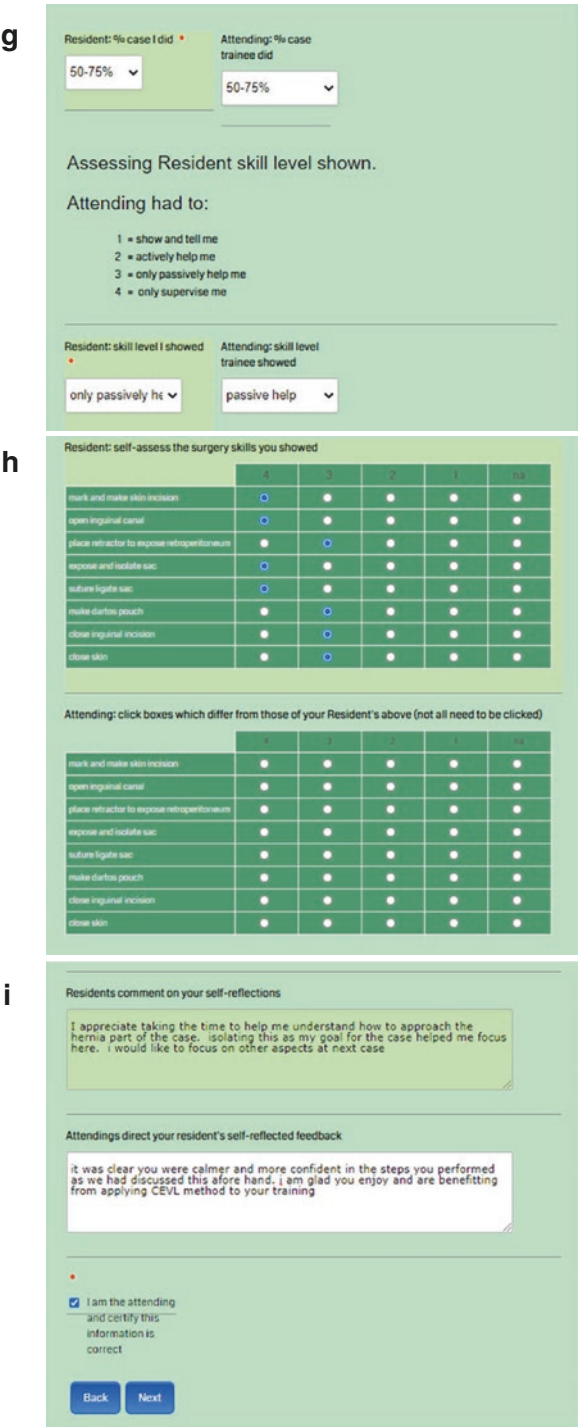

Fig. 4.3 (continued)

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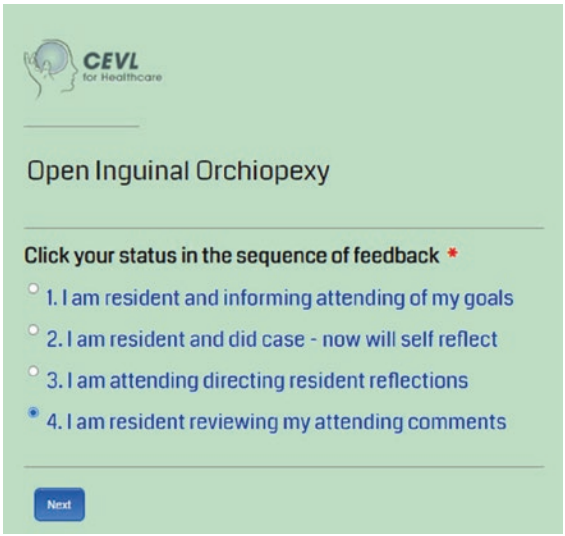


Fig. 4.3 (continued)

You may tinker with this "ping-pong" interactive by clicking "Edit Submission below". The attending Dr. Maizels received the following e-mail notification of trainee self-assessment:

Dear Max Maizels, MD,
click this link Edit Submission
to edit my self-reflection on performance shown at the recent case of inguinal orchiopexy
Thank you
forms created using jotform.com

4.3 Residents

4.3.1 Preparations for surgery

In addition to knowing the surgery plan (see Chap. 2), trainees are often caught off guard now being explicitly informed of their attendings preferences for medications after various surgical procedures. Consider making a CEV-ule so as to have ready clickable access to this information. While the information could be embedded into the hospital electronic medical record, the information presented in this graphical manner could be more intuitive. Also, this may contribute to trainees' portable briefcase. An example of accessing knowledge of the diverse medications which could be utilized after surgery is shown in the following figure (also a sample "in action.") (Fig. 4.4)

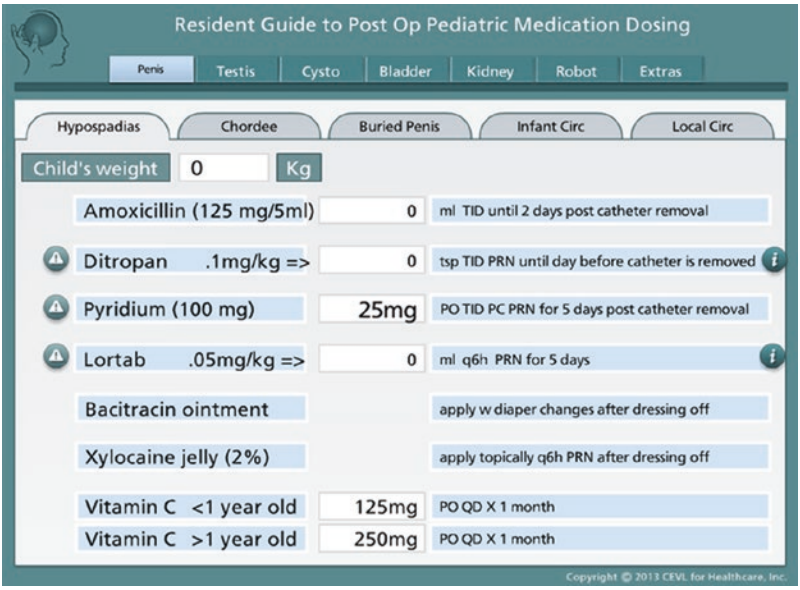


Fig. 4.4 Post-op mediation suite by surgical procedure/attending

see this in action

4.4 Same Surgical Procedure, But Working with Different Attendings

As trainees participate in a designated case, a CEV-ule is prepared against that supervising attending. Now you may wish to modify so as to suffice for a different attending with whom you plan to work together. Just debrief prior to the case, point out the existing CEV-ule, and ask the attending to state the differences. Expect some differences, this is fine. Archive the differences in a new, CEV-ule which showcases both attendings.

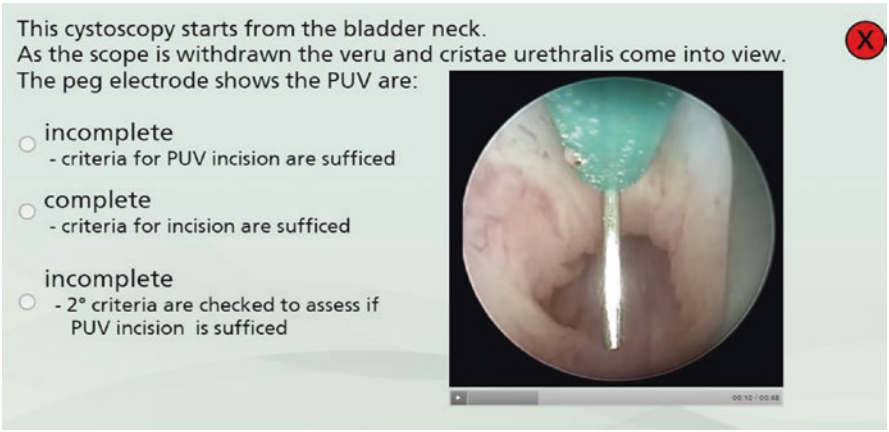
4.4.1 Preparations to Suffice Before Performing the Procedure

4.4.1.1 CEV-interactive (CEVi)

General knowledge of the procedure

Naturally, knowledge of the procedure is key to performing the procedure. You may create interactives so that trainees come to understand if they comprehend aspects of surgery which you view as important. Figure 4.5 interactive questions and answers.

a



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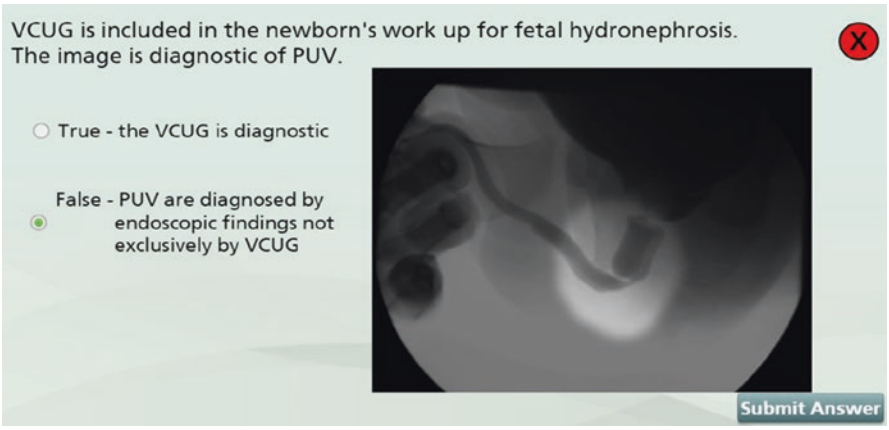

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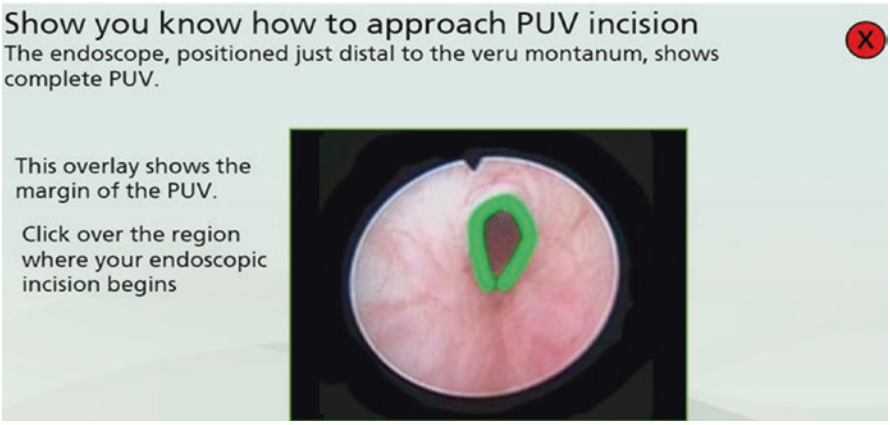


Fig. 4.5 General knowledge information tested using interactive (built in Storyline). (**a**) using multiple choice type (the video adds interest) and (**b**) using a static image, here a radiograph. (**c**) Interactivity makes this knowledge-based question more interesting, as the learner is asked to click over a "hot spot" here over the region where the surgeon's endoscopic incision begins

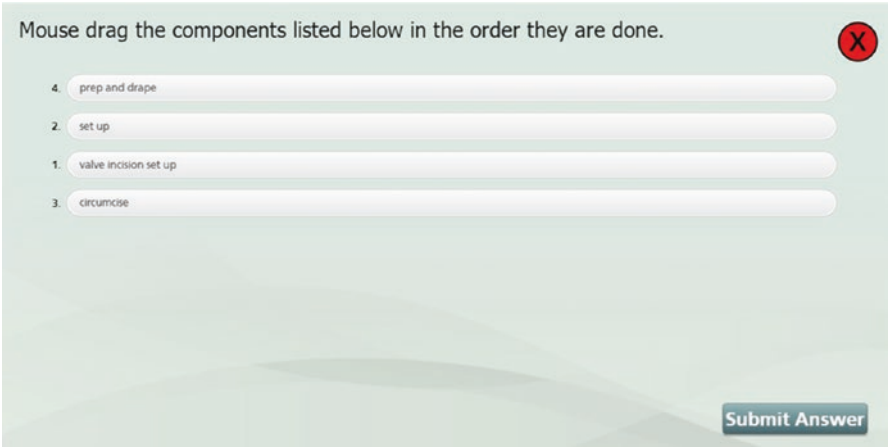


Fig. 4.6 "Arrange in order" interactive

Arrange the steps of surgery in order

Trainees who engage actively in learning, learn better. Knowing the procedure plan "cold" is key to getting the case done well. CEVL recognizes that while trainees are typically smart and show phenomenal memorization skills, completing an interactive to "arrange in order" the procedure plan "internalizes" this knowledge. See Fig. 4.6 for on an "arrange in order" interactive. Knowing the order of the procedure plan is tested interactively, asking the learner to move the tiles in the order as the procedure is done. In the figure, numbers to the left of the tiles show the order in which they were initially presented, the learner having re-arranged them to be the correct order.

4.4.2 Simulation Practice

It is understood that historically simulation practice was not a formal part of surgical training. On the other hand, back in the days, while on afternoon rounds which seemed to have no end, weren't we all wearing our surgical scrubs and practicing tying knots with the cords on our scrub pants? Nowadays, it seems the culture is focusing on electronic medical record (EMR) smart phases and "cool" clicks on the EMR. This is simply the culture taking the path of least resistance to accomplish an end. In order to return to focusing on clinical skills, I have made tools which "spoon feed" trainees, making skill acquisition easier and hopefully more fun. Let us show.

4.4.2.1 Basic Surgical Skills

Basic surgical skills are taught best by simulation and then immersion in the clinical setting. Getting "skills" in the clinical setting won't really work as it used to because it is a plain fact that trainees will be obligated to spend fewer hours in the operating room. Anecdotally, while I was in training in the late 1970s and being on call every other night every other weekend, I was told I wouldn't get good training as I would miss half of the experience. This is probably a soured view. My opinion is training was not organized to be effective given the time spent in the OR. So by having a plan, our trainees excel in skill acquisition and seem to have more fun.

I suggest it is as straight forward as shown below.

Landing Page

Identify the skills you want them to know. Provide an overview, define basic skills (e.g., open, endoscopic as scope), define how to learn them as sim skills, and mingle this with OR skill acquisition. Show skills trainees will be expected to show in an index case. Consider using a dance care to coach their simulation practice in real time and provide feedback (Fig. 4.7).

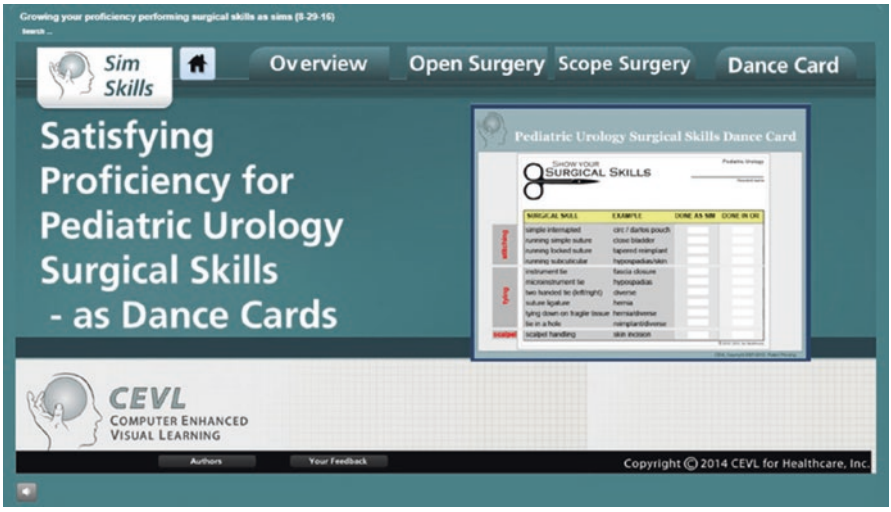


Fig. 4.7 Image of a main page showing organization of the sim skill acquisition: overview, open surgery, scope surgery, and dance card.

Overview of Skills Important to Open and Closed Surgeries

Setting yourself up is key to practice. Consider wearing a surgical costume, position of table, your standing posture, and other items as listed in Fig. 4.8a. Sewing requires understanding the suture needle grasp, needle anatomy, protecting the needle from harming you when not used (swallowing the needle into the needle holder jaws, Fig. 4.8b). Just as athletes warm up before an event, consider warming up your grips of the needle holder/hemostat (see the sim in Fig. 4.8c). See Fig. 4.8d for warm ups shown in the clinical setting.

Make a storyboard for the procedure. A storyboard is the frame for a "story" whether is the filming of a commercial movie or a surgical procedure. Consider making a storyboard to help learners understand the procedure. You may end up understanding the procedure better yourself as you compose the storyboard. A storyboard for infant pyeloplasty is shown in Fig. 4.8e. Trainees should not rely on the knowledge of OR staff to adjust the OR table. It is crucial to surgery and so the mechanics of the table should be familiar to trainees (Fig. 4.8f). The rules of engagement are utilized by military personnel to define how parties work with each other. The same is in effect for OR staff. Consider the items shown in Fig. 4.8g and modify them to **your** needs.

a

Fig. 4.8 Skills important to open and closed surgeries. (**a**) Items to wear during a surgery, (**b**) understanding of suture needle, (**c**) warming up of your grips of the needle holder/hemostat, (**d**) warm-ups in the clinical setting, (**e**) a storyboard for infant pyeloplasty, (**f**) mechanics of the table, (**g**) operating room table etiquette

Fig. 4.8 (continued)

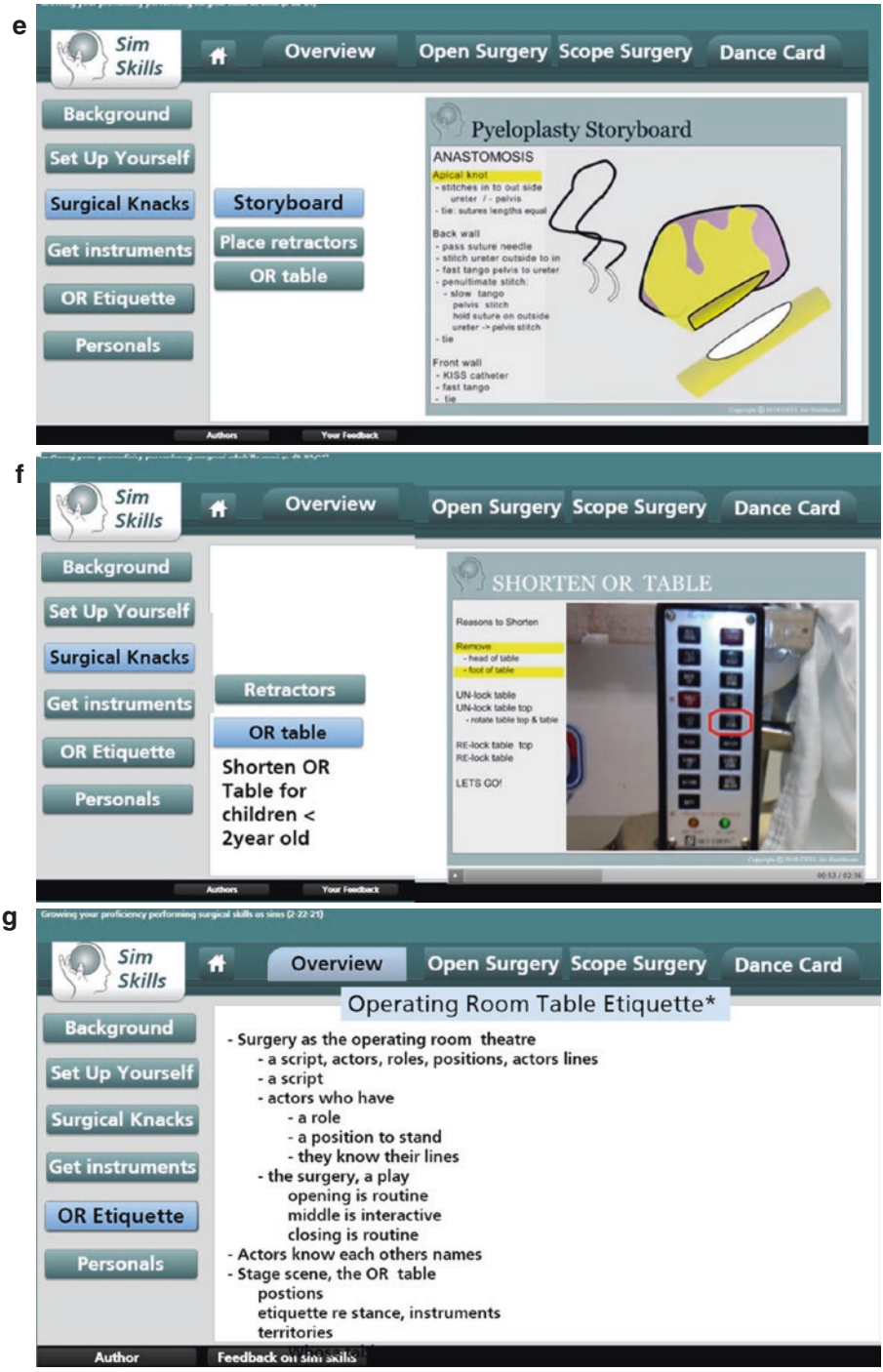
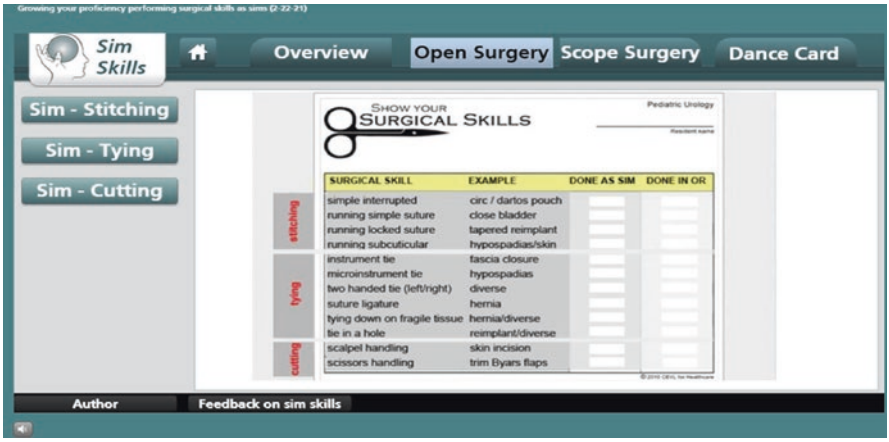


Fig. 4.8 (continued)

Open Surgery

Declare skills you would like trainees to be proficient (Fig. 4.9).

a



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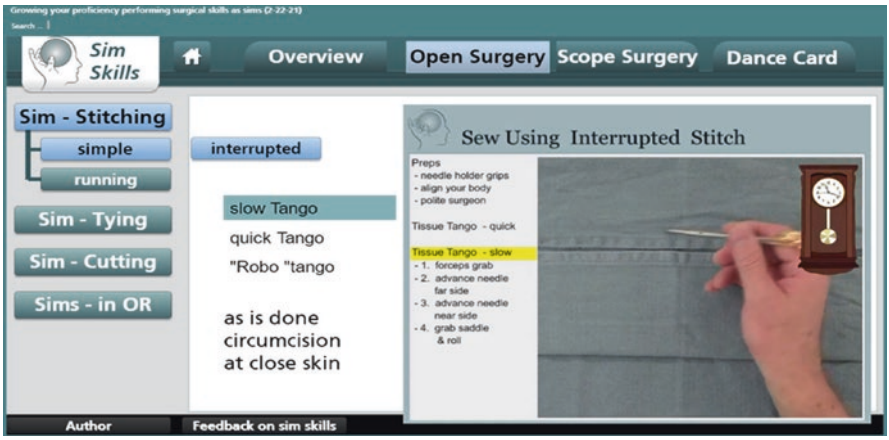
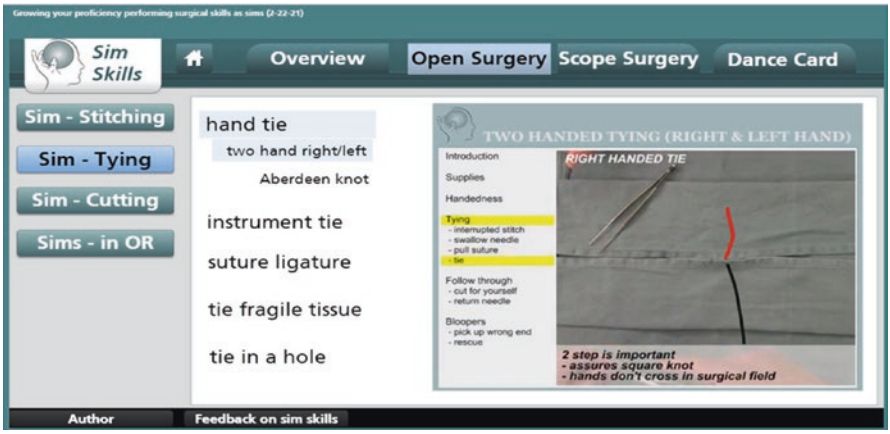


Fig. 4.9 (**a**) Get Skills - Use a "dance card." A dance card may be used as a tool to assure that trainee is "able to do all the dances" as shown in Fig. 4.9b. (**b**) Simple interrupted stitch. The steps are broken down to resemble "Tango" steps. The basic motion is a tick tock swivel of the surgeon's torso as emphasized by the clock. (**c**) Hand tie. (**d**) Suture ligation. (**e**) How to tie down on fragile tissue. (**f**) 3D animation reinforces understanding this routine technique of interrupted stitch. (**g**) A simple running suture as a natural extension of simple interrupted suture. (**h**) Being able to tie comfortably and securely in a "hole" is important. A simple basin is adapted to simulate a hole. (**i**) Knife skills include how to handle the scalpel. Key is to understand the different knife positions the knife may be used. The analogy with airplane orientation is helpful. (**j**) A quick trick to avoid dog ears; all too often "dog ears" result from cutting without paying attention to avoid this result. (**k**) Inguinal skin incision. Providing a clinical context for the sim exercises is important. Not cutting perpendicular to skin surface results in a "skived" cut. You may recall a skived cut is how you would like your shawarma cut as thin slices. An angled skin incision is trouble to close, so avoid this "blooper"

c



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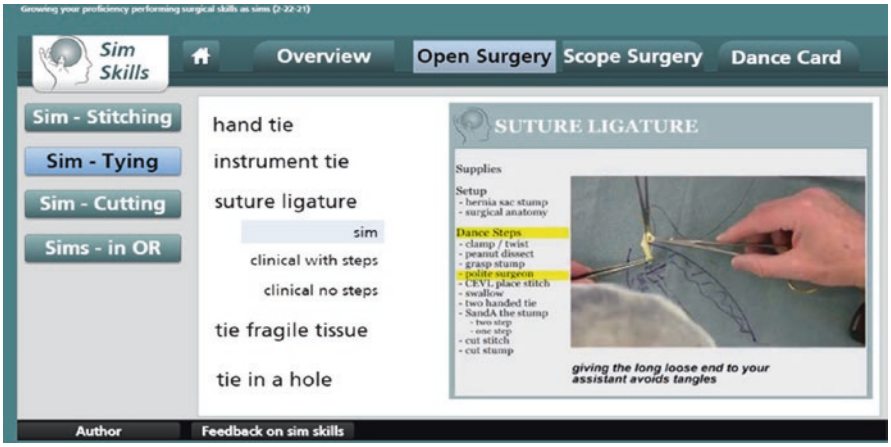

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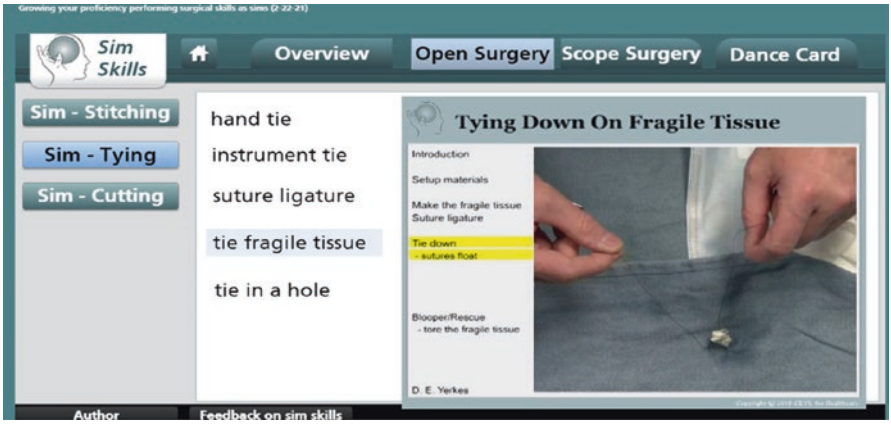

Fig. 4.9 (continued)

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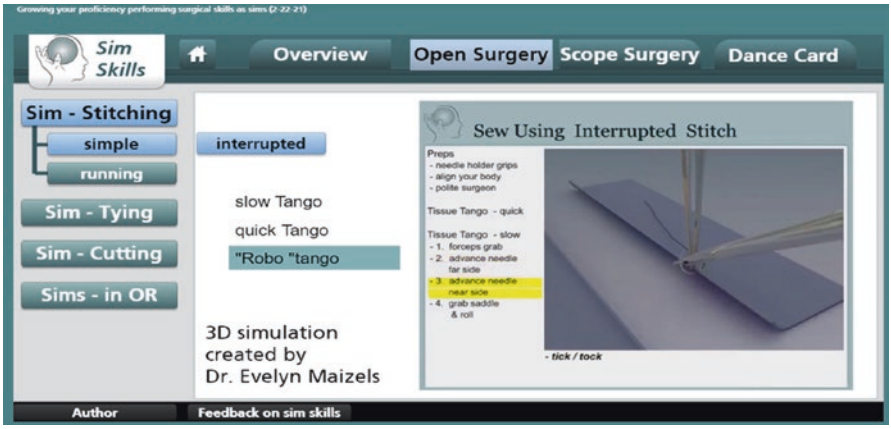

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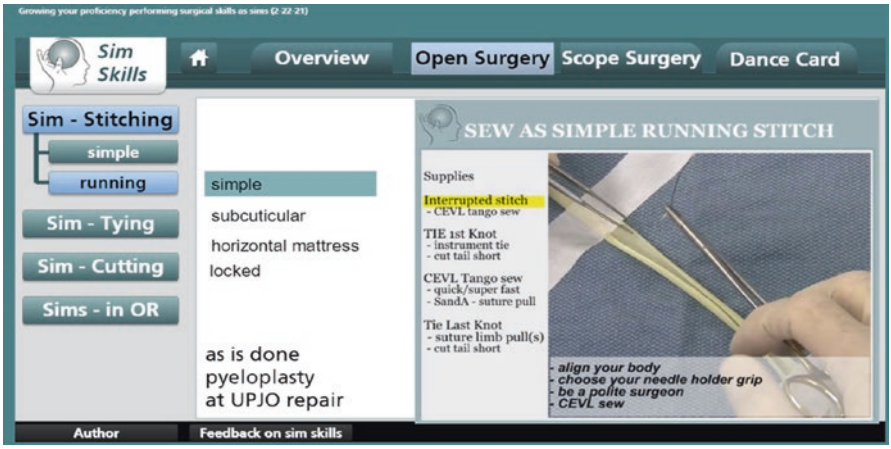

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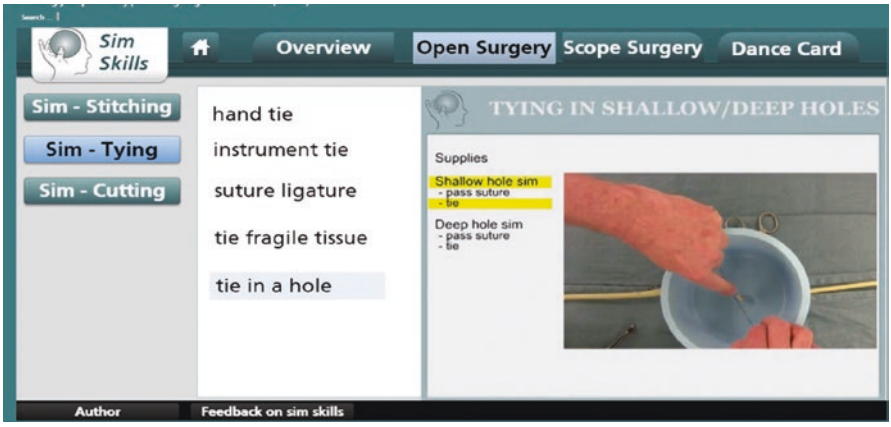
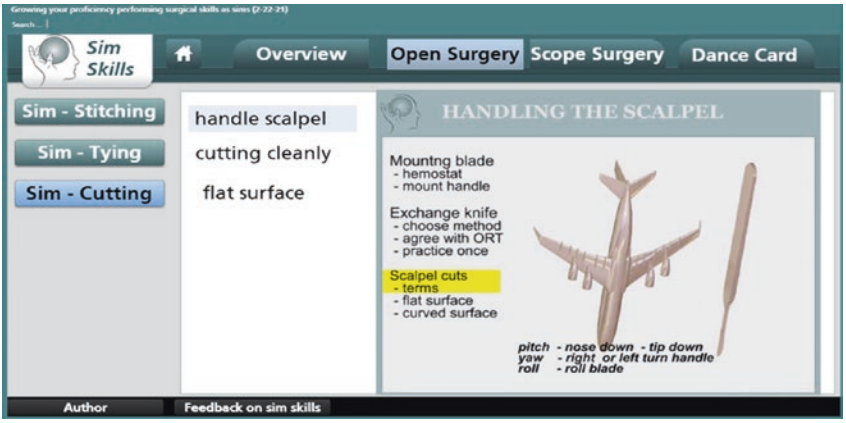


Fig. 4.9 (continued)

i



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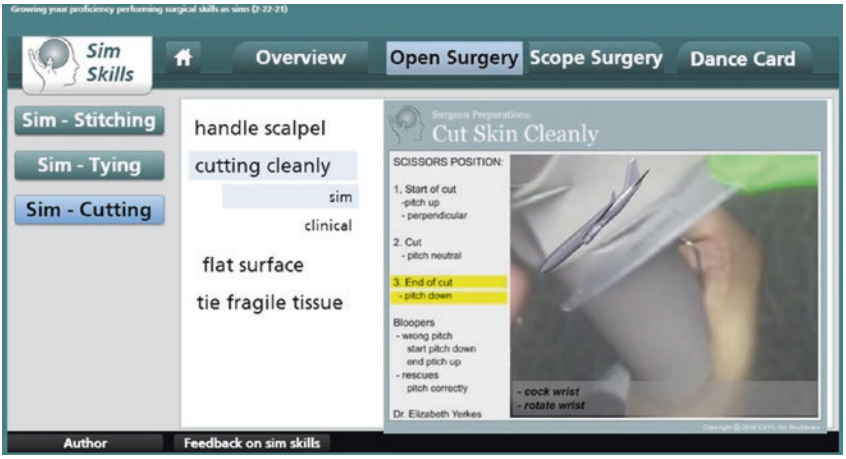

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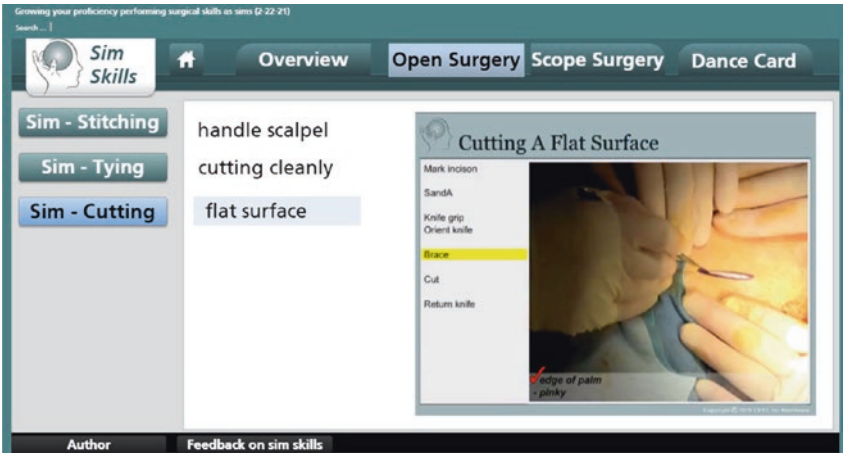

Fig. 4.9 (continued)

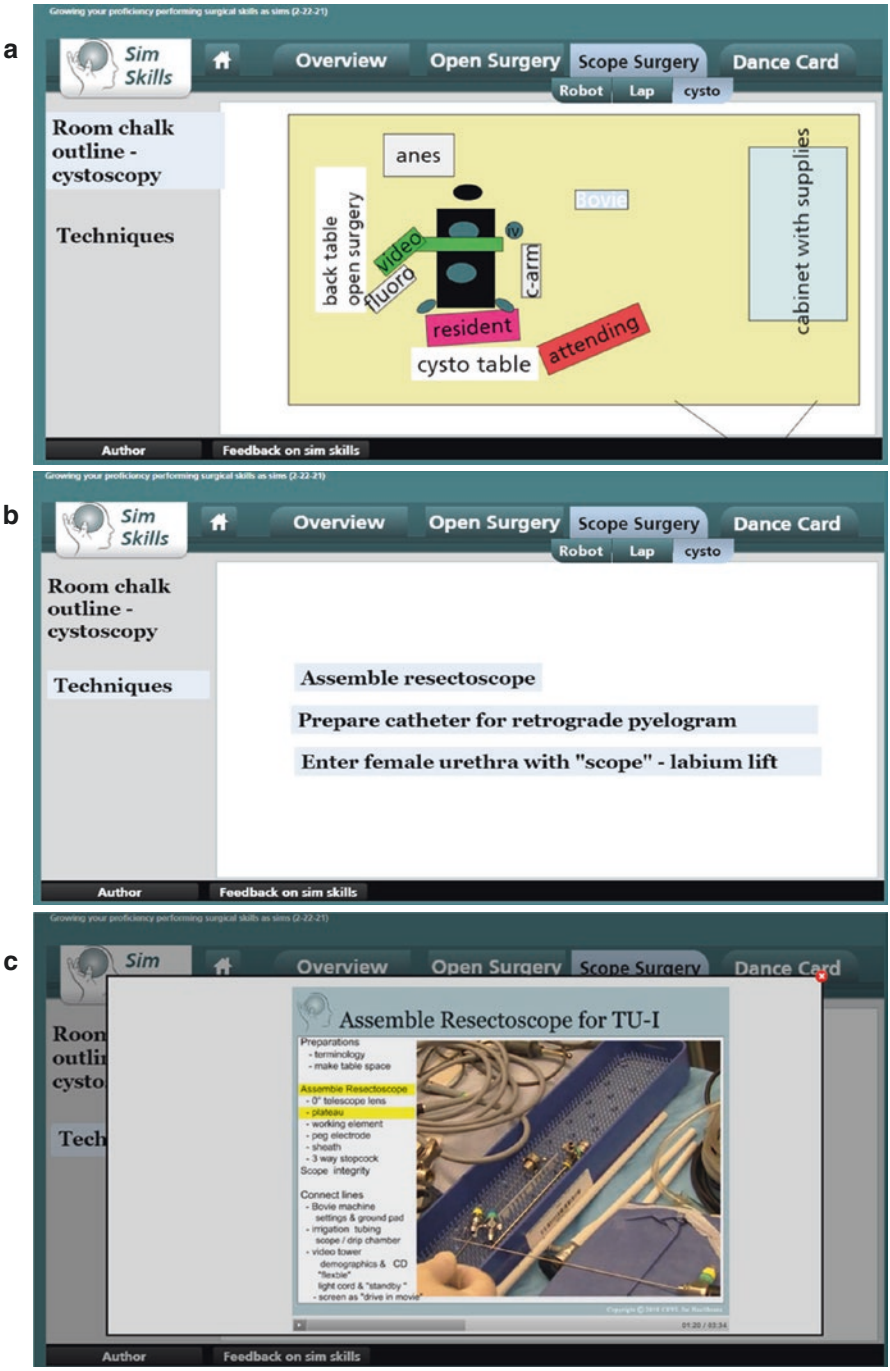

Fig. 4.10 (**a**) The room layout for scope surgery. (**b**) Three procedures are shown as examples. (**c**) Assembling important pieces of resectoscope. (**d**) Preparing a ureteral catheter to perform a retrograde pyelogram. (**e**) A sim practice, labium lift using a paper towel from the scrub sink

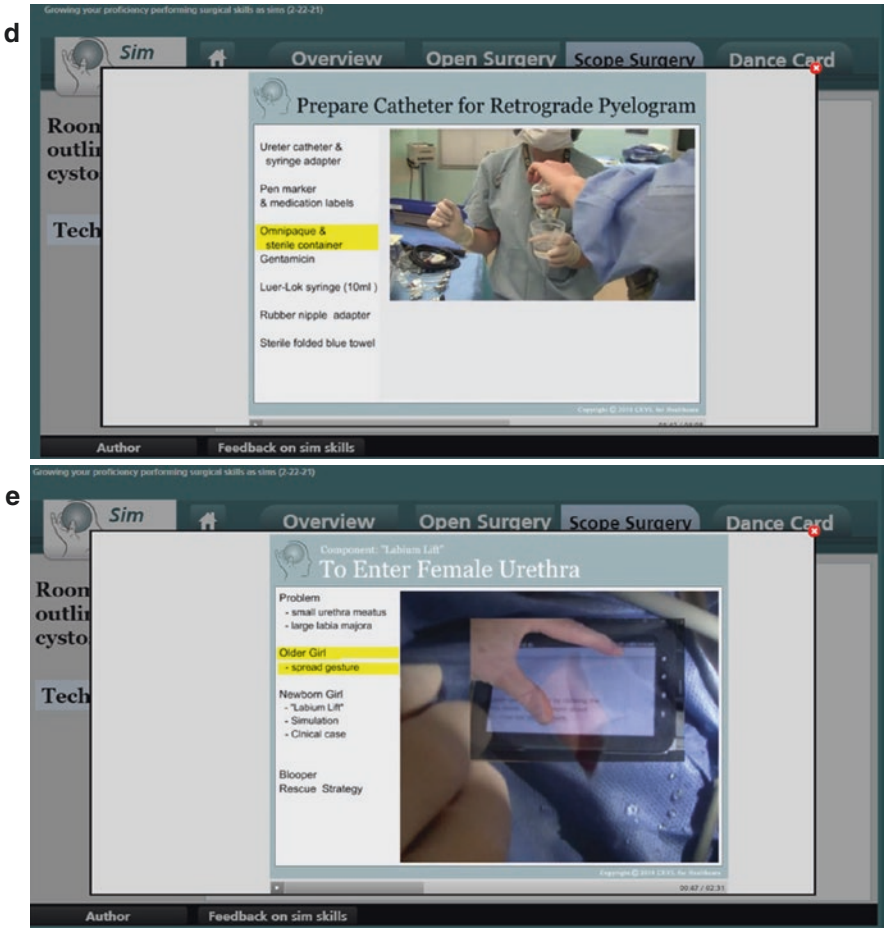

Fig. 4.10 (continued)

Endoscopic "Scope" Surgery

Endoscopic surgical procedures are showing effectiveness as an alternative to open surgery, expect they will be around for a long time. This being the case, we recognize that such procedures require skill sets different from open surgery. A few examples pertinent to endoscopic skills are shown in Fig. 4.10.

Endoscopic skills at "Scope Surgery" are of natural importance. However, the room layout is of considerable importance to perform the skills in the operating room. So consider being explicit with the trainee/OR staff, your surg-eco, the expected room layout (Fig. 4.10a). Identify skills of which you would like trainees and staff to be knowledgeable. Make a video to show how you would like it done. Three procedures are shown as examples in Fig. 4.10b. Showing the staff and trainees how to assemble important pieces of equipment (the resectoscope as shown in

Fig. 4.10c) will prepare them to perform more confidently and efficiently in the real-time operating room. Perhaps the scope would be assembled while other activities are transpiring, such as induction of anesthesia. In this way if you identify missing or broken parts, you will have more time to remedy this. Similarly, preparing a ureteral catheter to perform a retrograde pyelogram is shown stepwise in Fig. 4.10d. Showing the staff how to prepare the catheter ahead of time will permit them opportunity to perform with more confidence and effectiveness in the real time OR. Clinical skills in the real-time OR include skills which while they may be thought of as simple, such as "catheterizing the female urethra," can be daunting. A sim practice, labium lift using a paper towel from the scrub sink, is shown in Fig. 4.10e, followed up by a clinical example.

Give Feedback on Surgery Sim Skills

"Growing" trainees skills requires feedback and remediation. CEVL uses a salvo of "JotForm" surveys to communicate electronically. Once done, face-to-face communication could be used if desired. The skills expected to be done are presented online (Fig. 4.11). A supervisor, commonly a higher ranking trainee, may supervise and coach a trainee to perform the skills, and then input the feedback for the trainee to receive by e-mail (Fig. 4.12). Then, the trainee may "click" to review the information (Fig. 4.13).

This CEV-ule may be accessed at CEVL: Growing your sim skills

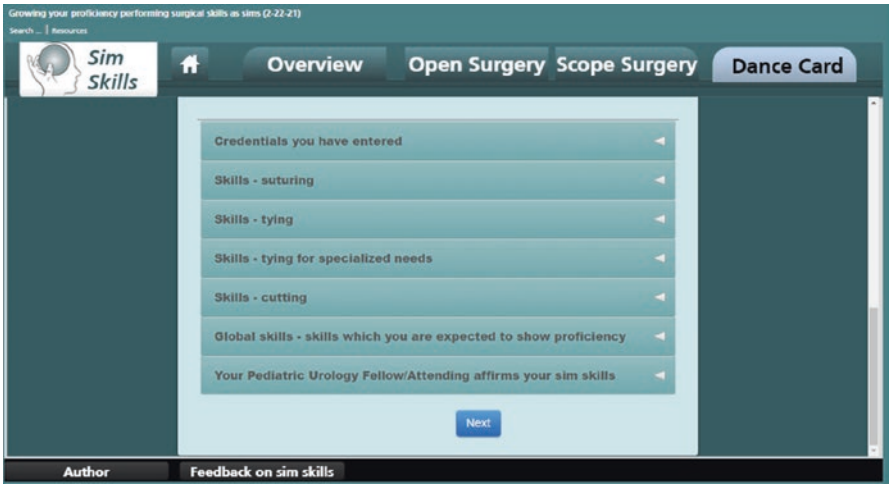

Fig. 4.11 Expected skills

4.4.3 *Make a Simulation Exercise for a Surgical Procedure*

As a follow-up to the storyboard example shown above, make a video of an isolated segment important to the case. Use a simple sim. Typically a high-fidelity sim is not necessarily more effective than a low-fidelity sim. But any sim is evidently better than no sim. Readily available Penrose drain serves the purpose.

It is easy enough to make a simulation for trainee to practice. To make it valuable, pick out the hardest part of the case and then use your common sense to figure

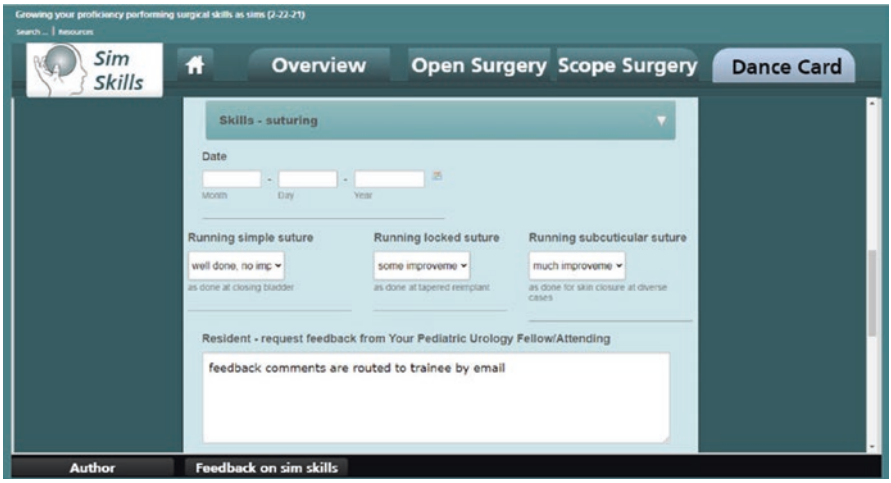

Fig. 4.12 Feedback form that a supervisor uses

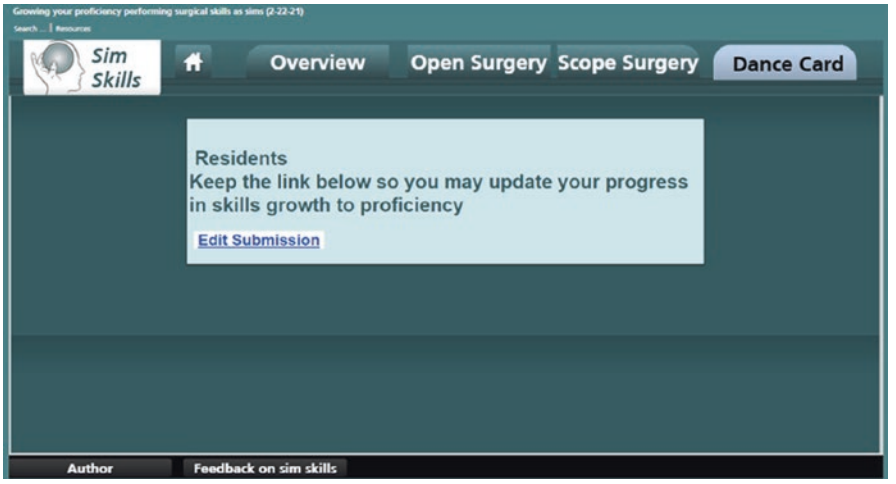

Fig. 4.13 Page used by the trainee to review the information

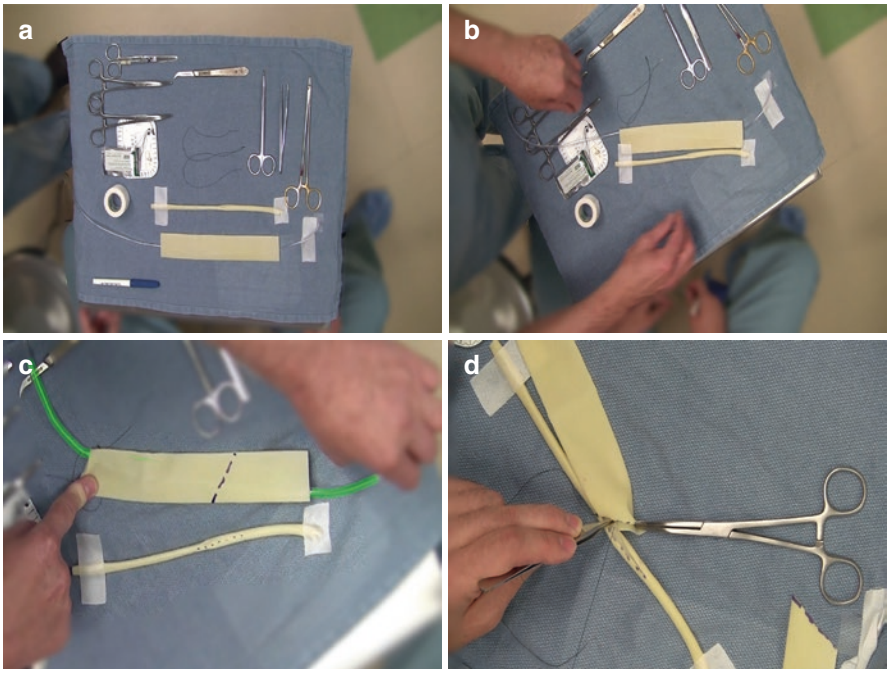

Fig. 4.14 (**a**) Ipsilateral ureteroureterostomy as a simulation. Typical Mayo stand instruments (be sure trainee knows their names) and narrow and wide Penrose drains represent the normal and obstructed ureters, respectively. Be sure you know the instruments you will need, as the scrub tech is really only there to hand you what you request. (**b**) Reposition the Penrose drains (wide simulating the obstructed ureter and narrow simulating the normal ureter) so they are adjacent to each other. (**c**) Mark the planned incision sites in each ureter. (**d**) Start the anastomosis by sewing the back walls of the ureters together. Practicing placing the suture tail limbs outside the lumen is critical

out how to craft a "stage" to build the technical skills into their mental concept. Ipsilateral ureteroureterostomy is shown as an example. The procedure while not frequent is uncommon. So practicing ahead of time is beneficial to trainee, and probably to attending as well. There are many subtle aspects to the case, for example catheterizing the affected ureter or exposing the ureters in the retroperitoneum. But actually doing the anastomosis as an open surgical procedure, especially in this age of robotic-assisted surgery, could be challenging. The following figures show the sim in action. Make the sim as a video, then the trainee can "copycat" during off duty hours (Fig. 4.14).

Sample PowerPoint is available for your use
extravesical reimplant

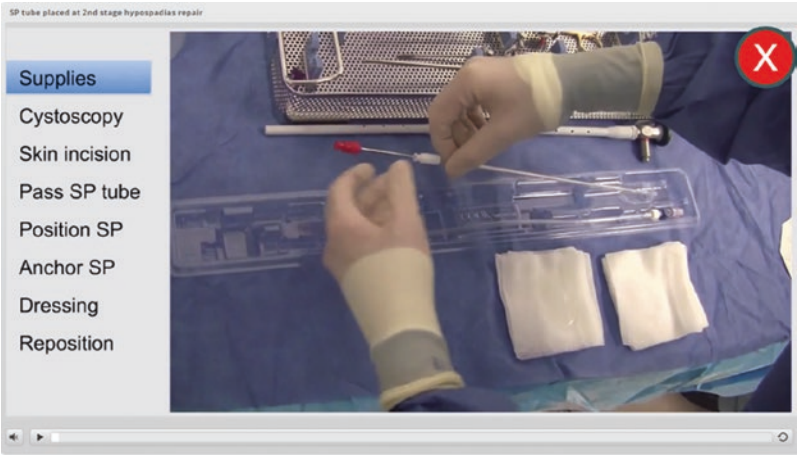

Fig. 4.15 This content was made by organizing the content logically, making companion video, using Storyline 3 to assimilate content and make it interactive

4.5 Portable Briefcases After Residency Training

Take-aways from residency training may include online access to modules created, particularly, if the trainee helped to construct them. Having the "bread crumb" to knowing how to pass a suprapubic tube during training makes it extra nice to access after training, as a "refresher." This content was made by organizing the content logically, making companion video, using Storyline 3 to assimilate content and make it interactive (Fig. 4.15).

insertion of suprapubic tube interactive

Storyline 3 is used to assemble the content. Logic is created using Storyline variables. Video is edited using Adobe suite. Audio is edited with Adobe Audition. Adobe Photoshop was used to archive and edit still images. Storyline 3 was used to build interactive content and publish to an online server using WS-FTP, an FTP client. Jotform was used to construct the feedback tool. Your contents could be created by your staff using Microsoft PowerPoint and then relayed to your hospital instructional design team.

Reference

1. George BC, Teitelbaum EN, Meyerson SL, Schuller MC, DaRosa DA, Petrusa ER, Petito LC, Fryer JP. Reliability, validity, and feasibility of the Zwisch scale for the assessment of intraoperative performance. J Surg Educ. 2014;71(6):e90–6. https://doi.org/10.1016/j.jsurg.2014.06.018. Epub 2014 Sep 3. PMID: 25192794.

Chapter 5
Office Practice

Contents

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5.2 Assets to Prepare This Content 84

In surgeons' everyday world, it is implicit that the support staff be keenly aware of practices expected – not those learned at a previous job, not those learned by urban legend from a co-worker, and certainly not by guess. In order to have the knowledge memorialized so that the ever-changing new staff can fit seamlessly into the work flow, have a few CEV-ules for important aspects of the practice. In this way, you clarify work expectations which leads to staff confidence and comfort. Your surg-eco just got better.

I have picked a few office nurse duties pertaining to pediatric urology which will give you ideas on application to your own practices.

5.1 Radiographs

While nurses are not certified to read and interpret radiographs, it is reasonable to educate them so they are comfortable reviewing and hearing conversations pertinent to the topic. The content is organized as shown in the following figures (Fig. 5.1).

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M. Maizels, *A Guide to Make Applications for Holistic Surgical Practice*,
https://doi.org/10.1007/978-3-030-77380-9_5

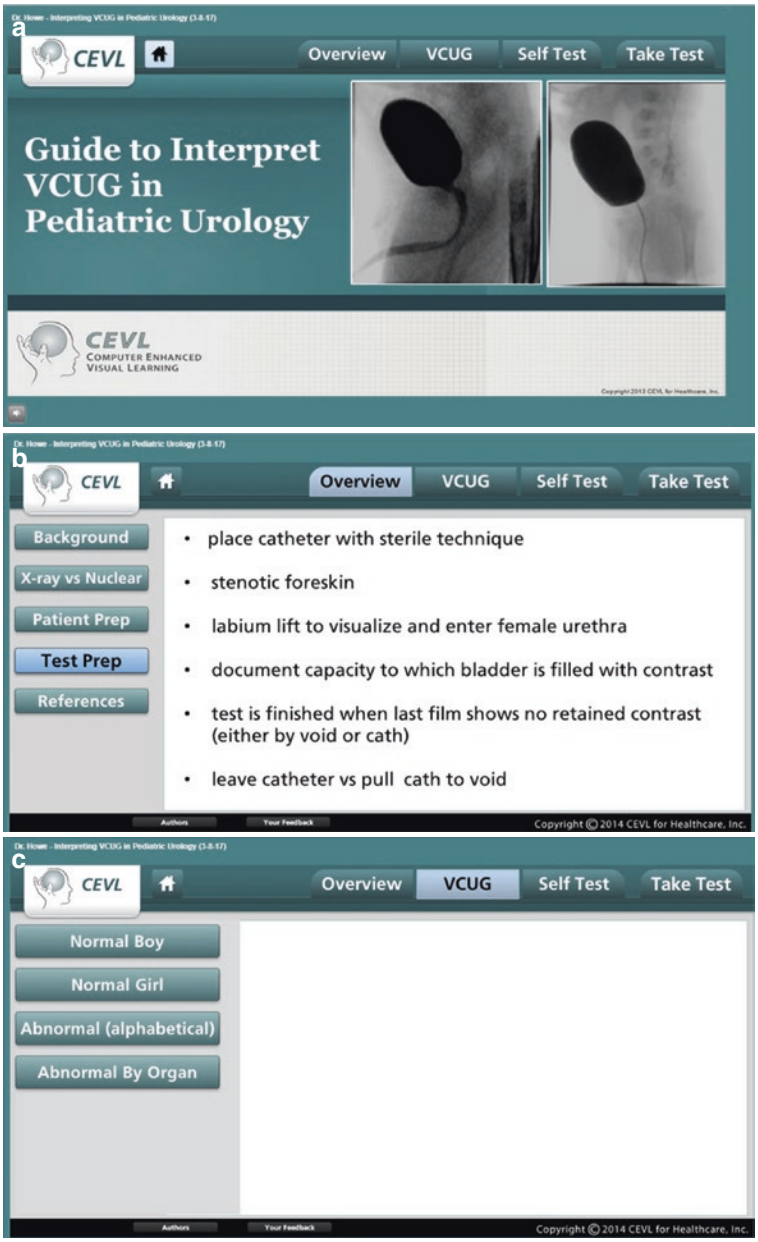

Fig. 5.1 (**a**) Main landing page. (**b**) The overview tab that provides orientation to the test. Here "prep" is highlighted. (**c**) Content is provided in the interactive tabs on the left panel as "normal" or "abnormal". (**d**) Information on the scout film for a "normal" boy is shown. (**e**) A representative image of "earl fill"; the exam is continued during filling and emptying of the bladder. (**f**) Image set of "abnormal" may be grouped by diagnosis. (**g**) An example of "neuropathic constipation". (**h**) Image sets by organ (bladder as shown in the figure) may be provided. (**i**) Findings in a patient with ureterocele. (**j**) An overlay provides clarity as to the inferred location of the ureterocele (light yellow) with respect to the bladder (dark yellow)

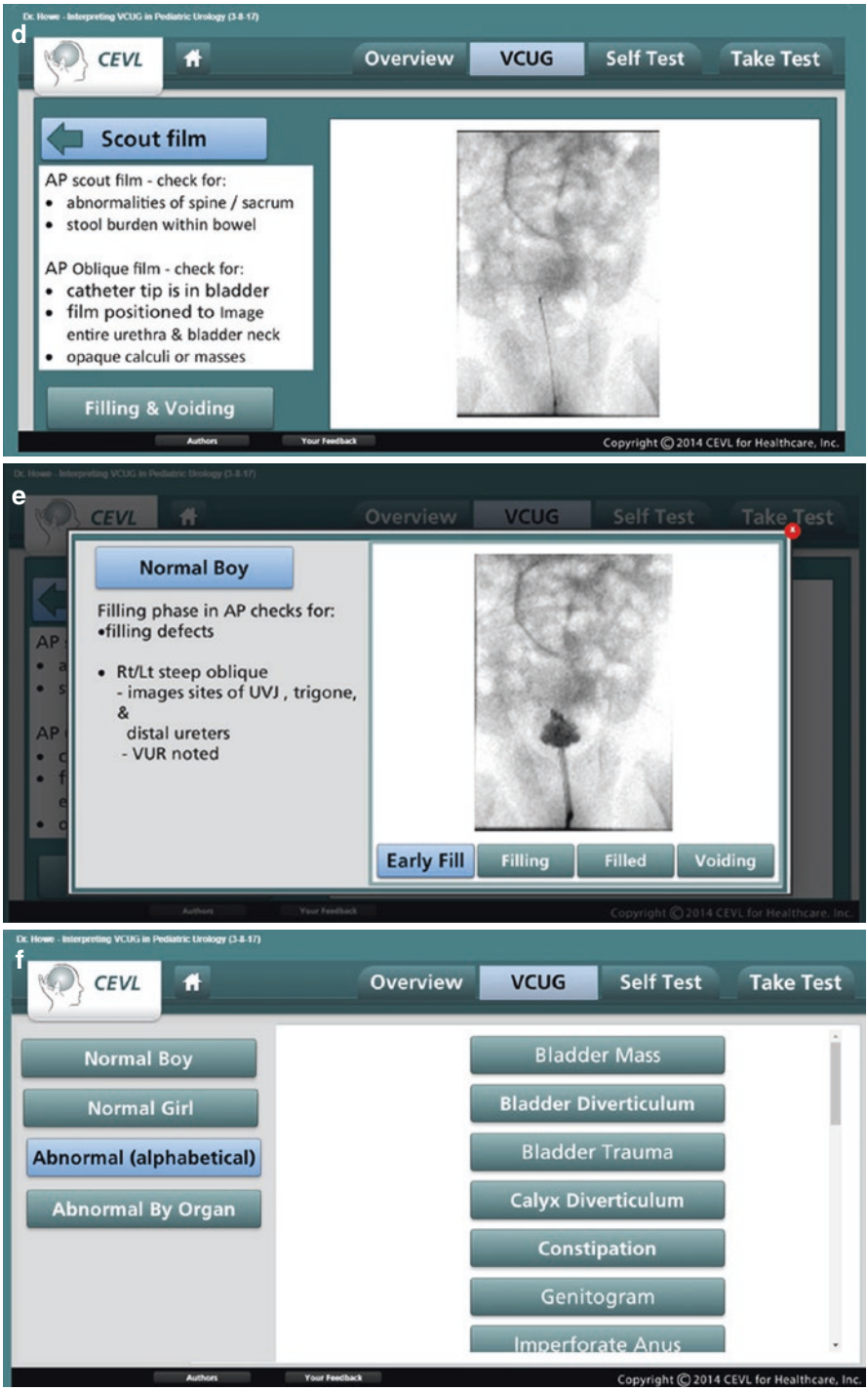

Fig. 5.1 (continued)

Fig. 5.1 (continued)

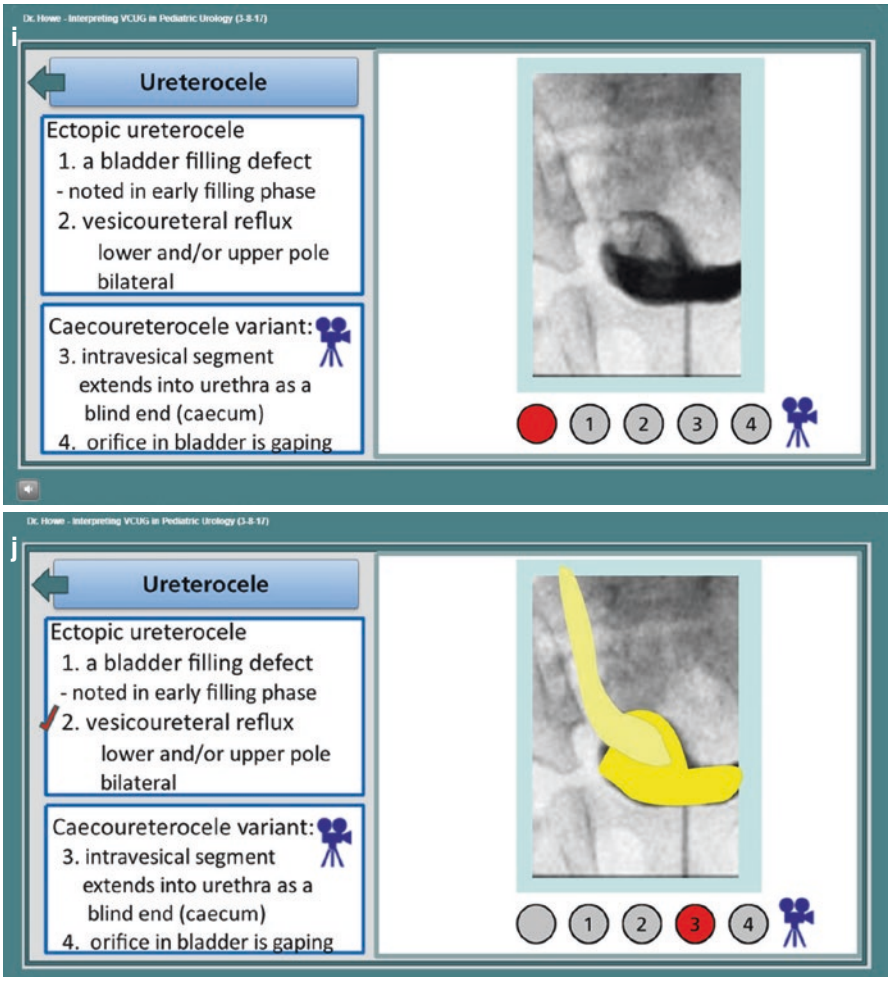

Fig. 5.1 (continued)

Let the learner know how they are learning. Provide a self-test (Fig. 5.2).

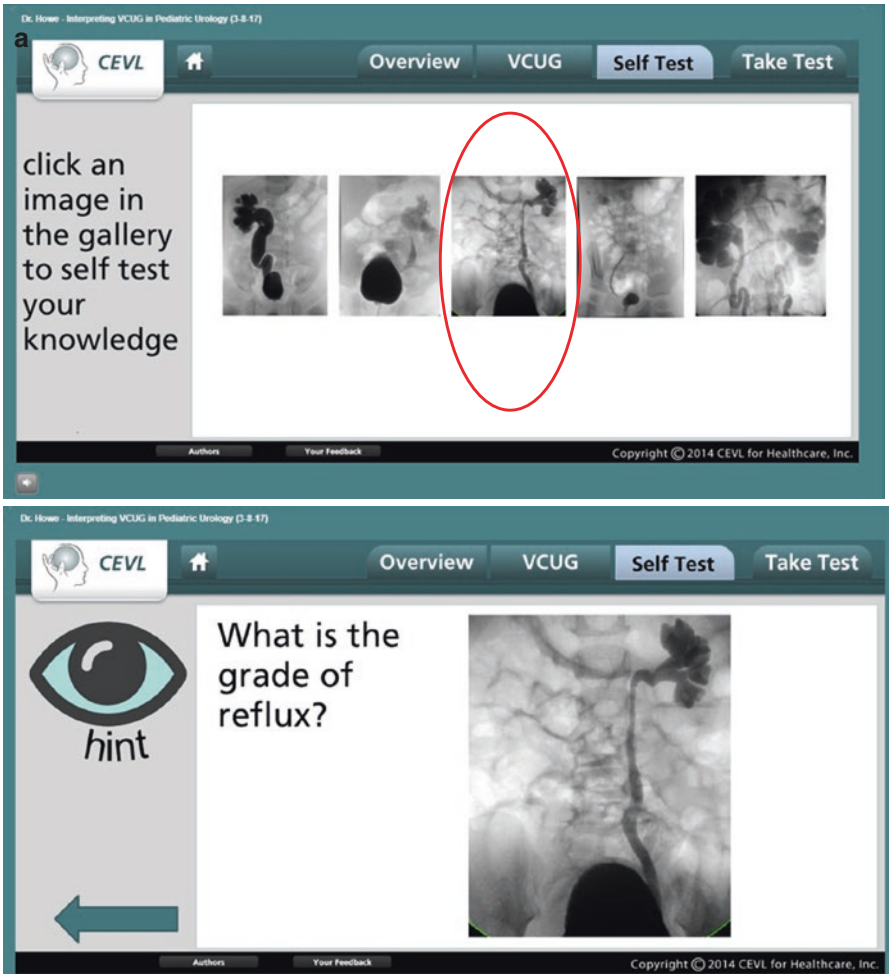

Fig. 5.2 VCUG in pediatric urology. (**a**) Clicking the image circled above calls up the question posed in the slide. (**b**) Hovering the mouse over the hint provides the question answer and the overlay gives further explanation. (**c**) A jotform provides a tool to take and score the test

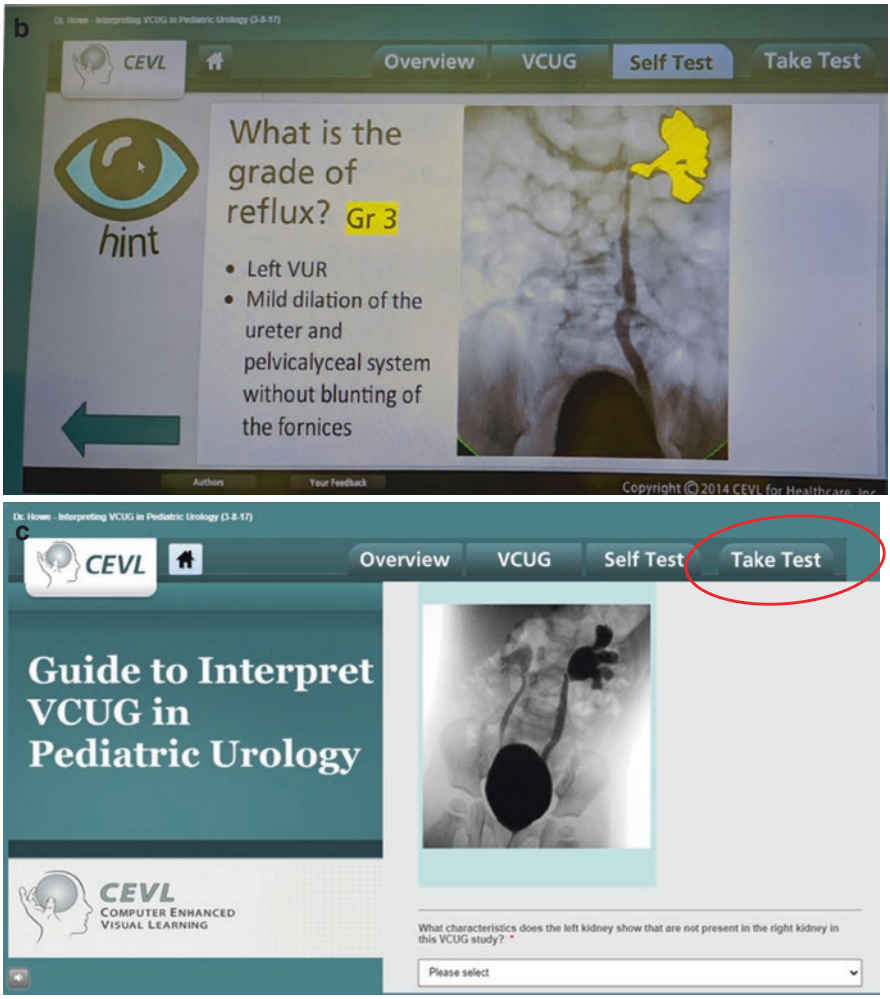

Fig. 5.2 (continued)

The example shown may be viewed as an interactive online, VCUG in Pediatric Urology

5.2 Assets to Prepare This Content

Storyline 3 is used to assemble the content. Logic is created using Storyline variables. Video is edited using Adobe suite. Audio is edited with Adobe Audition. Adobe Photoshop was used to archive and edit still images. Storyline 3 was used to build interactive content and publish to an online server using WS-FTP, an FTP client. Jotform was used to construct the test. Your contents could be created by your staff using Microsoft PowerPoint and then relayed to your hospital instructional design team.

Chapter 6
Training for Procedures Not Done in the Operating Room

Contents

6.1 Landing Page 85
6.2 Overview Page 88
6.3 Order to Evaluate the Patient Is Next Detailed 83
6.4 Assets Used to Create This Content 91

Your surg-eco extends outside of the operating room. In this chapter, we show how you may interface with emergency room physicians so as to provide them with a workflow which you supervise.

Acute, painful pediatric scrotum conditions are a frequent profile of patients seeking emergency care. Yet, as there are many different specialists important to the child's care, a workflow agreed upon by these various specialists is beneficial. This need is underscored by the transient nature of staff, who require a clear understanding of the expected needs to suffice. The CEV-ule (Fig. 6.1) provides online access for the team.

6.1 Landing Page

The main landing page is used to provide a "quick look" at the content, highlighting the most important points. The content is provided as rolling screen captures.

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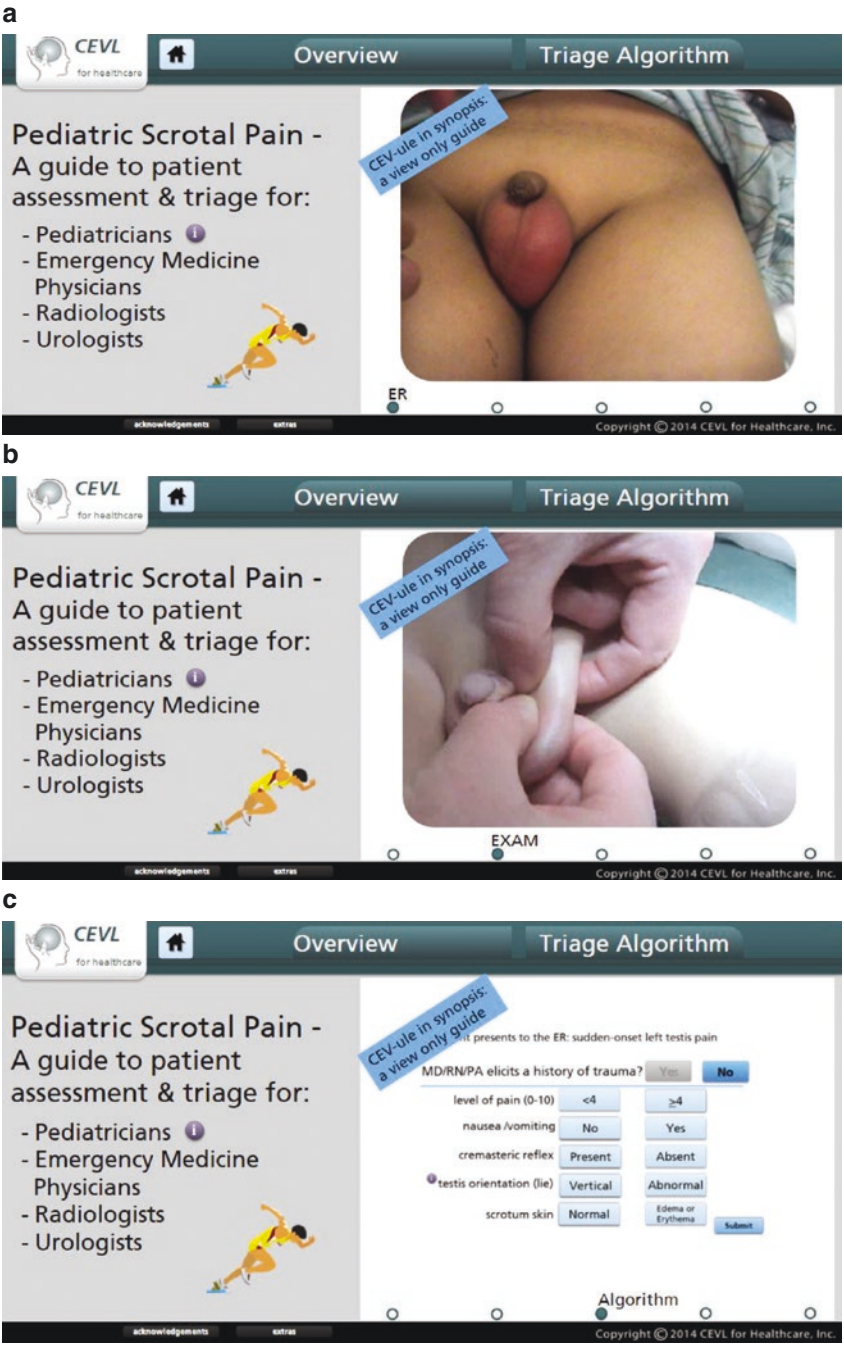
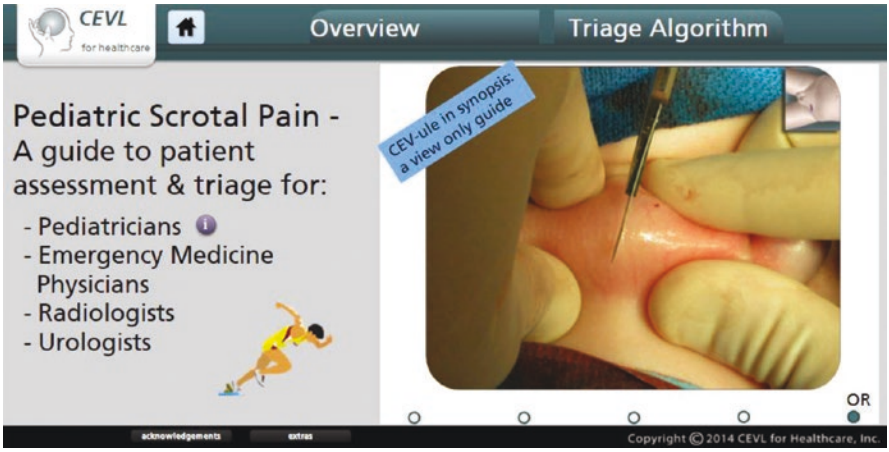


Fig. 6.1 (**a**) Presentation in emergency room. (**b**) Exam. (**c**) Algorithm provides a binary decision tree approach to help structure diagnosis and management. (**d**) Findings in OR explained to ER staff who may not visit the OR. (**e**) How this content applies to pediatricians is noted

d



e

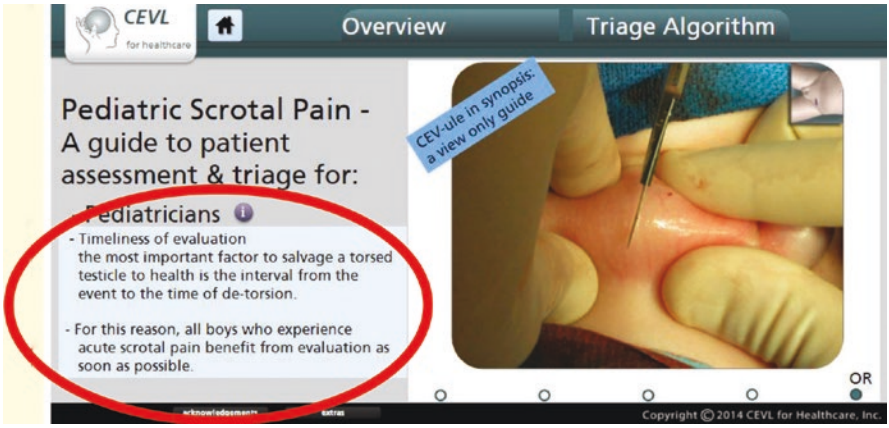


Fig. 6.1 (continued)

6.2 Overview Page

Overview gives details of the content important to understand the problem (Fig. 6.2).

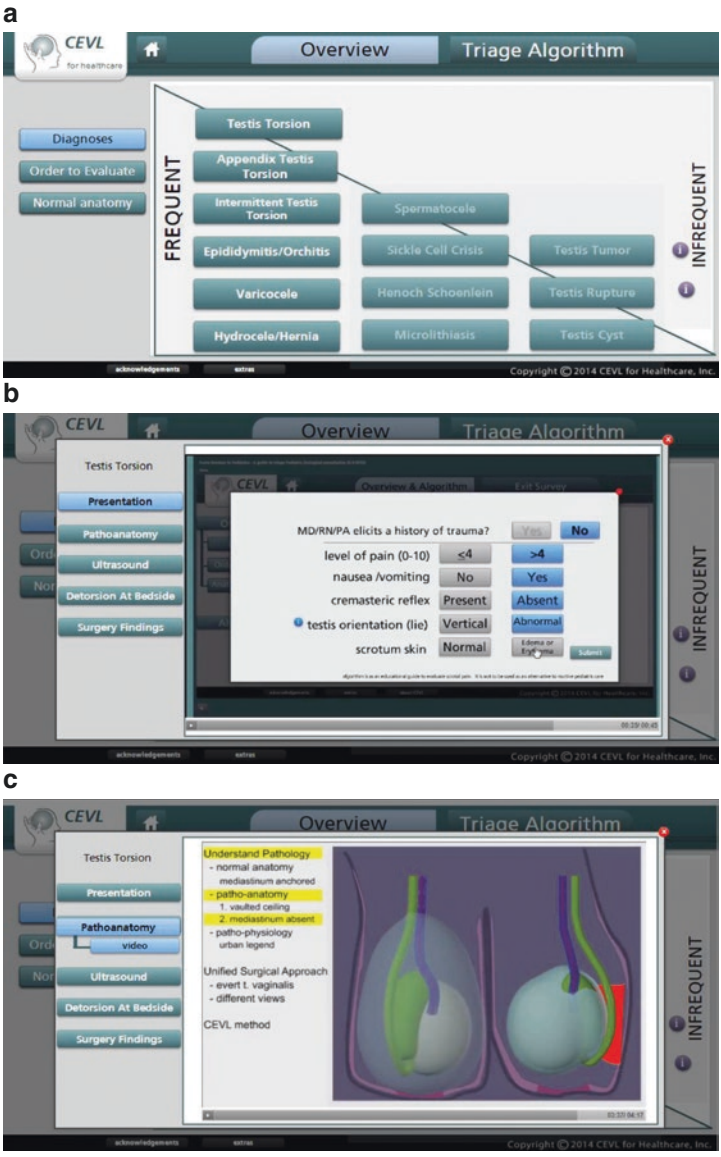


Fig. 6.2 (**a**) Diagnoses to consider in differential diagnoses are listed by incidence, frequent to infrequent. "i" icons provide additional information. (**b**) Details of the clinical presentation of a "case." Symptoms scored are shown in royal blue. (**c**) Pathophysiology of the condition explained with a video. (**d**) Typical ultrasound findings. (**e**) In the emergency room, the procedure to perform "detorsion" of the "torsed" testis is explained and demonstrated. (**f**) Findings at surgery are provided. ER staff seldom have opportunity to see the "surgery done" in real time, so the video provides this opportunity

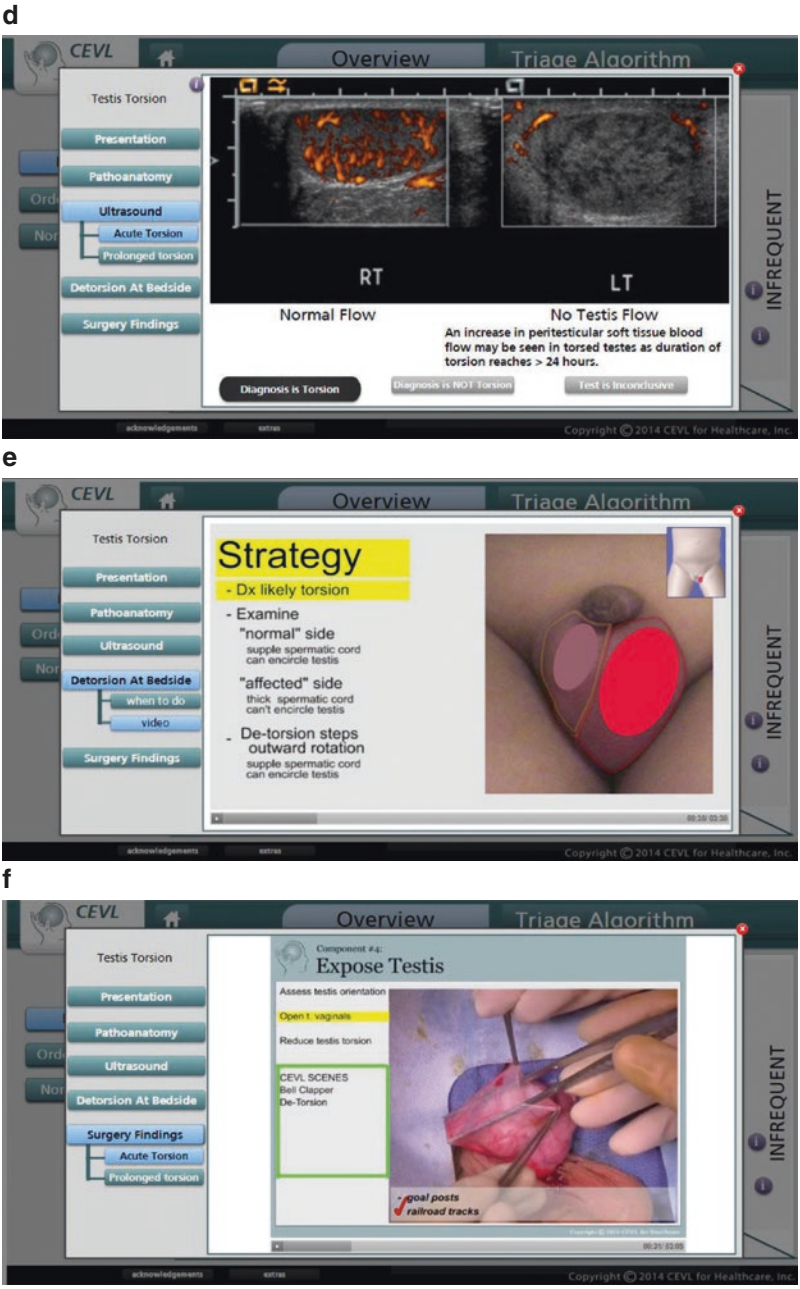


Fig. 6.2 (continued)

6.3 Order to Evaluate the Patient Is Next Detailed (Fig. 6.3)

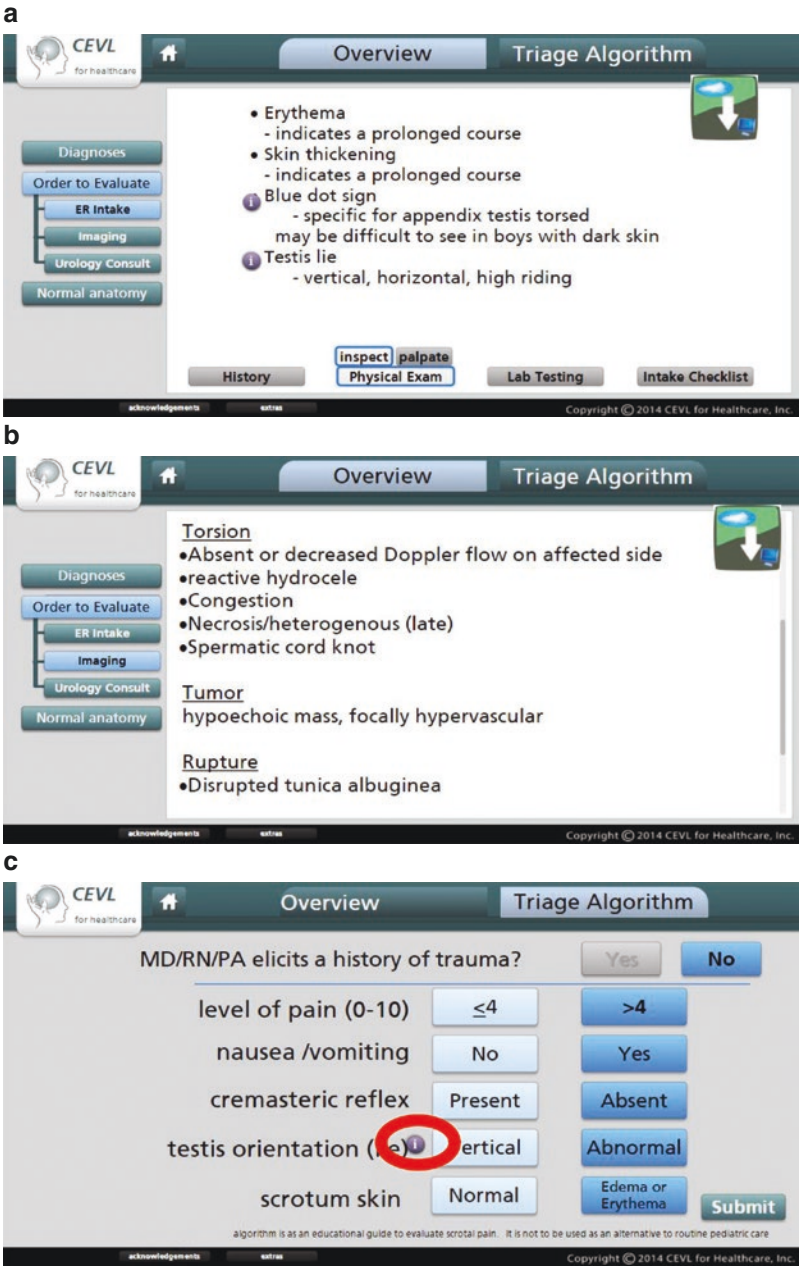
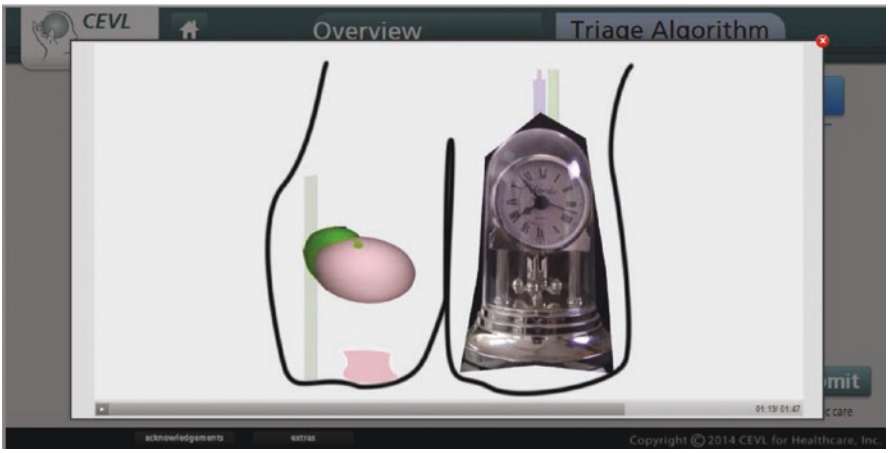


Fig. 6.3 (**a**) Details of the intake evaluation expected to be done. (**b**) The typical findings noted by radiographic imaging as ultrasound. (**c**) The management algorithm is shown as an example for a "boy" with the complaints highlighted in blue. Clarity is provided on "testis orientation. (**d**) The physical exam findings for intermittent testis torsion are presented as a video. (**e**) The management suggestion provided by algorithm is attained

d



e

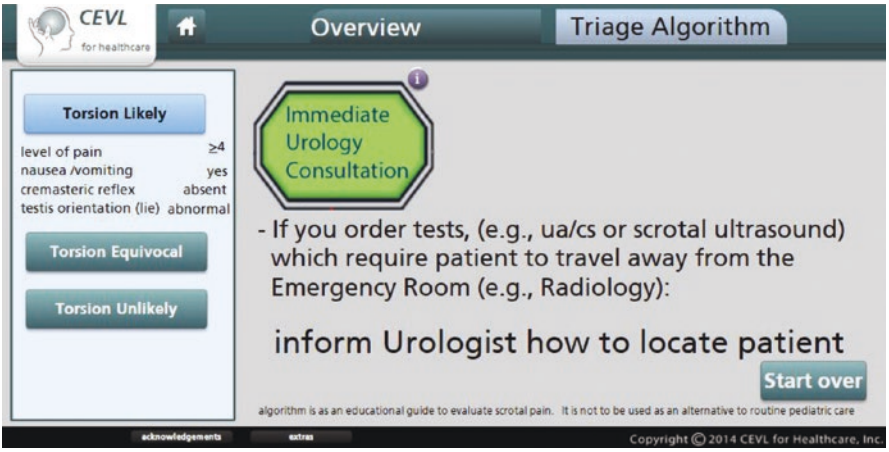


Fig. 6.3 (continued)

6.4 Assets Used to Create This Content

Storyline 3 is used to assemble the content. Binary logic is created using Storyline variables. Video is edited using Adobe suite. Audio is edited with Adobe Audition. Your contents could be created by your staff using Microsoft PowerPoint and then relayed to your hospital instructional design team.

View this content as an interactive.
CEV-ule for emergency room management of scrotal pain

Chapter 7
Explaining Surgical Care to Patients and Families

Contents

7.1 Surgical Care 93
7.2 Outpatient Care 97

7.1 Surgical Care

Patients may seek information regarding surgical plans from a variety of open source materials, such as Google searches, information from major hospital institutions, and a litany of other sources. However, this information is not filtered for the specific patient or for the specific surgeon/hospital providing the care.

Creating your own content to provide the needed information goes a long way to build patient trust and rapport. Figure 7.1 shows the broad category/specific diagnosis in the left panel. The condition of ascended testis is highlighted in this figure.

PowerPoint was created by staff. Storyline 3 imported the PowerPoint and then assembled the content. Images are edited using Adobe suite. Audio is edited with Adobe Audition. Adobe Photoshop was used to archive and edit still images. Storyline 3 was used to build interactive content and publish to an online server using WS-FTP, an FTP client. ***Your*** contents could be created by your staff using Microsoft PowerPoint and then relayed to your hospital instructional design team.

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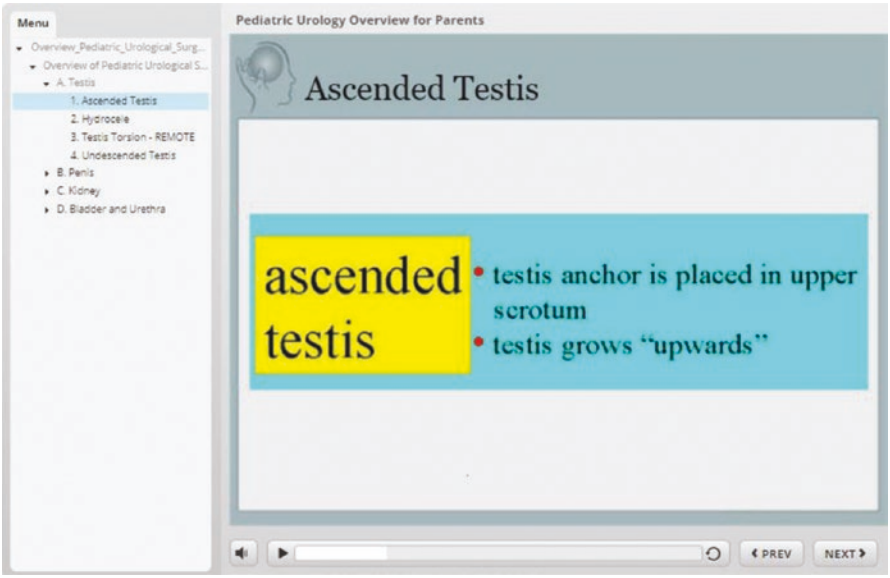
a

b

Fig. 7.1 Overview of surgical care for parents. (**a**) Overview allows the provider to navigate to the desired diagnosis. (**b**) Left panel shows the testis conditions. (**c**) Image showing the scrub bar in the timeline to explain the specific diagnosis of ascended testis to the patients. (**d**) Representative pictures of surgical findings that may be displayed or skipped if the patient chooses not to view. (**e**) Anesthetic concerns are able to be reviewed using this slide as a "talk point." (**f**) The "glossary" of diagnoses shows the breath of the content and applicability to a diverse group of patients

c



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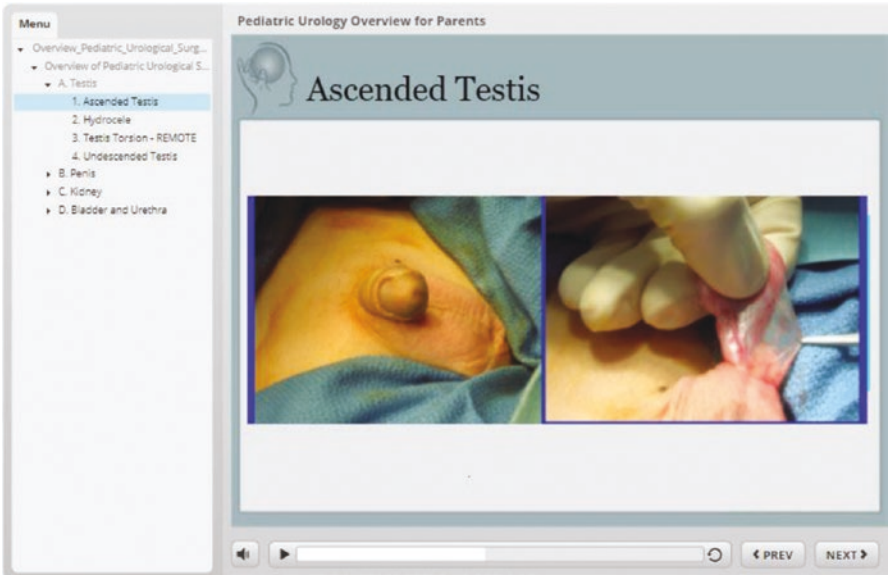
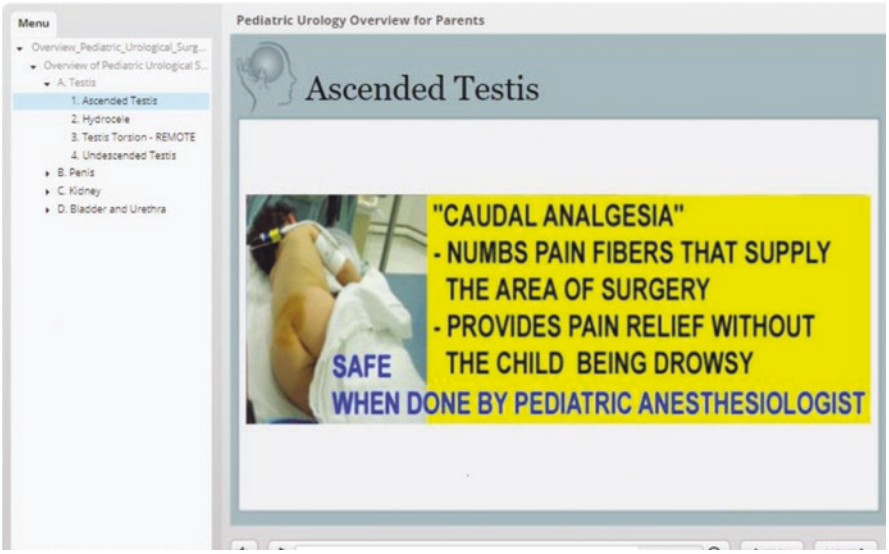


Fig. 7.1 (continued)

e



f

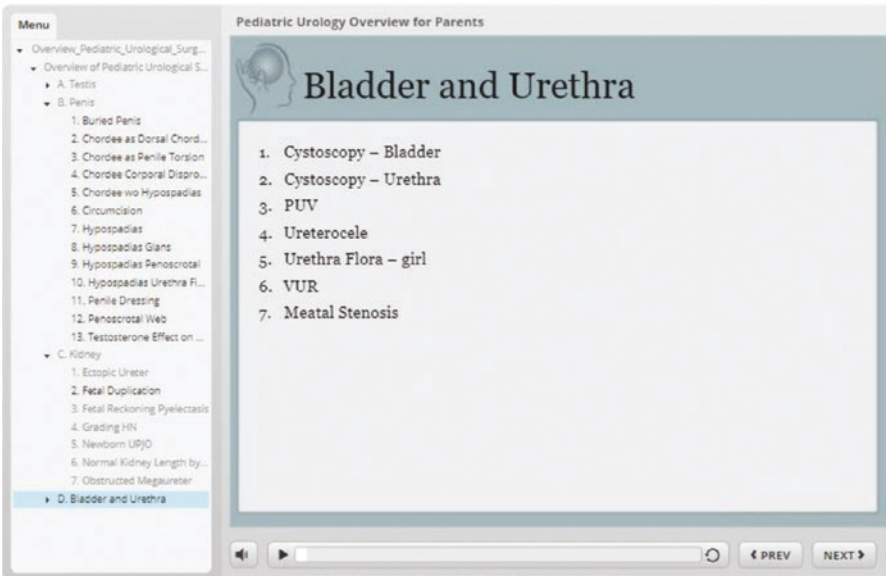


Fig. 7.1 (continued)

Parent overview of surgical care as PowerPoint
Parent overview as a working Storyline file
Parent overview of surgical care as a published online tool

7.2 Outpatient Care

It is implicit in the day in day out practice of extending outpatient care, that staff provide patients understanding of care instructions provided to their patients. Even with the best intentions, too often, instructions are provided by caregivers without clear patient understanding. Or, even if patients understand at the time of their encounter, they may need to relay the care instructions to other family members. A "safety net" is to provide instructions online. While many practices now do this, the information is presented as static text, which may not be received eagerly by families. Providing information multimedia with text, pictures, audio makes the understanding more engaging, and so more likely the instructions will be complied. In pediatric urology, it is common to extend care for wetting disorders or urine infection. In the evaluation of these complaints, it is critical to know the measurement for "functional bladder capacity." This is accomplished by home diary. Figure 7.2 from the interactive show families how to do this.

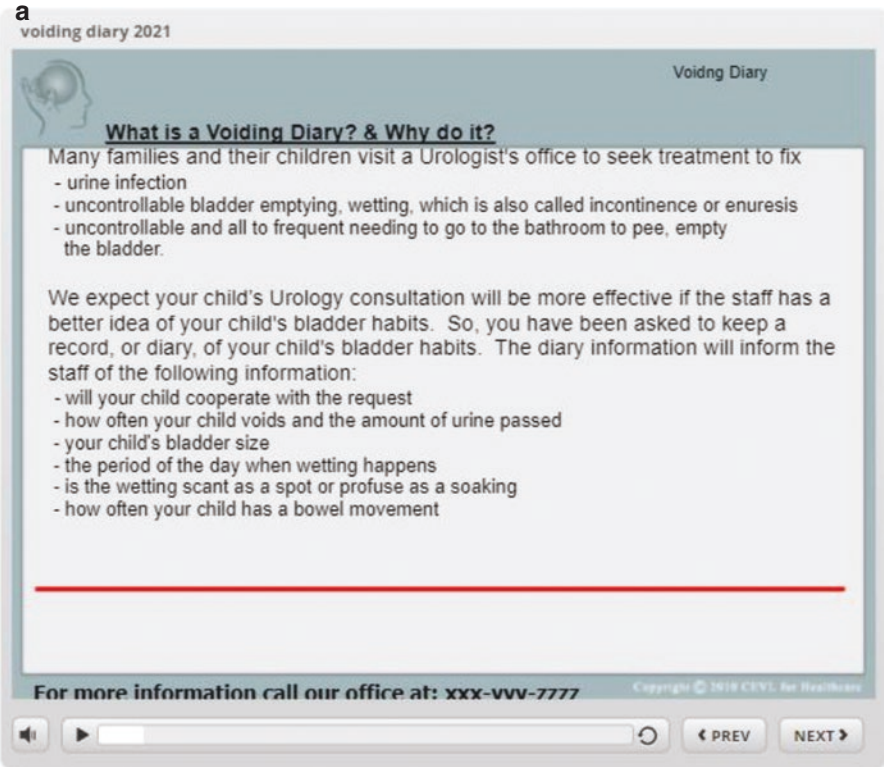


Fig. 7.2 (**a**) Introductory text that orients the patient. (**b**) Graphics help engage the patients' attention. (**c**) showing an example of the final result expected provides patients with confidence on what is expected of them to achieve

b

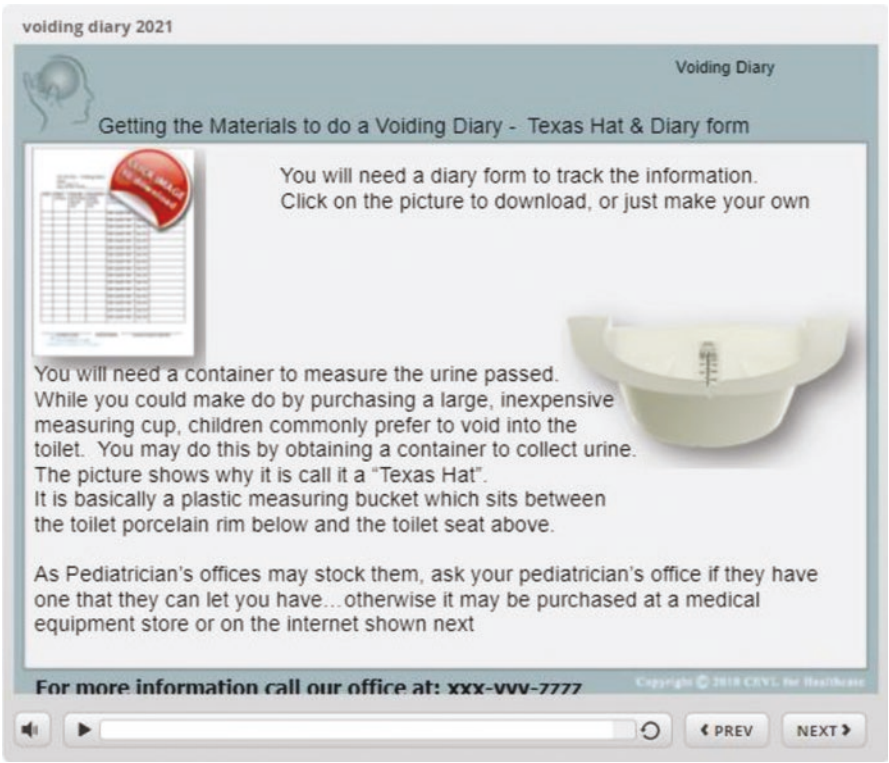
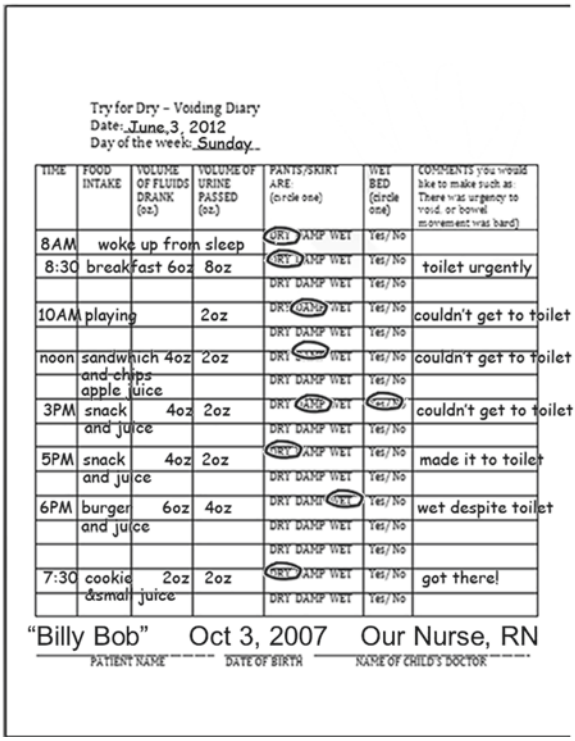


Fig. 7.2 (continued)

c

Voiding Diary

Sample Voiding Diary (also bowel movements)



Try for Dry – Voiding Diary
Date: June, 3, 2012
Day of the week: Sunday

TIME	FOOD INTAKE	VOLUME OF FLUIDS DRANK (oz.)	VOLUME OF URINE PASSED (oz.)	PANTS/SKIRT ARE (circle one)	WET BED (circle one)	COMMENTS (you would like to make such as: There was urgency to void. or bowel movement was hard)
8AM	woke up from sleep			DRY DAMP WET	Yes/No	
8:30	breakfast	6oz	8oz	DRY DAMP WET	Yes/No	toilet urgently
				DRY DAMP WET	Yes/No	
10AM	playing		2oz	DRY DAMP WET	Yes/No	couldn't get to toilet
				DRY DAMP WET	Yes/No	
noon	sandwich and chips apple juice	4oz	2oz	DRY DAMP WET	Yes/No	couldn't get to toilet
				DRY DAMP WET	Yes/No	
3PM	snack and juice	4oz	2oz	DRY DAMP WET	Yes/No	couldn't get to toilet
				DRY DAMP WET	Yes/No	
5PM	snack and juice	4oz	2oz	DRY DAMP WET	Yes/No	made it to toilet
				DRY DAMP WET	Yes/No	
6PM	burger and juice	6oz	4oz	DRY DAMP WET	Yes/No	wet despite toilet
				DRY DAMP WET	Yes/No	
				DRY DAMP WET	Yes/No	
7:30	cookie &small juice	2oz	2oz	DRY DAMP WET	Yes/No	got there!
				DRY DAMP WET	Yes/No	

"Billy Bob" Oct 3, 2007 Our Nurse, RN
PATIENT NAME DATE OF BIRTH NAME OF CHILD'S DOCTOR

Fig. 7.2 (continued)

Link to PowerPoint
Link to raw Storyline 3 file
Link to published Storyline 3 file

Chapter 8
Applications in Diverse Specialties

Contents

8.1 Adult Urology 102
8.2 Obstetrics 103
8.3 Pediatric Ophthalmology 104
8.4 Pediatric Orthopedics 105
8.5 Otorhinolaryngology 106
References 107

While the content in this book draws heavily on the author's specialty of pediatric urology, it is only a short leap to apply these techniques and clinical orientation to other surgical specialties. A few are tabulated below.

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8.1 Adult Urology

This CEV-ule (Fig. 8.1) was created collaboratively by Drs Milani and Maizels to provide increased surg-eco communication and well-being. Dr Milani has received many benefits from use of this CEV-ule in his surgical practice.

Click to view the neobladder interactive

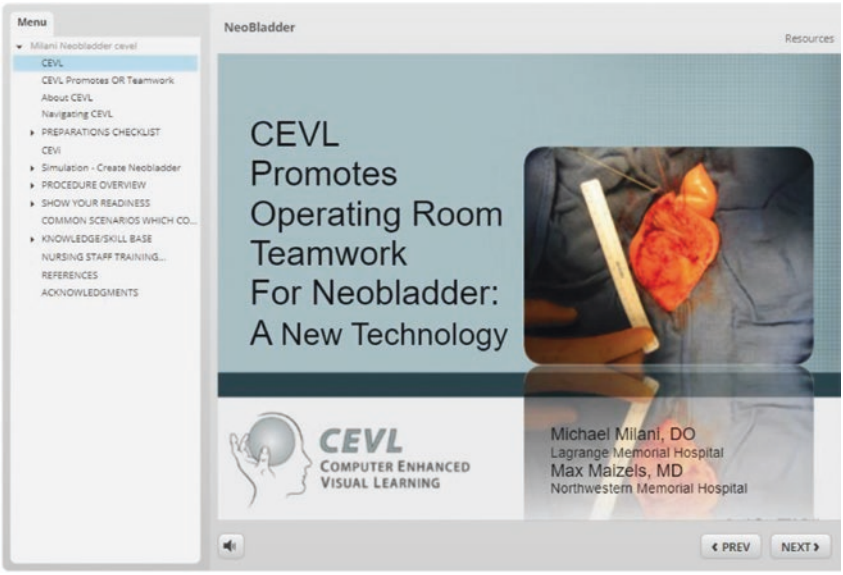

Fig. 8.1 CEV-ule on neobladder interactive

8.2 Obstetrics

All too often, performing primary cesarean section could involve staff and trainees who are not confident on the workflow, or expectations of skills they require. CEV-ule on this procedure addresses these needs.

This CEV-ule (Fig. 8.2) was created collaboratively by Drs Gossett, York, and Maizels to provide increased surg-eco communication and well-being. Dr Gossett has received many benefits from use of this CEV-ule in surgical practice.

The experience of Drs Gossett and York showed of more than 400 Cesarean procedures observed that trainees who utilized this content performed competently after about 30 procedures done with a slight, but significant reduction in surgical time [1].

Click to view
Example procedure - Primary Cesarean Section

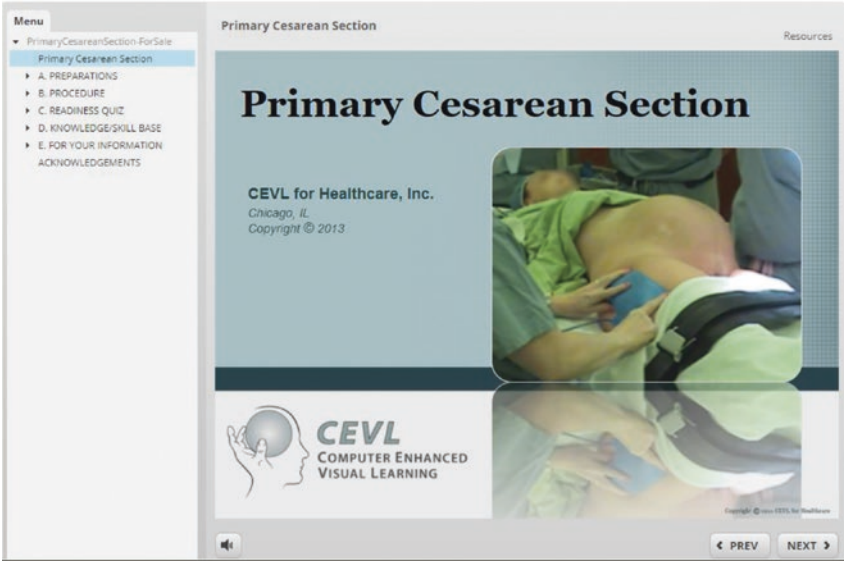

Fig. 8.2 CEV-ule on an example procedure of primary cesarean section

8.3 Pediatric Ophthalmology

This CEV-ule (Fig. 8.3) was created collaboratively by Drs Mets and Maizels to provide increased surg-eco communication and well-being. Dr Mets has received many benefits from use of this CEV-ule in surgical practice.

Click to view example procedure
Eye muscle recession

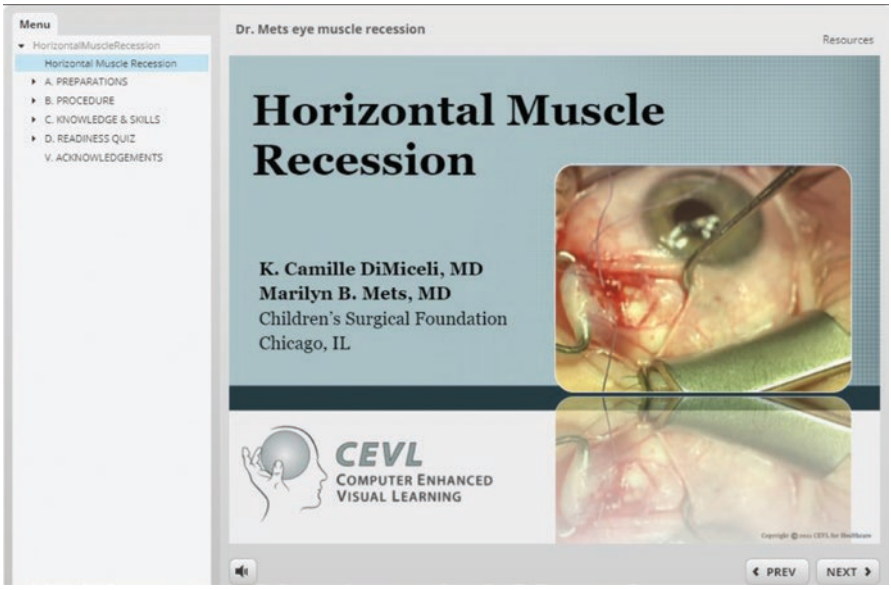

Fig. 8.3 CEV-ule on an example procedure of eye muscle resection

8.4 Pediatric Orthopedics

Surgical trainees, OR staff, and radiology technicians working in the operating room will be performing percutaneous pinning of elbow fractures. Providing the staff, your surg-eco, with the content you would like them to know is key to effectiveness, confidence, and well-being.

This CEV-ule (Fig. 8.4) was created collaboratively by Drs Hearty, Sarwark, and Maizels to provide increased surg-eco communication and staff well-being. Drs Hearty and Sarwark have received many benefits from use of this CEV-ule in their surgical practice [2].

percutaneous pinning of supracondylar fracture

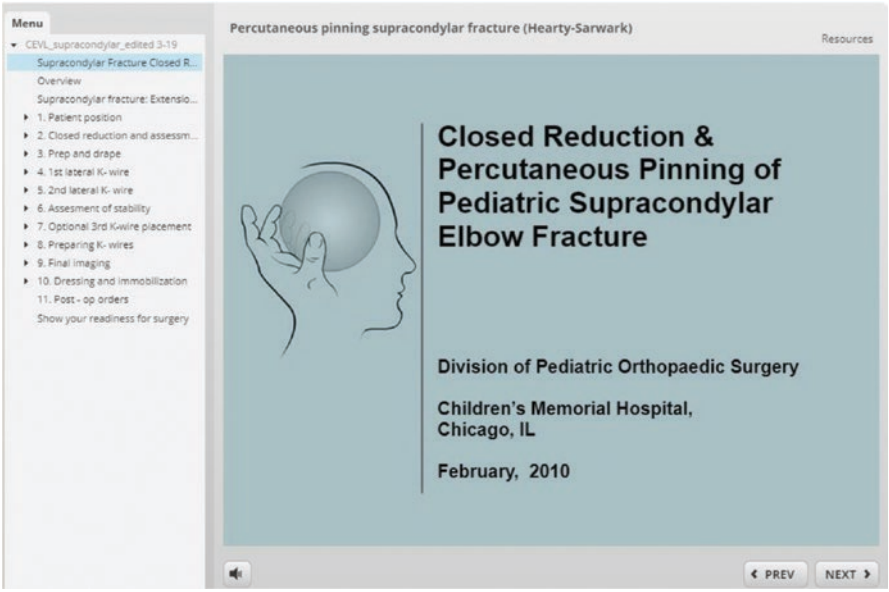

Fig. 8.4 CEV-ule on percutaneous pinning of supracondylar fracture

8.5 Otorhinolaryngology

Hemi thyroidectomy is a procedure that trainees desire to learn well. Drs. Stack and Vaughn created clinical content which CEVL assimilated using Storyline software. This is also shown in "Teamwork for Operating Room Specialties."

This CEV-ule (Fig. 8.5) was created collaboratively by Drs Stack and Maizels to provide increased surg-eco communication and well-being (see Sect. 3.1.2.1). Dr Stack has received many benefits from use of this CEV-ule in his surgical practice [3, 4].

The CEVL platform allows for improved procedural performance.
Click the link below to view a sample CEV-ule on hemi-thyroidectomy.
Hemi-thyroidectomy

Fig. 8.5 CEV-ule on hemi-thyroidectomy

References

1. York SL, Maizels M, Cohen E, Stoltz RS, Jamil A, McGaghie WC, Gossett DR. Development and evaluation of cesarean section surgical training using computer-enhanced visual learning. Med Teach. 2014;36(11):958–64. https://doi.org/10.3109/0142159X.2014.917156. Epub 2014 Jul 29.
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Chapter 9
Administrators of Out Patient Surgery (OPS), Operating Room (OR), Clinics

Content

9.1 Oversight 109

9.1 Oversight

Administration of outpatient services, operating room activities, and clinics is a daunting task. Hurdles likely encountered are the availability of a clear, transparent, user friendly "dashboard" which provides staff with content they require. The many examples in previous chapter provide insight in how to do this in operating room here an example of content creation for staff is shown for outpatient clinic.

A simple Adobe PDF made by staff who contribute their content and understandings along with voicing their mis-understandings which require resolution will go a long way to promote comfort, confidence and reduce burn out in the workplace.

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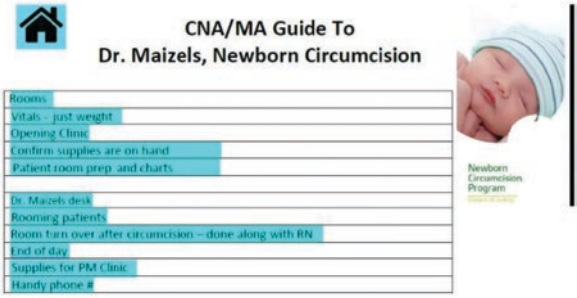

Fig. 9.1 This is an example of a guide for ambulatory staff who participate in outpatient care

Click to view a ambulatory guide for staff participating in outpatient circumcision clinic (Fig. 9.1).

Staff guide for ambulatory circumcision
Content was created using Adobe PDF

Appendix

A. Using software to create CEV-ules
   (a) Image and movie editing
      - Adobe Software: Photoshop, Premiere, Audition
   (b) De-identification of images, video footage, animated overlays
   (c) Form creation and distribution
      - JotForm and Adobe Acrobat Pro, and Acrobat Reader
   (d) E-learning
      - Articulate Storyline
         1. Web publication
         2. User interactivity
         3. Testing
   (e) FTP server
B. Template Downloads
C. Instructional design

Designers may download this file as an example of CEVL template

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Managing Your PowerPoint Templates (Table A.1)

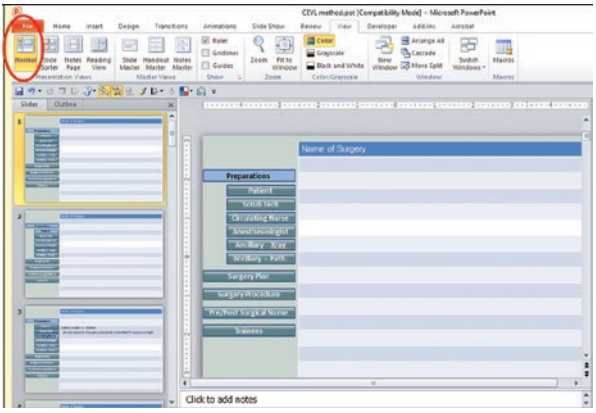
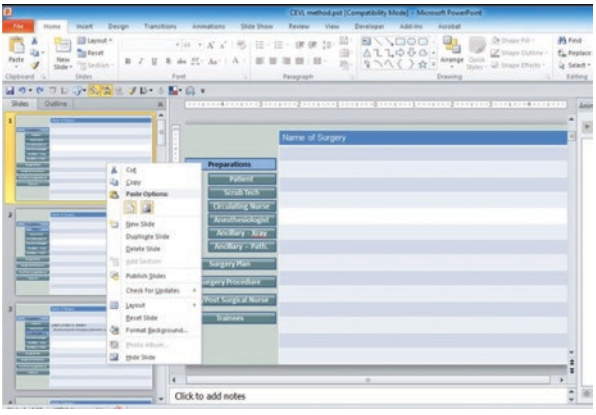
Download and Then Save the File

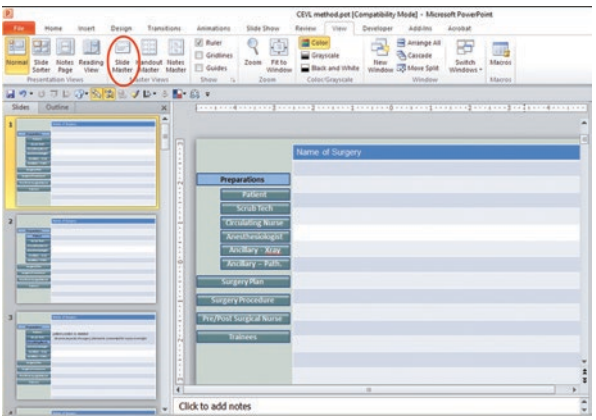
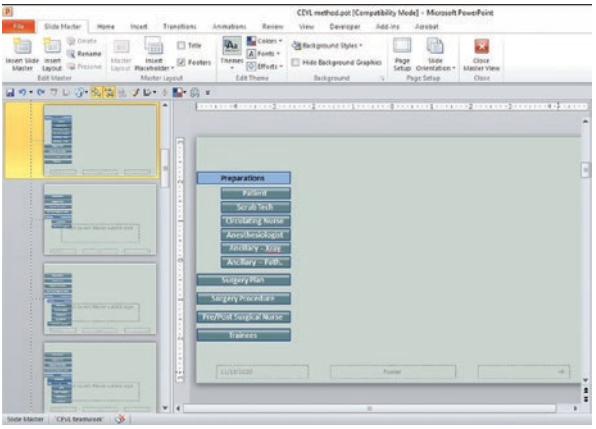
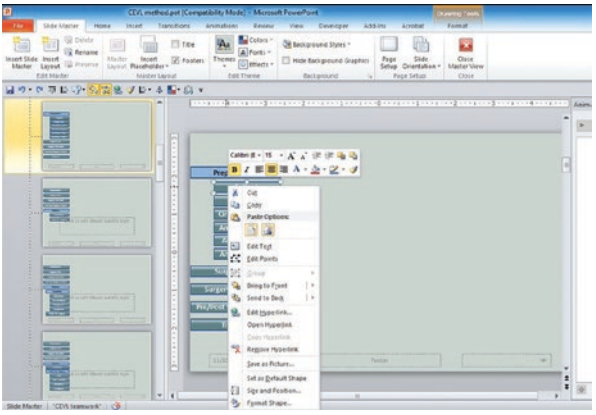
It is likely you will want to customize the templates to your specific needs. You may want to add/remove slides from the main view or the master view. You may want to provide slide navigation using insert hyperlink features of PowerPoint. For these actions, use the download.

Click to download, and open PowerPoint template. Then, save the template with a name you choose.

You will be renaming, adding, deleting slides to customize your project.

Table A.1 Management of PowerPoint templates

Normal view	
Once the file is opened, you are presented with the "normal" view.	
Right clicking (pink) over the left-side panel brings up the sub menu to add or delete	

Normal view	
If you would like to add or delete slides in the master, click slide master	
This is the slide master view. You may add/delete slides. If you would like to change the slide hyperlink	
Right click (pink) to bring up the menu and change your hyperlink to meet your needs	

Managing Storyline Files

Download a storyline file for you to use or route to your hospital web architect. Figure A.1 shows the layout of a storyline file and the close similarities with a typical PowerPoint file. Storyline file opened (Fig. A.1a). Really, this uses the same logic as a routine PowerPoint, just laid out a bit differently. These differences are shown in Fig. A.1b with the overlays explaining the similarity of a PowerPoint file layout with that of a storyline file. The locations of the Storlyline: slide sorter view, main stage view, selection panel, and links are shown. These areas correspond directly to those functionalities expected in PowerPoint.

Photoshop Concepts and Image Editing Tools

This section is meant as an introduction to image editing. There are a multitude of software available to use. The images are meant to take away the "fear" novices may have of image editing. Just pick a software, use it to make a few edits, and you will enjoy the experience.

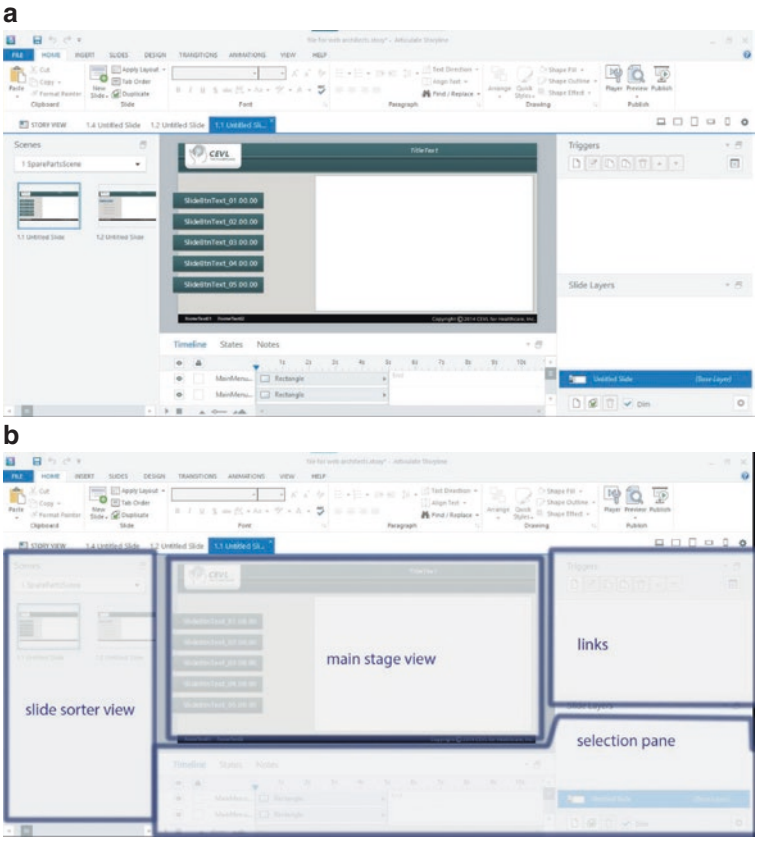


Fig. A.1 (**a**) A Layout of a storyline file and (**b**) close similarities with a typical PowerPoint file

All about pixels (Figs. A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9, and A.10)

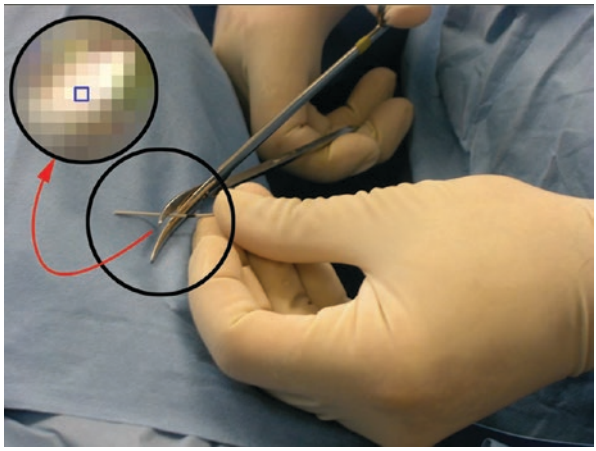


Fig. A.2 What is a pixel?

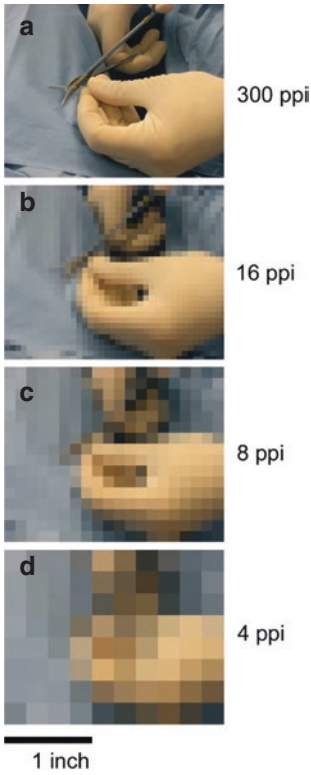


Fig. A.3 Images with same size, decreasing resolution, decreasing total pixel count, and decreasing information (top to bottom): (**a**) 300 ppi, (**b**) 16 ppi, (**c**) 8 ppi, and (**d**) 4 ppi. Decreasing resolution reduces acuity

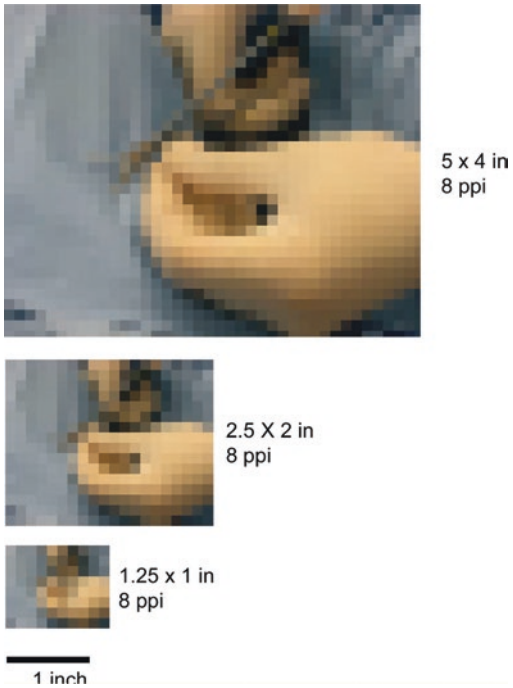


Fig. A.4 Images with decreasing size, same resolution, decreasing total pixel count, and decreasing information (top to bottom): A 5 × 4 in. 8 ppi, B 2.5 × 2 in. 8 ppi, and C 1.25 × 1 in.8 ppi

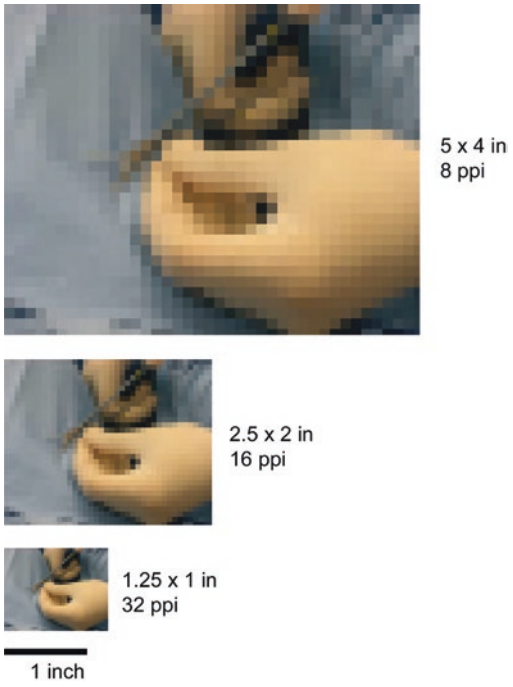


Fig. A.5 Images with decreasing size, increasing resolution, same total pixel count, and same amount of information (top to bottom): A 5 × 4 in. 8 ppi, B 2.5 × 2 in. 16 ppi, and C 1.25× 1 in.16 ppi

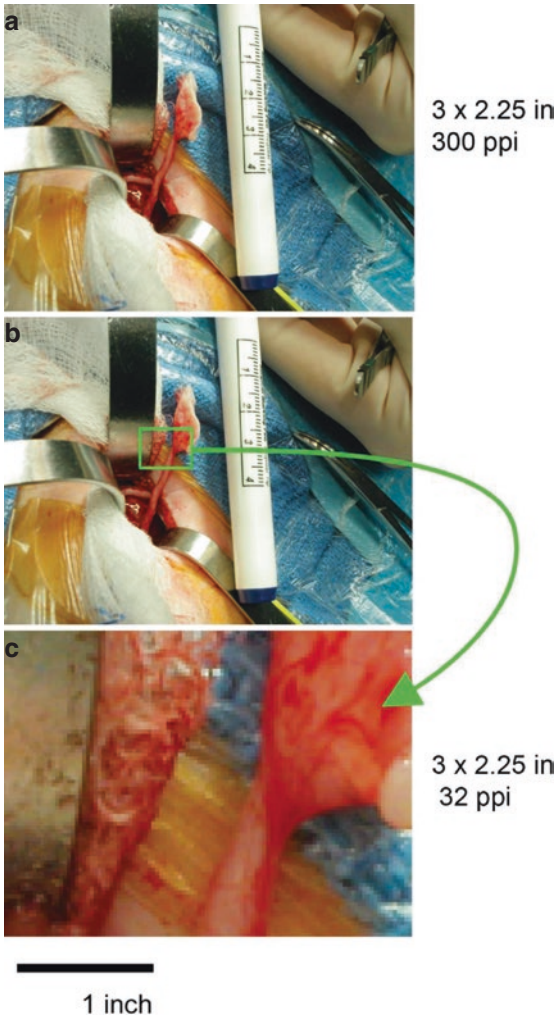


Fig. A.6 (**a**) Image with adequate resolution for print (3 × 2.25 in. 300 ppi). However, if you need to zoom in (**b**) to show what was only a small section of the original image, this image does not have enough pixel information to create an adequate print image. (**c**) Zoomed in image (3 × 2.25 in. 32 ppi)

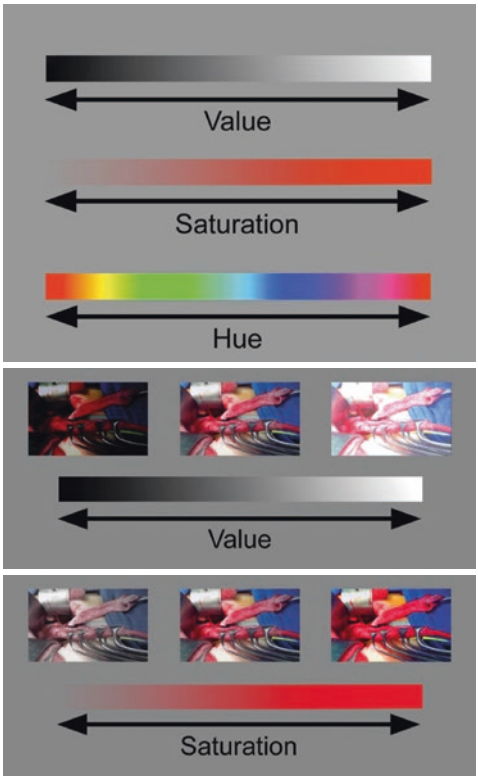


Fig. A.7 All about color as value, saturation, hue, and tonal range

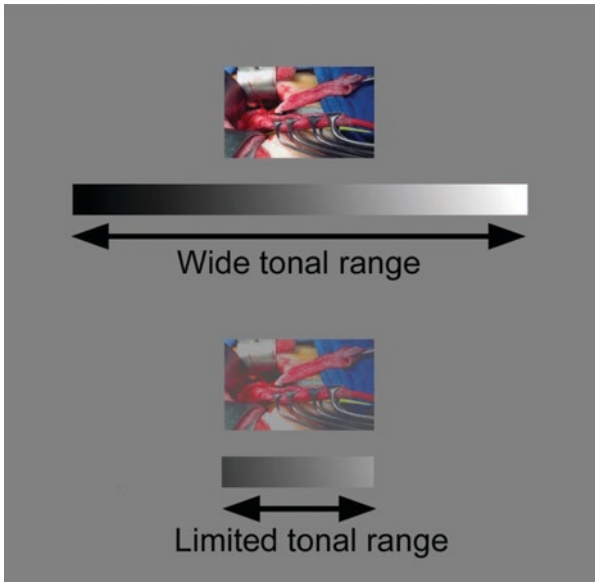


Fig. A.8 Images showing wide tonal range and limited tonal range

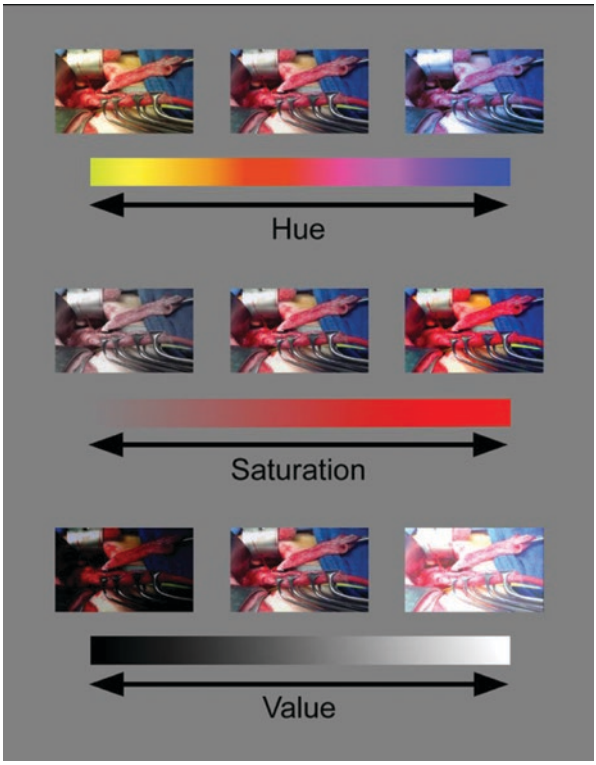


Fig. A.9 Images based on hue, saturation, and value

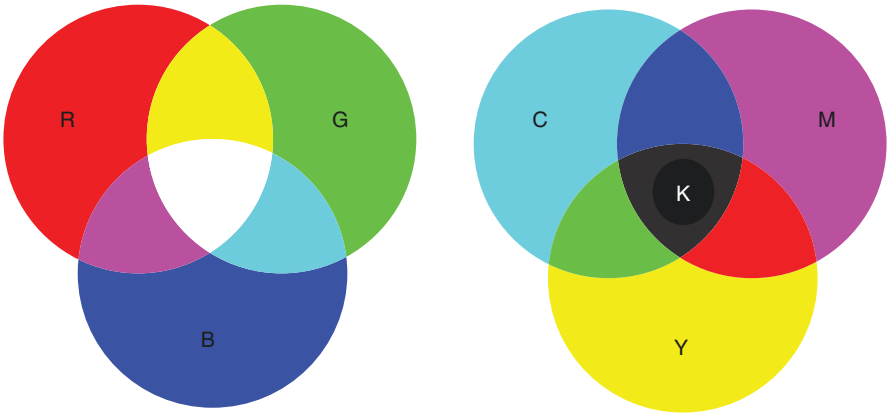


Fig. A.10 RGB and CMYK color model

Photoshop Menus (Figs. A.11, A.12, A.13, and A.14)

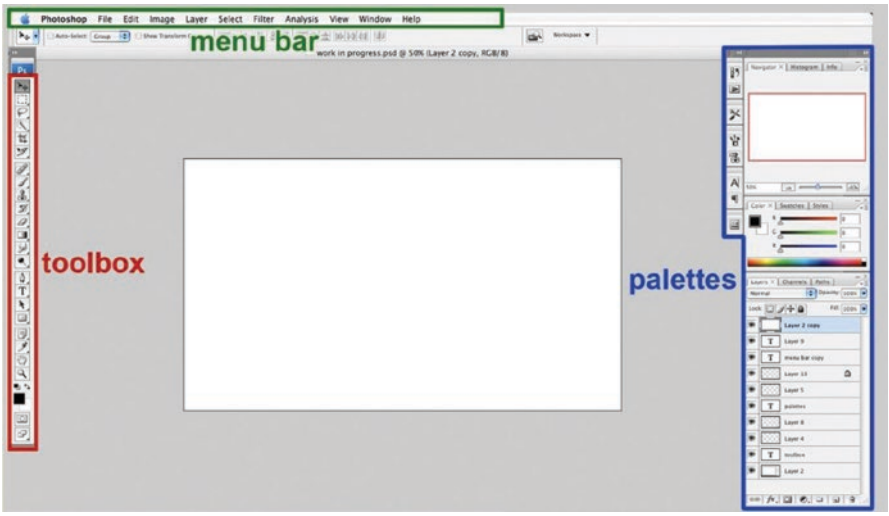
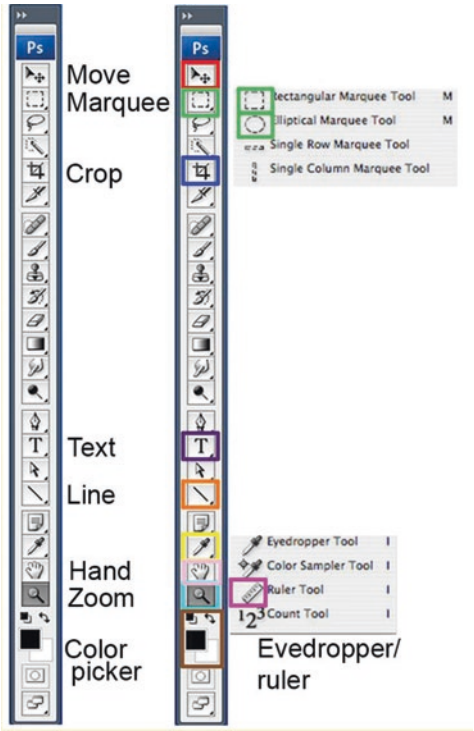


Fig. A.11 Tool box menu

Fig. A.12 Tools



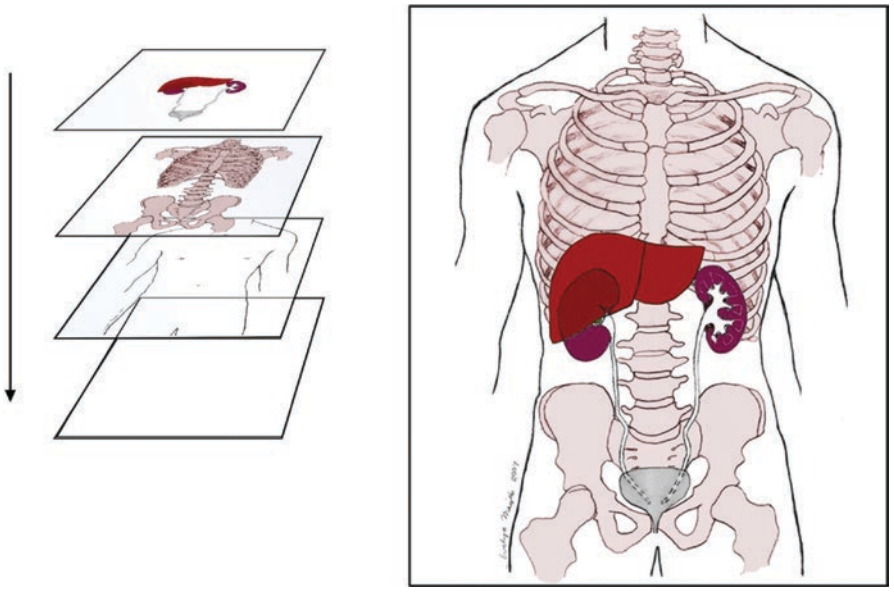


Fig. A.13 Stack layers concept

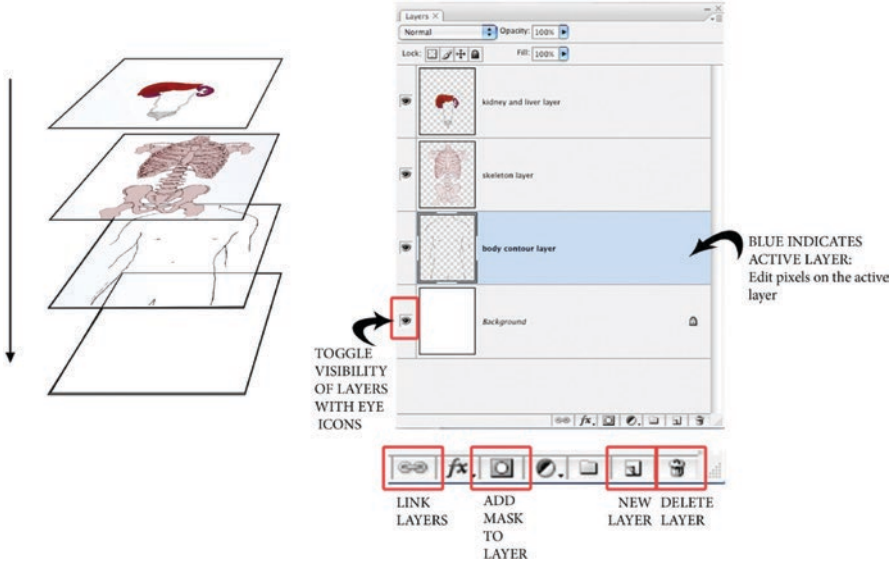


Fig. A.14 Layers palette

Editing Menus (Figs. A.15 and A.16)

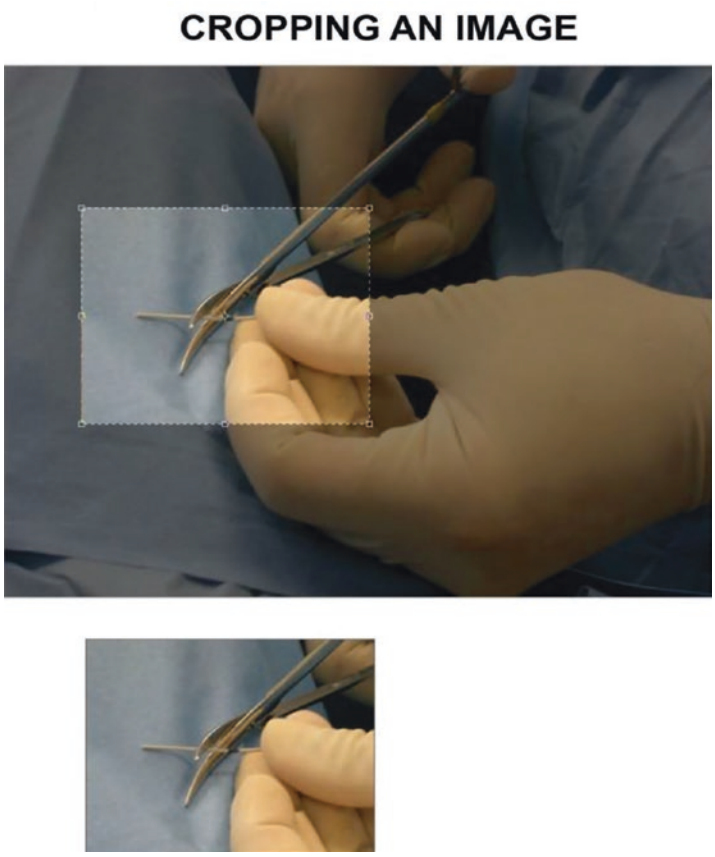


Fig. A.15 Cropping an image

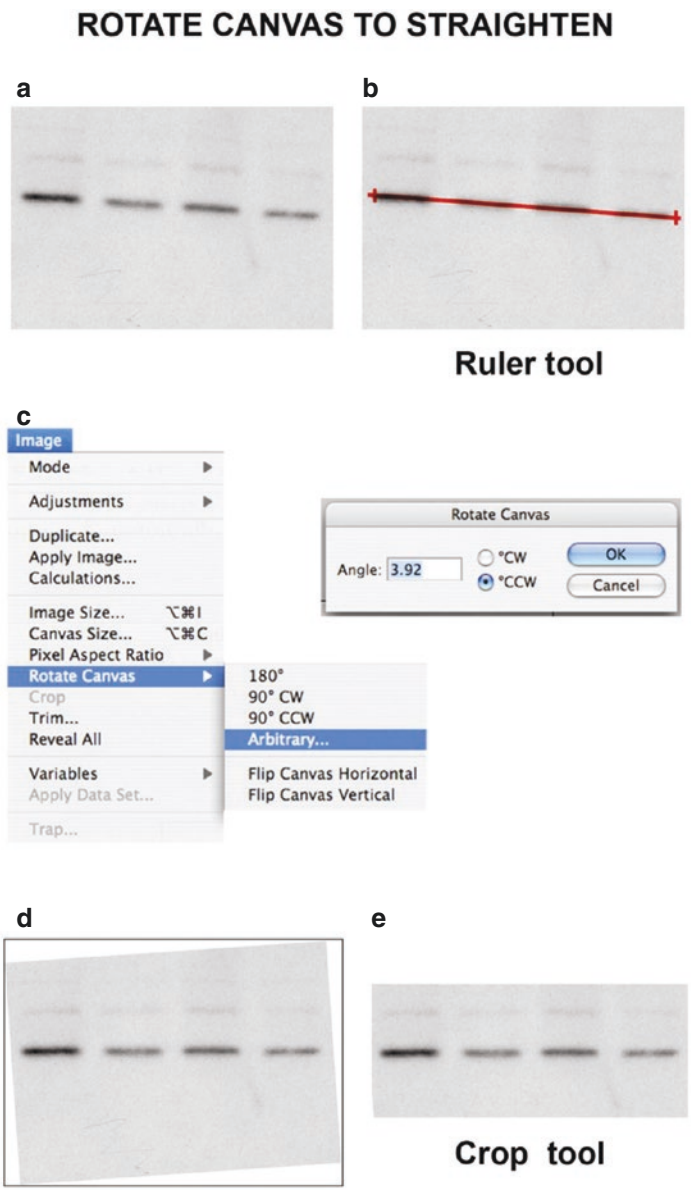


Fig. A.16 Adobe Photoshop can be used to rotate or crop a canvas

Editing Education files (Table A.2)

Editing Footage files (Tables A.3, A.4, and A.5)

Table A.2 Storyline

Swap pictures	
Want to exchange a picture for another	Right click on the picture you would like to swap out and choose "change picture," then navigate to the picture you would like to exchange.

Table A.3 Pictures – Photoshop

De-identify clinical content Clean up background of pictures	Marquee a clear area, copy paste, move over scratchy area Images (Photoshop) New layer on top of target layer New path Pen tool to outline face Gaussian blur

Table A.4 Pictures - PowerPoint

De-identify clinical content Clean up background of pictures	Insert new sequence on top of current sequence Copy current sequence Paste over target sequence Hide target sequence Pen tool outlines area to blur Apply as a selection Ctrl + shift to select everything else Delete this selection Apply blur to remaining area

Table A.5 Video - Premiere Pro

De-identify clinical content	Insert new sequence on top of current sequence Copy current sequence Paste over target sequence Hide target sequence Pen tool outlines area to blur Apply as a selection Ctrl + shift to select everything else Delete this selection Apply blur to remaining area

Audio Editing

Most of us do not utilize a studio quality sound booth to record audio. Even with a good-quality desktop microphone or USB headset, there will be background noise. Use Adobe Audition to remove the noise (Fig. A.17).

Listen to audio sample. Noise removed from first few seconds; not for the remainder of the clip.

Noise is not audible at the start; compare with end where noise is quite evident.

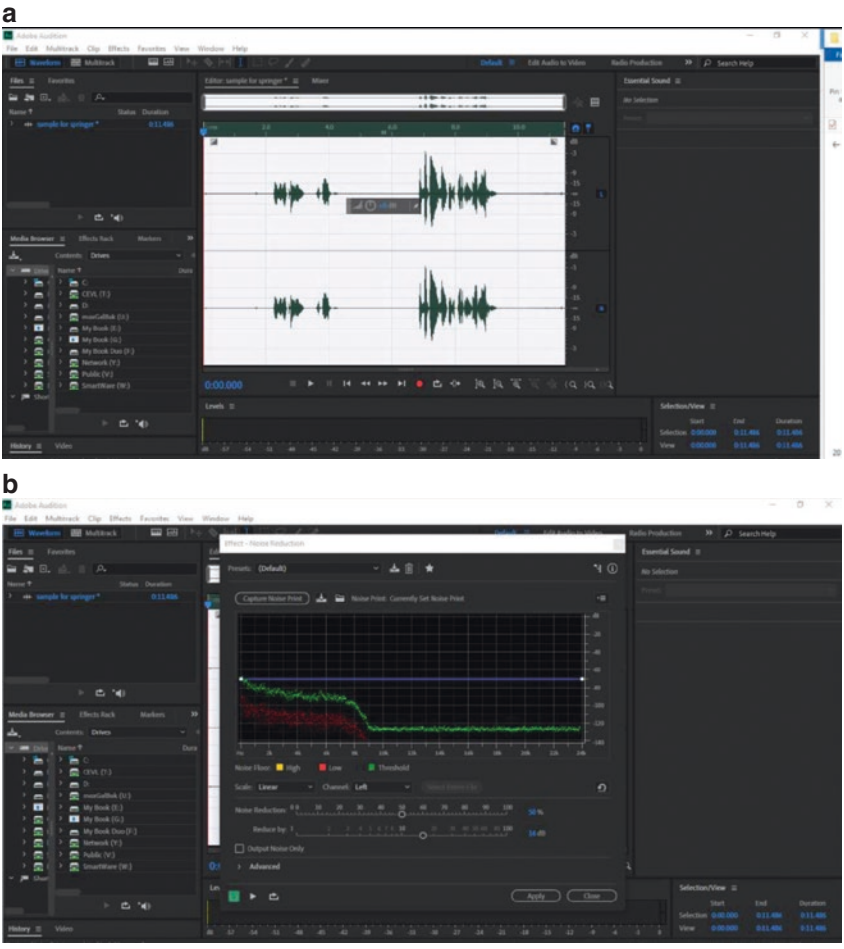
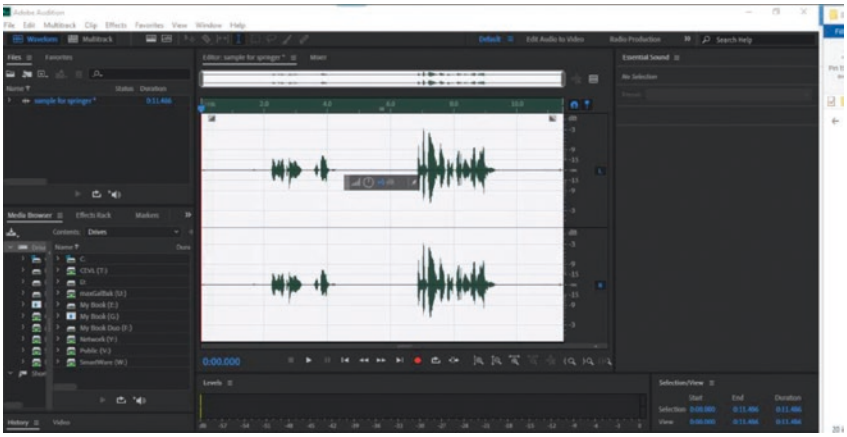
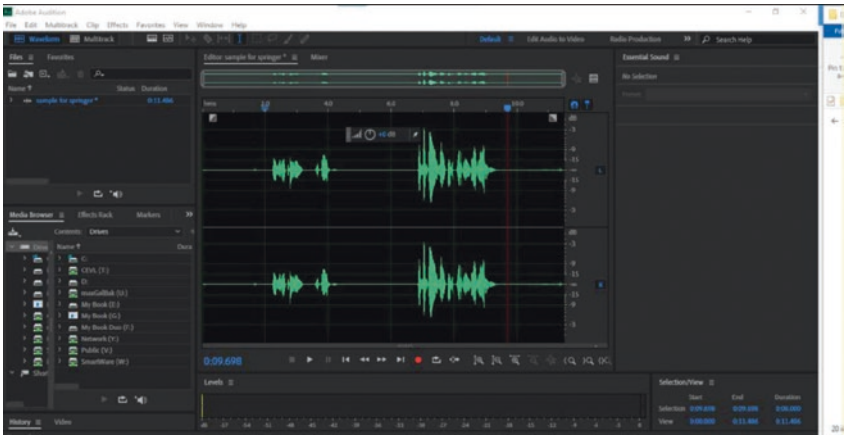


Fig. A.17 Adobe Audition. (**a**) Record your narration as an audio file. (**b**) Sample your audio in a blank area for background noise. (**c**) A "noise print" is made by the software. (**d**) Reduce noise from entire clip; select the entire clip. (**e**) Green vs. red curves show the noise to be removed. Click apply. (**f**) Noise gone

c



d



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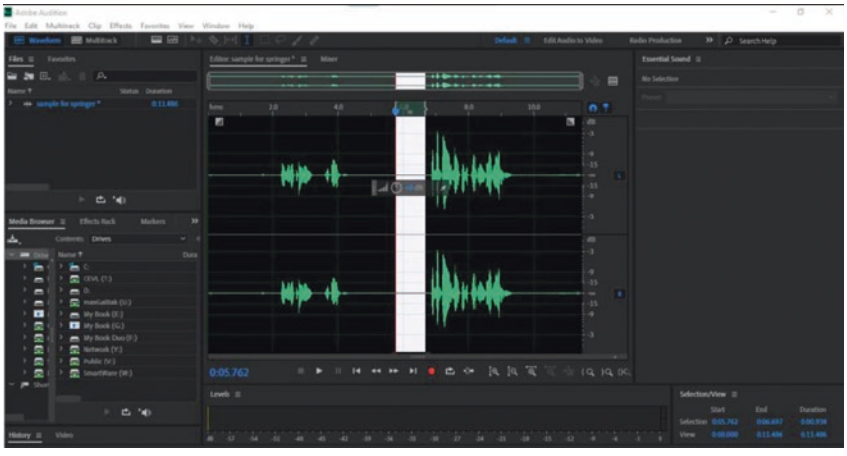

Fig. A.17 (continued)

f

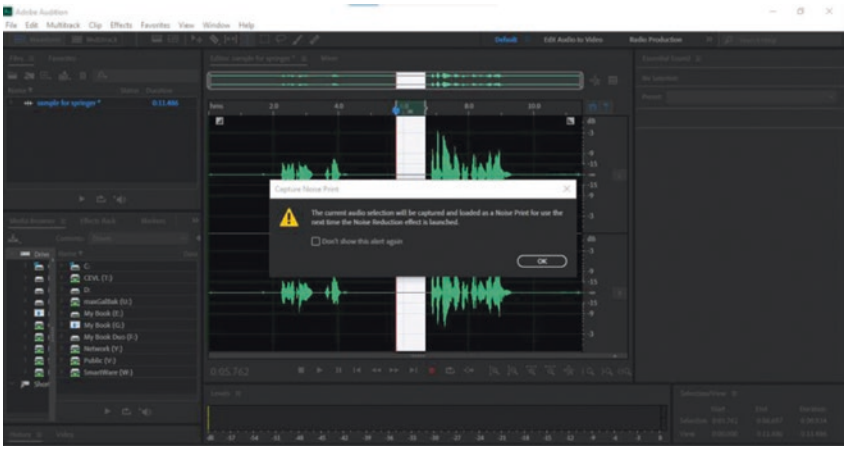

Fig. A.17 (continued)

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