

TreatSafely



Minimizing Error

Maximizing Quality

INCIDENT LEARNING SYSTEMS

Background and strategies for successful implementation

Objectives

2

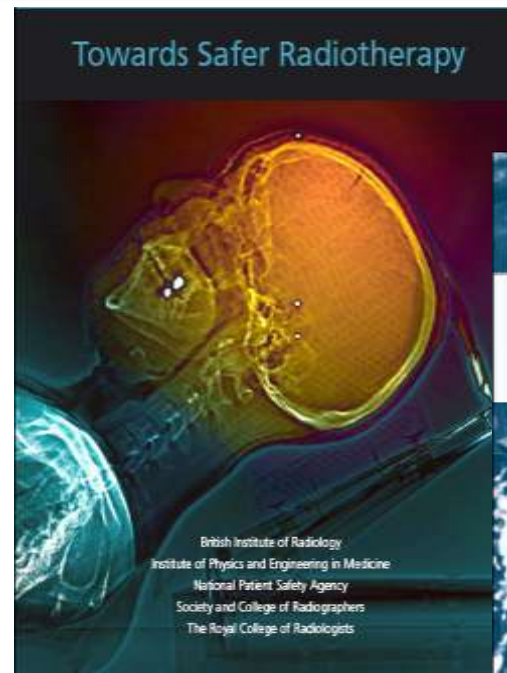
- ❑ To discuss the role of incident learning
- ❑ To discuss cultural challenges for implementing effective incident learning
- ❑ To describe the process for creating better/safer clinical operations from incident reports

Background – Global Problem

3

- “...it calls into question the integrity of hospital systems and their ability to pick up errors and the capability to make sustainable changes.”

Sir Liam Donaldson, Chief Medical Officer, Department of Health



Towards Safer Radiotherapy.
London: The Royal College of Radiologists, 2008.



Radiotherapy Risk Profile,
Geneva: World Health Organization, 2009.



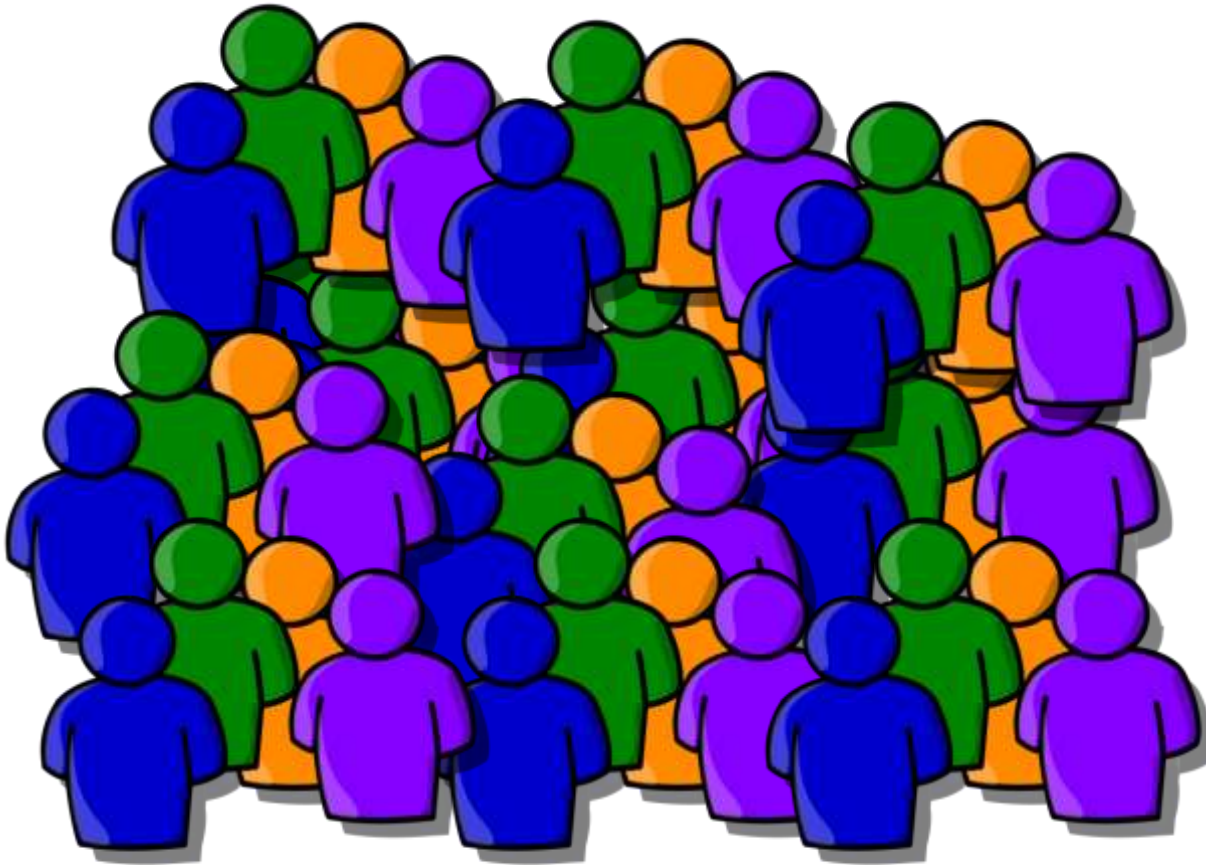
Benefit to every size facility?



Single Machine Facility

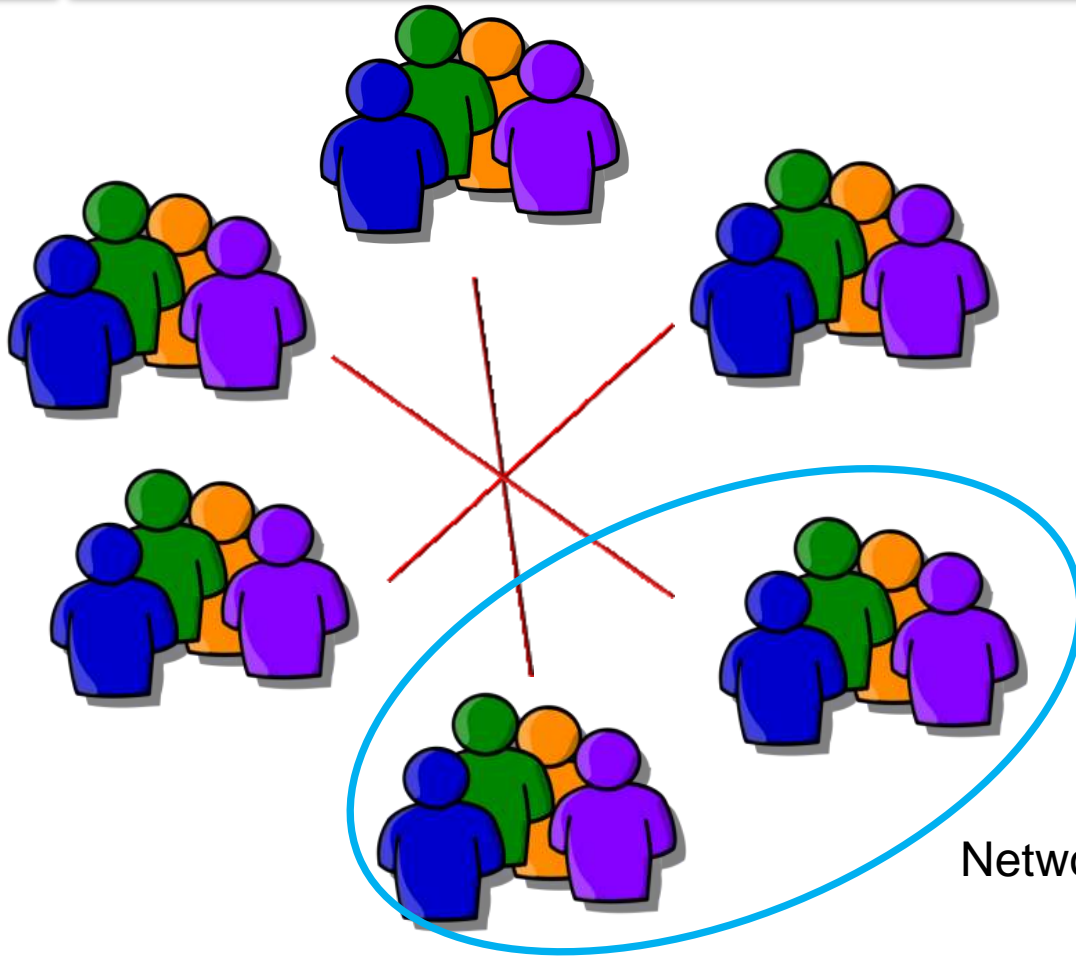
- ❑ Relatively good communications
- ❑ Streamlined processes
- ❑ Great collective memory
- ❑ Perhaps a limited benefit

Benefit to every size facility?



- ❑ Non-uniform communications
- ❑ Complex processes
- ❑ Pockets of reliable memory
- ❑ Potentially significant benefits

Benefit to every size facility?



- ❑ Still silos
- ❑ Non-uniform processes
- ❑ Unawareness
- ❑ Potentially significant benefits

Networks

Error Spectrum – Publicized

- ❑ One side of the spectrum
 - ❑ Usually large dosimetric errors
 - NY Times Articles
-

Error Spectrum – Semi-Publicized

□ RPC Data

- ~30% of participating institutions fail to deliver the planned IMRT dose
 - To an anthropomorphic phantom
 - 7% or 4mm
 - IJROBP. 2008;71(1 Suppl):S71-5)

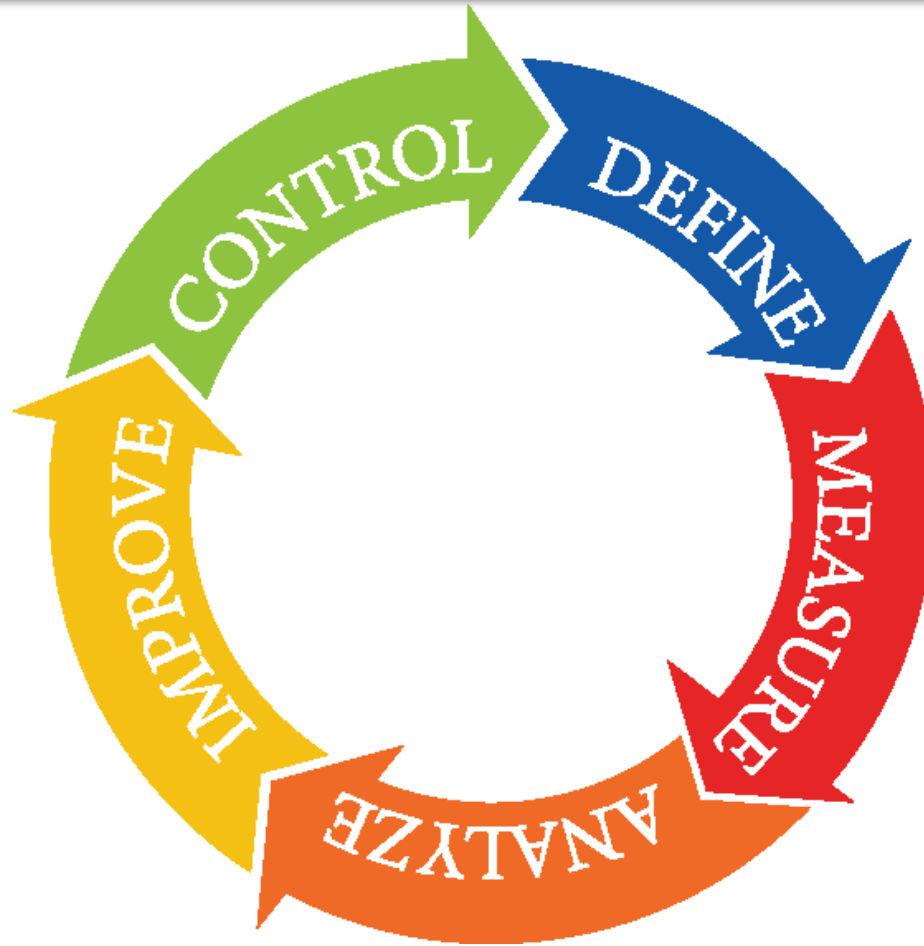
Error Spectrum – Unpublicized

- Everyday occurrences
 - “Small” dosimetric errors and geographic misses
 - Suboptimal treatment plans
 - Contouring and dose distributions
 - Care coordination issues
 - Unnecessary treatment delays
-

Event Reporting

- ❑ Not airline industry nor nuclear power
 - ❑ Perfection in complex systems across hundreds of diverse clinics is impossible
 - ❑ Reporting for the sake of reporting alone squanders resources and demoralizes staff
 - ❑ Event reporting as a part of broader process improvement efforts can be very valuable
-

DMAIC Cycle – Continuous Improvement



Opportunities

- ❑ Better insight into processes
 - ❑ Education – “I did not know that!”
 - ❑ Resource and effort allocation – hot to utilize care paths
 - ❑ Overall quality improvement
 - Definition of quality?
 - Safe treatments, minimal variations, benchmarking
 - Positive patient/employee experience
-

What to Report or Track

- ❑ Explicit events – frequent events
- ❑ Random events
- ❑ Actual errors
- ❑ Potential errors (near misses)
- ❑ Corrective measures



Errors and Near Misses

□ Error

- “The failure of planned action to be completed as intended (i.e., error of execution) or the use of a wrong plan to achieve an aim (i.e., error of planning).”

Institute of Medicine. To Err is Human: Building a Safer Health System, 2000.



Errors and Near Misses

- ❑ Near Misses
 - Near Hits
 - Free Lessons
 - Close Calls
 - Near Collisions



Small to Sentinel Events

- “...single events are rare...people must wait until some crisis actually occurs before they can diagnose a problem, rather than be in a position to detect a potential problem before it emerges.”

K.E. Weick, “The vulnerable system: an analysis of the Tenerife air disaster” in P.J. Forst et al Reframing Organizational Culture



Error Process

- ❑ Errors are product of a chain of causes



Explicit Events

- ❑ These are potentially low severity - high frequency events
 - Missing patient weight, Incomplete prescription, Incomplete simulation order, Missing weekly SSDs, etc.
- ❑ All solvable with better clinical organization and checklists
- ❑ Need to know what and where to implement and if it is working

Incident Reporting

- Mandatory (statutory) – Not addressed here
 - Reporting required by law
 - NRC in U.S.
 - State requirements
 - Mainly concentrated on well defined treatment delivery errors
 - Guidelines for near-miss reporting typically not provided
-

Incident Reporting

- Voluntary – This is what we are discussing
 - Mainly at institutional level
 - Some states in the U.S. have voluntary reporting systems – utility for radiation therapy not clear
 - Errors and near misses tracked
-

Voluntary Reporting

- Depends on many factors
 - Culture
 - Reporting system and guidelines
 - Competence to interpret reported data
 - Willingness to implement
 - Changes based on collected data and analyses
 - Ability to share data and provide feedback
-

Organizational Culture

- “Shared values (what is important) and beliefs (how things work) ... produce behavioral norms...”

Uttal, B., Fortune. 17 October 1983

- Safety culture
 - Reporting culture
 - Just culture
-

Organizational Culture

Pathological Culture	Bureaucratic Culture	Generative Culture
Do not want to know	May not find out	Actively seek it
Messengers (whistle blowers) are "shot"	Messengers are listened to if they arrive	Messengers are trained and rewarded
Responsibility is shirked	Responsibility is compartmentalized	Responsibility is shared
Failure is punished or concealed	Failures lead to local repairs	Failures lead to far reaching reforms
New ideas are actively discouraged	New ideas often present problems	New ideas are welcomed

Reporting Culture

- ❑ Indemnity against retribution
 - ❑ Confidentiality
 - ❑ Separate responsibilities
 - Collecting event data from those with the authority to impose disciplinary actions
 - ❑ An efficient method for event submission
 - ❑ Method for feedback to the reporting community
-

Just Culture

- Acceptable and unacceptable actions
 - Vast majority of errors due to factors and actions where attribution of blame is not appropriate
-

Just Culture

- ❑ Rare events are due to:
 - Recklessness
 - Negligent or malevolent behavior
 - ❑ The tendency is to attribute errors to acceptable actions
 - ❑ Impossible to give a blanket immunity
-

Lessons Learned

- ❑ Homegrown products should always have a name
- ❑ Brand new web-based system was named “Process Improvement Logs”
 - Staff quickly provided a nickname

“E-Snitch”

Deemphasize “Snitch” Part

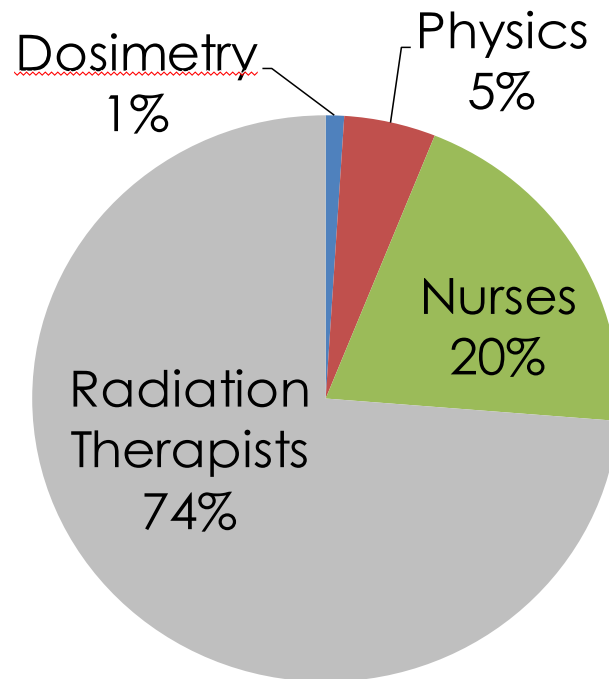
- ❑ Collect “Accolades” as well as Events
 - ❑ Publicize Accolades and Events together
 - ❑ Public statements:
 - “Individuals do not make errors – The organization is responsible for environment which allowed an error”
 - Always use “We” – no individuals or groups
-

Learning From Mistakes

- Radiation Oncology Reporting Survey
 - Multi-institutional,* IRB-approved
 - Surveymonkey[®], Anonymous, Dec-Jan 2011
 - Johns Hopkins
 - Washington University
 - University of Miami
 - North Shore-Long Island Jewish Hospital

Voluntary Reports: Dec-Jul, 2010

Attending physicians 0
Resident physicians 0



*Combined data from all four sites. Total number of reports = 916

Perceived Barriers to Reporting

	Get my colleagues in trouble	Admitting liability	Embarrass -ment	Affect reputation
Attending physician	41	41	49	35
Resident physician	54	42	58	44
Dosimetrist	7	28	14	29
Physicist	34	39	36	35
Nurse	40	20	32	24
Radiation therapist	47	18	25	25
	p=0.0089	p=0.0271	p=0.0019	p=0.0467

Missed Reporting Opportunities

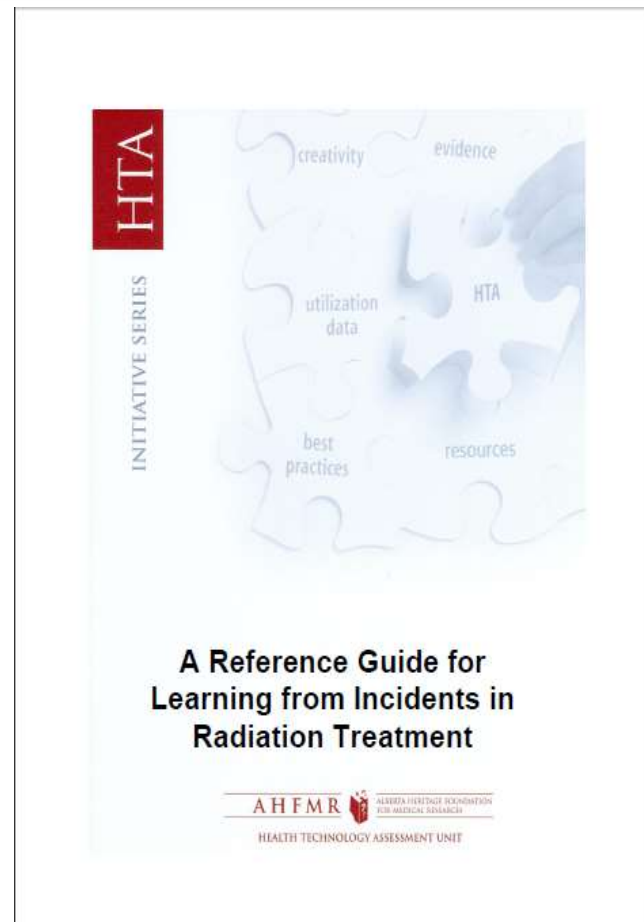
	Minor Near-miss	Minor Error	Major Near-miss	Major Error
Attending physician	67	49	16	8
Resident physician	41	18	9	5
Dosimetrist	40	28	10	4
Physicist	42	38	33	9
Nurse	29	24	8	2
Radiation therapist	25	9	13	0
	p=0.0019	p=0.0002	p=0.0147	p=0.1880

Reporting Systems

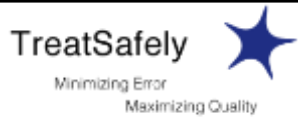
- ❑ Hospital - Electronic, not RT specific, difficult to collect feedback and near misses
 - ❑ Paper - RT specific, can be slow and tedious
 - ❑ Homegrown electronic solutions - Efficient but need resources for development
 - ❑ Combination of paper and electronic
-

Paper Based

Cooke, D.L., et al., *A Reference guide for learning from incidents in radiation treatment*, in *Initiative Series*. 2006, Alberta Heritage Foundation for Medical Research: Alberta, Canada.



Initial Reporter



EVENT REPORT

Event Date: _____ Event Report Date: _____

Patient Name: _____ Patient ID: _____ Other: _____

Reporting Person: _____ (optional)

Event Narrative:

I would like to receive feedback on this report.

Initial Analysis


- ❑ Location – process maps
- ❑ Severity – priority
- ❑ Factors – RCA
- ❑ Classification - DMAIC

To be completed by supervisor

Received by: A. Manager

Date received: 2005/06/02 time: 11:40am

Report Index: 1000000



TOM BAKER CANCER CENTRE
RADIATION THERAPY INCIDENT REPORT - SUPERVISOR

Incident Severity	Details of initial response																					
<p>Initial severity classification</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Potential</th> <th style="text-align: left;">Actual</th> <th style="text-align: left;">Severity</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Critical</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Major</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Serious</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/></td> <td>Minor</td> </tr> </tbody> </table> <p>Additional information needed:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	Potential	Actual	Severity	<input type="checkbox"/>	<input type="checkbox"/>	Critical	<input type="checkbox"/>	<input type="checkbox"/>	Major	<input type="checkbox"/>	<input type="checkbox"/>	Serious		<input checked="" type="checkbox"/>	Minor	<p><u>Radiation Oncologist notified and viewed EP. Identified area of MLC variation is small and thus no dose correction necessary.</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>						
Potential	Actual	Severity																				
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<input type="checkbox"/>	<input type="checkbox"/>	Major																				
<input type="checkbox"/>	<input type="checkbox"/>	Serious																				
	<input checked="" type="checkbox"/>	Minor																				
<p>Individuals Notified</p> <p>Name (Print): <u>Dr. B. Oncologist</u></p> <p>Date: 2005/06/02 time: 11:50</p> <p>Name (Print): <u>P. Dosimetryst</u></p> <p>Date: 2005/06/02 time: 12:05</p> <p>Name (Print): _____</p> <p>Date: YYYYMM.DD time: HH:MM</p> <p>Name (Print): _____</p> <p>Date: YYYYMM.DD time: HH:MM</p> <p>Name (Print): _____</p> <p>Date: YYYYMM.DD time: HH:MM</p> <p>Name (Print): _____</p> <p>Date: YYYYMM.DD time: HH:MM</p>	<p>Signature</p> <p>Name (print): <u>A. Manager</u></p> <p>Signature: <u>A. Manager</u></p> <p>Date: 2005/06/02 time: 12:05pm</p> <p><i>Note: if you are not a member of the Quality Assurance Committee, please submit this form immediately to one of the following:</i></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Phone</th> <th style="text-align: center;">Pager</th> </tr> </thead> <tbody> <tr> <td>RT Safety Officer</td> <td style="text-align: center;">12545</td> <td style="text-align: center;">8760</td> </tr> <tr> <td>Head, Medical Physics</td> <td style="text-align: center;">12545</td> <td style="text-align: center;">8760</td> </tr> <tr> <td>Electronics Dept</td> <td style="text-align: center;">12545</td> <td style="text-align: center;">8760</td> </tr> <tr> <td>Supervisor, Chemistry</td> <td style="text-align: center;">12545</td> <td style="text-align: center;">8760</td> </tr> <tr> <td>Supervisor, RT</td> <td style="text-align: center;">12545</td> <td style="text-align: center;">8760</td> </tr> <tr> <td>Supervisor, Mx/ang</td> <td style="text-align: center;">12545</td> <td style="text-align: center;">8760</td> </tr> </tbody> </table>		Phone	Pager	RT Safety Officer	12545	8760	Head, Medical Physics	12545	8760	Electronics Dept	12545	8760	Supervisor, Chemistry	12545	8760	Supervisor, RT	12545	8760	Supervisor, Mx/ang	12545	8760
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Final disposition

- ❑ Resolution \ corrective action
- ❑ Responsible person
- ❑ Implementation plan
- ❑ Evaluation plan
- ❑ Follow up plan


HTA Initiative #22 • January 2006 31

To be completed by Investigator

Received by: A.H. Bousquet

Date received: 2005/06/02 time: 0700

Report Index: 1000000

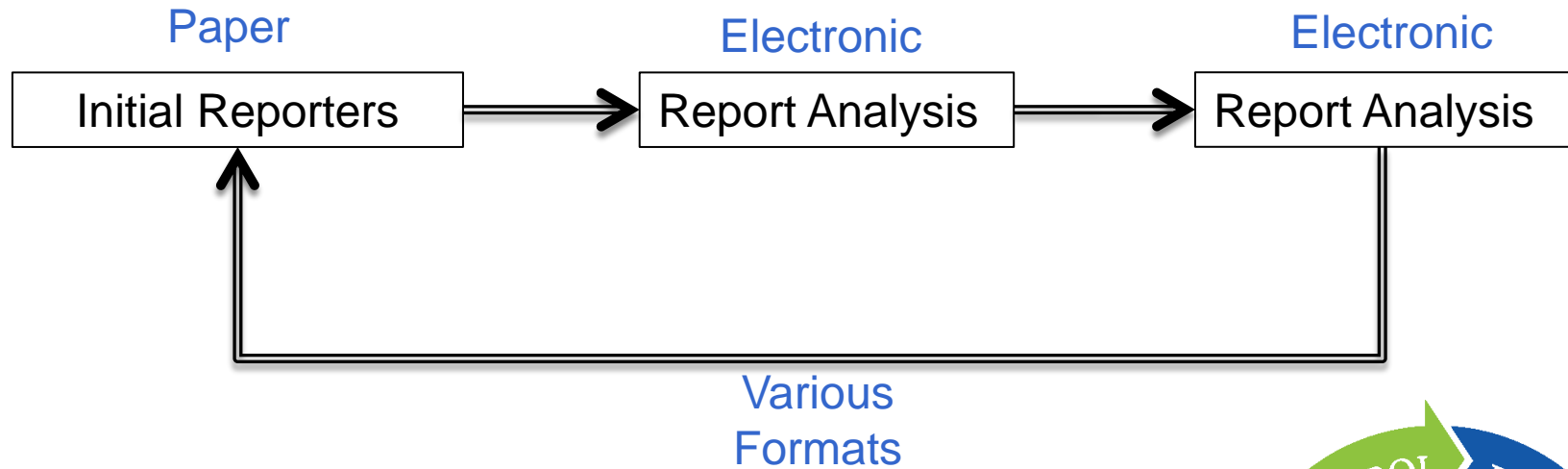


TOM BAKER CANCER CENTRE
RADIATION THERAPY INCIDENT REPORT - INVESTIGATION

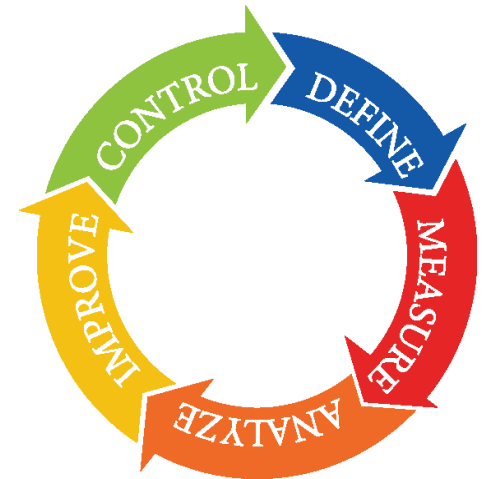
Incident: an unwanted or unexpected change from a normal system behavior, which causes, or has a potential to cause, an adverse effect to persons or equipment.

Administrative information			Incident Impact (Complete all that apply)	
Persons interviewed:			Patients:	
<small>Name</small>	<small>Date interviewed</small>		<small># patients affected:</small>	<u>1</u>
Floor Therapist	2005/06/02		<small># fractions per patient affected:</small>	<u>1</u>
Calc room Therapist	2005/06/02		<small># fields per fraction affected:</small>	<u>1</u>
	YYYY/MM/DD		<small>Deviation from prescribed dose:</small>	<u>nil/usual</u>
	YYYY/MM/DD		<small>Deviation from prescribed volume:</small>	<u>nil/usual</u>
	YYYY/MM/DD		<small>Dosimetrist/medical physicist who analyzed incident:</small>	
Verification of preliminary report information			<small>Name: <u>E. Bousquet</u> Date: <u>2005/06/02</u></small>	
<small>Please indicate by either agreement or a revised response for each element of the incident report.</small>				
<small>Info</small>	<small>Agreement</small>	<small>Revised Response</small>	<small>Signature: <u>E. Bousquet</u></small>	
Warrants incident report	✓		<small>Name: _____ Date: YYYY/MM/DD</small>	
Who	✓		<small>Signature: _____</small>	
What	✓		<small>Persons:</small>	
Where	✓		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> First Aid required <input type="checkbox"/> <input type="checkbox"/> Medical attention required <input type="checkbox"/> <input type="checkbox"/> Hospitalization required <input type="checkbox"/> <input type="checkbox"/> Ongoing treatment/therapy required <input type="checkbox"/> <input type="checkbox"/> (staff) days of work lost: _____ <input type="checkbox"/> <input type="checkbox"/> (patient) days of treatment lost: _____	
When	✓		<small>Resources:</small>	
Initial severity classification*	Minor		Total overtime hours (TBCC staff): _____ Total hours (outside service): _____ Replacement/repair costs: _____ Total hours for incident analysis: _____ Additional costs: _____	
<small>*If initial severity revised, list additional people notified.</small>			<small>Operations:</small>	
_____ _____ _____			Number of treatment units affected: _____ Number of patients affected: _____ Fractions lost per patient: _____ Fractions delayed by > 15 min: _____	
Related documentation				
<small>Additional reports attached:</small>				
_____ _____ _____				

ILS Process



- ❑ Explicit events
- ❑ Random events
- ❑ Corrective measures



Summary

- ❑ Operating an ILS requires institutional commitment
 - ❑ Need champions at all levels and groups
 - ❑ Must create a safety and reporting culture
 - ❑ Perfect compliance in a voluntary system is not necessary to be effective
-

Questions/Comments

