MEDICAL PHYSICS
ADDING VALUE IN INDUSTRY

Making an Impact and Saving Lives

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A WORLD WITHOUT FEAR OF CANCER

WE INNOVATE, SUPPORT AND SIMPLIFY CANCER-FIGHTING SOLUTIONS WORLDWIDE
MEDICAL PHYSICS MAKING A DIFFERENCE VIA INDUSTRY

Patient safety foundation to system design

Advancing quality care

Worldwide collaboration to speed best practices adoption

From institution to global impact

Innovation bench to bedside
The global cancer burden nearly doubles by 2030; expected to grow to 24.6 million new cancer cases with 13.5 million deaths.*

COMPELLING DEMOGRAPHICS

PEOPLE 60 YEARS AND OLDER IN MILLIONS

Source: U.S. Census Bureau
Expanding global access to radiotherapy

Lancet Oncology Vol 16 Sept. 2015

50-60% of patients with cancer need RT

56% of cancers diagnosed in high income countries

10% of patients have access to RT in low income countries

20,000+ Linacs needed by 2035, with greatest need in low and mid-income countries

$2T global economic burden in 2010
TREATMENT THEN

HOW WE SAW THE TARGET
• Weekly MV port films

HOW WE TREATED THE TARGET
• 2D treatment planning
• Blocks to shape the beam
• 250 MU/min dose rate
• R/V systems
• Paper based systems
TREATMENT TODAY….INCREASING COMPLEXITY

SEEING MORE ACCURATELY
- Multi-modality imaging
- Cone-Beam CT & kV radiographs
- Electromagnetic transponders
- Optical surface monitoring

TREATING MORE PRECISELY
- Dynamic Multileaf Collimator beam shaping
- Intensity Modulated Radiotherapy (IMRT)
- 2400 MU/min dose rate
- RapidArc planning and delivery
- Comprehensive software systems
COLLABORATION TO ADDRESS GLOBAL HEALTHCARE TRENDS

MINIMALLY INVASIVE TREATMENTS
SRS & SBRT PROTOCOLS
EMERGING ECONOMIES
EDUCATION GAPS
RISING HEALTHCARE COSTS
EVIDENCE-BASED MEDICINE
BIG DATA - CYBERSECURITY
DIGITAL FRONTIER
PERSONALIZED MEDICINE
PATIENT SELF CARE
GLOBAL ONCOLOGY ECOSYSTEM

- Quality Treatment and Patient Safety
- Technology Innovations
- Expanding Modalities of Cancer Care
- Sustainable Value Based Health Services
- Training and Education
- Academic Industry Partnership
FOCUS OF VARIAN PORTFOLIO
The opportunity to impact cancer care globally

- COST-EFFECTIVE HIGH-QUALITY
- SIMPLIFIED AND AUTOMATED
- GLOBALLY ACCESSIBLE
MEDICAL PHYSICIST SPECIALTIES

NORTH AMERICA SPECIALTIES

- **54%** RADIATION ONCOLOGY
- **27%** OTHER
- **19%** CLINICAL DIAGNOSTIC

Source: AAPM
2% MEDICAL PHYSICISTS IN INDUSTRY

NORTH AMERICA
BY EMPLOYMENT FUNCTION

>50% CLINICAL AND ACADEMIC RESEARCH/DEVELOPMENT

ONLY 2% COMMERCIAL RESEARCH/DEVELOPMENT

Source: AAPM
OPPORTUNITIES FOR MEDICAL PHYSICISTS ROLES IN INDUSTRY

- RESEARCH
- EDUCATION
- PROFESSIONAL SERVICES
- ENGINEERING
- APPLICATIONS TRAINING
- MARKETING
- PRODUCT MANAGEMENT
- HELP DESK
- SALES
INDUSTRY: MEDICAL PHYSICS VALUE ADD

Key Attributes

**METHODICAL**
Problem solver, creative, thoughtful, inclusive, results focused, safety-minded

**MISSION ORIENTED**
Innovation to improve cancer care, developing new technologies, solutions to simplify clinical workflow

**REWARDING**
Interacting with people from across the globe, enabling new breakthroughs, challenging tasks to tackle
INDUSTRY: MEDICAL PHYSICS VALUE ADD

Linking science, technology and application

- Research project approval committee and governance
- Establish scientific and medical advisory boards
- Horizon technology review and assessment
- Spearheading Open Innovation programs

Bringing clinical domain expertise to product requirements definition, test protocols development, usability design, interoperability conditions and release performance metrics
NEW ERA INNOVATION: PRECISION MEDICINE

Genetic profiling and population based analytics

Biomarker guidance Immunotherapy + Radiation

Technology advances - Imaging - Treatment Delivery

Cloud based ecosystems

Growth of meaningful survivorship programs
INDUSTRY
New frontiers in radiation medicine

PLANTAR FASCIITIS
DEPRESSION
ARTHRITIS
CARDIAC ARRHYTHMIAS
EMPHYSEMA
POST-THORACIC SURGERY NEUROPATHY
INDUSTRY OPPORTUNITY FOR MEDICAL PHYSICS

Skills for a New Era

- BIOLOGY
  Genomics, proteomics, immunotherapy

- PARTICLE THERAPY

- MULTI-MODALITY IMAGING
  Radiomics

- STATISTICS
  Population health

- INFORMATION TECHNOLOGY

- CYBERSECURITY
  Software and devices
THE CHOICE....INDUSTRY OPPORTUNITIES

OPPORTUNITIES IN MULTIPLE ROLES
Multiple role opportunities:
• Training and Education
• Engineering
• Product Management
• Professional Services
• Clinical Helpdesk
• Sales

TOUCHING MANY LIVES
Thousands over a lifetime vs millions every year

WORLDWIDE COLLABORATION
with the global oncology community

MULTI-MILLION
R&D investment
INDUSTRY: MEDICAL PHYSICS VALUE

LEAD VIA

COMPELLING JOB VALUE

OPPORTUNITIES ARE DIVERSE

ADVANCING THE FUTURE OF MEDICAL PHYSICS
THANK YOU