FEMTOSECOND LASERS FOR CATARACT SURGERY MARKET SHARES AND FORECASTS

Femtosecond Laser Cataract Surgical System Market Driving Forces
Cataract Surgical Technology Is Evolving Rapidly
Older Patient Populations Have Significant Demand for Cataract Surgery
Femtosecond Laser Cataract Surgical System Market Shares
Novartis / Alcon
Alcon LenS Femtosecond Laser For Refractive Cataract Surgical Workstation
Femtosecond Laser Cataract Surgical System Market Forecasts

1. FEMTOSECOND LASERS FOR CATARACT SURGERY MARKET DESCRIPTION AND MARKET DYNAMICS
1.1 Cataract Surgical Technology Is Evolving Rapidly
1.1.1 Patient Populations Have Significant Demand for Cataract Surgery
1.1.2 Challenge To Get Wide Acceptance Of A New Laser Once It Is Approved
1.1.3 Cataract Surgery Business
1.1.4 Femtosecond Laser for Cataract Surgery Market Challenges
1.2 Femtosecond Lasers
1.2.1 Fast As The Blink Of A Human Eye
1.3 World Economy Undergoing A Transformation
1.3.1 Global Economic Conditions:
1.3.2 Global Economy Becomes Steadily More Sluggish
1.3.3 Global Economic Conditions Impact Markets

2. FEMTOSECOND LASERS FOR CATARACT SURGERY MARKET SHARES AND FORECASTS
2.1 Femtosecond Laser Cataract Surgical System Market Driving Forces
2.1.1 Cataract Surgical Technology Is Evolving Rapidly
2.1.2 Older Patient Populations Have Significant Demand for Cataract Surgery
2.2 Femtosecond Laser Cataract Surgical System Market Shares
2.2.1 Novartis / Alcon
2.2.2 Novartis / Alcon
2.2.3 Alcon LenS Femtosecond Laser For Refractive Cataract Surgical Workstation
2.2.4 Novartis / Alcon Competitive Situation
2.2.5 OptiMedical Catalys
2.2.6 Excimer Lasers
2.2.7 Abbott Medical Optics
2.2.8 Victus
2.2.9 Technolas
2.2.10 Bausch + Lomb and Technolas™ Perfect Vision
2.2.11 Bausch + Lomb and Technolas™ Perfect Vision TPV
2.2.12 Bausch + Lomb and Technolas™ Perfect Vision
TPV Research And Development Partnership
2.2.13 Ziemer Group Femto LDV Z6
2.2.14 WaveTec Vision
2.2.15 LensAR
2.3 Femtosecond Laser Cataract Surgical System Market Forecasts
2.3.1 Cataract Surgical Laser, Single Surgeon, Multi-Surgeon Practice and Team Based Multi Surgeon Practice Patients per Laser
2.3.2 Number of US Practicing Ophthalmologists
2.3.3 Cataract Surgical Technology Is Evolving Rapidly
2.3.4 Patient Populations Have Significant Demand for Cataract Surgery
2.3.5 Cataract Surgery Business
2.3.6 Cuts in Medicare Reimbursement
2.3.7 World Population Growth
2.3.8 Surgeon Practices Will Evolve
2.3.9 Femtosecond Laser Cataract Surgical System Market ROI and Disposable Supplies Forecasts
2.3.10 Alcon LenSx Laser-Assisted Cataract Surgery Procedure
2.3.11 Femtosecond Laser Docking Procedure
2.3.12 In the Operating Room
2.3.13 Cataract Surgical Femtosecond Laser Practice Considerations
2.3.14 Femtosecond Laser Capital Costs And Usage Fee, Disposable Fee
2.3.15 Laser-Assisted Cataract Surgery Procedure Analysis
2.3.16 Laser-Assisted Cataract Surgery Break-Even Analysis
2.3.17 Femtosecond Laser Cataract Surgical System Prices
2.3.18 Medicare Reimbursement For Capsular Tension Rings
2.3.19 Medicare payment
2.3.20 Medicare Reimbursement for Cataract Surgery:
2.3.21 Femtosecond Laser Cataract Surgical System Regional Market Segments
2.3.22 Alcon Cataract Surgery
2.3.23 Abbott Regional Revenue
2.3.24 Abbott Sales Mix
2.3.25 United States
2.3.26 Canada
2.3.27 Brazil Cataract Surgical Procedure
2.3.28 Brazilian Cataract surgeries
2.3.29 China
2.3.30 Toric Lens Implantations On The Rise In Europe
2.3.31 Advanced Technology Intraocular Lens Growth Markets
2.3.32 Cataract Surgery in the UK
2.3.33 Asia-Pacific Cataract Surgery
2.3.34 Cataract Surgery in India
2.3.35 Cataract Surgery Assembly Line System Followed At Aravind Eye Hospitals
2.3.36 Aurolab’s Low-Cost, High-Volume Business Model
2.3.37 Highly Efficient Operations Coupled With Pricing Structure Allow 50% Profit Margin
2.3.38 World Health Organization (WHO)

3. CATARACT SURGERY FEMTOSECOND LASER PRODUCT DESCRIPTION
3.1 Alcon Surgical LenSx® Laser
3.1.1 Alcon LenSx® Laser Technology
3.1.2 LenSx® Laser Focused Femtosecond Laser Pulses
3.1.3 Alcon LenSx® Laser: True Image-guided Surgery
3.1.4 Alcon LenSx® Laser Display Panel
3.1.5 Alcon Surgical Display Combines Video Microscope With Optical Coherence Tomographer (OCT)
3.1.6 Alcon LenSx® Laser: Surgical Customization
3.1.7 Alcon LenSx® Laser Allows Adjustment of Surgical Options In Real Time
3.1.8 Alcon LenSx® Laser Procedure
3.1.9 Alcon LenSx® Laser
3.1.10 Alcon LenSx Laser Costs
3.1.11 Alcon LenSx Laser Surgery Patient Costs
3.2 Bausch + Lomb and Technolas™ Perfect Vision
3.2.1 Bausch + Lomb and Technolas™ Perfect Vision TPV Research And Development Partnership
3.3 Abbott Medical Optics
3.4 Carl Zeiss VisuMax
3.4.1 Carl Zeiss VisuMax Precision
3.4.2 Carl Zeiss VisuMax Performance
3.4.3 Carl Zeiss VisuMax Patient Care
3.4.4 Carl Zeiss VisuMax Productivity
3.5 MEL 80 Excimer Laser

4. FEMTOSECOND LASERS FOR CATARACT SURGERY TECHNOLOGY

4.1 Opportunity To Further Improve The Outcomes Of Cataract Surgery
4.1.1 Bausch + Lomb and Technolas™ Perfect Vision TPV Research And Development Partnership
4.1.2 Laser Refractive Cataract Surgery (LRCS)
4.2 Femtosecond Laser Application To Cataract Surgery Innovation
4.2.1 Femtosecond Laser Applications
4.2.2 Measuring The Density Of The Lens
4.2.3 Femtosecond Laser Indications
4.3 Abbott Femtosecond Laser Garners FDA Clearance For Cataract Surgery
4.4 LensAR Laser Cataract Surgery System
4.5 Cataract Incision
4.5.1 Cataract Incision Laser Approach
4.5.2 Optical Coherence Tomography (OCT)
4.5.3 Laser Capsulotomy
4.5.4 Removal of the Cataract
4.5.5 An Incision Burn Has A Higher Chance Of Leaking
4.6 Astigmatism Correction at the Time of Cataract Surgery
4.6.1 Cost of Laser Cataract Surgery
4.6.2 Optimization —Continuous Improvement Of Technology
4.7 FDA Status of Laser Cataract Surgery Systems in the United States
4.8 Cataract Surgery Most Common Surgical Procedure
4.9 Advantages of Calmar Fiber Lasers
4.9.1 Calmar Passively Mode-Locked Femtosecond Fiber Lasers
4.9.2 Calmar Actively Mode-Locked Fiber Lasers
4.9.3 Calmar Fiber Amplifiers
4.9.4 Calmar Chirped Pulse Amplifiers
4.10 The Human Eye
4.10.1 Cataract Symptoms
4.10.2 Benefits Of Cataract Eye Surgery
4.10.3 How Cataract Eye Surgery Is Performed
4.11 Cataracts
4.11.1 Staar Collamer
4.12 Intraocular Tens Technology
4.12.1 Technologies Drive Cataract Surgery Market Growth
4.13 Refractive Disorders
4.14 Studies On The Restor Toric Lens
4.14.1 MNRead Functional Reading Test
4.15 Surgeons Need To Concentrate On Proper Patient Selection
4.16 Mayo Clinic Study of Long-Term Dislocation Of Intraocular Lenses
4.16.1 Obesity Cause of Diabetes and Neuropathy of the Eye

5. FEMTOSECOND LASER FOR CATARACT SURGERY COMPANY DESCRIPTION
5.1 Selected Developers of Laser Cataract Surgical Systems
5.2 20/10 Perfect Vision AG
5.3 Abbott Laboratories
5.3.1 Abbott Acquired Visiogen with Synchrony Product
5.3.2 Abbott Labs Cataract Company Acquisitions
5.3.3 Abbott Completes Separation of Research-Based Pharmaceuticals Business
5.3.4 Abbott (NYSE: ABT) Separation Of Its Research-Based Pharmaceuticals Business
5.3.5 Abbott Separating Into Two Independent Companies
5.3.6 Abbott Laboratories and Subsidiaries Revenue
5.3.7 Abbott Sales Mix
5.3.8 Abbott Nutritional Market Presence
5.3.9 Abbott Diagnostics Market Presence
5.3.10 Abbott Medical Devices Market Presence
5.3.11 Abbott Strength Through Ability to Innovate
5.3.12 Abbott Revenue
5.3.13 Abbott Medical Optics
5.3.14 Abbott Medical Optics Corneal Products
5.3.15 Abbott Medical Optics Refractive Product Line
5.3.16 Abbott Medical Optics Cataract Products
5.3.17 Abbott Medical Optics Technological Innovation
5.4 AISIN / IMRA Femtolite F / H Family
5.4.1 IMRA Femtolite Ultra Family
5.4.2 AISIN Organization / Institut Minoru de Recherche Avancée (IMRA)
5.4.3 IMRA Mission
5.4.4 IMRA Customers: Market: Enabling Applications by Engineering Reliability
5.4.5 IMRA Growth: Through Global Innovation
5.5 Bioptigen
5.5.1 Bioptigen SD-OCT system
5.6 Biovision
5.7 Calmar Laser
5.7.1 Calmar Ultrafast Fiber Laser Key Technology
5.7.2 Calmar Technology
5.7.3 Calmar Laser Mendocino – Fiber Based Femtosecond Laser
5.8 Novartis Group / Alcon
5.8.1 Novartis Alcon Division
5.8.2 Novartis Revenue
5.8.3 Alcon Cataract Surgery
5.8.4 Alcon Surgical Glaucoma
5.8.5 Alcon Vitreoretinal
5.8.6 Alcon Refractive Surgery
5.8.7 Alcon Manufacturing and Technical Operations
5.8.8 Alcon Acquires Leading Ocular Surgical Guidance Technology
5.8.9 Alcon
5.8.10 Alcon Acquired The Ophthalmic Division of SensoMotoric Instruments (SMI)
5.8.11 Alcon Division Surgical Products
5.8.12 Alcon Ophthalmic Pharmaceuticals
5.8.13 Alcon Products
5.8.14 Alcon Cataract Reimbursement
5.8.15 Alcon Regulation
5.8.16 LenSx Acquired by Alcon
5.8.17 Alcon Global Leader In Eye Care
5.8.18 Alcon Advances
5.8.19 Alcon Business Focus
5.8.20 Alcon Mission
5.8.21 Alcon Vision
5.8.22 Alcon Research Areas and Pipeline
5.8.23 Alcon Proof of Concept Approach
5.8.24 Alcon Research Areas and Product Development Focus
5.9 Ophtec Artisan R
5.10 OptiMedica
5.10.1 Catalys Next Generation Laser Cataract Surgery Platform
5.11 Raydiance
5.11.1 Raydiance R-Series Femtosecond Lasers
5.11.2 Raydiance R-100
5.11.3 Raydiance R-200
5.11.4 Raydiance’s Mielke to Present Breakthrough Technology at World of Photonics
5.12 Staar Surgical
5.12.1 STAAR Surgical Devices Used In Corrective Surgery
5.12.2 STAAR Surgical Minimally Invasive Intraocular Lenses (IOLs).
5.13 Valeant / Bausch & Lomb
5.13.1 Bausch + Lomb
5.13.2 Bausch And Lomb
5.13.3 Bausch + Lomb Vision Care
5.13.4 Bausch + Lomb Pharmaceuticals
5.13.5 Bausch + Lomb Cataract and Vitreoretinal Surgery
5.13.6 Bausch + Lomb Acquires Technolas Perfect Vision GmbH
5.13.7 Technolas
5.13.8 Bausch + Lomb and Technolas™ Perfect Vision
5.13.9 Bausch + Lomb Technolas® Perfect Vision
5.13.10 Bausch + Lomb Technolas® Perfect Vision Transforming Refractive Surgery
5.13.11 Bausch + Lomb and Technolas™ Perfect Vision
5.13.12 Valeant / Bausch & Lomb
5.14 WaveTec Vision Secures $16.5M to Market Cataract Surgery System
5.14.1 WaveTec Vision Secures $16.5m To Market Cataract Surgery System
5.15 Zeiss –
5.15.1 Zeiss Vision
5.15.2 Zeiss Revenue
5.15.3 Carl Zeiss Meditec
5.16 Selected Companies in the Market

List of Tables and Figures
Table ES-1
Cataract Surgery Diverse Market Growth Drivers
Figure ES-2
Cataract Surgery Laser Market Shares, Dollars, Worldwide 2012
Table ES-3
Lasers for Cataract Surgery Market Shares, Dollars, Worldwide, 2012
Figure ES-4
Table 1-1
Cataract Surgery Diverse Market Growth Drivers
Table 1-2
Intraocular Lens Market Challenges
Table 2-1
Cataract Surgery Diverse Market Growth Drivers
Figure 2-2
Cataract Surgery Laser Market Shares, Dollars, Worldwide 2012
Table 2-3
Lasers for Cataract Surgery Market Shares, Dollars, Worldwide, 2012
Figure 2-4
Figure 2-5
Table 2-6
Cataract Surgical Femtosecond Laser Market Forecasts, Units and Dollars, Worldwide, 2013-2019
Table 2-7
Cataract Surgical Femtosecond Laser, Single Surgeon, Multi-Surgeon Practice and Team Based Multi Surgeon Practice Patients per Laser, Market Forecasts, Units and
Dollars, Worldwide, 2013-2019
Table 2-8
Eye Disease Statistics
Table 2-9
Cataract Surgery Diverse Market Growth Drivers
Table 2-10
Cataract Femtosecond Laser Market Challenges
Table 2-11
Cataract Surgical Femtosecond Laser Market Forecasts, by Type of Practitioner, Units and Dollars, Worldwide, 2013-2019
Table 2-12
Manual vs. Laser Capsulorhexis with the Alcor LensAR
Table 2-13
Cataract Surgery Laser Cost: Dollars, Five Years, 2013 to 2017
Table 2-14
Laser-Assisted Cataract Single Surgeon, Single Laser Productivity Analysis Dollars, Five Years, 2013 to 2017
Figure 2-15
Alcon Femtosecond Laser for Cataract Surgery
Table 2-16
Table 2-17
Laser-Assisted Cataract Surgery ROI, For Single Surgeon, Single Laser, Per Year Analysis Dollars, Five Years, 2013 to 2017
Table 2-18
Laser-Assisted Cataract Multi-Surgeon Practice, Single Laser Productivity Analysis Dollars, Five Years, 2013 to 2017
Table 2-19
Laser-Assisted Cataract Surgery ROI, For Multi-Surgeon Practice, Single Laser Analysis Dollars, Five Years, 2013 to 2017
Table 2-20
Laser-Assisted Cataract Surgery ROI, For Multi-Surgeon Practice, Single Laser, Per Year Analysis Dollars, Five Years, 2013 to 2017
Table 2-21
Laser-Assisted Cataract Multi-Surgeon Practice, Team Efficiencies for Surgery, Single Laser Productivity Analysis Dollars, Five Years, 2013 to 2017
Table 2-22
Laser-Assisted Cataract Surgery ROI, For Multi-Surgeon, Team Efficiencies for Surgery, Single Laser Dollars, Five Years, 2013 to 2017
Table 2-23
Laser-Assisted Cataract Surgery ROI, For Multi-Surgeon Practice, Team Efficiencies for Surgery, Single Laser, Per Year Analysis, Dollars, Five Years, 2013 to 2017
Figure 3-1
Alcon LenSx® Laser Technology
Table 3-2
Alcon LenSx® Laser Indications
Table 3-3
Alcon LenSx® Laser Features
Table 3-4
LenSx® Laser Femtosecond Focused Pulses Functions
Table 3-5
Alcon LenSx® Laser Visualization Options
Figure 3-6
Alcon LenSx® Laser Eye Fitting
Figure 3-7
Alcon Surgical Display Video Microscope
Figure 3-8
Alcon LenSx® Laser Optical Coherence Tomographer (OCT) Views
Figure 3-9
Alcon LenSx® Laser Allows Creation of Template Profiles
Table 3-10
Alcon Laser Refractive Cataract Surgery
Figure 3-11
Alcon Laser Refractive Cataract Surgery
Figure 3-12
Alcon Laser: Surgeon Determines Diameter And Depth Of The Anterior Capsulotomy
Figure 3-13
Alcon LenSx® Laser Cut Patterns
Figure 3-14
Alcon LenSx® Laser Optimized Alignment
Table 3-15
Alcon LenSx® Laser Advantages
Figure 3-16
Diameter Accuracy of the Alcon LenSx® Laser Versus Manual Capsulorhexis
Figure 3-17
Carl Zeiss VisuMax
Figure 4-1
Calmar Passively Mode-Locked Femtosecond Fiber Lasers
Figure 4-2
Calmar Actively Mode-Locked Femtosecond Fiber Lasers
Figure 4-3
Human Eye
Table 4-4
Cataract Symptoms
Figure 4-5
Staar nanoFLEX
Figure 4-6
Staar nanoFLEX Collamer has a built in Anti-Reflective Interface
Figure 4-7
Staar Hydrophilic Collamer Ultra-High Water Content Layer
On Its Surface Minimizing The Difference In Refractive Index
Figure 4-8
Staar nanoFLEX™ Collamer Percentage of Light Reflectance
Figure 4-9
Staar nanoFLEX™ Collamer Single Piece IOL
Figure 4-10
Staar nanoFLEX™ Collamer Incision Size
Figure 4-11
Staar nanoFLEX™ Collamer Protective Layer
Figure 4-12
Staar Afinity 3-Piece Collamer Aspheric IOL Model CQ2015A
Function 4-13
Modulation Transfer Function (MTF) Analysis
Figure 5-1
IMRA Erbium-doped Raman-Shifted Femtosecond Fiber Laser
Table 5-2
IMRA offers Erbium-doped Raman-Shifted Femtosecond Fiber Lasers Features
Figure 5-3
IMRA Femtolite Ultra Femtosecond Fiber Laser
Table 5-4
IMRA Femtolite Ultra Femtosecond Fiber Laser Features
Table 5-5
IMRA America 2012 Growth
Table 5-6
Calmar Products
Table 5-7
Calmar Product Markets And Applications
Figure 5-8
Calmar Laser Mendocino – Fiber Based Femtosecond Laser
Figure 5-10
Novartis / Alcon Positioning in Healthcare
Figure 5-11
Novartis Resource By Segment
Figure 5-12
Novartis Surgical Franchise
Table 5-13
Alcon Advances
Table 5-14
Alcon Eye Condition Problems That Keep People From Seeing Well: Target Markets
Table 5-15
Alcon Business Focus
Table 5-16
Alcon Pipeline Strategy
Figure 5-17
Alcon Proof of Concept Approach Applied To Product
Development Process
Table 5-18
Raydiance R-100 Technical Specifications
Table 5-19
Raydiance R-200 Technical Specifications