“Why am I here?”

CHANGE!

MRI Practice is changing,
Risk Profile is changing,
Regulation is changing.

“Who Is This Guy?”

ACR MR Safety Committee
VA / ASHE Design Standards
Author (x 100’s)
Expert on MR Accidents
Full Disclosure

President & Stockholder
Mednovus, Inc.

Consultant
RAD-Planning

Forward

Thank you to…
Emanuel Kanal, MD
RAD-Planning / Junk Architects

Working Session
Live Tweet “#MRIsafety”
Feedback Forms

MRI Safety
Today
Major MR-Environment Safety Concerns

- Time-Varying RF / Magnetic Fields
- Static Magnetic Fields
- Cryogens

Cryogen Safety

- Entrapment / Asphyxiation
- Catastrophic Failure
Cryogen Safety

Cryogen Safety

Outline Of Cryogen Vent

Wind Speed (mph)

0 10 20 30 40

Deflection Angle (deg)

0 10 20 30 40

Wind Direction

Major MR-Environment Safety Concerns

- Time-Varying RF / Magnetic Fields
- Static Magnetic Fields
- Cryogens
Static Magnetic Field

- Always On
- Interfere With Implants / Devices
- Translational (Missile) Effect
- Rotational (Torque) Effect

Projectiles / Missiles

- Cause $100,000's of Damage
- Injure Patients and Staff
- Result in Days / Weeks of Downtime
- Still Occur Regularly

$50,000
Physics of Attraction

“But It Was Safe Before!”

- Shape of Object
- Rotation / Orientation of Object
- Position in Static Field
- Static Field Strength
- Magnetic Spatial Gradient (MSG)

Recent Events

- Oxygen Cylinder vs. Physician’s Arm
- Wheelchair vs. Technologist
- Flat-Panel Monitor vs. Face
- Rolling Cart vs. Vendor Apps Specialist
- MR Fan Unit KILLS Service Engineer
‘A Bad Day @ The Office’

MRI Projectile Cost

$43,172

MRI Accident Rates

MAUDE LNH reports
270% increase

http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfMAUDE/search.CFM

2003 2004 2005 2006 2007 2008

http://www.va.gov/ncps/SafetyTopics/mrihazardsummary.html

Presentation Made Possible by...

Mednovus SAFESCAN and RAD-Planning
Take Away -

MR Safety Is Getting Worse and Requires Serious Attention!

The Stakes

Why We’re All Here
What Was The Result?

$2,900,000

Which works out to 9.7¢ per U.S. MRI patient last year

Who Has Requirements, Today, To Prevent This?
Who Has Requirements, Today, To Prevent This?

“But That Couldn’t Happen Here…”

- Two RT’s On Duty
- Piped-In Oxygen
- Unsecured Control Room
- ‘Unsafe’ Materials Kept Outside Room
- Nurse Responded To Call For Help

“But We’re Licensed & Accredited…”

- ACR Snubs Own MR Safety Committee
- Radiology State License = Ionizing
- JCAHO Worried About Fire Extinguisher
- No Federal Requirements
- No Payor Requirements
“But Our Vendor...”

NOT Design

Take Away -

Medical Physicists Possibly In the Best Position To Protect Patients and Facility!
Stretch Time!

Welcome Back!

Bringing It Home:
What You Can Do At Your Facility.
Codes & Licenses

• 2010 Guidelines
• NY State Certification (CA to follow?)

2010 Guidelines

• Introduces MRI Safety Standards
• Awaiting Joint Commission (JCAHO)
• Rolling-Out To States
2010 Guidelines

2.2-3.4.4.2 Design configuration of the MRI suite

(1) Suites for MRI equipment shall be planned to conform to the four-zone screening and access control protocols identified in the American College of Radiology’s “Guidance Document for Safe MR Practices.”

(2) The layout shall include provisions for the following functions:

(a) Patient interviews and clinical screening
(b) Physical screening and changing areas (as indicated)
(c) Siting of ferromagnetic detection systems
(d) Access control
(e) Accommodation of site-specific clinical and operational requirements

Designer Certification?!!

• New York Requires Designer Certification of MRI Safety
• California Reviewing Similar Measure

Accreditation

• Radiology Accreditation (ACR)
• CMS Advanced Imaging (welcome TJC)
JCAHO E.C. Standard

Changes to Standards & EPs for Advanced Imaging Requirements
Ambulatory Health Care Accreditation Program

Standard EC.02.01.01
The organization manages safety and security risks.

• For organizations that provide the technical component of advanced diagnostic imaging and elect to use this Joint Commission (JCAHO) Imaging Registry accreditation program, in addition to the organization managing safety risks in the magnetic resonance imaging (MRI) environment associated with the following:
  - Patients who may experience claustrophobia, anxiety, or emotional distress
  - Patients with any restraints or contraindications to the MRI examination
  - Patients entering the MRI environment

New York Times, Ionizing Radiation & CMS

• Accreditation Preventing Accidents?
• Basic Safety Standards Needed
• Radiology Safety Must Include MRI

4 Things To Check At Home

• 4-Zones
• Physical Access Controls
• Line-of-Sight Situational Awareness
• Ferromagnetic Screening
1. 4-Zones

2. Access Controls

3. Line-of-Sight
Ferromagnetic Screening

“Pay It Forward”
The Call To AAPM.
MRI Safety, Who Gets It?

- Architects?
- Equipment Vendors?
- Hospital Administrators?
- Risk Managers?
- Accreditation Agencies?

MRI Safety, Who Gets It?

Medical Physicists, That’s Who!

AAPM

Presentation Made Possible by...

Mednovus SAFESCAN and RAD-Planning
Summary

MR accidents are increasing, dramatically. Accident / interruption costs are huge! New standards demand expertise, that YOU can provide.

MR Safety = Enlightened Self-Interest

Questions?

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THANK YOU!

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