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VA Radiotherapy Incident Reporting and Analysis System (RIRAS)

Jatinder R Palta PhD
Rishabh Kapoor MS
Michael Hagan, MD
National Radiation Oncology Program(10P11H)
Veterans Health Administration

Disclosure

- Vice President, Center for the Assessment of Radiological Sciences (CARS)
  - A non-profit organization dedicated to improving quality and safety of radiotherapy and radiological imaging.

Objectives

- Describe the design characteristics of the infrastructure for radiotherapy incident reporting in the VHA
- Describe incident reporting workflow
- Give live demonstration of an incident reporting, analysis, and learning
- Discuss lessons learned from the VHA incident reporting system

VA National Center for Patient Safety

Goal

- Nationwide (151 VA hospitals) reduction and prevention of inadvertent harm to patients as a result of their care

Mission

- Use a "systems approach" to develop health care solutions based on prevention, not punishment.

Strategy

- Use Human Factors Engineering methods and apply ideas from "high reliability" organizations, such as aviation and nuclear power, to target and eliminate system vulnerabilities.

Reporting System

- Patient Safety Information System (over 1M reports)
  - **The information PSIS is protected from disclosure under 38 U.S.C. 5705**

Patient Safety Information System

Designed to document patient safety information from across the VA in a general hospital setting, e.g.

- Misdiagnosis
- Unnecessary treatment
- Unnecessary tests
- Medication mistakes
- “Never events”
- Uncoordinated care
- Infections, from hospital to patients
- Not-so-accidental “accidents”
- Missed warning signs
- Going home- not so fast

<u>Limitations</u> : Lacks Radiation Oncology Taxonomies/Ontologies

Incidents Happen

- We, the radiotherapy community, need to accept that errors do happen.
- Errors happen when even trying to do a good job, good earnest workers.
- Errors almost always happen when multiple unusual things happen at the same time.
- In order to improve the situation, we need to study what happened every time and **learn** from it..

What to Report?

- Adverse event or incident or any situation that "just doesn't seem to go like it is supposed to."
- These include "good catches" that may go undocumented because someone "caught" the problem before anything bad happened.
- Good catches are great opportunities to identify the weaknesses or failure points in systems and processes that, if not addressed, can lead to bad outcomes.

Why Report?

- Sometimes you may be uncomfortable reporting an error or a good catch.
- But if reports are not made, we will never be able to fix or improve the system or process that contributed to the error.
- Intent of reporting incidents or good catches is to prevent similar errors in the future, not to punish any one.
- Reporting is non punitive.

Radiotherapy Incident Reporting and Analysis System* (RIRAS)

A reporting system to aggregate data for:

- Errors regardless of whether they lead to harm (good catches)
- Adverse events that are recordable at facility level
- Medical events that are reportable as per regulatory requirement
  - *VHA Directive 2013-07- Mandatory Reporting for Misadministration of Therapy Machine Sources of Ionizing Radiation*
- Issues/problems with radiotherapy devices

Radiotherapy Incident Reporting & Analysis System (RIRAS)

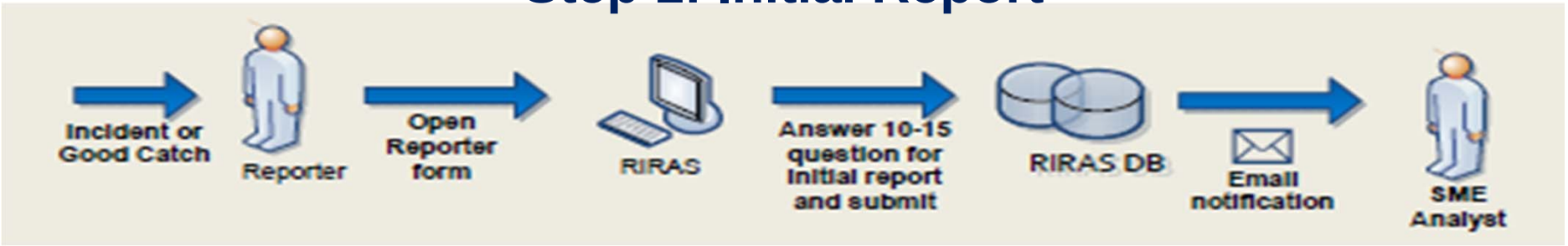
Attributes:

- Taxonomy and data dictionary based on AAPM document on, "Error Reporting",
- A carefully designed data entry form that minimizes keystrokes *(pull-down menus based on well-established clinical workflow for consistent data reporting, pre-filled facility data, etc.),*
- Anonymous reporting option,
- Relational event database,
- Data analyses, management and maintenance.
- RIRAS is on the VA Intranet (http://vaww.webdevi.va.gov/NROPA)

Ford EC et.al. "Consensus recommendations for incident learning database structures in radiation oncology", Med Phys 39, 2012

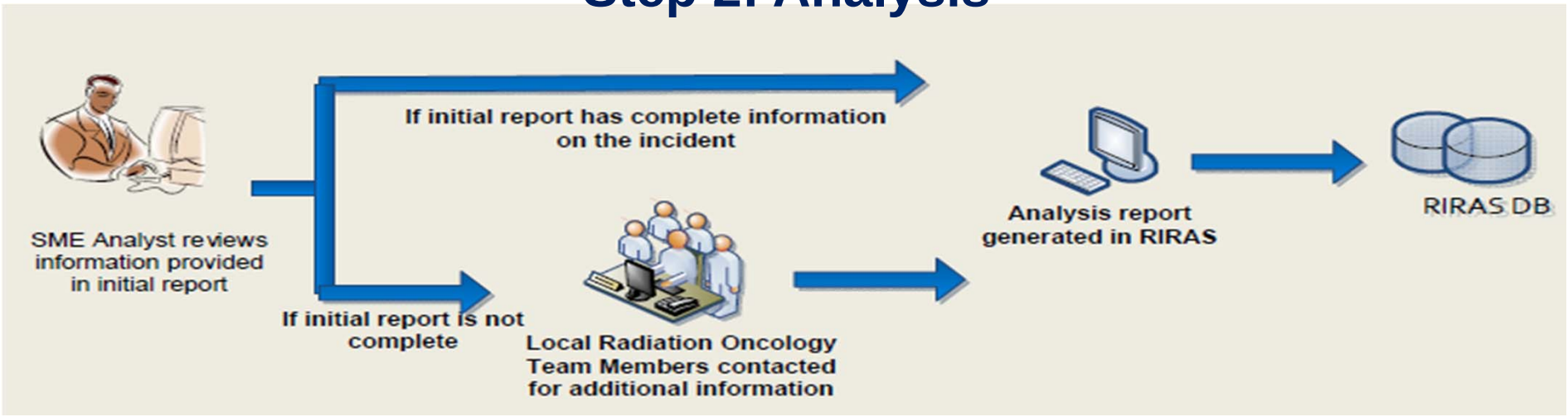
RIRAS Workflow

Step 1: Initial Report



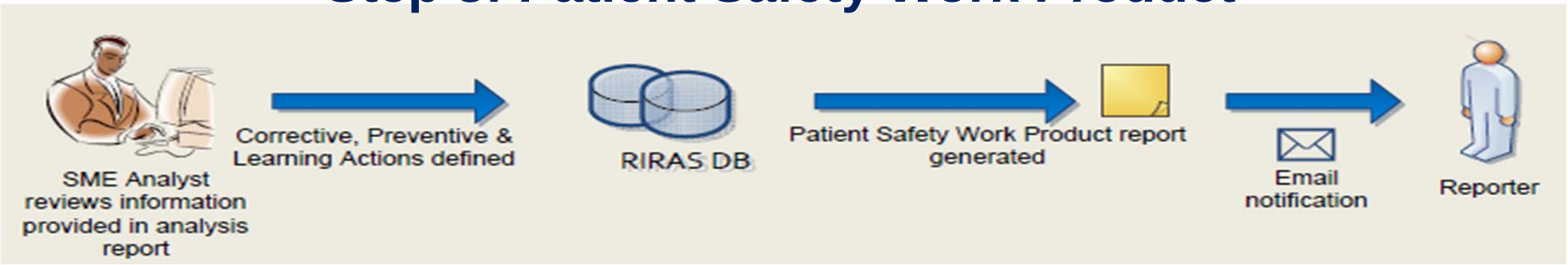
RIRAS Workflow

Step 2: Analysis



RIRAS Workflow

Step 3: Patient Safety Work Product

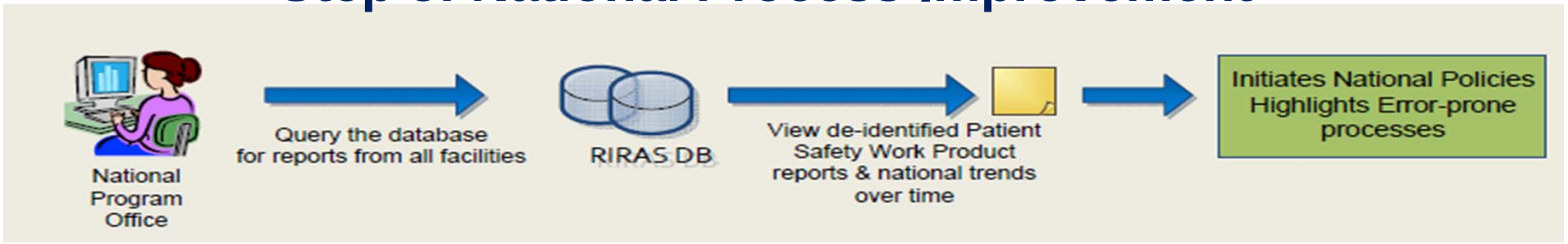


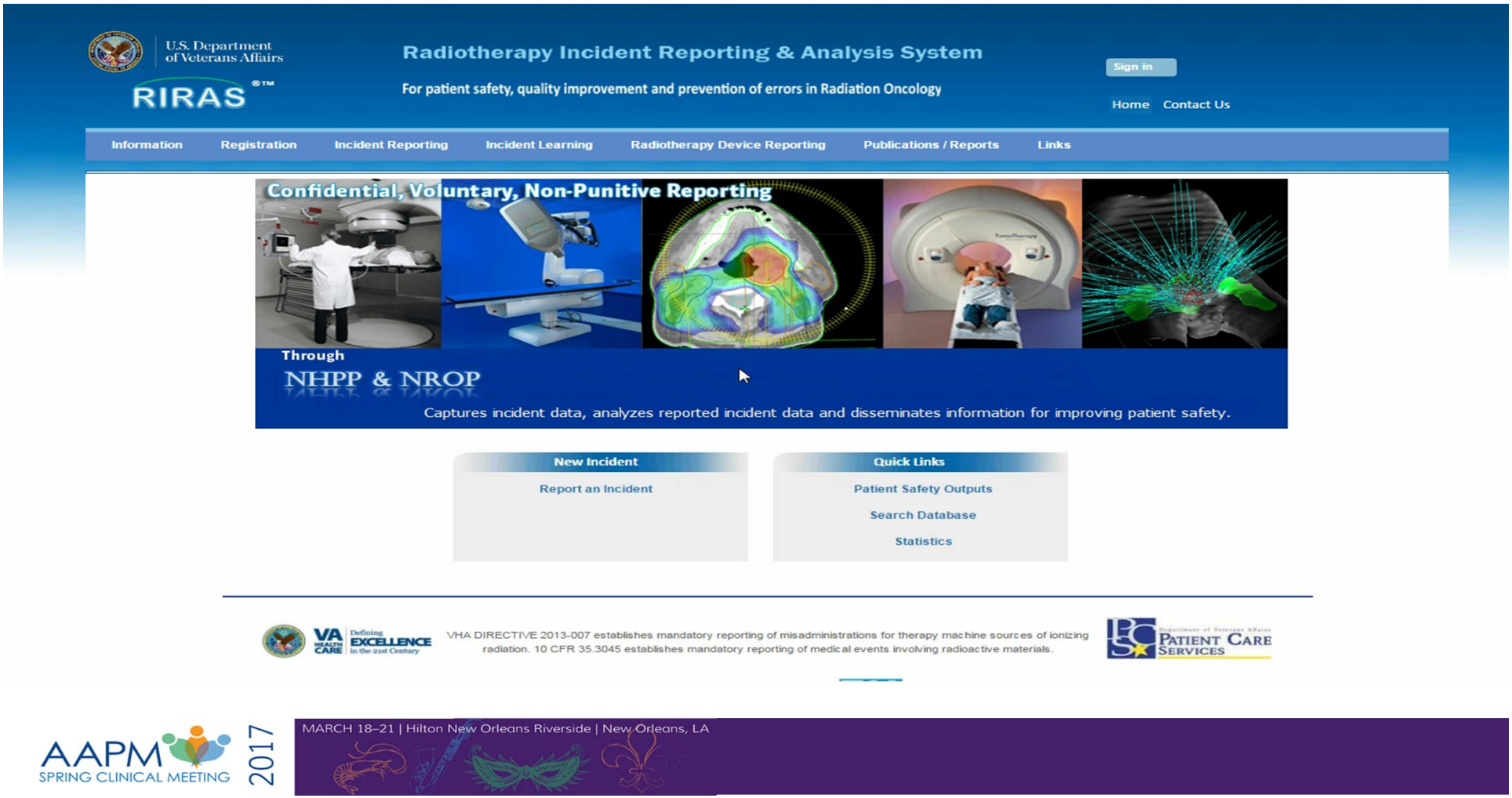
RIRAS Workflow

Step 4: Local Process Improvement

RIRAS Workflow

Step 5: National Process Improvement




U.S. Department of Veterans Affairs
RIRAS
Radiotherapy Incident Reporting & Analysis System
For patient safety, quality improvement and prevention of errors in Radiation Oncology
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Through
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Captures incident data, analyzes reported incident data and disseminates information for improving patient safety.
New Incident
Report an Incident
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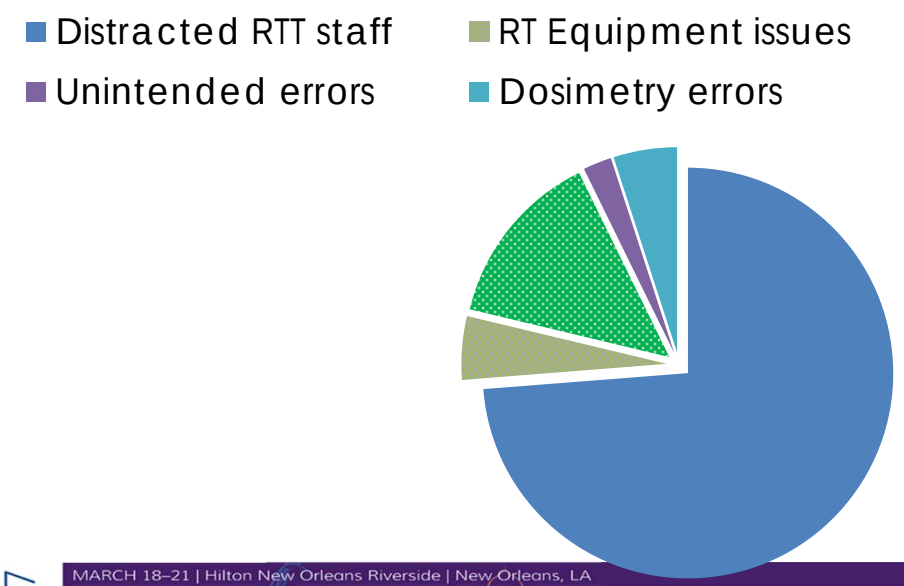
Statistics
VA Defining Excellence in the 21st Century HEALTH CARE
VHA DIRECTIVE 2013-007 establishes mandatory reporting of misadministrations for therapy machine sources of ionizing radiation. 10 CFR 35.3045 establishes mandatory reporting of medical events involving radioactive materials.
Department of Veterans Affairs PATIENT CARE SERVICES

RIRAS Status Report

- All 39 Radiation Oncology Services in VHA have used the RIRAS to report at least one incident (mock and or real)
- Current RIRAS database includes (Total: 300 reports)
  - 10 misadministration
  - 277 good catches
  - 8 anonymous good catches
  - 35 reported incidents (CY05-14)
- In addition to these we have received 130 training / mock reports from RTT staff.
- We continue to encourage VHA radiation oncology services to report incidents and good catches in RIRAS

RIRAS Status Report
VHA-wide Reported Incidents
(CY 2005-2014; Historical Data)

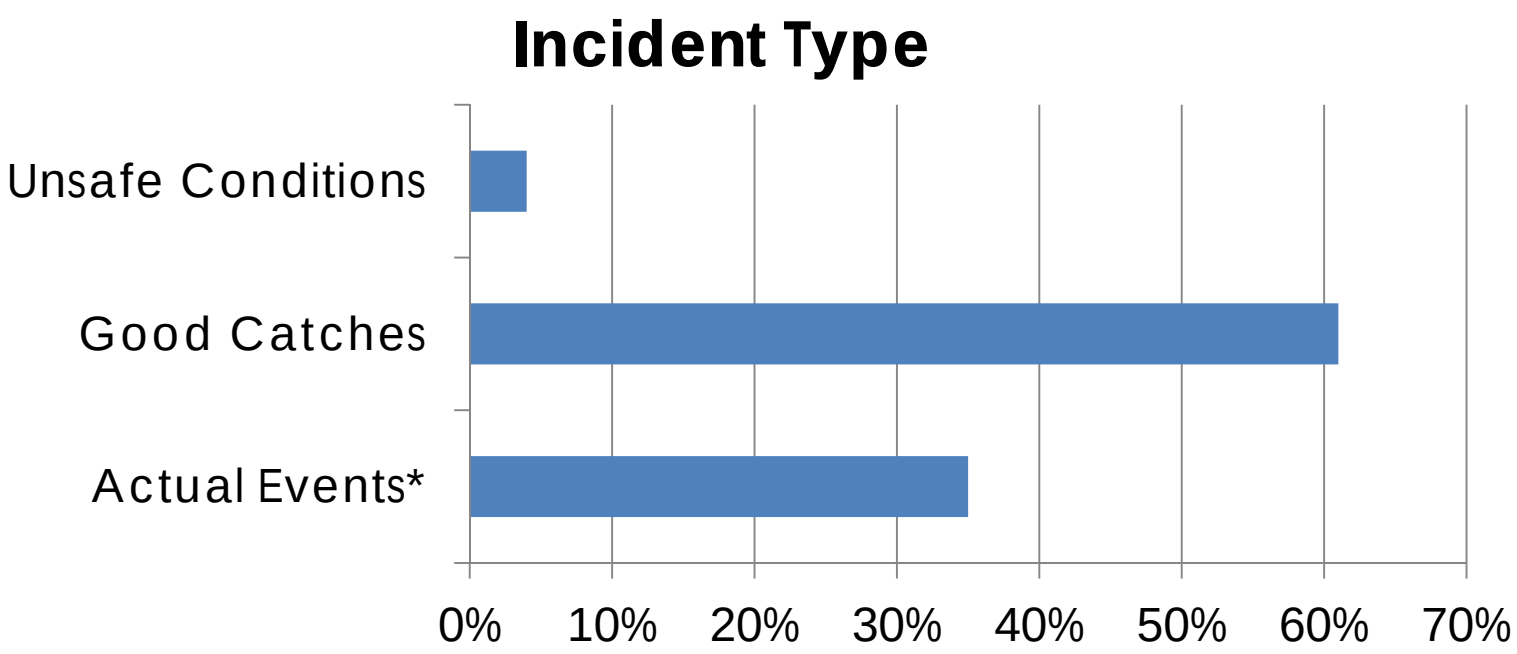
35 involving 42 patients



Potential consequences of distracted RTT staff

1. Wrong patient setup
2. Wrong treatment site

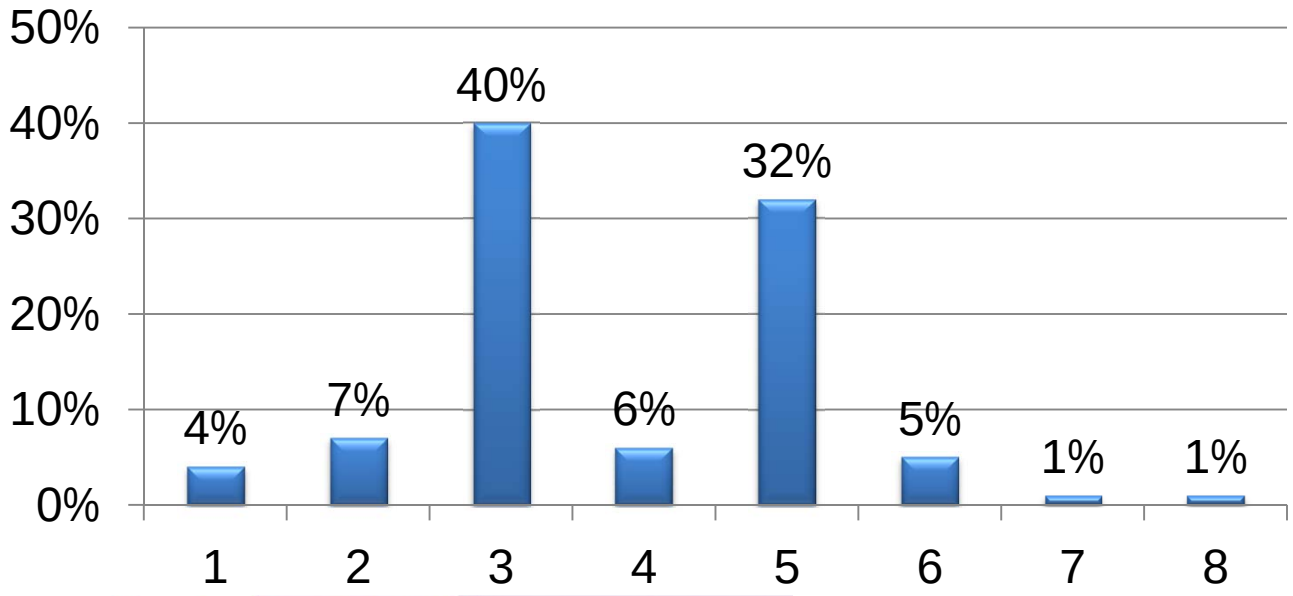
RIRAS Status Report
Reporting Trends



* only 3% met the criteria of VHA misadministration classification but with a low medical severity

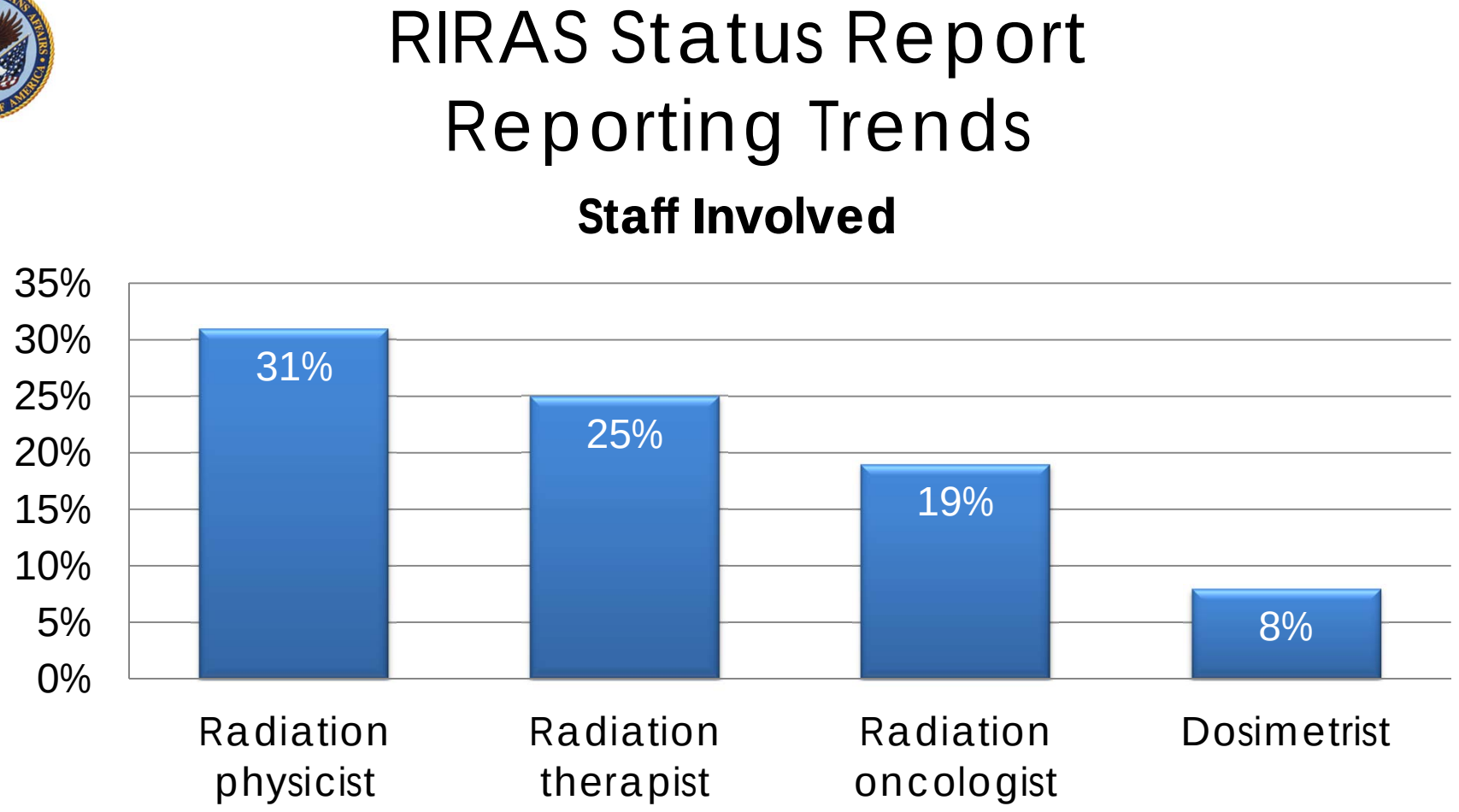
RIRAS Status Report
"Good Catches" Analysis
5/11/2014 – Present (Total: 277)

Event Origination Process Step



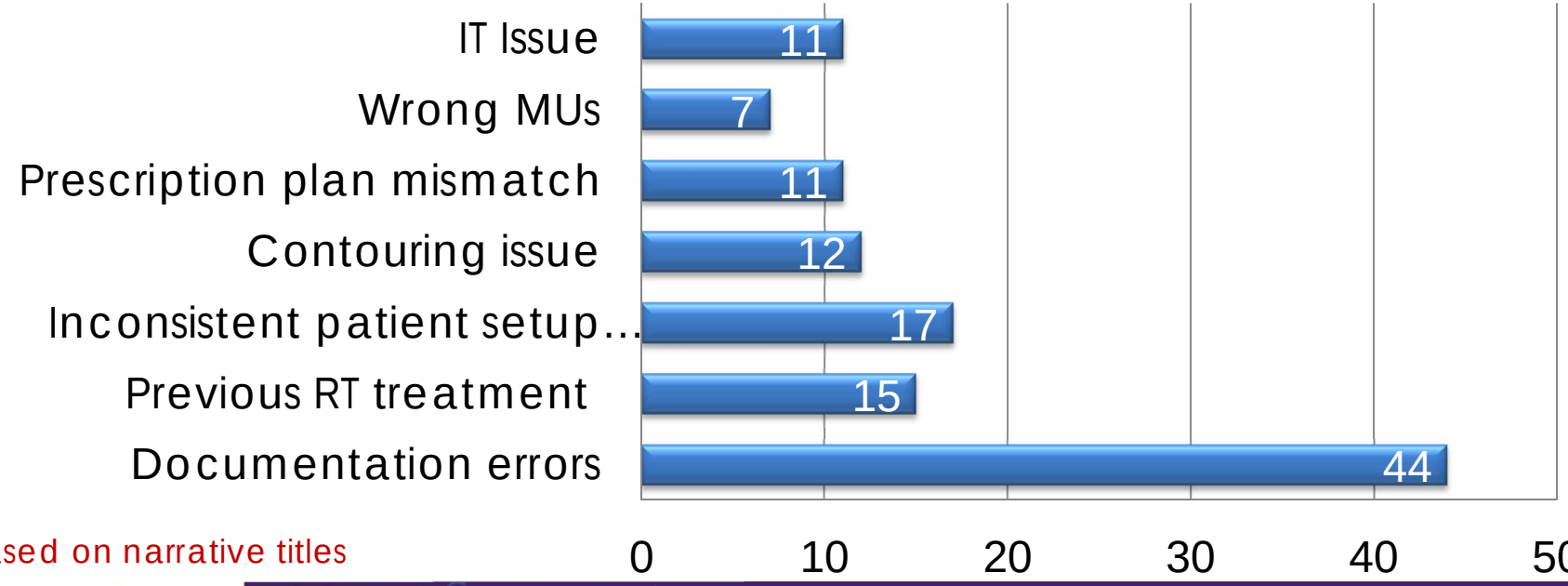
1. Patient Assessment
2. Imaging for Planning
3. **Treatment Planning**
4. Pre-treatment Verification
5. **Treatment Delivery**
6. On-treatment Management
7. Post -treatment Management
8. Equipment and Software Issues

RIRAS Status Report
Reporting Trends



RIRAS Status Report
Reporting Trends

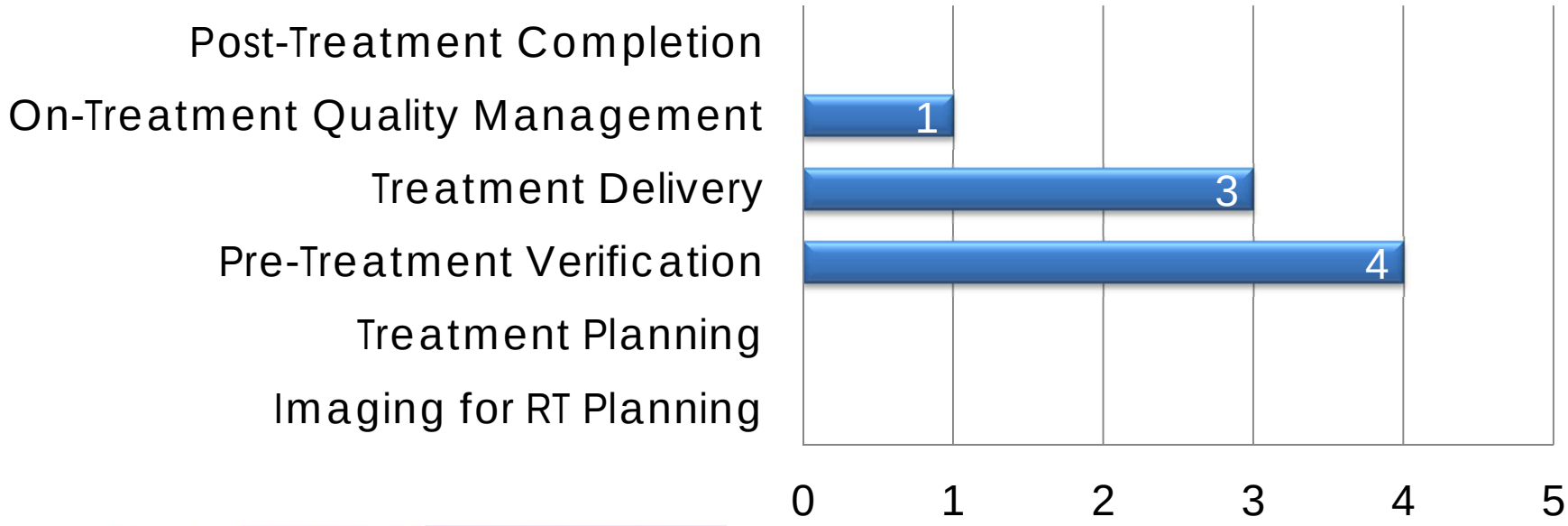
Common Reported Events*



*Based on narrative titles

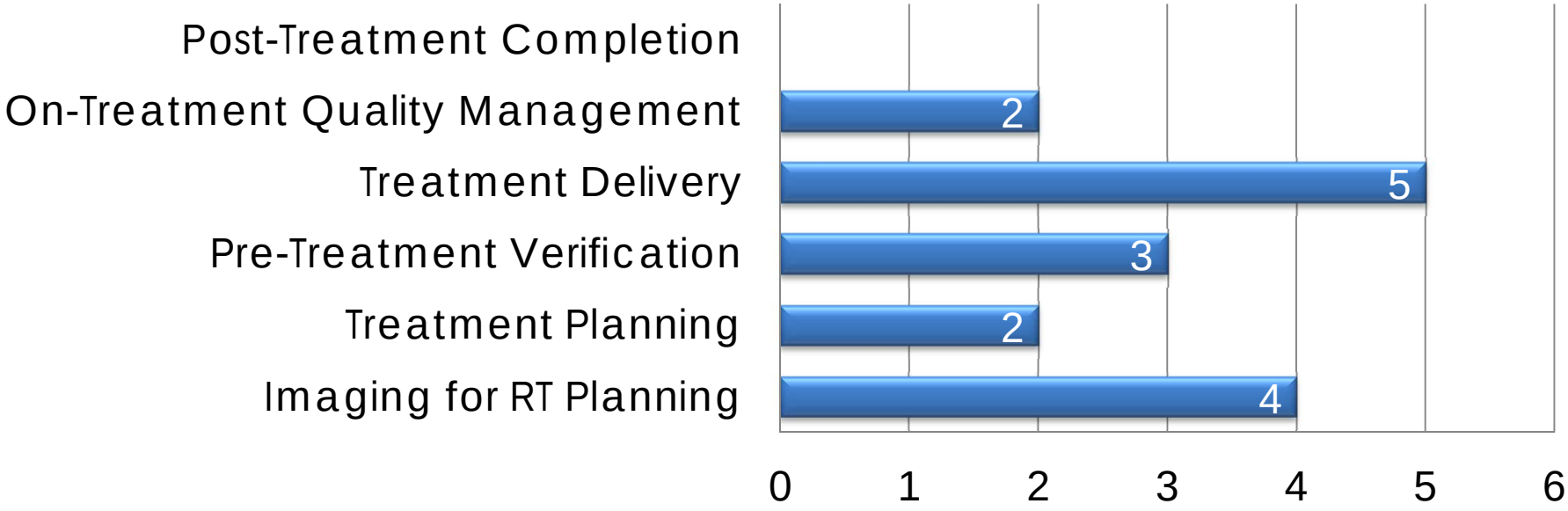
RIRAS Status Report
Reporting Trends

Number of Events Originating at Patient Assessment
Process Step where discovered



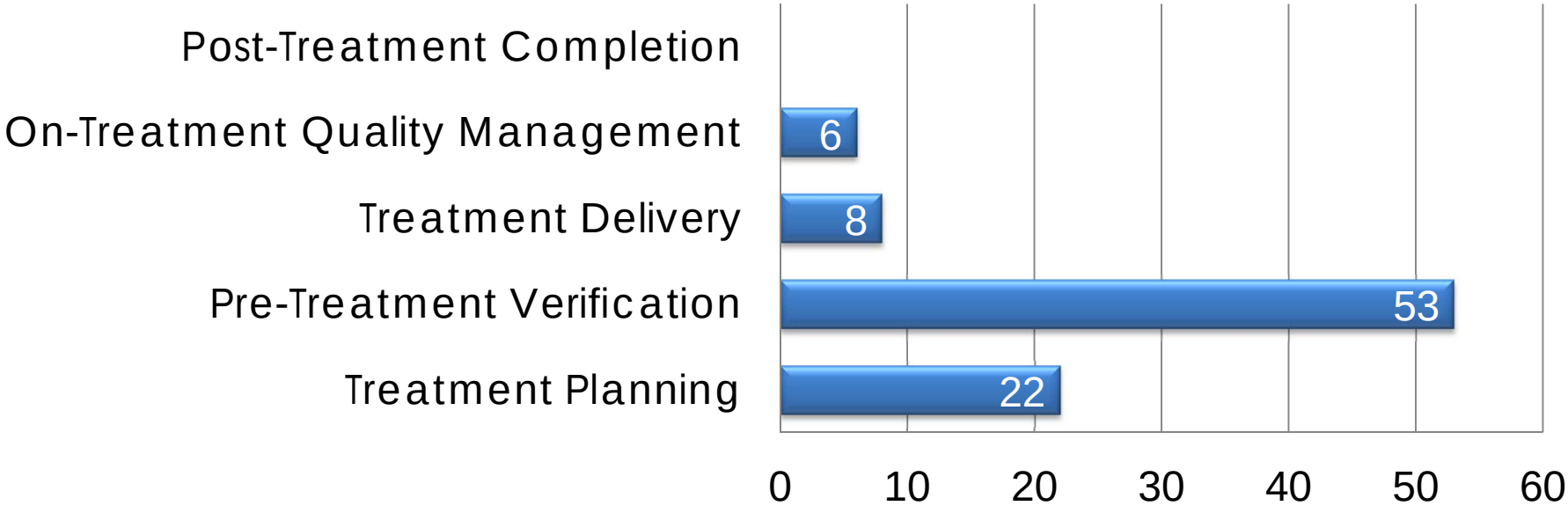
RIRAS Status Report
Reporting Trends

Number of Events Originating at Imaging for RT Planning
Process Step where discovered



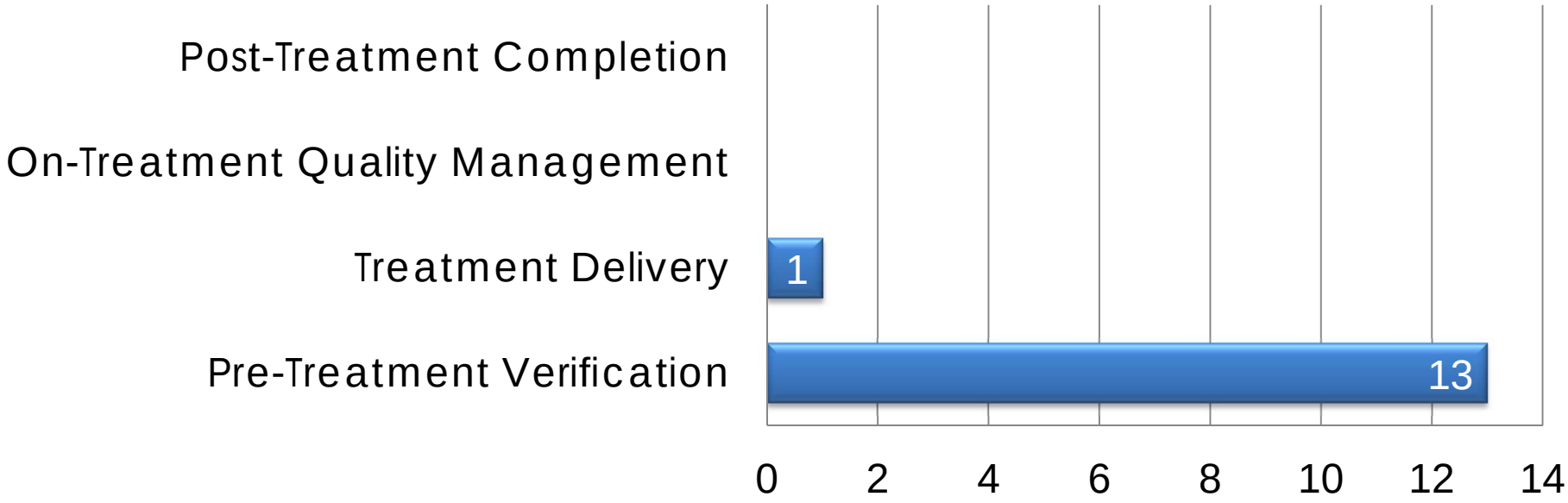
RIRAS Status Report
Reporting Trends

Number of Events Originating at Treatment Planning Process Step



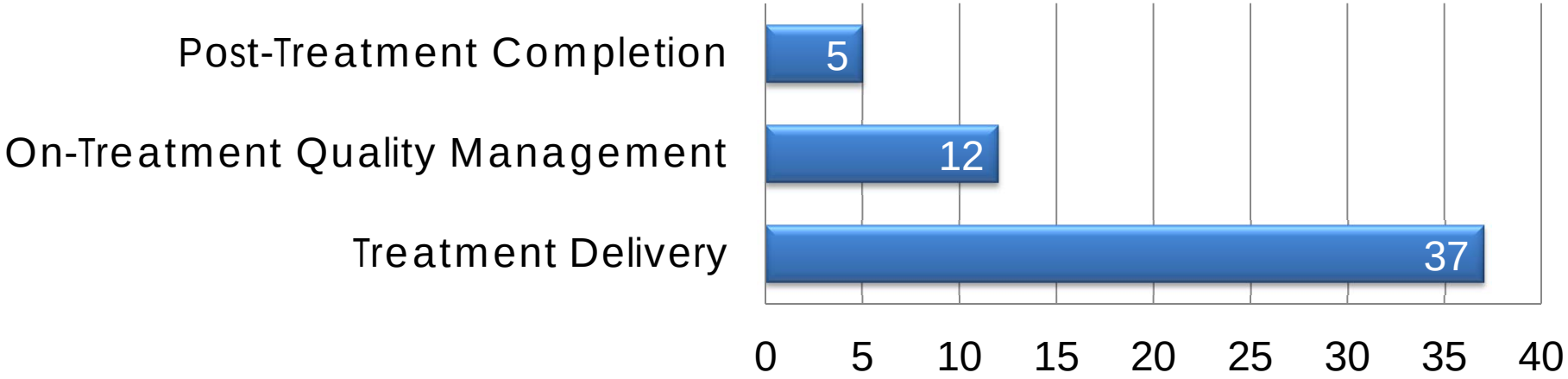
RIRAS Status Report
Reporting Trends

Number of Events Originating at Pre-Treatment Verification Process Step



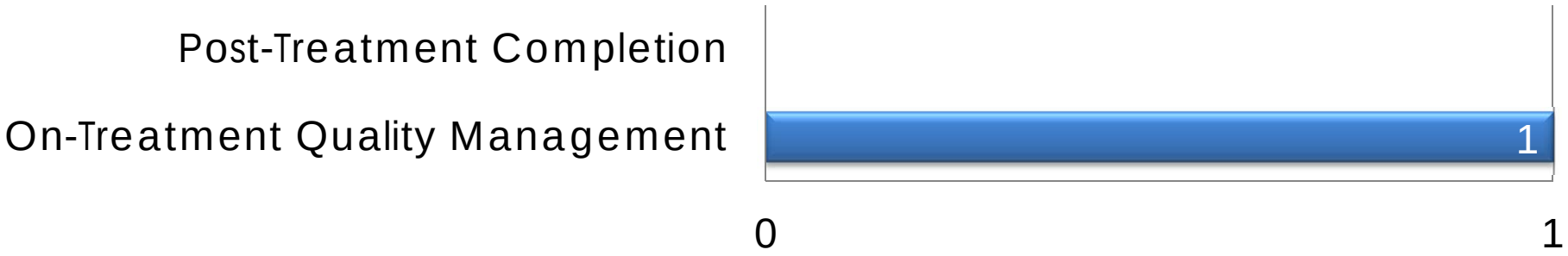
RIRAS Status Report
Reporting Trends

Number of Events Originating at Treatment Delivery Process Step

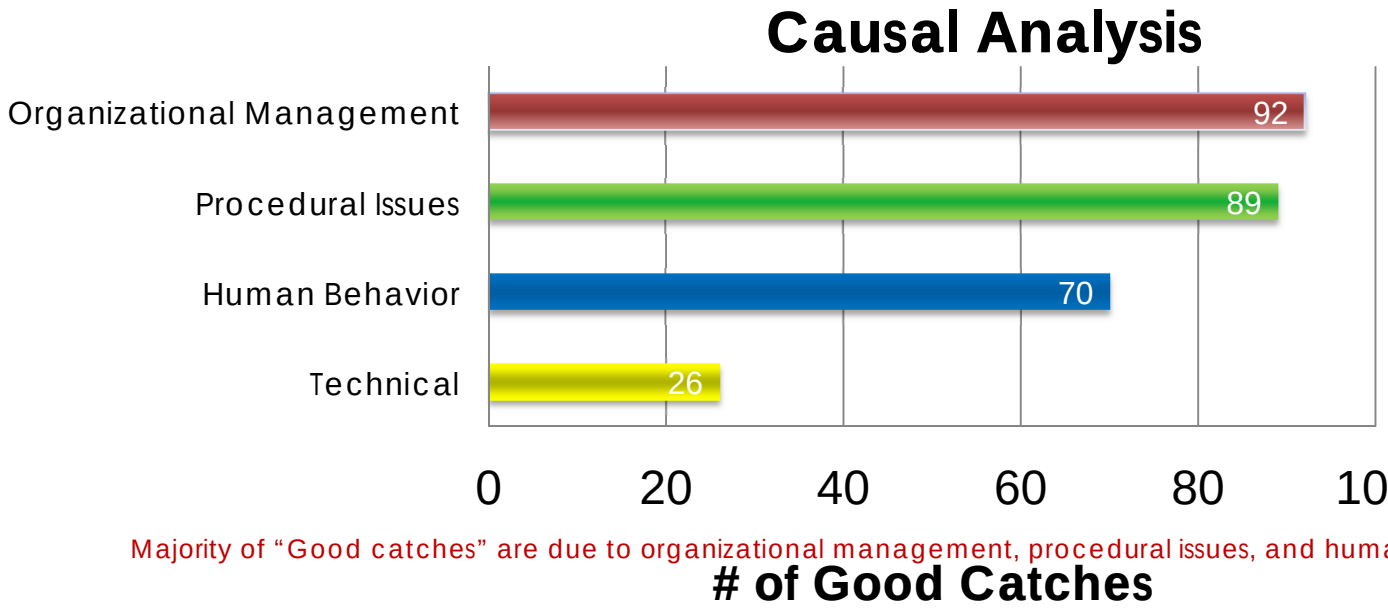


RIRAS Status Report
Reporting Trends

Number of Events Originating at On-Treatment Quality Management Process Step



RIRAS Status Report
"Good Catches" Analysis
5/11/2014 – Present (Analysis Total: 277)



- **Policy & Procedures**
  - Nonexistent
  - Inadequate
  - Not followed
- **Procedural Issues**
  - Distraction
  - Loss of attention
  - Poor documentation
- **Human Behavior**
  - Poor judgement
  - Lack of vigilance
- **Technical**
  - Software operation failure
  - IT issue

Majority of "Good catches" are due to organizational management, procedural issues, and human factors.

Observations

- The importance of checklists to make sure all the "i_s" are dotted and "t_s" are crossed
- Inconsistent patient setup instructions/documentation
- Nonadherence to policies and procedures
- Lax "time out" policies
- Distracted RTTs at the treatment console
  - Lack of "sterile cockpit" environment
- Poor communication between team members
- Inadequate RTT staffing for patient setup and delivery

Summary

- Incident reporting and learning system is a great tool for enhancing the quality and safety in radiation oncology
- The quality of learning is substantially improved with a thorough analysis of each reported incident
  - Errors in radiation oncology are multifactorial in origin
  - may be attributable to any member of the radiation oncology team.
-