RITN® Overview

Nelson Chao, MD, MBA
Duke University
Acknowledgements

NMDP – Be The Match
  – Cullen Case
  – Dennis Confer
  – Dan Weisdorf

ASBMT
  – David Weinstock
  – Robert Krawicz

Norm Coleman
Agenda

• What is RITN?
• What is RITN preparing for?
• How RITN fits into the response
• Victim profile
• Is RITN ready?
• Organization structure
• Initiatives
• Resources
Who we are?
Who are RITN centers?

- RITN centers are hospitals that work with the National Marrow Donor Program to facilitate unrelated marrow transplants
- Preparing to receive casualties from a mass casualty Marrow Toxic Incident
- RITN centers may:
  - Accept patient transfers to their institutions
  - Provide intensive supportive care to victims
  - Provide treatment expertise to practitioners caring for victims at other locations
  - Travel to other centers to provide medical expertise
  - Provide data on victims treated at their centers
  - Facilitate marrow transplant for those who require it
Possible Incidents Involving RITN

- Focus of preparations: Any incident resulting in mass casualties with a marrow toxic injury
- Marrow is damaged by exposure to low levels of radiation
- Possible incidents:
  - Radiological - exposure to ionizing radiation
    - Improvised Nuclear Device (IND)
    - Nuclear power plant accident
    - Radiological exposure device (RED) a.k.a. open source
    - Radiological Dispersal Device (RDD) a.k.a. dirty bomb
      - Less likely to overwhelm existing response resources
    - Industrial accident
    - Military grade nuclear weapon
  - Chemical: Mustard agent
  - Unknown
Goals

1. To develop treatment guidelines for managing hematologic toxicity among victims of radiation exposure
2. To educate health care professionals about pertinent aspects of radiation exposure management
3. To help coordinate the medical response to radiation events
4. To provide comprehensive evaluation and treatment for victims at participating centers
It is not the Cold War..... It is not a futile effort!
If you see the flash, duck and cover!
How would RITN fit in?
Reality will probably not be this orderly
This model does not account for victims with trauma or no injuries.
Expected distribution of victims (in a nutshell)

- **Incident Location:** Victims triaged, decontaminated, then moved to RITN or other care facility through collaboration with HHS-ASPR.
- **Patients transported for intensive supportive care.**
- **RITN Centers** receive patients to allow hospitals in impacted area to focus on incident response.
RITN Casualties Will Take ~3-10 Days

**Day 1**
RITN Centers - review capabilities & prepare to receive casualties

**Day 3**
Earliest casualties arrive at RITN Centers near incident
Daily/Periodic CBCs

**Day 7**
Expected initial surge of casualties for RITN Centers
Patient collection and transport to FCCs

**Day 30**
Discharge and return to home region
Clinical management

Initiate G-CSF as soon as possible when indicated

Alert and Notification
Early Symptoms – e.g., nausea and vomiting
Only a small minority would benefit from intensive care or a transplant
Small Percent Will Require Transplant

Triage category affected by radiation dose and resource availability

RADIATION ONLY

<table>
<thead>
<tr>
<th>Radiation Dose* (Gy)</th>
<th>Resource availability:</th>
<th>Standard of care**:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10* Likely fatal (in higher range)</td>
<td>Normal</td>
<td>Conventional</td>
</tr>
<tr>
<td>6-10* Severe</td>
<td>Good</td>
<td>Contingency</td>
</tr>
<tr>
<td>&gt;2-6* Moderate</td>
<td>Fair</td>
<td>Crisis</td>
</tr>
<tr>
<td>&gt;0.5-&lt;2* Minimal</td>
<td>Poor</td>
<td>Crisis</td>
</tr>
<tr>
<td>&lt;0.5* Minimal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Expectant³ Immediate²
- Expectant³ Immediate² Delayed²
- Expectant³ Immediate³
- Minimal B³
- Minimal A³
- Minimal B³
- Minimal A³
- Minimal B³
- Minimal A³

*Radiation dose received by the whole body or a significant portion of the whole body.


### Combined Injury Significantly Worsens Outcomes

**Triage category for TRAUMA and COMBINED INJURY affected by injury severity, radiation dose and resource availability**

<table>
<thead>
<tr>
<th>Resource availability:</th>
<th>Normal</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard of care**:</td>
<td>Conventional</td>
<td>Contingency</td>
<td>Crisis</td>
<td>Crisis</td>
</tr>
</tbody>
</table>

**TRAUMA**

- Immediate
- Delayed

**Combined injury**

- Expectant

**Combined injury + Radiation**

- Expectant

Combined Injury:

- Immediate
- Delayed
- Expectant

**No longer likely a RITN patient candidate**

- >2 Gy**
- Moderate trauma* + radiation

**Combined Injury**

- Combined injury

**Combined Injury with Radiation**

- Expectant

**Combined Injury with Radiation**

- Combined injury

**Combined Injury with Radiation**

- Combined injury

**Combined Injury with Radiation**

- Combined injury

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RITN ARS Treatment Guidelines

- Follow standard approaches for patients with bone marrow toxicity from chemotherapy
- Based on severity of cytopenias and presence of complications (e.g. neutropenic fever)
  - Irradiated, leukoreduced transfusions
  - Antibiotics
  - IV fluid and other support
  - G-CSF
  - Hospitalization when indicated
  - Opportunity to apply new mitigation approaches
Biodosimetry of Casualties

• Daily CBCs at RITN centers to determine clinical need for treatment
• Biodosimetry using online algorithms (REMM)
  – Blood counts (before and after arrival at RITN centers)
  – Geographic dosimetry
  – Opportunity to apply new biodosimetry approaches
Is RITN ready?
**Radiation Casualty Estimates for an Improvised Nuclear Device**

<table>
<thead>
<tr>
<th>Radiation Dose (Gy)</th>
<th>Care Requirement</th>
<th>Mid Casualty Estimate (50&lt;sup&gt;th&lt;/sup&gt; %tile)</th>
<th>Moderately-High Casualty Estimate (85&lt;sup&gt;th&lt;/sup&gt; %tile)</th>
<th>High Casualty Estimate (95 %tile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild (0.75-1.5)</td>
<td>Outpatient monitoring</td>
<td>5,000</td>
<td>32,000</td>
<td>91,000</td>
</tr>
<tr>
<td>Moderate (1.5-5.3)</td>
<td>Supportive Care and possible inpatient admission</td>
<td>7,000</td>
<td>29,000</td>
<td>51,000</td>
</tr>
<tr>
<td>Severe (5.3-8.3)</td>
<td>Intensive Supportive Care (most possibly including HCT)</td>
<td>3,000</td>
<td>9,000</td>
<td>12,000</td>
</tr>
<tr>
<td>Expectant (&gt;8.3)</td>
<td>Comfort Care</td>
<td>10,000</td>
<td>28,000</td>
<td>47,000</td>
</tr>
<tr>
<td>Combined Injury and Radiation (&gt;1.5)</td>
<td>Stabilization and monitoring, pending resource availability</td>
<td>3,000</td>
<td>20,000</td>
<td>44,000</td>
</tr>
</tbody>
</table>

**Total Possible Estimate of Victims for RITN (Moderate + Severe categories)**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10,000</td>
<td>38,000</td>
<td>63,000</td>
</tr>
</tbody>
</table>

***Radiation doses are estimates based on clinical presentation and laboratory values.***

Table adapted from: Knebel AR, Coleman CN, Cliffer KD; et al. Allocation of scarce resources after a nuclear detonation: setting the context. Disaster Med Public Health Prep. 2011;5 (Suppl 1):S20-S31
## 2011 Capacity Survey

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Low Estimate</th>
<th>High Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How many patients could you receive in your existing BMT unit with no changes (e.g., no early discharges/transfers, no delayed admissions, no addition of beds, etc...)?</td>
<td>51</td>
<td>377</td>
</tr>
<tr>
<td>2</td>
<td>How many patients could you receive now in your existing BMT unit with modest changes (e.g., early discharges/transfers, a few delayed admissions, addition of beds from Hem/Onc service, etc...)?</td>
<td>259</td>
<td>1,014</td>
</tr>
<tr>
<td>3</td>
<td>How many patients could you receive now in your existing BMT unit with aggressive changes (e.g., aggressive discharges/transfers, many delayed admissions)?</td>
<td>456</td>
<td>1,528</td>
</tr>
<tr>
<td>4</td>
<td>How many patients could you receive now with spill-over into other areas of your hospital (Hem/Onc, med/surg, ICU), assuming no alterations in standards of care?</td>
<td>665</td>
<td>2,259</td>
</tr>
<tr>
<td>5</td>
<td>How many patients could you receive now in your existing BMT unit with aggressive changes and spill-over into other areas of your hospital (Hem/Onc, med/surg, ICU), assuming some alterations in standards of care?</td>
<td>1,098</td>
<td>3,134</td>
</tr>
<tr>
<td>6</td>
<td>How many patients could you receive now with the above and utilizing additional hospitals in your community?</td>
<td>2,862</td>
<td>8,365</td>
</tr>
<tr>
<td>7</td>
<td>How many patients could you receive now with the above and incorporating large austere emergency treatment facilities that have been previously planned for (e.g. pre-defined: dormitories, gymnasiums, domed stadiums, and assuming major alterations in standards of care)?</td>
<td>7,409</td>
<td>13,636</td>
</tr>
</tbody>
</table>
2011 Capacity Survey
Still have more work to do...

Radiation-only casualties requiring monitoring, supportive care and possible transplant (~38,000)

Current capacity of RITN (13,000)
To treat that many it would get this bad

Network Composition:
- 67 total centers
- 54 Transplant centers
- 6 Donor centers
- 7 Cord blood banks

As of March 13, 2013
# Radiation Injury Treatment Network

## Transplant Centers

<table>
<thead>
<tr>
<th>State</th>
<th>Hospital Name</th>
<th>Type</th>
<th>Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>University of Alabama at Birmingham</td>
<td>P/A</td>
<td>NDMS HPP OK</td>
</tr>
<tr>
<td>AZ</td>
<td>University Medical Center</td>
<td>P/A</td>
<td>NDMS HPP OR</td>
</tr>
<tr>
<td>CA</td>
<td>UCSF Medical Center</td>
<td>P/A</td>
<td>NDMS HPP PA</td>
</tr>
<tr>
<td>CA</td>
<td>City of Hope National Medical Center</td>
<td>P/A</td>
<td>NDMS HPP PA</td>
</tr>
<tr>
<td>CA</td>
<td>Stanford Hospital and Clinics</td>
<td>P/A</td>
<td>NDMS HPP PA</td>
</tr>
<tr>
<td>CO</td>
<td>Presbyterian/St. Luke's Medical Center</td>
<td>P/A</td>
<td>NDMS HPP PA</td>
</tr>
<tr>
<td>FL</td>
<td>All Children's Hospital</td>
<td>Ped</td>
<td>NDMS HPP PA</td>
</tr>
<tr>
<td>FL</td>
<td>H. Lee Moffitt Cancer Center</td>
<td>P/A</td>
<td>NDMS HPP RI</td>
</tr>
<tr>
<td>FL</td>
<td>Shands Hospital at the University of Florida</td>
<td>P/A</td>
<td>NDMS HPP SC</td>
</tr>
<tr>
<td>FL</td>
<td>University of Miami</td>
<td>P/A</td>
<td>NDMS HPP SD</td>
</tr>
<tr>
<td>GA</td>
<td>Northside Hospital</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>IA</td>
<td>University of Iowa Hospitals and Clinics</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>IL</td>
<td>Rush University Medical Center</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>IN</td>
<td>St. Francis Hospital and Health Centers</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>KS</td>
<td>University of Kansas Medical Center</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>MA</td>
<td>Children's Hospital of Boston</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>MA</td>
<td>Dana Farber/Partners Cancer Care</td>
<td>P/A</td>
<td>NDMS HPP WV</td>
</tr>
<tr>
<td>MA</td>
<td>Massachusetts General Hospital</td>
<td>P/A</td>
<td>NDMS HPP WV</td>
</tr>
<tr>
<td>MI</td>
<td>Barbara Ann Karmanos Cancer Center</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>MN</td>
<td>Mayo Clinic Rochester</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>MN</td>
<td>University of Minnesota BMT Program</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>MO</td>
<td>Barnes-Jewish Hospital at Washington</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>MO</td>
<td>The Children's Mercy Hospital</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>MS</td>
<td>University of Mississippi Medical Center</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>NC</td>
<td>UNC Hospitals</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>NC</td>
<td>Wake Forest Univ Baptist Medical Center</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>NC</td>
<td>Duke University Medical Center</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>NH</td>
<td>Dartmouth-Hitchcock Medical Center</td>
<td>P/A</td>
<td>NDMS HPP WX</td>
</tr>
<tr>
<td>NY</td>
<td>Strong Memorial Hospital</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>NY</td>
<td>Memorial Sloan-Kettering Cancer Center</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>NY</td>
<td>Mount Sinai Hospital</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>NY</td>
<td>Westchester Medical Center</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>OH</td>
<td>Cincinnati Children's Hospital Medical Center</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>OH</td>
<td>Cleveland Clinic Foundation</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
<tr>
<td>OH</td>
<td>University Hospitals of Case Medical Center</td>
<td>P/A</td>
<td>NDMS HPP TX</td>
</tr>
</tbody>
</table>

**Ped** = Pediatric patient only facility  
**P/A** = Pediatric and adult capable facility  
**NDMS** = National Disaster Medical System Center  
**HPP** = Hospital Preparedness Program  
If no capability is annotated the facility is adult only

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**Donor Centers**

<table>
<thead>
<tr>
<th>State</th>
<th>Hospital Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>City of Hope National Medical Center</td>
</tr>
<tr>
<td>AZ</td>
<td>Colorado Marrow Donor Program</td>
</tr>
<tr>
<td>CA</td>
<td>MD - C.W. Bill Young Marrow Donor Center</td>
</tr>
<tr>
<td>DC</td>
<td>NMID operated donor center</td>
</tr>
<tr>
<td>MO</td>
<td>TN - Blood Assurance</td>
</tr>
<tr>
<td>NY</td>
<td>WA - Puget Sound Blood Center</td>
</tr>
</tbody>
</table>

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**Cord Blood Banks**

<table>
<thead>
<tr>
<th>State</th>
<th>Hospital Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>StemCyte International Cord Blood Center</td>
</tr>
<tr>
<td>CO</td>
<td>University of Colorado</td>
</tr>
<tr>
<td>IL</td>
<td>ITxM Cord Blood Services</td>
</tr>
<tr>
<td>MO</td>
<td>St. Louis Cord Blood Bank</td>
</tr>
<tr>
<td>NC</td>
<td>Carolinas Cord Blood Bank</td>
</tr>
<tr>
<td>TX</td>
<td>MD Anderson</td>
</tr>
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**Permissions**

<table>
<thead>
<tr>
<th>TC</th>
<th>DC</th>
<th>CBB</th>
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</thead>
<tbody>
<tr>
<td>55</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

As of 03 Mar 2014

- Total NDMS Centers | 43 | 78%
- Total HPP Centers | 42 | 76%
- Total Pediatric or Ped/Adult | 31 | 56%

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**Note:** Please report any corrections to this document to RITN@ndmp.org

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03/03/2014
Center Locations

RITN Center Locations*
- Donor Centers
- Transplant Centers
- Cord Blood Centers

March 2014
* Multiple centers of a single type located within close geographic proximity are represented by a single symbol.
Preparedness Initiatives
Preparedness Efforts

- Standard Operating Procedures
- Standardized admission and treatment orders
- Standardized data collection protocol
- Training/education:
  - Over 2,300 RITN staff completed Basic Radiation Training since 2006
  - 110 staff have attended REAC/TS training since 2008
- Contracted HLA typing laboratories 6,000 – 10,000 per week during an emergency
- Internet based unrelated donor and cord blood unit searching
Preparedness Efforts

• Readiness exercises/events
  – Annual RITN directed tabletop exercise
  – Top Officials IV (TOPOFF) (2007) - DHS
  – Pinnacle 07 (2007) – DHHS-ASPR
  – ConvEX 2008 – IAEA
  – National Level Exercise 2010 (NLE 2010)

• Emergency communications equipment
  – Government Emergency Telecommunication Service (GETS) calling cards
  – Satellite telephones
RITN Preparedness Efforts

RITN Exercises by Year
Grand Total = 505

<table>
<thead>
<tr>
<th>Year</th>
<th>Fullscale</th>
<th>Tabletop</th>
<th>Regional Tabletop</th>
<th>Web-based Tabletop</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>1</td>
<td>11</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>2007</td>
<td>1</td>
<td>52</td>
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<td>34</td>
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<tr>
<td>2008</td>
<td>1</td>
<td>50</td>
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</tr>
<tr>
<td>2009</td>
<td>60</td>
<td>48</td>
<td>47</td>
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</tr>
<tr>
<td>2010</td>
<td>47</td>
<td>47</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>47</td>
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<tr>
<td>2012</td>
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<td>2013</td>
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<tr>
<td>2014</td>
<td>22</td>
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<tr>
<td>2015</td>
<td>9</td>
<td>9</td>
<td>55</td>
<td></td>
</tr>
</tbody>
</table>
RITN Preparedness Efforts

RITN Site Preparedness Assessments
Grand Total = 33

- 2011: 11
- 2012: 1
- 2013: 6
- 2014: 9
- 2015: 6
# RITN Preparedness Efforts

## RITN Training & Education

<table>
<thead>
<tr>
<th>Year</th>
<th>Other RITN Web Courses</th>
<th>REAC/TS</th>
<th>Grandrounds</th>
<th>Basic Rad Tng</th>
<th>Outreach Presentation</th>
<th>Biennial Conference</th>
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<tbody>
<tr>
<td>2006</td>
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<tr>
<td>2008</td>
<td>38</td>
<td>26</td>
<td>677</td>
<td>30</td>
<td>895</td>
<td>149</td>
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<tr>
<td>2009</td>
<td>46</td>
<td>45</td>
<td>763</td>
<td>320</td>
<td>320</td>
<td>92</td>
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<tr>
<td>2010</td>
<td>45</td>
<td>26</td>
<td>460</td>
<td>301</td>
<td>112</td>
<td>125</td>
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<tr>
<td>2011</td>
<td>26</td>
<td>84</td>
<td>314</td>
<td>322</td>
<td>394</td>
<td>175</td>
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<tr>
<td>2012</td>
<td>192</td>
<td>120</td>
<td>203</td>
<td>744</td>
<td>389</td>
<td>150</td>
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<tr>
<td>2013</td>
<td>267</td>
<td></td>
<td>259</td>
<td>242</td>
<td>498</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>71</td>
<td></td>
<td>208</td>
<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grand Total = 12,665
Training on RITN.net - FREE

- Web based training
  - Intro to RITN
  - Basic Radiation Training
  - RITN Concept of Operations
  - Radiation Safety Communication
  - GETS Card 101
  - Satellite Telephone 101
  - Non-Medical Radiation Awareness Training (ESL)

- Medical Grand Rounds training
Training: Medical Grand Rounds on RITN.net

Medical Response to Radiation Exposure: the Role of Hematologists

Agenda

- Radiation Injury Treatment Network
- Radiological Event Scenarios
- Radiation Biology
- Dosimetry
- Acute Radiation Syndrome
- Mitigation and Treatment
- Available resources
Treatment Guidelines on RITN.net

Contents

- Principles of ARS management at RITN center
- Altered standards after a nuclear detonation
- Acute Radiation Syndrome
- Victim triage after a nuclear detonation
- ARS management
- Stem cell support: when to HLA type casualties

Decision to perform HLA typing

Factors favoring HLA typing:
- Estimated whole body dose > 3 Gy
- Neutrophil count < 100/µl by day 6 (see slide 26)
- Rapid drop of platelets (see slide 27)
- Expected to survive other injuries

Expedited HLA typing will be available using buccal swab, with high resolution DNA typing of HLA-A, -B, -C, -DRB1, and -DQB1

*Guidance for obtaining HLA-typing can be obtained by contacting the NMDP or the closest RITN center:
  - NMDP HLA-typing guidance: 1 (800) MARROW2 or (612) 637-5800
  - For an updated map and list of RITN centers: [http://www.ritn.net/About/](http://www.ritn.net/About/)
  - RITN Participating Centers General Contact Directory: [http://www.ritn.net/Contact/](http://www.ritn.net/Contact/)

Decision to recruit a donor for evaluation

Factors favoring recruitment of a donor:
- Bone marrow is aplastic at 2 sites >14 days after exposure
- Neutrophil count < 100/µl after 5 days of myeloid cytokine therapy
- Expected to survive other injuries
- Suitable donor is available:
  - 8/8 match (HLA-A, B-C, DRB1) for bone marrow or PBSCs
  - 4/6 matched umbilical cord blood of adequate cell number
  - Haploidentical or mismatched T-cell depleted transplant would be an alternative if available

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RITN®
Radiation Injury Treatment Network
Acute Radiation Syndrome Treatment Guidelines

Please forward comments or suggestions to RITN@nmdp.org

October 2013

www.RITN.net
# Prototype for Adult and Pediatric Medical Orders During a Radiation Incident

**Version 7/26/2013**

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## 1. Administrative information

- **Name:**
- **Unique Identifier:**
- **Address:**
- **Phone:**
- **Spoken language:**
- **Unaccompanied minor:**
- **Next of kin contact information:**
- **Special needs:**

## 2. Admit to:

- __Hospital ward__
- __Area__
- __Team__
- __ICU__
- __Physician__
- __Other__

## 3. Diagnoses

**Acute Non-radiation Related Admission Diagnoses:**

- a.
- b.
- c.
- d.
Referral Guidelines on RITN.net

Guidelines for Identifying Radiation Injury and Considering Transfer to a Specialized Facility

**Purpose:** to provide hospitals with a concise guide for identifying casualties in the aftermath of a radiation incident who may have received a clinically significant dose of radiation.

**Regional RITN hospital contact information for specialized consultation:**

- Hospital Name:
- Department:
- Phone:
- E-mail:

**Overview:** Ionizing radiation affects the hematopoietic system even at very low doses; hematology and oncology medical staff treat these effects daily. Irradiated patients may develop severe organ dysfunction over time and require intense and specialized management.

**For extensive information on the acute radiation syndrome** (hematologic, gastrointestinal, cutaneous, central nervous system), types of radiation incidents, and radiation decontamination, see: [www.remm.nlm.gov](http://www.remm.nlm.gov) (Radiation Emergency Medical Management (REMM) website)

**CONSULTATION/REFERRAL CRITERIA:** Any patient suspected of having a radiation injury can be discussed with your local RITN center. The ability to accept referrals will depend on the size of the incident and the capacity of regional RITN center(s).

- **Criteria for considering RITN center consultation/referral include:**
  - i. Absolute neutrophil count less than 1,000/µL
  - ii. Absolute lymphocyte count less than 1,000/µL
  - iii. Severe nausea, vomiting and/or anorexia
  - iv. A localized cutaneous radiation injury that requires extensive management
  - v. Suspected or known internal contamination (e.g. involving a wound, the lung or GI tract)
  - vi. Current facility not equipped to provide irradiated, leukoreduced blood products

- **Manage comorbidities and possible seqelae of irradiation:**
  - i. See [www.ritn.net/Treatment/](http://www.ritn.net/Treatment/) for acute radiation syndrome treatment guidelines:
    - 1. Transfuse only irradiated and leukocyte-depleted blood products
Exercise Materials on RITN.net

- Tabletop SITMANs (9 years of exercises and results)
- Regional Tabletop and Full scale exercise materials
- Data from exercises
- AARs
Tabletop Exercise Data on RITN.net

2009 RITN Tabletop Exercise Results (partial)

- How many people participated in your exercise?

2009 RITN Tabletop Exercise Results (partial)

- Does your transplant center have a written plan to implement altered standards of care?

Yes: 20 (53%)
No: 18 (47%)

Identify all members of your incident response team (select all that apply):

- Medical Directors
- Additional Physicians
- Primary Coordinator
- RITN POCs
- Nurse Leaders
- Admin Processing Reps
- Administrators/Hospital Executives
- Emergency Management Staff
- Pharmacy Staff Members
- Radiation Safety Officer/Health Physicists
- Social Services Reps
Ongoing Initiatives

• Funding to cover cost of treatment beyond 30 days
• Strengthen relationship with NDMS to facilitate transfer of casualties with ARS
  • Distribution to non–NDMS RITN centers
• Establish guidelines for management of pediatric casualties with ARS
• Support planning of outpatient and inpatient capabilities at non-RITN centers through referral guidance
• Education of non-physician hospital staff
What to Remember About RITN

- Not 1\textsuperscript{st} Responders or trauma care
  - Casualties with 2+ Gy of radiation exposure and trauma are expectant

- Preparing for a distant radiological incident
  - Expect patient surge 7-10 days after incident

- National Disaster Medical System will move casualties to hospitals for definitive care
  - NDMS coordinates reimbursement for care too
Resources
Fantastic Resources at a Price You Can’t Beat

FREE

Planning Guidance for Response to a Nuclear Detonation
Second Edition
June 2010
Developed by the National Security Staff
Interagency Policy Coordination Subcommittee
for Preparedness & Response to
Radiological and Nuclear Threats

Radiation Injury Treatment Network® (RITN)

Concept of Operations

The purpose of this document is to establish a uniform understanding among RITN center staff and non-medical RITN partners of the anticipated participation of RITN centers during a national disaster. The Concept of Operations describes the triage and flow of casualties from the initial catastrophic incident through the disaster aftermath to the treatment facility.

February 2012

http://www.dmphp.org/content/vol5/Supplement_1/index.dtl
http://www.ritn.net/About/
Treatment Guidelines & Crisis Assistance

www.RITN.net

www.REMM.NLM.gov

For decontamination help or crisis assistance call
REAC/TS: 865.576.1005 (24x7 - Ask for REAC/TS)
http://orise.orau.gov/reacts
Critical to Success

Partners

- Office of Naval Research
- U.S. Department of Health & Human Services, REMM
- World Health Organization
- ASBMT
- ASPR
- Reacts
- Astho
- NACCHO
- HRSA
- EBMT
- WBMT
- RadCCORE
- National Alliance for Radiation Readiness
- RITN
Partners

- American Society for Blood and Marrow Transplantation
- Department of Defense - Office of Naval Research
- Health Resources and Services Administration
- Center for International Blood and Marrow Transplant Research
- Radiation Emergency Assistance Center/Training Site
- Dept. Health & Human Services - Asst. Secretary for Preparedness and Response
- AABB Disasters Task Force
- New England Center for Emergency Preparedness
- World Health Organization – Radiation Emergency Medical Preparation and Assistance Network
- European Group for Blood and Marrow Transplantation-Nuclear Accident Committee
- Leading hematopoietic stem cell transplantation physicians