

APPENDIX A

COA/CCOA, COT, and COMT SUB-CONTENT AREAS

Higher level examinations may also contain areas found in lower level examinations

CONTENT AREAS	COA/CCOA	COT	COMT
HISTORY TAKING	<p>Presenting Complaint/History of Presenting Illness</p> <ul style="list-style-type: none"> • Signs and symptoms • Triage • Refractive Status • Injury • Contact Lenses • Confidentiality <p>Past Ocular History</p> <ul style="list-style-type: none"> • Refractive status problems • Injury • Disease and prescriptions • Surgery and laser • Contact lenses <p>Family History</p> <ul style="list-style-type: none"> • Diabetes • Glaucoma • Hypertension • Ocular diseases and dystrophies • Strabismus • Other <p>Systemic Illness, Past and Present</p> <ul style="list-style-type: none"> • Hypertension • Diabetes • Cardiac problems • Pulmonary problems • Arthritis • Sickle Cell disease • Surgical Procedures • Major infections • Other <p>Medications</p> <ul style="list-style-type: none"> • Aspirin-containing medications • Diuretics • Blood pressure medications • Birth control pills • Steroids • Other <p>Allergies and Drug Reactions</p> <ul style="list-style-type: none"> • Penicillin • Sulfa • Local anesthesia • Fluorescein • Other <p>Partially Sighted Patient</p> <ul style="list-style-type: none"> • Onset of visual loss • Use of low vision aids • Problems/goals • Home/family/community support 	<p>Presenting Complaint/History of Presenting Illness</p> <ul style="list-style-type: none"> • Signs and symptoms • Triage • Refractive Status • Injury • Contact Lenses • Confidentiality <p>Past Ocular History</p> <ul style="list-style-type: none"> • Refractive status problems • Injury • Disease and prescriptions • Surgery and laser • Contact lenses <p>Family History</p> <ul style="list-style-type: none"> • Diabetes • Glaucoma • Hypertension • Ocular diseases and dystrophies • Strabismus • Other <p>Systemic Illness, Past and Present</p> <ul style="list-style-type: none"> • Hypertension • Diabetes • Cardiac problems • Pulmonary problems • Arthritis • Sickle Cell disease • Surgical Procedures • Major infections • Other <p>Medications</p> <ul style="list-style-type: none"> • Aspirin-containing medications • Diuretics • Blood pressure medications • Birth control pills • Steroids • Other <p>Allergies and Drug Reactions</p> <ul style="list-style-type: none"> • Penicillin • Sulfa • Local anesthesia • Fluorescein • Other <p>Partially Sighted Patient</p> <ul style="list-style-type: none"> • Onset of visual loss • Use of low vision aids • Problems/goals • Home/family/community support 	<p>Presenting Complaint/History of Presenting Illness</p> <ul style="list-style-type: none"> • Signs and symptoms • Triage • Refractive Status • Injury • Contact Lenses • Confidentiality <p>Past Ocular History</p> <ul style="list-style-type: none"> • Refractive status problems • Injury • Disease and prescriptions • Surgery and laser • Contact lenses <p>Family History</p> <ul style="list-style-type: none"> • Diabetes • Glaucoma • Hypertension • Ocular diseases and dystrophies • Strabismus • Other <p>Systemic Illness, Past and Present</p> <ul style="list-style-type: none"> • Hypertension • Diabetes • Cardiac problems • Pulmonary problems • Arthritis • Sickle Cell disease • Surgical Procedures • Major infections • Other <p>Medications</p> <ul style="list-style-type: none"> • Aspirin-containing medications • Diuretics • Blood pressure medications • Birth control pills • Steroids • Other <p>Allergies and Drug Reactions</p> <ul style="list-style-type: none"> • Penicillin • Sulfa • Local anesthesia • Fluorescein • Other <p>Partially Sighted Patient</p> <ul style="list-style-type: none"> • Onset of visual loss • Use of low vision aids • Problems/goals • Home/family/community support
BASIC SKILLS & LENSOMETRY	<p>Method of Measuring/Recording Acuity</p> <ul style="list-style-type: none"> • Distance acuity • Near acuity • Children • Low vision • Illumination of target and background • Pinhole • Artifacts • Recording 	<p>Method of Measuring/Recording Acuity</p> <ul style="list-style-type: none"> • Distance acuity • Near acuity • Children • Low vision • Illumination of target and background • Pinhole • Artifacts • Recording 	<p>Method of Measuring/Recording Acuity</p> <ul style="list-style-type: none"> • Distance acuity • Near acuity • Children • Low vision • Illumination of target and background • Pinhole • Artifacts • Recording

Continued

APPENDIX A (Continued)

CONTENT AREAS	COA/CCOA	COT	COMT
BASIC SKILLS & LENSOMETRY (Continued)	<p>Color Vision Testing</p> <ul style="list-style-type: none"> • Color plates • D-15 • Farnsworth-Munsell • Physiology • Children <p>Lensometry</p> <ul style="list-style-type: none"> • Sphere • Cylinder power/axis • Prism • Multifocal power • Multifocal induced prism • Base curve • Lensometer • Lens "clock" • Estimation with loose lenses • Aphakic lenses • Recording prescription • Transposition <p>A-scan Biometry Exophthalmometry Amsler Grid Schirmer Tests Evaluation of Pupils Estimation of Anterior Chamber Depth</p>	<p>Color Vision Testing</p> <ul style="list-style-type: none"> • Color plates • D-15 • Farnsworth-Munsell • Physiology • Children <p>Lensometry</p> <ul style="list-style-type: none"> • Sphere • Cylinder power/axis • Prism • Multifocal power • Multifocal induced prism • Base curve • Lensometer • Lens "clock" • Estimation with loose lenses • Aphakic lenses • Recording prescription • Transposition <p>A-scan Biometry Exophthalmometry Amsler Grid Schirmer Tests Evaluation of Pupils Estimation of Anterior Chamber Depth</p>	<p>Color Vision Testing</p> <ul style="list-style-type: none"> • Color plates • D-15 • Farnsworth-Munsell • Physiology • Children <p>Lensometry</p> <ul style="list-style-type: none"> • Sphere • Cylinder power/axis • Prism • Multifocal power • Multifocal induced prism • Base curve • Lensometer • Lens "clock" • Estimation with loose lenses • Aphakic lenses • Recording prescription • Transposition <p>A-scan Biometry Exophthalmometry Amsler Grid Schirmer Tests Evaluation of Pupils Estimation of Anterior Chamber Depth</p>
PATIENT SERVICES	<p>Ocular Dressings and Shields</p> <ul style="list-style-type: none"> • Indications • Proper use <p>Drug Delivery (Advantages/Disadvantages)</p> <ul style="list-style-type: none"> • Drops • Ointments • Sustained release • Injections • Systemic • Complications <p>Spectacle Principles</p> <ul style="list-style-type: none"> • Interpupillary distance • Frames • Multifocal • "Safety" lenses and frames • Adjustments and repairs • Care of spectacles • Lens materials <p>Assisting Patient</p> <ul style="list-style-type: none"> • Physically Disabled • Visually disabled • Pediatric/children <p>Minor Surgery</p> <ul style="list-style-type: none"> • Assisting surgeon • Instructing patient 	<p>Ocular Dressings and Shields</p> <ul style="list-style-type: none"> • Indications • Proper use <p>Drug Delivery (Advantages/Disadvantages)</p> <ul style="list-style-type: none"> • Drops • Ointments • Sustained release • Injections • Systemic • Complications <p>Spectacle Principles</p> <ul style="list-style-type: none"> • Interpupillary distance • Frames • Multifocal • "Safety" lenses and frames • Adjustments and repairs • Care of spectacles • Lens materials <p>Assisting Patient</p> <ul style="list-style-type: none"> • Physically Disabled • Visually disabled • Pediatric/children <p>Minor Surgery</p> <ul style="list-style-type: none"> • Assisting surgeon • Instructing patient 	<p>Ocular Dressings and Shields</p> <ul style="list-style-type: none"> • Indications • Proper use <p>Drug Delivery (Advantages/Disadvantages)</p> <ul style="list-style-type: none"> • Drops • Ointments • Sustained release • Injections • Systemic • Complications <p>Spectacle Principles</p> <ul style="list-style-type: none"> • Interpupillary distance • Frames • Multifocal • "Safety" lenses and frames • Adjustments and repairs • Care of spectacles • Lens materials <p>Assisting Patient</p> <ul style="list-style-type: none"> • Physically Disabled • Visually disabled • Pediatric/children <p>Minor Surgery</p> <ul style="list-style-type: none"> • Assisting surgeon • Instructing patient
BASIC TONOMETRY	<p>Applanation</p> <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique <p>Non-Contact Complications and Contraindications Scleral Rigidity</p> <ul style="list-style-type: none"> • General concepts • Methods of assessing scleral rigidity <p>Factors Altering Intraocular Pressure</p> <ul style="list-style-type: none"> • Squeezing eyelids • Heartbeat • Breath holding • Tight collar • Body position • Other 	<p>Applanation</p> <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique <p>Non-Contact Complications and Contraindications Scleral Rigidity</p> <ul style="list-style-type: none"> • General concepts • Methods of assessing scleral rigidity <p>Factors Altering Intraocular Pressure</p> <ul style="list-style-type: none"> • Squeezing eyelids • Heartbeat • Breath holding • Tight collar • Body position • Other 	<p>Applanation</p> <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique <p>Non-Contact Complications and Contraindications Scleral Rigidity</p> <ul style="list-style-type: none"> • General concepts • Methods of assessing scleral rigidity <p>Factors Altering Intraocular Pressure</p> <ul style="list-style-type: none"> • Squeezing eyelids • Heartbeat • Breath holding • Tight collar • Body position • Other

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APPENDIX A (Continued)

CONTENT AREAS	COA/CCOA	COT	COMT
INSTRUMENT MAINTENANCE	Acuity Projectors Ophthalmoscopes <ul style="list-style-type: none"> • Direct • Indirect Retinoscopes Lensometers Perimeters Tangent Screen Phoropters Slit Lamps Ultrasound Keratometers Lenses Tonometers Muscle Light Special Instruments (Equipment) Surgical Instruments	Acuity Projectors Ophthalmoscopes <ul style="list-style-type: none"> • Direct • Indirect Retinoscopes Lensometers Perimeters Tangent Screen Phoropters Slit Lamps Ultrasound Keratometers Lenses Tonometers Muscle Light Special Instruments (Equipment) Surgical Instruments	Acuity Projectors Ophthalmoscopes <ul style="list-style-type: none"> • Direct • Indirect Retinoscopes Lensometers Perimeters Tangent Screen Phoropters Slit Lamps Ultrasound Keratometers Lenses Tonometers Muscle Light Special Instruments (Equipment) Surgical Instruments
GENERAL MEDICAL KNOWLEDGE	Cardiopulmonary Resuscitation <ul style="list-style-type: none"> • Fainting • Cardiac Arrest • Acute drug reaction Anatomy <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Physiology <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Systemic Diseases <ul style="list-style-type: none"> • Diabetes • Hypertension • Cancer • Atherosclerosis • Blood • Infections • Blood dyscrasia • Infectious disease Ocular Disease <ul style="list-style-type: none"> • Refractive errors • Infection • Injury • Red eye • Presbyopia • Other common disorders Ocular Emergencies <ul style="list-style-type: none"> • First aid • Management in the absence of the physician Metric Conversions Fundamentals of Microbial Control <ul style="list-style-type: none"> • Sanitation • Disinfection • Sterilization • Contamination 	Cardiopulmonary Resuscitation <ul style="list-style-type: none"> • Fainting • Cardiac Arrest • Acute drug reaction Anatomy <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Physiology <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Systemic Diseases <ul style="list-style-type: none"> • Diabetes • Hypertension • Cancer • Atherosclerosis • Blood • Infections • Blood dyscrasia • Infectious disease Ocular Disease <ul style="list-style-type: none"> • Refractive errors • Infection • Injury • Red eye • Presbyopia • Other common disorders Ocular Emergencies <ul style="list-style-type: none"> • First aid • Management in the absence of the physician Metric Conversions Fundamentals of Microbial Control <ul style="list-style-type: none"> • Sanitation • Disinfection • Sterilization • Contamination 	Cardiopulmonary Resuscitation <ul style="list-style-type: none"> • Fainting • Cardiac Arrest • Acute drug reaction Anatomy <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Physiology <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Systemic Diseases <ul style="list-style-type: none"> • Diabetes • Hypertension • Cancer • Atherosclerosis • Blood • Infections • Blood dyscrasia • Infectious disease Ocular Disease <ul style="list-style-type: none"> • Refractive errors • Infection • Injury • Red eye • Presbyopia • Other common disorders Ocular Emergencies <ul style="list-style-type: none"> • First aid • Management in the absence of the physician Metric Conversions Fundamentals of Microbial Control <ul style="list-style-type: none"> • Sanitation • Disinfection • Sterilization • Contamination

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APPENDIX A (Continued)

CONTENT AREAS	COA/CCOA	COT	COMT
GENERAL MEDICAL KNOWLEDGE (Continued)		<p>Optics</p> <ul style="list-style-type: none"> • Geometric • Clinical • Physiologic <p>Retinoscopy</p> <ul style="list-style-type: none"> • Principles • Techniques <p>Refractometry</p> <ul style="list-style-type: none"> • Fogging • Astigmatic dials • Cross cylinder • Duochrome • Accommodation • General principles <p>Advanced Spectacle Principles</p> <ul style="list-style-type: none"> • Vertex distance • Prism correction • Bicentric grinding (slab off) • Aphakic spectacles <p>Low Vision Aids</p>	<p>Optics</p> <ul style="list-style-type: none"> • Geometric • Clinical • Physiologic <p>Retinoscopy</p> <ul style="list-style-type: none"> • Principles • Techniques <p>Refractometry</p> <ul style="list-style-type: none"> • Fogging • Astigmatic dials • Cross cylinder • Duochrome • Accommodation • General principles <p>Advanced Spectacle Principles</p> <ul style="list-style-type: none"> • Vertex distance • Prism correction • Bicentric grinding (slab off) • Aphakic spectacles <p>Low Vision Aids</p>
BASIC OCULAR MOTILITY		<p>Extraocular Muscle Actions</p> <p>Strabismus</p> <ul style="list-style-type: none"> • Phoria/tropia • Horizontal deviations • Vertical deviations • Pseudostrabismus • Paralytic (including primary and secondary deviations) <p>Amblyopia Detection</p> <p>Evaluation Assessment Methods</p> <ul style="list-style-type: none"> • Cover/uncover, alternate cover tests • Krimsky/Hirschberg • Diagnostic positions of gaze • Maddox rod • Worth 4 – dot • Stereopsis • Near point of convergence and accommodation • Ductions and versions, head tilt • Vergences • Risley prism • Diplopia (e.g. Red Glass) • Fusion (e.g. Bagolini lens) 	<p>Extraocular Muscle Actions</p> <p>Strabismus</p> <ul style="list-style-type: none"> • Phoria/tropia • Horizontal deviations • Vertical deviations • Pseudostrabismus • Paralytic (including primary and secondary deviations) <p>Amblyopia Detection</p> <p>Evaluation Assessment Methods</p> <ul style="list-style-type: none"> • Cover/uncover, alternate cover tests • Krimsky/Hirschberg • Diagnostic positions of gaze • Maddox rod • Worth 4 – dot • Stereopsis • Near point of convergence and accommodation • Ductions and versions, head tilt • Vergences • Risley prism • Diplopia (e.g. Red Glass) • Fusion (e.g. Bagolini lens)
VISUAL FIELDS		<p>Visual Pathways</p> <ul style="list-style-type: none"> • Retina • Retinal nerve fiber layer • Optic nerve • Chiasm • Optic tract • Lateral geniculate body • Optic radiation • Occipital cortex <p>Visual Fields</p> <ul style="list-style-type: none"> • Visual field terminology (isopters, threshold, apostilb, decibel) • Definition of the visual field • The “island of vision” analogy <p>Methods of Measuring the Visual Fields</p> <ul style="list-style-type: none"> • Screening (single stimulus, multiple stimuli, Harrington-Flocks screener, others) <p>Techniques</p> <ul style="list-style-type: none"> • Manual (confrontation, tangent screen, autoplot, arc perimeter, Goldmann) 	<p>Visual Pathways</p> <ul style="list-style-type: none"> • Retina • Retinal nerve fiber layer • Optic nerve • Chiasm • Optic tract • Lateral geniculate body • Optic radiation • Occipital cortex <p>Visual Fields</p> <ul style="list-style-type: none"> • Visual field terminology (isopters, threshold, apostilb, decibel) • Definition of the visual field • The “island of vision” analogy <p>Methods of Measuring the Visual Fields</p> <ul style="list-style-type: none"> • Screening (single stimulus, multiple stimuli, Harrington-Flocks screener, others) <p>Techniques</p> <ul style="list-style-type: none"> • Manual (confrontation, tangent screen, autoplot, arc perimeter, Goldmann)

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APPENDIX A (Continued)

CONTENT AREAS	COA/CCOA	COT	COMT
VISUAL FIELDS (Continued)		<p>Errors in Visual Field Testing</p> <ul style="list-style-type: none"> • Machine calibration • Recording and printing results • Correcting lens (power and positioning) • Stimulus selection • Patient preparation (instructions, positioning, comfort, special situations, e.g. low vision, wheelchairs) • Test selection • Catch trials, fixation losses, and fluctuation • Artifactual loss <p>Visual Field Defects from Disease</p> <ul style="list-style-type: none"> • Retinal disease • Optic nerve disease (glaucoma, drusen, optic neuritis) • Neurological • Non-organic 	<p>Errors in Visual Field Testing</p> <ul style="list-style-type: none"> • Machine calibration • Recording and printing results • Correcting lens (power and positioning) • Stimulus selection • Patient preparation (instructions, positioning, comfort, special situations, e.g. low vision, wheelchairs) • Test selection • Catch trials, fixation losses, and fluctuation • Artifactual loss <p>Visual Field Defects from Disease</p> <ul style="list-style-type: none"> • Retinal disease • Optic nerve disease (glaucoma, drusen, optic neuritis) • Neurological • Non-organic
CONTACT LENSES		<p>Basic Principles</p> <ul style="list-style-type: none"> • Hard lenses • Soft lenses • Toric lenses • Astigmatism • Bifocal • Aphakic • Extended wear • Gas permeable • Truncated • Bandage lenses • Oxygen permeability • Lens characteristics • Rigid lenses <p>Fitting Procedures</p> <ul style="list-style-type: none"> • Keratometry • Corneal diameter • Pupil diameter • Tear secretion • Eyelid tightness and fissure size • Fluorescein pattern • Spectacle prescription conversion • Over-refraction • Pediatric • Contraindications <p>Patient Instruction</p> <ul style="list-style-type: none"> • Insertion • Removal • Cleaning • Storage • Hygiene • Solutions • Wearing time <p>Troubleshooting Problems</p> <ul style="list-style-type: none"> • Tight • Loose • Vascularization • Ulcers • Spectacle blur • Giant papillary conjunctivitis • Deposits • Pain • Keratoconus • Edema • Solutions • Modifications • Vision <p>Verification of Lenses</p> <ul style="list-style-type: none"> • Power • Base Curve • Diameter • Central Thickness • Edge profile 	<p>Basic Principles</p> <ul style="list-style-type: none"> • Hard lenses • Soft lenses • Toric lenses • Astigmatism • Bifocal • Aphakic • Extended wear • Gas permeable • Truncated • Bandage lenses • Oxygen permeability • Lens characteristics • Rigid lenses <p>Fitting Procedures</p> <ul style="list-style-type: none"> • Keratometry • Corneal diameter • Pupil diameter • Tear secretion • Eyelid tightness and fissure size • Fluorescein pattern • Spectacle prescription conversion • Over-refraction • Pediatric • Contraindications <p>Patient Instruction</p> <ul style="list-style-type: none"> • Insertion • Removal • Cleaning • Storage • Hygiene • Solutions • Wearing time <p>Troubleshooting Problems</p> <ul style="list-style-type: none"> • Tight • Loose • Vascularization • Ulcers • Spectacle blur • Giant papillary conjunctivitis • Deposits • Pain • Keratoconus • Edema • Solutions • Modifications • Vision <p>Verification of Lenses</p> <ul style="list-style-type: none"> • Power • Base Curve • Diameter • Central Thickness • Edge profile

Continued

APPENDIX A (Continued)

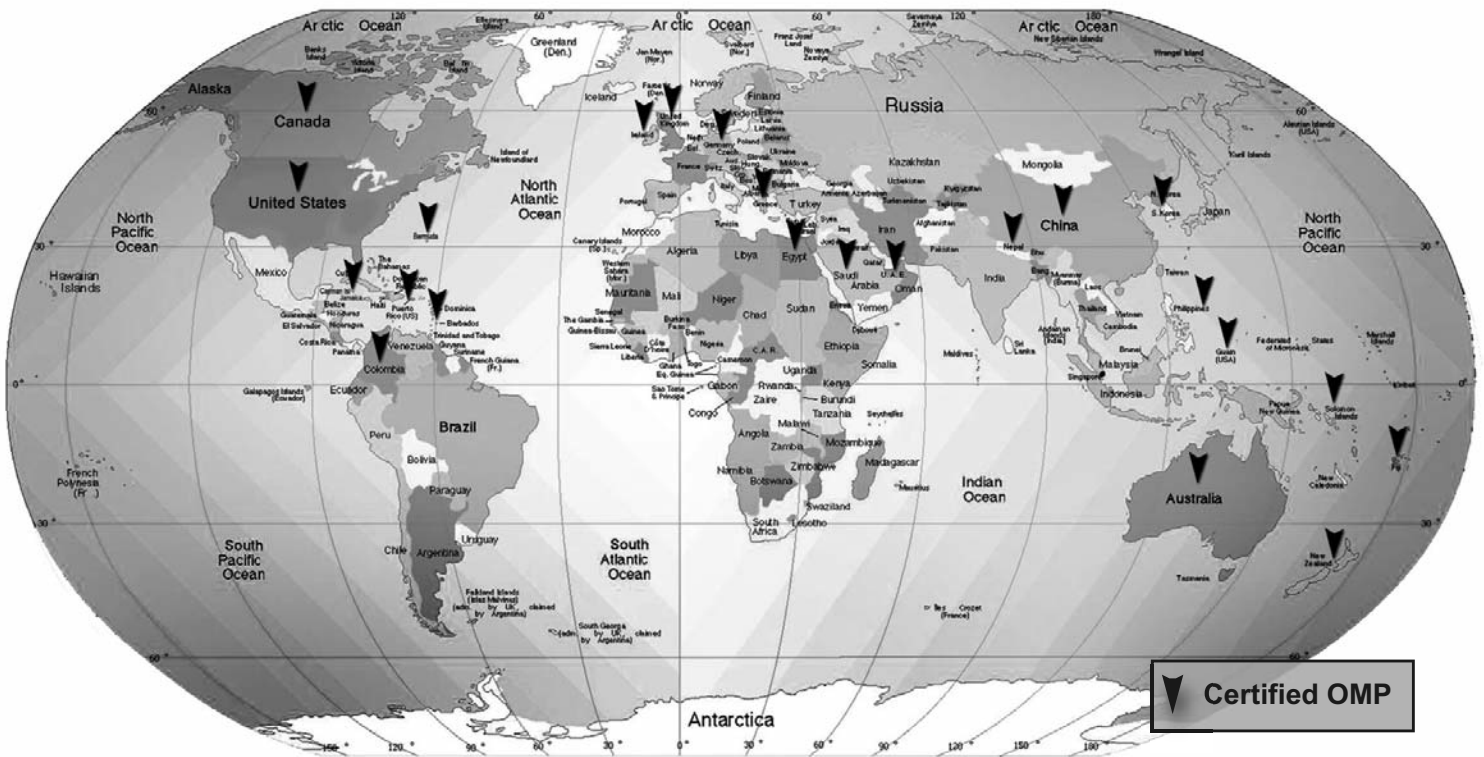
CONTENT AREAS	COA/CCOA	COT	COMT
INTERMEDIATE TONOMETRY		Aqueous Humor Dynamics Glaucoma <ul style="list-style-type: none"> • Basic mechanisms • Angle closure • Open angle • Cupping • Basic medical management • Basic surgical management Indentation <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique 	Aqueous Humor Dynamics Glaucoma <ul style="list-style-type: none"> • Basic mechanisms • Angle closure • Open angle • Cupping • Basic medical management • Basic surgical management Indentation <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique
OCULAR PHARMACOLOGY		Types, Strengths, Actions and Complications Anesthetics Mydriatics and Cycloplegics Epinephrine Beta-Blockers Miotics Steroids Antibiotics Carbonic Anhydrase Inhibitors Vasoconstrictors Antihistamines Osmotic Agents Nonsteroidal Anti-Inflammatories Others	Types, Strengths, Actions and Complications Anesthetics Mydriatics and Cycloplegics Epinephrine Beta-Blockers Miotics Steroids Antibiotics Carbonic Anhydrase Inhibitors Vasoconstrictors Antihistamines Osmotic Agents Nonsteroidal Anti-Inflammatories Others
PHOTOGRAPHY		Basics of Photography <ul style="list-style-type: none"> • Film • Exposure • Focal length • Depth of field • Synchronization • Beam splitters • Reticles • Ocular • Focus • Video • Astigmatic correction Fundus Photography Defects/Artifacts	Basics of Photography <ul style="list-style-type: none"> • Film • Exposure • Focal length • Depth of field • Synchronization • Beam splitters • Reticles • Ocular • Focus • Video • Astigmatic correction Fundus Photography Defects/Artifacts
MICROBIOLOGY			Inflammatory Response <ul style="list-style-type: none"> • Infectious • Non-infectious • Cell types • Cell function Microscopy <ul style="list-style-type: none"> • Bacteria identification • Non-infectious • Cell-types • Cell function Staining <ul style="list-style-type: none"> • Gram • Giemsa • Wright • Special Culture Media <ul style="list-style-type: none"> • Bacterial • Viral • Fungal • Other Specimen Collection and Processing <ul style="list-style-type: none"> • Collecting • Labeling • Fixing • Staining • Culturing

Continued

APPENDIX A - COMT ONLY (Continued)

CONTENT AREAS	COMT	CONTENT AREAS	COMT
ADVANCED TONOMETRY	<p>Pathophysiology of Glaucoma</p> <ul style="list-style-type: none"> • Structural changes • Deterioration of function • Secondary glaucoma • Ocular hypertension • Congenital glaucoma <p>Tonometry Theory</p> <ul style="list-style-type: none"> • Applanation • Indentation <p>Managing Tonometry Problems</p> <ul style="list-style-type: none"> • Corneal irregularity and scarring • High astigmatism • Orbital disease 	ADVANCED PHOTOGRAPHY	<p>Fluorescein Angiography</p> <ul style="list-style-type: none"> • Principle • Filters (exciter, barrier) • Fluorescein administration • Photography technique and sequence • Fluorescence <p>Slit Lamp External Specular Micrography Film Processing</p>
ADVANCED VISUAL FIELDS	<p>Advanced Principles of Visual Field Testing</p> <ul style="list-style-type: none"> • Dynamic-kinetic field testing • Static field testing • Binocular field testing <p>Etiology and Description of Less Common Defects</p> <ul style="list-style-type: none"> • Toxic • Steep vs. sloping margins • Absolute vs. relative • Nasal steps • Altitudinal • Scotomata 	ADVANCED PHARMACOLOGY	<p>Basic Concepts of Topical Medications</p> <ul style="list-style-type: none"> • Stability • pH • Tonicity • Sterility • Adverse effects <p>Mechanism of Action and Desired Effects</p> <ul style="list-style-type: none"> • Sympathomimetics • Sympatholytics • Parasympathomimetics • Parasympatholytics • Cholinesterase inhibitors
ADVANCED COLOR VISION	<p>Physiology/Theory Defects</p> <ul style="list-style-type: none"> • Anomalous trichromats • Dichromats • Monochromats and achromatopsia <p>Advanced Testing Techniques</p> <ul style="list-style-type: none"> • Anomaloscope • Other 	SPECIAL INSTRUMENTS AND TECHNIQUES	<p>Ophthalmic Lasers</p> <ul style="list-style-type: none"> • Argon • Krypton • Excimer • CO₂ • Other <p>Imaging Techniques</p> <ul style="list-style-type: none"> • Computerized tomography (CT scans) • Magnetic resonance imaging (MRI) • Ultrasonography <p>IOL Power Computation Electrodiagnostics</p> <ul style="list-style-type: none"> • Electroretinography • Electrooculography • Visually evoked potential <p>Dark Adaptometry Macular Function Testing Pupillography Ophthalmoscope Slit Lamp Photokeratoscope Pachymetry Low Vision Equipment Contrast Sensitivity</p>
ADVANCED CLINICAL OPTICS	<p>Advanced Refractometry</p> <ul style="list-style-type: none"> • Stenopeic slit • Automated refractometers • Merits of subjective vs. objective • Low vision patients <p>Advanced Optics</p> <ul style="list-style-type: none"> • Simple lens systems • Compound lens systems • Plane mirrors • Curved mirrors • Accommodative range • Accommodative amplitude • Presbyopia • Low vision aids • Induced prism • Safety lenses • Schematic eye • Conoid of Strum 	ADVANCED GENERAL MEDICAL KNOWLEDGE	<p>Ocular Manifestation of Systemic Diseases</p> <ul style="list-style-type: none"> • Diabetes Mellitus • Hypertension • Atherosclerosis • Thyroid disease • Pituitary disease • Brain tumors • Other <p>Low Vision/Blindness</p> <ul style="list-style-type: none"> • Legal • Total • Functional • Psychological/social aspects <p>Ocular Disease</p> <ul style="list-style-type: none"> • Infectious • Immunologic • Congenital • Malignant • Other <p>Trauma</p>
ADVANCED OCULAR MOTILITY	<p>Amblyopia</p> <ul style="list-style-type: none"> • Classification • Treatment • Cause <p>Anatomy and Physiology of the Extraocular Muscles</p> <ul style="list-style-type: none"> • Location • Innervation <p>Binocular Function</p> <ul style="list-style-type: none"> • Hering's Law • Sherrington's Law • AC/A ratio • Angle kappa • Fusional amplitude • Stereopsis • Nystagmus • Convergence and divergence • Panum's area • Retinal correspondence <p>Advanced Strabismus</p> <ul style="list-style-type: none"> • Convergence insufficiency and accommodative insufficiency • Dissociated vertical deviation • Syndromes and systemic manifestations • Divergence excess and divergence insufficiency 		

CERTIFICANTS WORLDWIDE



JCAHPO Certified Ophthalmic Medical Personnel

Total = 18,546*

COUNTRY	COA	COT	COMT	CCOA	ROUB	CDOS	SURGICAL ASSISTING	LOW VISION
AUSTRALIA	2	1						
BARBADOS		1	1					
BERMUDA	2	1						
CANADA	124	79	69		6	10	4	2
CAYMAN ISLANDS	1							
CHINA	8							
COLOMBIA			1					
EGYPT			1					
FIJI	1						1	
GERMANY	4		2					
GREECE	1							
GUAM	3							
IRELAND	1							
KOREA, REPUBLIC OF	1							
NEPAL	1							
NEW ZEALAND		1						
PHILIPPINES	2							
PEURTO RICO	2							
SAUDI ARABIA	98	42	2		6	3	1	
SOLOMAN ISLANDS	2						2	
UNITED ARAB EMIRATES		1						
UNITED KINGDOM	3		1					
UNITED STATES	12,673	3,902	593	72	119	54	631	6

* Includes individual personnel with multiple credentials.

APPENDIX B

Examination Effective Dates: COA – Early 2011 COT – 2012 COMT – Early 2011

COA, COT and COMT CONTENT AREA PERCENTAGES

CONTENT AREA	COA %	COT %	COMT %
History Taking	5	6	3
Pupillary Assessment	3	5	4
Contact Lenses	2	3	0
Equipment Maintenance and Repair	4	4	3
Lensometry	2	5	6
Keratometry	3	5	3
Medical Ethics, Legal and Regulatory Issues	5	3	5
Microbiology	2	3	5
Pharmacology	8	5	8
Ocular Motility	3	5	11
In-Office Minor Surgical Procedures	7	3	3
Ophthalmic Patient Services and Education	16	7	10
Ophthalmic Imaging	3	7	6
Refractometry	6	7	6
Spectacle Skills	3	3	0
Supplemental Skills	7	9	10
Tonometry	4	5	5
Visual Assessment	8	6	6
Visual Fields	4	6	6
Surgical Assisting in ASC or Hospital-Based OR	5	3	0

Skill Areas for the COT Skill Evaluation

Candidates will be asked to demonstrate their skill in each of the following seven areas:

- Lensometry - Demonstrate the ability to perform non-automated lensometry to determine the strength of the distance correction and the bifocal or trifocal add.
- Visual Fields - Demonstrate the ability to perform an automated visual field on a specified automated visual field test as determined by JCAHPO.
- Ocular Motility - Demonstrate the ability to detect a phoria or tropia, and identify the direction of the deviation using appropriate cover tests.
- Keratometry - Demonstrate the ability to perform keratometry.
- Retinoscopy - Demonstrate the ability to perform retinoscopy.
- Refinement - Demonstrate the ability to perform refinement.
- Tonometry - Demonstrate the ability to perform applanation tonometry.

Skill Areas for the COMT Performance Test

Candidates will be asked to demonstrate their skill in each of the following five areas:

- Measure patient's ocular motility using prism and cover tests at a distance.
- Perform manual lensometry: Identify and measure prism.
- Perform fundus photography and identify fluorescein angiography phases.
- Measure, compare, and evaluate pupil function at a distance.
- Evaluate versions and ductions, identifying any abnormalities.

APPENDIX B

COA, COT and COMT SUB-CONTENT AREAS

Higher level examinations may also contain areas found in lower level examinations.

CONTENT AREAS	COA	COT	COMT
HISTORY TAKING	Ocular Medical Medication Social Family	Ocular Medical Medication Social Family	Ocular Medical Medication Social Family
PUPILLARY ASSESSMENT	Measure Compare Evaluate RAPD	Measure Compare Evaluate RAPD	Measure Compare Evaluate RAPD
CONTACT LENSES	Measure Patient Instruction Patient Counsel Fitting	Measure Patient Instruction Patient Counsel Fitting	
LENSOMETRY	Neutralize Spectacles i. Automated ii. Manual	Neutralize Spectacles i. Automated ii. Manual Fresnel Ground-in prism Slab-off	Neutralize Spectacles i. Automated ii. Manual Fresnel Ground-in prism Slab-off
KERATOMETRY	Corneal Curvature	Corneal Curvature Keratometer	Corneal Curvature Keratometer
EQUIPMENT MAINTENANCE & REPAIR	Ophthalmic Lenses, Instruments and equipment i. Clean and lubricate ii. Tighten screws iii. Replace parts	Ophthalmic Lenses, Instruments and equipment i. Clean and lubricate ii. Tighten screws iii. Replace parts iv. Maintenance	Ophthalmic Lenses, Instruments and equipment i. Clean and lubricate ii. Tighten screws iii. Replace parts iv. Maintenance
MEDICAL ETHICS, LEGAL AND REGULATORY ISSUES	Third party coding Government and institutional rules and regulations Quality assurance Ethical & legal standards Scribing Confidentiality Informed consent	Third party coding Government and institutional rules and regulations Quality assurance Ethical & legal standards Scribing Confidentiality Informed consent	Third party coding Government and institutional rules and regulations Quality assurance Ethical & legal standards Scribing Confidentiality Informed consent
MICROBIOLOGY	Office antisepsis Universal precautions	Office antisepsis Universal precautions Specimens and biopsies Cultures	Office antisepsis Universal precautions Specimens and biopsies Cultures
PHARMACOLOGY	Ocular medications (instilling and identifying) Educate patients on medications Drug reactions	Ocular medications (instilling and identifying) Educate patients on medications Drug reactions	Ocular medications (instilling and identifying) Educate patients on medications Drug reactions
OCULAR MOTILITY	Version and Ductions i. Functions i. Anomalies Cover Tests Stereoaucuity Nystagmus	Version and Ductions i. Functions i. Anomalies Near point convergence Near point accommodation Fusional convergence amplitudes Cover Tests Strabismus with prisms Worth 4-Dot test Maddox Red Krimsky Stereoaucuity Nystagmus Amblyopia therapy Covergence training	Version and Ductions i. Functions i. Anomalies Near point convergence Near point accommodation Fusional convergence amplitudes Cover Tests Strabismus with prisms Worth 4-Dot test Maddox Red Krimsky Stereoaucuity Nystagmus Amblyopia therapy Covergence training
IN-OFFICE MINOR SURGICAL PROCEDURES	Instrument preparation Refractive surgery Sterile fields Aseptic technique Non-refractive laser therapy Intraocular injections	Instrument preparation Refractive surgery Sterile fields Aseptic technique Non-refractive laser therapy Intraocular injections PDT procedures	Instrument preparation Refractive surgery Sterile fields Aseptic technique Non-refractive laser therapy Intraocular injections PDT procedures

APPENDIX B (CONTINUED)

COA, COT and COMT SUB-CONTENT AREAS

Higher level examinations may also contain areas found in lower level examinations.

CONTENT AREAS	COA	COT	COMT
OPHTHALMIC PATIENT SERVICES & EDUCATION	Patient Education i. Surgery ii. Systemic & ocular diseases iii. Anatomy & physiology (general) iv. Anatomy & physiology (ocular) v. Safety glasses Patient Instruction i. Medication ii. Tests iii. Procedures iv. Treatments Eye Dressings Patient flow Triage CPR Forms & Manuals Legal forms for government services Vital signs CPR	Patient Education vi. Surgery vii. Systemic & ocular diseases viii. Anatomy & physiology (general) ix. Anatomy & physiology (ocular) x. Safety glasses Patient Instruction v. Medication vi. Tests vii. Procedures viii. Treatments Eye Dressings Patient flow Triage CPR Forms & Manuals Legal forms for government services Vital signs CPR	Patient Education xi. Surgery xii. Systemic & ocular diseases xiii. Anatomy & physiology (general) xiv. Anatomy & physiology (ocular) xv. Safety glasses Patient Instruction ix. Medication x. Tests xi. Procedures xii. Treatments Eye Dressings Patient flow Triage CPR Forms & Manuals Legal forms for government services Vital signs CPR
OPHTHALMIC IMAGING	Slit lamp/anterior segment photography Fundus photography External photography Diagnostic/standardized A-scan Corneal topography Scanning laser tests for glaucoma/retina i. HRT ii. GDX iii. OCT	Slit lamp/anterior segment photography Fundus photography Fluorescein angiography External photography Imaging artifacts Diagnostic/standardized A-scan B-Scan Corneal topography Scanning laser tests for glaucoma/retina i. HRT ii. GDX iii. OCT Endothelial cell count	Slit lamp/anterior segment photography Fundus photography Fluorescein angiography External photography Imaging artifacts Diagnostic/standardized A-scan B-Scan Corneal topography Scanning laser tests for glaucoma/retina i. HRT ii. GDX iii. OCT Endothelial cell count
REFRACTOMETRY	Refractive error (automated) Manifest refractometry	Refractive error (automated) Manifest refractometry Retinoscopy	Refractive error (automated) Manifest refractometry Retinoscopy
SPECTACLE SKILLS	Transpose cylinder readings	Transpose cylinder readings Prescriptions Vertex distance i. Measure ii. Conversion	
SUPPLEMENTAL SKILLS	IOL power calculation A/C depth Pachymetry Calibrate biometry instruments Tear Tests i. Schirmer ii. BUT iii. Rose Bengal Glare testing Color vision testing Contact A-scan Laser interferometry (IOL Master)	IOL power calculation Low vision A/C depth Pachymetry Calibrate biometry instruments Tear Tests i. Schirmer ii. BUT iii. Rose Bengal Calibration Topography unit calibration Anterior chamber depth Exophthalmometry Glare testing Color vision testing Contact A-scan Laser interferometry (IOL Master) Wavefront diagnostics Corneal sensitivity testing	IOL power calculation Low vision A/C depth Pachymetry Calibrate biometry instruments Tear Tests i. Schirmer ii. BUT iii. Rose Bengal Calibration Topography unit calibration Anterior chamber depth Exophthalmometry Glare testing Color vision testing Contact A-scan Immersion A-scan Laser interferometry (IOL Master) Wavefront diagnostics Corneal sensitivity testing

APPENDIX B (CONTINUED)

COA, COT and COMT SUB-CONTENT AREAS

Higher level examinations may also contain areas found in lower level examinations.

CONTENT AREAS	COA	COT	COMT
TONOMETRY	Goldmann applanation tonometer i. Clean ii. Disinfect iii. Calibrate	Goldmann applanation tonometer i. Clean ii. Disinfect iii. Calibrate Intraocular pressure	Goldmann applanation tonometer i. Clean ii. Disinfect iii. Calibrate Intraocular pressure
VISUAL ASSESSMENT	Visual acuity Potential acuity meter measurement Pinhole acuity	Visual acuity i. Optotype ii. Special situations iii. ETDRS iv. EVA Projection chart Contrast sensitivity testing Potential acuity meter measurement Laser interferometer test Pinhole acuity	Visual acuity i. Optotype ii. Special situations iii. ETDRS iv. EVA Projection chart Contrast sensitivity testing Potential acuity meter measurement Laser interferometer test Pinhole acuity
VISUAL FIELDS	Amsler Grid Confrontation fields Automated perimetry	Amsler Grid Goldmann perimetry Confrontation fields Automated perimetry	Amsler Grid Goldmann perimetry Confrontation fields Automated perimetry
SURGICAL ASSISTING IN ASC or HOSPITAL-BASED OR	Yag laser Sterilization Surgical site identification Laser safety Assist with surgical procedures	Yag laser Sterilization Surgical site identification Scrub technician duties Surgical ophthalmic equipment i. Phacoemulsifier ii. Vitrectomy units iii. Laser automated keratometer Laser safety Assist with surgical procedures Refractive surgical procedures	

APPENDIX C - OPHTHALMIC SURGICAL ASSISTING (OSA)

Content Areas

- 1. Pre-Operative Preparation of the Patient – 5%**
 - a. Consent
 - b. Intraoperative monitoring
- 2. Instruments – 25%**
 - a. Identification
 - b. Selection/setup
 - c. Maintenance
 - d. Sterilization
 - e. Sutures/supplies
 - f. Function
- 3. Aseptic Technique – 20%**
 - a. Scrubbing/gowning/gloving/prepping
 - b. Circulating
 - c. General Knowledge
 - d. Assisting
- 4. Ophthalmic Anesthesia – 5%**
 - a. General
 - b. Local
 - c. Topical
- 5. Surgical Procedures – 27%**
 - a. Cataract surgery
 - b. Corneal surgery
 - c. Glaucoma surgery
 - d. Strabismus surgery
 - e. Oculo-plastics surgery
 - f. Orbital surgery
 - g. Lacrimal surgery
 - h. Refractive surgery
 - i. Retinal surgery
 - j. Laser surgery
 - k. Other
- 6. Surgical Complications – 3%**
- 7. Ophthalmic Surgical Pharmacology – 10%**
 - a. Miotics
 - b. Viscoelastics
 - c. Enzymes
 - d. Mydriatics
 - e. Osmotic 9
 - f. Narcotics
 - g. Other
- 8. Minor Surgery – 5%**
 - a. Assisting the surgeon
 - b. Instructing the patient

Case Requirements for Ophthalmic Surgical Assisting Recertification

The case requirement is divided into two groups: Categories A and B. Certificants may choose to earn 100 percent of their case requirement from Category A or may choose to earn at least 90 percent of the case log from Category A and the remaining cases from Category B.

Category A (at least 90% or 27 cases)	Retina	<ul style="list-style-type: none"> • Scleral Buckle • Vitrectomy • Membrane removal • Endo laser
	Lens	<ul style="list-style-type: none"> • Cataract extraction +/- IOL • Secondary IOL • IOL exchange
	Strabismus	<ul style="list-style-type: none"> • Muscle procedure
	Cornea	<ul style="list-style-type: none"> • Penetrating Keratoplasty (PKP) • Lamellar/patch graft • Pterygium with or without conjunctival transplant • Conjunctival autograft
	Oculo-Plastics	<ul style="list-style-type: none"> • Dacryocystorhinostomy (DCR) • Levator procedures • Ptosis repair • Orbital decompression • Ectropion & Entropion repair • Lid laceration • Full thickness or partial thickness lid tumor • Endoscopic brow lift • Blepharoplasty • Conjunctivoplasty • Conjunctival tumors
	Glaucoma	<ul style="list-style-type: none"> • Trabeculectomy • Seton procedures
	Other	<ul style="list-style-type: none"> • Scleral patch
	Category B (no more than 10% or 3 cases)	Lens
Strabismus		<ul style="list-style-type: none"> • Botulinum toxin injection
Cornea		<ul style="list-style-type: none"> • Radial Keratotomy (RK) • Automated lamellar keratoplasty (ALK) • Lasik • AK • Excimer laser surgeries (e.g., PRK, PTK)
Oculo-Plastics		<ul style="list-style-type: none"> • Tarsorrhaphy • Canthal plication • Chalazion • Trichiasis • Temporal artery biopsy • Nasolacrimal duct (NLD) probing
Retina		<ul style="list-style-type: none"> • Intravitreal injections