



# IAPB ESSENTIAL LIST

## for Simulation-Based Learning (Cataract Surgery)

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## INTRODUCTION

IAPB considers appropriate information as a vital resource in improving universal access to eye health. In resource-constrained settings especially, procurement decisions can play an important role in ensuring that a maximum number of people have equitable access to quality services.

An investment in appropriate equipment and other items can ensure optimal eye health, enhancing the quality of life of the beneficiaries. Further, it can enhance sustainability of eye health services, and provide a satisfactory social return. Therefore IAPB collaborates on the development of a series of 'IAPB Essential Lists' to assist NGOs, Ministries of Health, district health services, eye clinics and hospitals in decision-making about the items best suited their setting. These lists are a useful resource to assist in planning and purchasing inventory to support the delivery of quality care.

### What do these lists contain?

IAPB consults publications and panels of experts in their fields from around the world, many with considerable experience in resource-constrained settings to compile these lists. The experts reach consensus on equipment, instruments, pharmaceuticals, consumables and other resources considered essential to provide quality eye health interventions. They also identify items that are desirable and recommend that efforts should be made to obtain these, budget allowing.

### Why is this list important?

Simulation is designed to replicate clinical scenarios in order to augment learning of diagnostic or surgical procedures through deliberate practice. This list describes the items required for learning cataract surgery in a simulated environment. Skills acquired within a simulated environment have been shown to transfer to improvements in procedures on actual patients. Further, the use of simulation in health professionals' education:

- has become ethically “imperative” due to patient safety concerns, the need to reduce avoidable medical errors and to protect patients whenever possible.
- provides an alternative and equivalent experience to cadaveric and animal models, which have ethical and moral issues surrounding their use.
- provides many and immediate training opportunities: learners don't have to wait for a particular “real-life” case or pathology to present itself.



## What does this list contain?

This list contains recommendations for a range of equipment, instruments, consumables and pharmaceuticals learners can use to practice in a simulated environment to prepare them to do surgery. Ideally the skills laboratory should include as many of the same instruments and equipment that the students are likely to use in future, in order for them to become familiar with these.



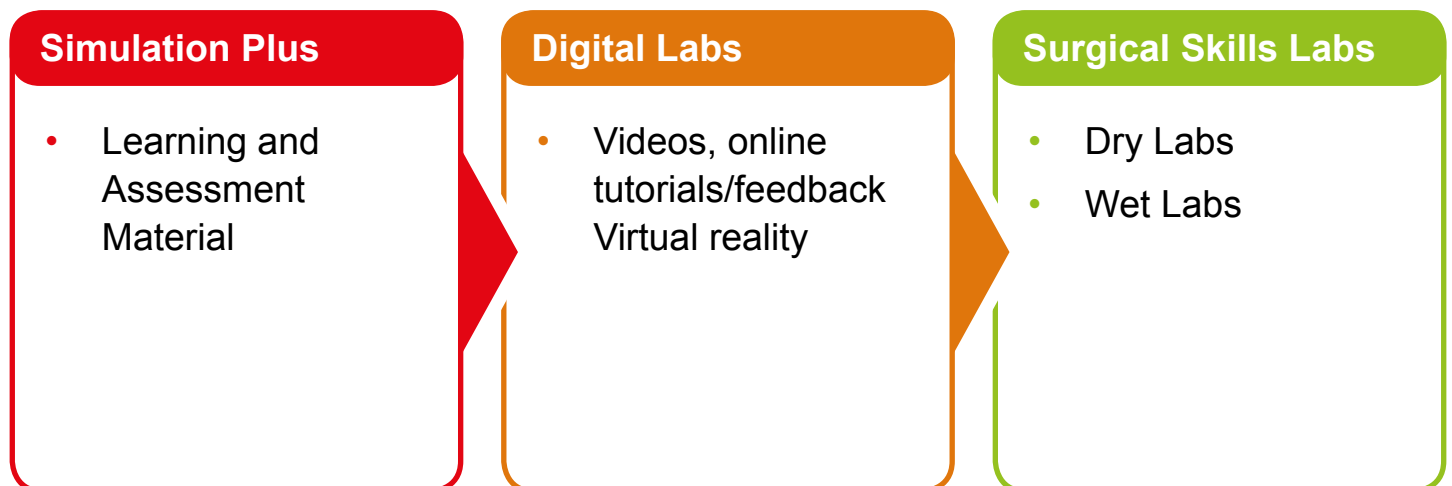
We recognise that some options included in the EL are expensive or may be unobtainable in certain areas, but nevertheless these represent aspirational best practice.



Where possible we have suggested alternatives to help training institutions to contain costs and ensure simulation training is as cost-effective as possible.

## Sections of the EL

To learn a new skill, *quantity* of practice is necessary, but optimal performance is dependent on the *quality* of the practice itself. Practice makes perfect, but practicing the wrong technique does not. Thus in addition to ensuring that the items required in a digital, dry and wet lab for optimal learning are available, the envisaged learning outcomes should be included within structured cataract surgery curricula, both for those initially learning cataract surgical procedures to those wishing to continue their professional development in this field. This list is thus separated into the following sections:





## 1. Simulation plus – learning and assessment material

Simulation, as part of a “skills curriculum”, can accelerate learning especially if guided by the selection of appropriate competencies and “deliberate practice”: activities that have been specifically designed to improve the current level of performance.

- *Learning activities* may include demonstration videos, didactic instruction by peers and/or more senior students, written material, lectures, procedural demonstrations by experts – face to face or via teleconferencing.
- *Structure learning activities and assessment*, using a standardized and objective tool such as the ICO-OSCAR.
- *Document and reflect* on learning, for assessment and to contribute to certification requirements using paper or electronic logbooks and portfolios.
- *Feedback, formative and summative assessments* can either be during and/or after, using videos. This can be self-assessment, or assessment from experienced peers and from experts, face-to-face or using multipoint video-conferencing/telemedicine facilities. Plans should be in place to enable the learner to do closely supervised procedures on actual patients, once they have reached an adequate level of competence using the simulation.

## 2. Digital labs

Digital labs may include videos/tutorials for initial learning of procedures and feedback via the internet. Virtual reality may be used to provide a more interactive environment.

- Virtual reality simulation.
- Demonstration videos, tutorials, manuals/guides.
- Digital recording for feedback, formative and summative assessment.

## 3. Surgical skills labs

### 3.1 Dry labs



Dry labs may include bench models and box-trainers – simulators that are static and can be placed on the “bench” in front of the learner to practice instrument handling, basic skills, procedures or steps of procedures. Using, for example, a stereo-optical microscope or bench top operating microscope to practice skills such as suturing practice on examination gloves, suture packaging or orange peel.




### 3.2 Wet labs

Wet labs may include bench top operating microscopes, dedicated operating microscopes or the existing operating microscope in the operating theatre to practice surgical techniques, complication management, and common mistakes.











#### How can quantities be calculated?

The instruments and consumables are calculated for one learner.






Description	Essential (E) or Desirable (D)	Quantity Required
<b>SIMULATION PLUS</b>  <b>LEARNING AND ASSESSMENT MATERIAL</b> <b>On-line open sourced resources</b>		
<b>The Iowa Ophthalmology Wet Laboratory</b> <a href="http://webeye.ophth.uiowa.edu/eyeforum/tutorials/iowa-OWL/index.htm">http://webeye.ophth.uiowa.edu/eyeforum/tutorials/iowa-OWL/index.htm</a> Cataract Surgery for Greenhorns <a href="http://cataractsurgeryforgreenhorns.blogspot.co.za/">http://cataractsurgeryforgreenhorns.blogspot.co.za/</a>	E	1
<b>Patient Communication during Cataract Surgery:</b> An Eye Rounds Tutorial – Brinton, JP and Oetting, TA <a href="http://webeye.ophth.uiowa.edu/eyeforum/tutorials/Communication-Cataract-Surgery.htm">http://webeye.ophth.uiowa.edu/eyeforum/tutorials/Communication-Cataract-Surgery.htm</a>	E	1
<b>Orbis Cybersite</b> Lecture on setting up a wet lab from some of the world's experts. <a href="https://cybersight.org/portfolio/training-of-ophthalmic-educators-orbis-coecsa/">https://cybersight.org/portfolio/training-of-ophthalmic-educators-orbis-coecsa/</a> "Fundamentals in MSICS course" as pre-learning for hands-on training. <a href="https://cybersight.org/online-learning/">https://cybersight.org/online-learning/</a>	E	1
<b>The Virtual Cataract Surgery Course Manual for Ophthalmology Residents 2016 Edition.</b> Li, E, Paul, A. A. Greenberg, P.B. Warren Alpert Medical School of Brown University. <a href="https://repository.library.brown.edu/studio/item/bdr:583598">https://repository.library.brown.edu/studio/item/bdr:583598</a> . DOI: <a href="http://dx.doi.org/10.7301/Z08913SK">http://dx.doi.org/10.7301/Z08913SK</a>	E	1
<b>ICO OSCARs:</b> (International Council of Ophthalmology's Ophthalmology Surgical Competency Assessment Rubric, or ICO-OSCAR) Small Incision Cataract Surgery (SICS), Extracapsular Cataract Extraction, Phacoemulsification (English). Some available in Chinese, French, Portuguese, Russian, Spanish, Vietnamese. <a href="http://www.icoph.org/resources/230/Surgical-Assessment-Tool-ICO-OSCAR-in-English-and-Spanish.html">http://www.icoph.org/resources/230/Surgical-Assessment-Tool-ICO-OSCAR-in-English-and-Spanish.html</a>	E	1
<b>DIGITAL LAB</b>		
 <b>Virtual reality simulation</b> e.g. Eyesi® ophthalmosurgical simulator (VRMagic, Mannheim, Germany). <a href="https://www.vrmagic.com/simulators/publications/">https://www.vrmagic.com/simulators/publications/</a> e.g. MicroVisTouch (ImmersiveTouch, Chicago). e.g. Touch Surgery <a href="https://www.touchsurgery.com/">https://www.touchsurgery.com/</a> e.g. Cataract Master (phacoemulsification cataract surgery) Mass. Eye and Ear, American Society of Cataract and Refractive Surgery	D	1

Description	Essential (E) or Desirable (D)	Quantity Required
 <b>Demonstration videos, tutorials, manuals/guides</b> e.g. <a href="http://webeye.ophth.uiowa.edu/eyeforum/video/INDEX.htm">http://webeye.ophth.uiowa.edu/eyeforum/video/INDEX.htm</a> e.g. <a href="http://simulatedocularsurgery.com/">http://simulatedocularsurgery.com/</a> e.g. <a href="http://gallery.simulatedocularsurgery.com/register">http://gallery.simulatedocularsurgery.com/register</a> <a href="http://gallery.simulatedocularsurgery.com/login">http://gallery.simulatedocularsurgery.com/login</a> The Royal College of Ophthalmologists Simulation Gallery: a repository for high quality surgical training videos from around the world, which will enable ophthalmologists to share their teaching tips for a particular procedure and for trainees to share their training experiences.	E	1
 <b>Digital recording for feedback, formative and summative assessment</b> Operating microscope with an external monitor and records simulation surgery – <a href="https://iapb.standardlist.org/product-category/wetdry-lab-operating-microscope/">https://iapb.standardlist.org/product-category/wetdry-lab-operating-microscope/</a>  Set up phone or tablet to record through teaching scopes	E	1
Monitor Flat screen/flat screen/phone/tablet	E	1
<b>Internet connection</b> <ul style="list-style-type: none"> <li>to overcome space constraints and add scalability to the method</li> <li>to use for teaching and assessment</li> </ul>	D	1
<b>SURGICAL SKILLS LAB: WET &amp; DRY LAB</b>		
<b>Room<sup>1</sup></b>		
Room: spacious and easily accessible	E	1
Sink and draining board: for washing up instruments after use, with other instrument cleaning equipment, e.g. receivers, etc.	E	1
Small fridge	D	1
Microwave	D	1
Working bench or table: at sitting level with stools for learners. Length determined by the number of 'stations' to be set up	E	Per Station
Stools: height-adjustable if possible	E	Per Station
Storage Locker(s)	D	Per Learner
Sockets: for electrical equipment	E	Per Station
Surge protection	E	Per Station
<b>SYSTEMS/KITS FOR SKILLS LABS</b>		
<b>Kitaro Kits</b> <a href="http://www.fci-ophthalmics.com/blog/kitaro-kits-a-superior-way-to-practice-cataract-surgery/">http://www.fci-ophthalmics.com/blog/kitaro-kits-a-superior-way-to-practice-cataract-surgery/</a> <b>Dry Lab</b> – to practice instrument handling and basic steps of cataract surgery such as capsulorhexis, IOL insertion etc without the need of a microscope and phaco machine. monitors eye movement upon instrument contact to mimic a real surgical environment. <b>Wet lab</b> – Use artificial eyes to practice completeing surgical techniques, complication management, and common mistakes	D	Per Station
<b>Pharmabotics Limited</b> <a href="http://www.pharmabotics.com">www.pharmabotics.com</a> – designed in cooperation with RCO <b>Dry Lab Skills Board</b> for practicing basic skills techniques <b>Wet Lab Skills Board</b> use with artificial eyes and/or with animals' eyes	D	Per Station

<sup>1</sup> <http://webeye.ophth.uiowa.edu/eyeforum/tutorials/iowa-OWL/video/wetlab-setup.htm>  
ORBIS Wet Lab Course Outline – MSICS.

Description	Essential (E) or Desirable (D)	Quantity Required
<b>Practice eyes – to use in a dry or wet lab</b>		
 For practising steps, use lower fidelity models e.g. for capsulorhexis use grapes/tomatoes  AND/OR  Use animal eyes for practising surgery	E	As required to learn
 Synthetic/artificial practice eyes – Various models e.g. Kitaro <a href="https://www.google.com/search?q=kitaro+artificial+eyes&amp;ie=utf-8&amp;oe=utf-8&amp;client=firefox-b&amp;gfe_rd=cr&amp;dcr=0&amp;ei=lq7TWbPoDMz38AeJ0IbABA">https://www.google.com/search?q=kitaro+artificial+eyes&amp;ie=utf-8&amp;oe=utf-8&amp;client=firefox-b&amp;gfe_rd=cr&amp;dcr=0&amp;ei=lq7TWbPoDMz38AeJ0IbABA</a> e.g. Phillips Studio artificial eyes <a href="http://www.phillipsstudio.co.uk/wppages/sics.html">http://www.phillipsstudio.co.uk/wppages/sics.html</a>	D	As required to learn
 Foam/Mount – <a href="http://ophthalmicwetlabtoolbox.blogspot.pe">http://ophthalmicwetlabtoolbox.blogspot.pe</a>	E	1 Per Station
 Manikin Head – <a href="http://phillipsstudio.co.uk/">http://phillipsstudio.co.uk/</a>	D	1 Per Station
<b>EQUIPMENT</b>		
<b>Bench Top microscope –</b> <a href="https://iapb.standardlist.org/product-category/wetdry-lab-operating-microscope/">https://iapb.standardlist.org/product-category/wetdry-lab-operating-microscope/</a>		
 Optical microscope e.g. <ul style="list-style-type: none"> <li>model D stereo microscope <a href="http://www.microscope-depot.com/seriesD.asp.2">http://www.microscope-depot.com/seriesD.asp.2</a></li> </ul>	E	1 Per Station
 Simpler operating microscope (OM) e.g. <ul style="list-style-type: none"> <li>SCANOPTICS Skills lab model SO-1700W – <a href="https://iapb.standardlist.org/the-products/wet-lab-microscope-so-1700w/">https://iapb.standardlist.org/the-products/wet-lab-microscope-so-1700w/</a></li> <li>ZEISS Stemi 305 EDU cam</li> </ul>	D	1 Per Station
<b>Portable Operating Microscope:</b> This provides higher fidelity than a bench top model, e.g. foot controls – <a href="https://iapb.standardlist.org/product-category/portable/">https://iapb.standardlist.org/product-category/portable/</a>		
 Low cost, surgical microscopes e.g. <ul style="list-style-type: none"> <li>INAMI – L0940SD – <a href="https://iapb.standardlist.org/the-products/portable-operating-microscope/">https://iapb.standardlist.org/the-products/portable-operating-microscope/</a></li> <li>KAPS – SOM82 – <a href="https://iapb.standardlist.org/the-products/kaps-som-82-table-mounted-ophthalmic-microscope/">https://iapb.standardlist.org/the-products/kaps-som-82-table-mounted-ophthalmic-microscope/</a></li> </ul>  Can also use existing OM in theatre	E	1 Per Station
 A lower cost, but sophisticated surgical microscope e.g. <ul style="list-style-type: none"> <li>MAPPASAMY – AAOM250P LED – <a href="https://iapb.standardlist.org/the-products/operating-microscope/">https://iapb.standardlist.org/the-products/operating-microscope/</a></li> <li>SCANOPTICS – SO111TZ/SO 5000 RFZ – <a href="https://iapb.standardlist.org/the-products/portable-microscope-so-111tz/">https://iapb.standardlist.org/the-products/portable-microscope-so-111tz/</a> &amp; <a href="https://iapb.standardlist.org/the-products/portable-microscope-so-5000tfz/">https://iapb.standardlist.org/the-products/portable-microscope-so-5000tfz/</a></li> <li>LEICA – M220 – <a href="https://iapb.standardlist.org/the-products/operating-microscope-m220-without-xy/">https://iapb.standardlist.org/the-products/operating-microscope-m220-without-xy/</a></li> </ul>	D	1 Per Station
Observers Tube for OM (available for most brands of Microscopes – check with manufacturer)	E	1 Per Station
OM Spare Bulb and Fuse Pack (for halogen bulbs – not LED)	E	1 Per Station
Floor Stand for OM	E	1 Per Station

<sup>2</sup> Does not have the foot petal or full range of an ophthalmic, skills lab microscope but costs less than \$300USD and when paired with a magnifying –8D lens allows for longer focal distance, and ability to practice many steps in cataract surgery: <http://ophthalmicwetlabtoolbox.blogspot.pe>.




Description	Essential (E) or Desirable (D)	Quantity Required
Portable Operating Lamp with stand – <a href="https://iapb.standardlist.org/product-category/operating-lights/">https://iapb.standardlist.org/product-category/operating-lights/</a>	E	1 Per Station
Spare Bulbs for lamp (for halogen bulbs – not LED)	E	1 Per Station
Instrument trolley	E	1 Per Station
Kidney Bowl 0.5L	E	1 Per Station
Gallipots	E	1 Per Station
Stand for fluids	E	1 Per Station
 Focus on MSICS	E	
 Phaco-machine – <a href="https://iapb.standardlist.org/product-category/phacoemulsification-equipment/">https://iapb.standardlist.org/product-category/phacoemulsification-equipment/</a>	D	
<b>INSTRUMENTS<sup>3</sup></b> <a href="https://iapb.standardlist.org/product-category/instruments-eye-surgery/">https://iapb.standardlist.org/product-category/instruments-eye-surgery/</a>		
 Basic instrument sets	E	1 Per Station
 Instruments recycled from OT		
 Full range of surgical instruments, similar to those used in their operating theatre <sup>4</sup>		1 Per Station
<b>Forceps</b>		
Forceps, for wet field electric cautery (Unipolar & Bipolar)	E	1
Forceps, Superior rectus, <i>Landolt style</i>	E	1
Forceps, Conjunctival, 0.3mm Toothed <i>Moorfields</i>	E	1
Forceps, Conjunctival Non-Toothed <i>Moorfields</i>	E	1
Forceps, Mosquito, curved (SL “ <i>Hartmann Mosquito Forceps 3.25” Curved</i> ”)	E	1
Forceps, Mosquito, straight (SL “ <i>Hartmann Mosquito Forceps 3.25” Straight</i> ”)	E	1
Forceps, Corneal, 0.12mm Atraumatic Tips, Angled with Tying Platform	E	1
Forceps, Corneal, 1x2 Teeth, 0.12mm, with 6mm Tying Platform	E	1
Forceps, suture tying, cilia or <i>Birks</i>	E	1
Forceps, Lens Introducing, Angle to Tip 8-12mm, Smooth Jaw <i>Kellman Mc Pherson</i>	E	1
Forceps, Capsulorhexis, Angle to Tip 11mm, Sharp Tip to use as a Cystotome, <i>Utrata</i>	E	1
<b>Needle holders</b>		
Needleholder, none locking Straight for 4/0, 5/0, 6/0 or 7/0 Suture	E	1
Needleholder, none locking Curved or Straight, overall length 10-11mm, Jaws 8mm, for 8/0 to 10/0 Suture	E	2

<sup>3</sup> Also see <http://webeye.ophth.uiowa.edu/eyeforum/tutorials/instruments/Phaco/index.htm>.

<sup>4</sup> Using similar instruments to those used in the operating theatre where students will be operating provides familiarity and continuity for students.



Description	Essential (E) or Desirable (D)	Quantity Required
<b>Blades and handles</b>		
Troutman blade handle, non fixed handle, <i>Bard Parker</i> for Single Use Knives or Purchase disposable Knives & Handle combined/fixed	E	3
BP 15 or 11 or 15 degree or 1.1mm paracentesis MVR tip	E	3
Blade Slit/Keratome 2.5-3.2mm angled bevel up	E	3
Knife, Crescent <i>Angled, Bevel Up</i> 2.5-3.0mm	E	3
<b>Scissors</b>		
Scissors, Conjunctival, <i>Westcotts</i>	E	1
Scissors, Corneal Section (Corneoscleral), 10mm blades	D	1
Scissors, Angled, 10mm, Extra thin Blades, <i>Barraquers</i>	E	1
Scissors, iridectomy, 10mm blades <i>De-Wecker's</i> OR <i>Vannas</i>	E	1
Scissors, Capsulotomy, fine	D	1
Scissors, iris, sharp pointed	E	2
Ordinary Scissors (for cutting big sutures and threads and eye lashes)	E	2
<b>Cannula</b>		
Cannula, Rycroft 30 gauge	E	2
Cannula, Air Injection, 27G Angle to Tip 5mm	E	2
Cannula Visco-Elastic, 22G, Angle to Tip 10mm	D	2
Cannula, Simcoe, Irrigating/Aspirating, 23G, Angled, aspiration through top opening, 15mm	E	4
Cannula, Irrigating Vectis, Three Ports 23G	E	2
<b>Other</b>		
Vertical chopper useful for any type of cataract	D	1
Pre chopper – enables to fracture the nucleus in the bag, without the need of phaco – possibly to extract half of the nucleus at a time e.g. <i>Ernst micro nucleus cracker</i> or <i>Micro Akahoshi</i>	D	1
Kuglen Iris Hook and Lens Manipulator ( <i>with Clover Leaf Tip Angled</i> )	D	1
Sinskey hook straight or angled	E	2
Lens Expressor ( <i>Hook</i> )	D	1
Iris Spatula or repositor <i>Nettleship</i>	D	1
Vectis, Lens Loop or wire, <i>Snellen Lens Loop</i>	E	1
Muscle Hook or squint hook <i>Graefe</i>	E	1
Cautery Ball or electric cautery	E	1
Calipers 1-20mm in 1mm Increments	E	1
Speculum, 12mm Blade (Adult and child)	E	1
Speculum <i>adjustable: Barraquer's, Weiss</i> or <i>wire speculum, Cook</i> or <i>Liberman</i>	E	1
<b>SICS – ADDITIONAL INSTRUMENTS</b>		
Troutman blade handle, non fixed handle, <i>Bard Parker</i> for Single Use Knives or Purchase disposable Knives & Handle combined/fixed		
Keratome (bevel up) 2.7-3.5mm		
Knife, Slit/Keratome, Angled 3.2mm (bevel up)		
Knife, Crescent, Angled, 2.5mm (bevel up)		

Description	Essential (E) or Desirable (D)	Quantity Required
Knife, MVR 19G		
Knife, 15 Degree Stab		
<b>PHACO – ADDITIONAL INSTRUMENTS</b>		
<b>Phacoemulsification Machine</b> <a href="https://iapb.standardlist.org/product-category/phacoemulsification-equipment/">https://iapb.standardlist.org/product-category/phacoemulsification-equipment/</a>	E	1
Phaco Hand Piece, tip and accessory pack with silicone sleeve	E	1
Irrigation – Aspiration tip (co-axial)	E	1
Bimanual irrigation hand pieces	E	1
Spatulated irrigation cannulas for hydrodissection	D	2
Troutman blade handle, non fixed handle, <i>Bard Parker</i> for Single Use Knives or Purchase disposable Knives & Handle combined/fixed		
Keratome (bevel up) 2.7-3.5mm		
Knife, MVR 19G		
Phaco chopper vertical and horizontal	E	1
Spatula, fine iris	E	1
Forceps, IOL folding and inserting	E	1
Cystomes can be build with a needle and mosquito if required	D	2
<b>Blades (included in sets)</b>		
<b>SURGICAL CONSUMABLES AND SUPPLIES</b>		
 Use leftover and/or expired consumables from the OT e.g. <ul style="list-style-type: none"> <li>• Use leftover sutures</li> <li>• Use expired IOLs</li> </ul>  Use substitutes e.g. <ul style="list-style-type: none"> <li>• KY Jelly or other clear lubricant in place of Viscoelastic</li> <li>• Blue food dye in place of Trypan blue</li> </ul>	E	
 Full range of surgical consumables and supplies, similar to what is used in their OT <sup>5</sup>	D	
<b>Needles</b> – <a href="https://iapb.standardlist.org/product-category/syringes-needles/">https://iapb.standardlist.org/product-category/syringes-needles/</a>		
Needle 30G	E	50
Needle 25G	E	50
Needle, 23G, 30-35mm long	D	
Needle, 26G	D	
Needle, 27G	D	
Needles, superior rectus, for 4/0 cutting silk	E	5
<b>Syringes</b>		
5ml disposable syringes leur lock	E	5
2ml disposable syringes leur lock	E	5
1ml disposable syringes leur slip	E	5
<b>Sutures</b> – <a href="https://iapb.standardlist.org/product-category/sutures/">https://iapb.standardlist.org/product-category/sutures/</a>		

<sup>5</sup> Using similar surgical consumables and supplies to those used in the operating theatre where students will be operating provides familiarity and continuity for students.

Description	Essential (E) or Desirable (D)	Quantity Required
9/0 Nylon double armed sutures spatulated needles	D	
10/0 Nylon double armed sutures spatulated needles	E	10
4/0 Black Braided Silk on a Reel	E	1
Prolene 5/0 , double armed with spatulated needles	D	
10-0, 9-0 and 8-0 nylon	D	
6-vicryl	D	
<b>IOLS</b> – <a href="https://iapb.standardlist.org/product-category/iols/">https://iapb.standardlist.org/product-category/iols/</a>		
IOLs, Single Piece (PMMA) with Dialling Holes	E	10
1 piece acrylic, 3-piece acrylic	D	5
AC Lenses Three or Four Point Fixation	E	5
Capsular tension ring (11mm)	D	5
<b>Other</b>		
Gloves (different sizes 6.5 – 8.5) – <a href="https://iapb.standardlist.org/product-category/gloves/">https://iapb.standardlist.org/product-category/gloves/</a>	E	10 each size
Antiseptic hand scrub minimum 70% alcohol (500ml)/handwash solution (500ml)	E	1
Perasafe sterilizing powder 81g	E	1
Isopropyl alcohol 70% minimum	E	1
Sodium hypochlorite	E	1
Chlorhexidine aqueous 0.5%	E	1
Trypan blue 0.06% 1ml – <a href="https://iapb.standardlist.org/the-products/trypan-blue-1ml-inj/">https://iapb.standardlist.org/the-products/trypan-blue-1ml-inj/</a>	E	5 vials
Ringers Lactate 500ml – <a href="https://iapb.standardlist.org/the-products/ringers-lactate-1000ml/">https://iapb.standardlist.org/the-products/ringers-lactate-1000ml/</a>	E	5
Viscoelastic (75cc)	E	10

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- Dr Rènée du Toit, Independent Eye Health Consultant
- Philip Hoare, Procurement & Standard List Manager IAPB
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- Dr Neil Murray, RANZCO and Fred Hollows Foundation NZ
- Dr John Ferris, Consultant Ophthalmologist

# WORKING TOGETHER TO ELIMINATE AVOIDABLE BLINDNESS

IAPB's ESSENTIAL LISTS identify equipment and consumables considered essential, minimum requirements to perform high quality eye health interventions. IAPB produces these lists in collaboration with leading experts from around the world and updates them from time to time.



Published by International Agency for the Prevention of Blindness  
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