FORWARD LOOKING STATEMENTS

Except for historical information, this presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Statements concerning industry outlook, including growth drivers, future trends in cancer incidence and trends in cancer treatment needs, demand, innovation and growth opportunities; Varian Medical System, Inc.’s (“Varian” or the “company”) future orders, revenues, backlog, or earnings growth; future financial results; market acceptance of or transition to new products or technology such as our Edge™ radiosurgery system, TrueBeam™, HyperArc™, image-guided radiation therapy, stereotactic radiosurgery and proton therapy, and any statements using the terms “could,” “believe,” “expect,” “outlook,” “anticipate”, “vision”, “estimate”, “future”, “horizon”, “aiming” and “driving” or similar statements are forward-looking statements that involve risks and uncertainties that could cause the company’s actual results to differ materially from those anticipated. Such risks and uncertainties include global economic conditions and changes to trends for cancer treatment regionally; the impact of the Affordable Health Care for America Act (including excise taxes on medical devices) and any further healthcare reforms (including changes to Medicare and Medicaid), and/or changes in third-party reimbursement levels; currency exchange rates and tax rates; demand for the company’s products; the company’s ability to develop, commercialize, and deploy new products; the company’s ability to meet Food and Drug Administration (FDA) and other regulatory requirements for product clearances or to comply with FDA and other regulatory regulations or procedures; changes in the regulatory environment, including with respect to FDA requirements; the company’s assessment of the goodwill associated with its particle therapy business, challenges associated with the successful commercialization of the company’s particle therapy business; the effect of adverse publicity; the company’s reliance on sole or limited-source suppliers; the company’s ability to maintain or increase margins; the impact of competitive products and pricing; the potential loss of key distributors or key personnel; challenges to public tender awards and the loss of such awards or other orders; and the other risks listed from time to time in the company’s filings with the Securities and Exchange Commission, which by this reference are incorporated herein. The company assumes no obligation to update or revise the forward-looking statements in this presentation because of new information, future events, or otherwise.

Medical Advice Disclaimer

Varian as a medical device manufacturer cannot and does not recommend specific treatment approaches. Individual treatment results may vary.
AGENDA

Welcome & Introductions
— Dow R. Wilson

ASTRO Exhibit & The Next Advances in Cancer Care
— Kolleen Kennedy

Varian’s Featured Products & Works in Progress
HyperArc HDRT – Corey Zankowski
360 Oncology – Sukhveer Singh
Cyber-Security – Ken Khouri

The Clinical Perspective; What We’re Seeing
— Dr. Dee Khuntia

HCA: Modernizing, Optimizing Clinical Operations
— Dr. Andrew Kennedy and Tammy Wotring

Update on Varian Particle Therapy
— Moataz Karmalawy

Realizing the Promise and Potential of Protons
— Dr. William Regine

Questions & Answers

Closing Remarks
— Dow R. Wilson
A WORLD WITHOUT FEAR OF CANCER

ONCOLOGY SYSTEMS OVERVIEW

KOLLEEN KENNEDY
President, Oncology Systems
DRIVING FOR MID-SINGLE-DIGIT GROWTH

- Expanding globally
- Getting return on innovation
- Building software & services
- Driving profitable growth
- Worldwide 44% NPS
VARIAN ONCOLOGY SYSTEMS

- 5,000+ Employees
- 3,700 Software Installs
- 7 Education Centers
- $2.34B FY15 Revenue
- 7,400 Medical Linear Accelerators
VARIAN ONCOLOGY SOLUTIONS

- 60% of global accelerators
- 2.8M patients treated annually
- 100k+ software users; largest oncology installed base

A majority of the leading global cancer centers use Varian hardware, software, and/or services

Millions spent annually on research support
MARKET LEADERSHIP

Varian honored as a Corporate Knights Global 100 Most Sustainable Corporation

ARIA and Eclipse recognized as 2015 KLAS Category Leaders in Software

Varian ranked first in 2015 IMV survey in Overall Service Performance, System Uptime and Hardware Reliability
UNITY: SERVING OUR CUSTOMERS

Varian invests in infrastructure to serve customers better through world-class customer support.
WORLDWIDE CANCER BURDEN

- **24.6** new cancer cases per year by 2030
- **$2T** global economic burden in 2010
- **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

Expanding global access to radiotherapy. Lancet Oncol. Vol 16, Sept.2015
## GLOBAL RADIOTHERAPY GAPS

<table>
<thead>
<tr>
<th>What is Needed</th>
<th>2015</th>
<th>GAP</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation Oncology Centers</td>
<td>7,700</td>
<td>3,200</td>
<td>10,900</td>
</tr>
<tr>
<td>Linear Accelerators</td>
<td>13,100</td>
<td>21,800*</td>
<td>21,800</td>
</tr>
<tr>
<td>Radiation Oncologists</td>
<td>23,200</td>
<td>22,300</td>
<td>45,500</td>
</tr>
<tr>
<td>Medical Physicists</td>
<td>10,000</td>
<td>29,300</td>
<td>39,300</td>
</tr>
<tr>
<td>Radiation Technologists</td>
<td>33,300</td>
<td>96,900</td>
<td>130,200</td>
</tr>
</tbody>
</table>

*8,700 new machines plus 13,100 replacements = 21,800 additional machines needed

Expanding global access to radiotherapy. Lancet Oncol. Vol 16, Sept 2015

**KEYS TO CLOSING GAP**

- Automation
- Simplification
- Productivity
NEEDS GROWING FASTEST OUTSIDE USA, EU

PEOPLE 60 YEARS AND OLDER (IN MILLIONS)

- **BRIC**: +97%
- **OTHER**: +81%
- **NA**: +58%
- **EU DEVELOPED**: +37%

Expanding global access to radiotherapy. Lancet Oncol. Vol 16, Sept. 2015
VARIAN MARKET ACCESS

EXPANDING GLOBAL TEAM

PARTNERING TO BUILD ACCESS TO CANCER CARE
• Governments
• Financiers
• Clinicians
• Patient advocacy groups

PROMOTING AWARENESS
• Lancet Oncology Commission
• PR/Government Affairs
CANCER IN WOMEN

#1 cancer incidence per 100,000, age-normalized

Sources: American Cancer Society, Globocan data
CANCER IN MEN

#1 cancer incidence per 100,000, age-normalized

Sources: American Cancer Society, Globocan data
TRENDS DRIVE DEVELOPMENT

MINIMALLY INVASIVE

- Radiosurgery
- Intraoperative Therapy
- Robotic Surgery

GLOBAL MARKETS

- Cost of Care
- Emerging Markets Growth
- Education Gaps
- Regulatory Oversight

DIGITAL FRONTIER

- Big Data
- Decision Support
- Telemedicine
- Mobility

PERSONALIZED MEDICINE

- Genomics
- Targeted Therapies
- Molecular Imaging
- Patient Self-Care
RADIOSURGERY MARKET

108% INCREASE in SRS utilization for brain cancer treatment

SRS/SBRT LEADS GROWTH

255% INCREASE in extracranial treatment over the next decade*

*Source: SG2 Consulting, Skokie, Illinois, US
MOST COMPREHENSIVE ONCOLOGY PORTFOLIO

ARIA® OncoEMR®
Oncology Information System

Channel Partners
OncoLog, Aria Business Office

Connectivity
Epic, Cerner, ARIAConnect

Velocity™
Oncology Image Informatics

Eclipse™
Treatment Planning System

InSightive™
Oncology Analytics

Cancer Treatment

OIS

Radiation Therapy

Proton Therapy

Radio-surgery

Brachy Therapy

Analytics

Treatment Planning

Image Management

Partnering

TrueBeam®/VitalBeam™ Trilogy®/Clinac®/UNIQUE™
Treatment Procedures with Ease, Speed and Accuracy

ProBeam®
Proton Therapy Systems

Edge™ System
Dedicated Full-Body Radiosurgery Platform

Calypso®
Real Time Tracking Technology

Varian Brachytherapy
Product Suite for Planning and Delivery

VARIAN medical systems
LEADER IN ONCOLOGY SOFTWARE TODAY

Over 3700 sites globally

True integration

Patient care pathways

ARRA HiTECH compliant

Workflow optimization

Auto-segmentation tools

Comprehensive algorithms
PATIENT SAFETY: CENTRAL TO VARIAN TECHNOLOGY

Patient ID Verification
Displays patient photo, name and ID

Tx Plan Approval, Checklist
Sign-off prior to treatment

Validity Checks
Validate that instructions are deliverable

Daily Treatment Recording
Tracks treatment progress, captures notes of important events

Quality Assurance
Fast, automated IMRT/RapidArc QA for simple electronic dose verification

Treatment Interlocks
Redundant sensors, no single-fault conditions, collision avoidance system

Image-Guided Setup
Visually confirms patient setup, position

In-Room Monitoring
Live video, audio of patient and device

Accessory Verification
Detects accessories, prevents treatment unless correct

Machine Performance Check
Daily machine self-checks
SUPPORT SERVICES MAKE THE DIFFERENCE

Installation and Site Solutions
440 installers, project managers, site experts

Field Service
2,000 certified service engineers and support staff strategically located around the globe

Remote Service
180 clinical and technical help desk staff

Training and Consulting
224 classroom and on-site trainers

Source: CSS Human Resources
NEW ERA OF INNOVATION

KNOWLEDGE-GUIDED ONCOLOGY

INTELLIGENT TREATMENT DELIVERY

ADVANCED DATA ANALYTICS
NEW ERA OF INNOVATION

KNOWLEDGE-GUIDED ONCOLOGY

• Eclipse
• RapidPlan
• Multi-criteria optimization
• Velocity

INTELLIGENT TREATMENT DELIVERY

• Power of TrueBeam
• HyperArc HDRT
• Multimodality imaging console

ADVANCED DATA ANALYTICS

• ARIA
• AURA
• InSightive
• 360 ONCOLOGY
• Velocity
CHRONIC DISEASE MANAGEMENT

Estimated number of US survivors

2016
15.5 MILLION SURVIVORS

2026
GREATER THAN 20 MILLION SURVIVORS
FOCUS OF VARIAN PORTFOLIO

The opportunity to impact cancer care globally

COST-EFFECTIVE
HIGH-QUALITY

SIMPLIFIED AND
AUTOMATED

GLOBALLY
ACCESSIBLE
SUMMARY OVERVIEW

• Varian is the global radiotherapy leader
• Long-term demand for radiotherapy is increasing
• Healthcare megatrends drive our strategy for continued leadership and market expansion
• Strengthening global customer loyalty
ONCOMAND ECOSYSTEM – PORTFOLIO EVOLUTION

Knowledge-Guided Oncology
- RapidPlan

Intelligent Treatment Delivery
- HyperArc HDRT

Advanced Data Analytics
- 360 Oncology

FOR INVESTOR USE ONLY
HyperArc™ High Definition Radiotherapy

A NEW ERA IN PRECISION THERAPY

COREY ZANKOWSKI, PhD
Vice President, Product & Strategic Portfolio Management
20-30% of cancer patients develop metastatic disease

- Annual metastatic patients in the US,
  - >200,000 brain mets
  - >150,000 bone mets
- Non-invasive SRS adoption is increasing
- Most clinics cannot perform radiosurgery
- Not all patients have access to radiosurgery
A World Without Fear of Cancer

We innovate, support and simplify cancer-fighting solutions worldwide

Varian solutions aiming to deliver the most compact doses faster than any other solution
STREAMLINED INTRACRANIAL SRS

Goals
• Single-click automated treatments
• Most efficient SRS treatment (20 minutes)
• Treat multiple metastases simultaneously
• Deliver compact target dose with rapid fall-off
• Use only safe trajectories

HyperArc High-Definition Radiotherapy is 510(k) pending. Not available for sale.
ESTABLISHING A NEW BENCHMARK FOR COMPACT DOSE, TREATMENT SPEED

Comparing V12 of HDRT to Sphere-Packing Technique

Comparing V12 of HDRT to Dose-Painting Technique

Eclipse planning for HyperArc HD Radiotherapy is works-in-progress. Not available for sale.
HIGH-DEFINITION RADIOTHERAPY

Distributing more beams around the patient to achieve more compact dose
HIGH-DEFINITION RADIOTHERAPY

New options:
- HDRT Treatment Mode*
- HDRT Planning Module**
- HDRT Virtual Dry Run**
- HDRT Patient Immobilization*

Pre-requisites:
- TrueBeam or EDGE
- PerfectPitch™ Couch
- Eclipse IMRT

Aiming for >$500M Orders/10 yrs

*HyperArc High Definition Radiotherapy is 510(k) pending. Not available for sale.
**Eclipse planning for HyperArc HD Radiotherapy is works-in-progress. Not available for sale.
360 Oncology

SUKHVEER SINGH
Vice President,
Oncology Continuum Solutions

SIMPLER, SMARTER CANCER CARE
CHALLENGES WITH COORDINATING CANCER CARE

“Cancer care is often not as patient-centered, accessible, coordinated, or evidence based...”

Cancer Moonshot Blue Ribbon Panel Report (Draft)
Institute for Medicine, 2013 Report: Delivering High-Quality Cancer Care, Charting a New Course for a System in Crisis
NEED FOR BETTER DECISION-MAKING, CARE MANAGEMENT, PATIENT ENGAGEMENT SOLUTIONS

- Explosion of data in disparate data sources
- Lack of imaging and treatment data integration
- Need to see patient’s imaging and treatment history in one place
- Inefficient care team collaboration

CANCER PATIENT -> IMAGING
IMAGING -> SURGERY
SURGERY -> CHEMO-THERAPY
CHEMO-THERAPY -> RADIATION
RADIATION -> IMAGING

RETREATMENT/SURVIVORSHIP
INTRODUCING A NEW PLATFORM FOR….

TUMOR BOARDS, CARE MANAGEMENT TEAMS, PATIENTS
360 ONCOLOGY PLATFORM BUILT FOR COORDINATED AND PATIENT CENTERED CARE

- Designed for Oncology
- Enables Value Based Care
- Localization Ready
- Cloud Based Platform

Flexible Integration with Existing IT Systems
ENABLING 360 ONCOLOGY

- Engaged Patients
- Coordinated Workforce
- Evidence Based Care
- A Learning Health IT System
- Measuring the quality of Care
- Value Based Care
“Pulling all of the necessary elements together in an orderly and timely fashion is challenging and can make or break multi-disciplinary tumor boards. This space is wide-open for new solutions.”

B.J. Sintay, Ph.D., DABR
Chief Physicist
The seamless integration of different electronic medical platforms will maximize the delivery of highly effective, safe, and personalized cancer treatment, which enhances quality, value and, ultimately, the patient experience.

John Suh, MD
Chairman, Department of Radiation Oncology
There is a lack of coordinated care in oncology nationally and has led to delayed diagnosis, fragmented care, and delayed treatment. Patients’ and caregivers are not armed with the tools needed to provide the best possible coordinated care which will lead to better outcomes.

Darlena Chadwick
MSN, MBA, FACHE
Vice President, Patient Care
ONCOLOGY CARE MANAGEMENT GROWTH OPPORTUNITY

Aiming for annual SaaS revenues of ~$100M by 2020

Key Customers

• Comprehensive cancer programs
• Cancer Networks
• Integrated Delivery Network
• Value Based Delivery Programs
EXPANDING THE SCOPE OF PATIENT SAFETY

KEN KHOURI
Director,
Software Services Portfolio

Healthcare Cyber-Security
HEALTHCARE PROVIDERS ARE UNDER ATTACK BY CYBER-CRIMINALS

Healthcare cybercrime pays

- Medical records ~10x more valuable than credit cards
- Healthcare is an easier target than financial systems
  - Many older, more vulnerable devices in use
  - Little dedicated security staff; limited investment

Reinforcing threat dynamics

- Better tools - Malware marketplaces
- Easier financial gains – Bitcoins, “Darkweb” ID marketplaces

67% of 2015 breached records in US were in healthcare
VICTIMS SPEND MILLIONS AND SUSTAIN REPUTATION DAMAGE

- Forensic Analyses ($750K)
- Patient Notification + ID Protection ($1M)
- OCR Fines / State-led Disclosure Suits ($500K-$5M)
- Patient Frustration ($3M-$5M)
- Monitored Action Plan (~$1.5M)

Sources: HIPAA Journal, Ponemon Institute, 2016

Plus patient turnover: 64%+ Impacted patients willing to switch providers

~$7M-$13M Per Episode
SECURITY CONSIDERATIONS INCREASINGLY IMPACT DECISIONS

Security considerations may

- Slow purchasing cycles
- Swing purchasing decisions
- Disrupt deployment plans
- ...
- Result in no-go decisions
SECURITY ALREADY A CONSIDERATION IN OUR PRODUCTS AND SERVICES

System Security Attributes

- Perimeter security devices
- Data integrity checks
- User identity management
- Activity logging
- Regular employee training
- ...

Added cyber-defenses at product / device-level can increase uptime and reduce risk
CUSTOMER PARTNERSHIP HAS ENABLED INNOVATION FOR DECADES

- Customer-led security testing
- Information Security advisory panel
- Partnering to establish vendor standards
SPRING 2017
SOFTWARE SYSTEM ENHANCEMENTS

Improved ease-of-use for clinicians with additional defenses against malicious actors

- Integrated user-authentication
- Encrypted internal communication
- Security-hardening throughout software system

Comprehensive penetration testing of applications and subsystems by security experts
EXPLORING ADDITIONAL SECURITY-RELATED ENHANCEMENTS

SmartConnect®
FullScale®
TrueBeam®
Velocity®

Perimeter security enhancements
Credential-handling enhancements
Encryption-related enhancements
Behavioral analysis enhancements
Real-time Log-monitoring
Whitelisting
STRENGTHENING CYBER-DEFENSES MEANS GROWTH

Growth Opportunities

• Keeping software systems current
  • Contracts sales, Paid upgrades

• Keeping machine software current
  • Contract sales, System upgrades

• Shifting to Varian Managed Services
  • FullScale Cloud migrations

• Migration to all-Varian systems
  • Fully-integrated security model

Aiming for annual incremental revenue of ~$80M by 2018
Clinical Trends; Promising Studies

DEEPAK KHUNTIA, MD
Vice President
Medical Affairs
EQUIPMENT NEEDS CHANGING IN US

• Move to SBRT/SRS driving replacement
  – Every center will need at least one SBRT unit

RADIATION THERAPY - US Transition of practice to increased SRS/SBRT/Hypo Fx
(Assumes 4000 machines in US market)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Cancer Patients total (new Dx)</td>
<td>1600000</td>
<td>2528000</td>
</tr>
<tr>
<td>RT Suitable (60% of patients)</td>
<td>960000</td>
<td>1516800</td>
</tr>
<tr>
<td>SRS/SBRT (~3 Fx)</td>
<td>21%</td>
<td>39%</td>
</tr>
<tr>
<td>Hypofractionation (15 Fx)</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Conventional (30 Fx)</td>
<td>59%</td>
<td>28%</td>
</tr>
<tr>
<td>Total Fractions</td>
<td>19,634,400</td>
<td>20,124,144</td>
</tr>
<tr>
<td>Total Time</td>
<td>303,372,000</td>
<td>330,700,320</td>
</tr>
</tbody>
</table>

MINUTES PER FRACTION

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRS/SBRT</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Hypofrac</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Conv</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

FRACTION NUMBER CHANGE
2%

Tx TIME CHANGE
9%

• ~3,500-4,500 new SBRT units needed over next 12-15 years in US
TRENDS AT ASTRO 2016

• Theme: Enhancing Value, Improving Outcomes

• Leadership focused on:
  – SRS for prostate cancer; value of treatment options
  – Transformation in health care systems
  – Role of “Big Data” in radiation oncology

• 2,378 clinical abstracts
ASTRO: ENHANCING CARE STANDARDS

• 10 practice guidelines published
• Analyzing, learning from self-reported errors
  – Set up radiation oncology incident learning system
  – Most errors stem from:
    • Communication issues
    • Changes in patients’ treatment plans
    • Inadequate training and education
ADVANCES: BRAIN METASTASES

• SRS improving outcomes in treatment of brain metastases after surgery
• Two studies on new clinical approach

A Mahajan: Post-operative SRS vs observation for completely resected brain metastases – Abstract #3

P Brown: N107c/CEC.3: A phase III trial of post-operative SRS vs whole brain RT for resected metastatic brain disease (ASTRO Late Breaking)
EFFECTS OF WHOLE BRAIN RT

- Headache
- Somnolence syndrome
- Confusion
- Skin erythema
- Memory loss
- Otitis media
- Alopecia
- Fatigue
- Leukoencephalopathy
ADVANCES: ESOPHAGEAL CANCER

- Radiotherapy together with chemotherapy extends survival in esophageal cancer versus chemotherapy alone

T Li: Chemotherapy alone vs. chemoradiation for stage IV esophageal cancer – Abstract #1
ADVANCES: PROSTATE CANCER

- Hypofractionation likely to have bigger role
- Requires modern treatment delivery systems
- Could improve patient convenience and lower cost of treatment

DW Bruner: Review of RTOG 0415 Quality of Life review of two fractionation regiments for prostate cancer – Abstract #4
ADVANCES: PROSTATE CANCER

• Genomics identifying cases likely to benefit from radiotherapy following surgery

D Spratt: Study looking at identification of and validation of intrinsic subtypes of prostate cancer – Abstract #6
ADVANCES: GYNECOLOGIC CANCER

• IMRT improved quality of life for uterine patients versus patients treated with conventional conformal therapy

A Klopp: Toxicity results of 3D vs IMRT for endometrial cancer and cervical cancer – Abstract #5
ADVANCES: LUNG CANCER

• SBRT data shows safe treatment now possible in the mediastinum.

A Bezjak. Efficacy and Toxicity of SBRT for central NSCLC (RTOG 0813) Abstract #16
LOWERING LUNG CANCER COSTS

• Societal costs lower for lung cancer treatment with SBRT vs. surgery:
  
  **95€ vs. 3,513€**

AV Louie. QOL after SABR vs Surgery, analysis of the ROSEL randomized trial. Abstract #21
ADVANCES: BREAST CANCER

- IMRT improving quality of life for breast patients versus conventional conformal therapy

JP Pignol. Ten-year results of breast IMRT vs conventional. Abstract #10
COST OF UNTREATED CERVICAL CANCER

- Unless radiotherapy is available for cervical cancer in low and middle-income nations, it will cost an estimated **21.4 million life years** and **$271B**.

- A realistic investment in RT over the next 20 years could have a **net economic benefit of $150B**

Nine middle-income nations studied have only half of the equipment needed for their cancer patients.

E. Rosenbladt. RT utilization in middle income countries. Abstract #82.
VARIAN TECHNOLOGY USED IN CLINICAL STUDIES

• Phase I/II study of urethral and rectal sparing SBRT for prostate cancer with Calypso™ – C. Greco

• First clinical implementation of EM transponder-guided MLC tracking for lung SBRT – J. Booth

• Noninvasive stereotactic cardiac ablation for ventricular tachycardia – C. Robinson
SBRT CONTROL OF VENTRICULAR ARRHYTHMIA

Monthly ICD Therapies

Off antiarrhythmic medication

Patient 1
Patient 2
Patient 3
Patient 4
Patient 5

0 5 10 15 20 25

CONCLUSIONS

• Global cancer incidence increasing
• SRS/SBRT/IMRT improving outcomes
• Radiation oncology is most affordable cancer treatment
• Still many, many unmet needs in LMIC
• Investment needed in advanced clinical technologies, equipment
HCA SARAH CANNON DISCLOSURES

HCA Sarah Cannon is receiving an honorarium for our time and presentation today.

This presentation specifically represents our strategy and opinions and not those of Varian.

We have no conflicts of interest to report.

Varian products utilized to support our multisite infrastructure and radiation oncology services:

- Aria V13
- Eclipse V13
- Multiple treatment delivery systems with a focus on TrueBeam.
SARAH CANNON RADIATION ONCOLOGY PROGRAM

1,000 patients treated each day

80+ treatment delivery systems across the enterprise

One of the Largest providers of radiation oncology services in the U.S.

46 HCA radiation oncology facilities across the U.S. and UK

Radiation oncology services across 16 states
A standardized OIS platform is the foundation for removing variation, improving efficiency and providing a platform for continuous improvement that supports successful technology implementation and utilization.

Clinician-Led Governance
Market and enterprise governance structure supports the programmatic build. Decision making through expert consensus focused on improving quality, safety, and outcomes.
Supported by the knowledge generated through the infrastructure to assist with assessing/improving the operations of our radiation oncology facilities

Focusing on implementation of best practices to support quality, safety and outcomes while reducing variation

Creates central point of coordination for the experts already residing throughout the company
**FOUNDATION: OIS CONSOLIDATION**

**Successes to Date:**

**Analytics**
- Focused operational, market and clinical analysis
- Discovering best practices, defining benchmarks, measuring improvement

![Graphs and charts showing data analysis](image)

**10,000** Patients treated per year via 80+ delivery systems in 46 facilities in 16 states
**TOOLS: KNOWLEDGE BASED PLANNING**

## Quality/Efficiency/Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Disease site models developed and validated: Prostate; Lung; Head &amp; Neck</th>
<th>Knowledge Based Planning licenses installed for pilot testing, Nashville market showing a 82% adoption rate with positive user feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**R50** is a standard metric used to evaluate dose conformality equaling the ratio of the volume enclosed by the 50% isodose line to the volume of the target.

### Average R50 Reduction

- **Thorax** 11%
- **Head-and-Neck** 8%
- **Prostate** 6%

By the end of 2017, 40% of our facilities will be utilizing this technology.
Aligning strategy with fiscal responsibility: Seventy-five percent of our 46 facilities have single treatment delivery systems. The decision on systems must support a full range of treatment options that all patients and referring physicians deserve, including an infrastructure that enables and ensures a safe/high quality treatment delivery.
Our core tenets: no individual initiative or technology creates a superior radiation oncology service, that it take a complete build that interconnects to deliver knowledge and hold accountability, focused on quality, safety and outcomes.

### YOY CM Performance

<table>
<thead>
<tr>
<th></th>
<th>Pilot Markets</th>
<th>HCA Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(7 Facilities)</td>
<td>(46 Facilities)</td>
</tr>
<tr>
<td>2014 vs. 2015</td>
<td>29%</td>
<td>2%</td>
</tr>
<tr>
<td>2015 vs. 2016</td>
<td>27% (Projected)</td>
<td>8%</td>
</tr>
</tbody>
</table>

HCA Sarah Cannon Strategy approved and initiated 5/2015
**HCA SARAH CANNON RADIATION ONCOLOGY: INNOVATING CARE THROUGH PARTNERSHIP**

Whether it is an executive strategy discussion in a boardroom or writing code with developers, it takes a comprehensive partnership focused on collaboration and innovation, leveraging the inherent strength/knowledge of both organizations:

<table>
<thead>
<tr>
<th>ARIA and InSightive (OIS Consolidation)</th>
<th><strong>Varian</strong></th>
<th><strong>HCA Sarah Cannon</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Collaborative developers</td>
<td></td>
<td>Clinical and business expertise</td>
</tr>
<tr>
<td>• Innovative training</td>
<td></td>
<td>Size and commitment to scalability</td>
</tr>
<tr>
<td>• Project management fully integrated</td>
<td></td>
<td>Open and collaborative strategy that supports innovation</td>
</tr>
<tr>
<td>with customer strategy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RapidPlan (Knowledge Based Planning)</th>
<th><strong>Varian</strong></th>
<th><strong>HCA Sarah Cannon</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leading technology and algorithms</td>
<td></td>
<td>Expansive network of experts</td>
</tr>
<tr>
<td>• Focused on quality and efficiencies</td>
<td></td>
<td>Large volume to advance learning</td>
</tr>
<tr>
<td>• Partner and committed to learning</td>
<td></td>
<td>Large network of user feedback for expedited enhancements as needed</td>
</tr>
<tr>
<td>together</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TrueBeam (Treatment Delivery Devices)</th>
<th><strong>Varian</strong></th>
<th><strong>HCA Sarah Cannon</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Advanced, efficient technology</td>
<td></td>
<td>Large, expansive footprint</td>
</tr>
<tr>
<td>• Cost effective: Multimodality in a</td>
<td></td>
<td>Committed to bringing advanced technology to the community</td>
</tr>
<tr>
<td>single system</td>
<td></td>
<td>Single system facilities</td>
</tr>
<tr>
<td>• Intuitive, giving time back to the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>therapist</td>
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**For Investor Use Only**
People who live with cancer – those who work to prevent it, fight it, and survive it – are at the heart of every decision we make. Bringing the most innovative medical minds together with the most passionate caregivers in their communities, we are transforming care and personalizing treatment. Through clinical excellence and cutting edge research, Sarah Cannon is redefining cancer care around the world.
THANK YOU
VARian PARTICLE THERAPy
BUILDING MOMENTUM

MOATAZ KARMALAWY
Vice President and General Manager,
Worldwide Particle Therapy
PROTON THERAPY INVESTMENT SUMMARY

- Leadership position in expanding global PT market
- Integrating leading Varian RT technology into protons
- Leveraging Varian’s global sales & service infrastructure
- On track for profitability
FIRST SINGLE ROOM COMPACT ORDER

- Varian selected by Proton Therapy Pte., Ltd. To install and service the first Varian ProBeam® Compact single-room proton therapy system for the Biopolis Oncology Center in Singapore
VARIAN GAINING SHARE OF THE PROTON MARKET

SHARE OF # ROOMS ORDERED 2012 - 2015

2012 - 2015

2015
# VARIAN PARTICLE THERAPY BACKLOG – 36 ROOMS

<table>
<thead>
<tr>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK PROTON THERAPY CENTER</td>
<td>UCLH London – 3 Gantries</td>
</tr>
<tr>
<td>UNIVERSITY OF MARYLAND</td>
<td>1 Gantry and 1 Fixed Beam Room, 3 Gantries treating patients</td>
</tr>
<tr>
<td>CINCINNATI CHILDREN’S HOSPITAL</td>
<td>3 Gantries</td>
</tr>
<tr>
<td>HOLLAND PTC</td>
<td>2 Gantries 1 Fixed Beam</td>
</tr>
<tr>
<td>UK Proton Therapy Center</td>
<td>The Christie Hospital, Manchester, 3 Gantries</td>
</tr>
<tr>
<td>AARHUS PTC - DENMARK</td>
<td>2 Gantries</td>
</tr>
<tr>
<td>NEW YORK PTC</td>
<td>3 Gantries 1 Fixed Beam Room</td>
</tr>
<tr>
<td>PAUL SCHERRER INSTITUTE (PSI)</td>
<td>1 Gantry Room</td>
</tr>
<tr>
<td>PTC ST PETERSBURG, RUSSIA</td>
<td>2 Gantries</td>
</tr>
<tr>
<td>KFMC-KING FAHD MEDICAL CENTER</td>
<td>3 Gantries and 1 Fixed Beam &amp; 1 Eye Tx</td>
</tr>
<tr>
<td>NATIONAL TAIWAN UNIVERSITY</td>
<td>2 Gantries 1 Fixed Beam Room</td>
</tr>
<tr>
<td>WAN UNIVERSITY</td>
<td></td>
</tr>
<tr>
<td>CHINA PT CENTER (HEIFI)</td>
<td>3 Gantries and 1 Fixed Beam Room &amp; 1 Research Room</td>
</tr>
</tbody>
</table>

Three additional contracts for 4 rooms not yet booked as orders.
DR. WILLIAM REGINE

Realizing the Promise and Potential of Protons

Maryland Proton Treatment Center
Realizing the Promise and Potential of Proton Therapy

William F. Regine, MD, FACP, FACRO
Isadore and Fannie Schneider Foxman Chair and Professor
Department of Radiation Oncology
Executive Director, Maryland Proton Treatment Center, University of Maryland
Disclosures

- University of Maryland School of Medicine is receiving an honorarium for our time and presentation today.
- This presentation specifically represents our strategy and opinions and not those of Varian.
- We have no conflicts of interest to report.
Objectives

- Review the evolution of proton therapy (PT) and identify the challenges facing PT
- Review the vision of the Maryland Proton Treatment Center (MPTC) and identify the strategies used by MPTC in facing the challenges of PT
- Review the current PT clinical trials portfolio and identify its promise for defining the future use of PT
Evolution to Image-Guided Proton Therapy

>145,000 patients have been treated with proton therapy worldwide from 1954-2015; >15,000 patients were treated in 2015. USFDA approved in 1988.

Pencil Beam Scanning (PBS) = Intensity Modulated Proton Therapy (IMPT)
Ongoing Challenges with Proton Therapy

- Addressing uncertainties with protons
  - Distal edge RBE
  - Motion management
  - Tissue heterogeneity

Increasing R&D from academic proton centers, along with increased R&D from vendors (best when in collaboration with each other) will rapidly address and overcome current challenges/limitations of PT, further extending the indications and use of PT in patients.
The Added Challenge

- The development and building of proton therapy facilities for the treatment of cancer requires substantial initial capital outlays, often exceeding $100 million... even exceeding $30-$50M for single room facility

- The promise of proton therapy services hinges on the ability of such facilities to earn a return on investment

- Large fixed costs means that an appropriate volume of patients must be treated daily
Maryland Proton Treatment Center (MPTC)
A Regional Resource to Mid-Atlantic Healthcare Providers and Payors

VISION: To become a Proton Center of Excellence across all academic missions, accessible as a REGIONAL RESOURCE to and in PARTNERSHIP with major regional Health System/Oncology Providers and Payors

- $200M, 110,000 square feet, 5 treatment rooms, with unique patient throughput process enhancing patient volume capacity allowing treatment of up to 2,000 patients per year (150-200 patients per day).

MPTC: Cost of Proton Therapy = Cost of Intensity Modulated Radiation Therapy (IMRT)
The Regional Partnership Model: Making Proton Therapy “More” Accessible to the Region

Currently engaged with 4 Major Regional Providers of Radiation Oncology; including from Northern VA/DC and South Central PA. Two have signed formal affiliate partnership agreements.
Unique patient throughput process enhances MPTC patient volume capacity allowing treatment of up to ~2,000 patients/year (150-200 patients/day)
Developing “Partnerships” & Making the Case with Payors
Level of Scientific Evidence Underlying Recommendations Arising From the National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines Thejaswi K. et al; JCO 2011

The NCCN definitions for various Evidence and Consensus categories are as follows:
Category I: high level of evidence such as **randomized controlled trials** with uniform consensus
Category IIA: lower level of evidence with uniform consensus
Category IIB: lower level of evidence without uniform consensus but no major disagreement
Category III: any level of evidence but with major disagreement

< 10% of what we recommend in cancer care (or COVERED by insurance) is based on “level I evidence/randomized trials”!!

**Fig 4.** Distribution of evidence and consensus categories according to area of recommendation for all guidelines.
111 active PBT clinical trials worldwide, with projected enrollment of 29,995 patients.

Proton Clinical Trials: Where are we NOW?

7 of 11 planned randomized trials are underway!

Mishra, MV, Presented at ASTRO, In Press
Where We are Today in Justifying the Use of Proton Therapy

Scientific Evidence

- **Level I**
- **Level II**

Evidence needed for definitive answer on patient outcome

Threshold for justifying use

Chordomas, skull base, ocular, pediatric and other (?) tumors

Where We are Today in Justifying the Use of Proton Therapy

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Scientific Evidence

- **Level I**
- **Level II**

Evidence needed for definitive answer on patient outcome

Threshold for justifying use

Chordomas, skull base, ocular, pediatric and other (?) tumors
**How We Will Justify Future Use of Proton Therapy**

- **Evidence needed for definitive answer on patient outcome**
- **Lung, brain, liver, breast, head and neck cancers & others**
- **Threshold for justifying use**
- **Novel non-randomized trial designs and “value/patient benefit” endpoints**

*Scientific Evidence*

*Clinical Trials*

- Level I
- Level II
VISION:
Cancer Therapy Now and Into the Future
VISION:
Cancer Therapy Now and Into the Future
Conclusions

- The technical evolution of PT has been relatively slow and behind that of photon therapy; with the opening of additional academic affiliated proton centers, and associated increased R&D by vendor partners, advancements in proton technology will further extend its appropriate use across multiple tumor types.

- The MPTC model of providing PT as a regional resource allows for “partnerships” with regional providers and payors, increasing patient access to PT.

- Creative regional partnerships and patient throughput designs, enabling increased capacity/patient volume for PT should allow for “discount pricing”.

- The clinical trial portfolio for PT is rapidly expanding and will likely increase appropriate indications for its use in patients.
THANK YOU!

Maryland Proton Treatment Center (MPTC)
A Healthcare Resource Accessible to and in PARTNERSHIP with Regional Health Systems/Oncology Providers and Payors
QUESTIONS & ANSWERS