



-Fortuna Favet Paratis-

est. 2006

Radiation Injury Treatment Network - *2021 Year in Review*

Cullen Case Jr.

RITN Program Director

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www.RITN.net

January 4, 2022

Agenda

- Rad in the News
- 2021 Highlights
- 2022 Projects
- 2022 Tasks



North Korea—not to be outdone—appeared to have **restarted a nuclear reactor** in August. An International Atomic Energy Agency report called the development “deeply troubling,” for it suggests the country may be at work expanding its nuclear arsenal.

North Korea’s “tactical-guided” ballistic missile test is no joke for Biden and South Korea

By Duyeon Kim | April 1, 2021

The 2022 National Defense Authorization Act includes nearly \$28 billion for nuclear weapons activities. Of that total, \$2.6 billion will go to the Ground Based Strategic Deterrent program, a new generation of intercontinental ballistic missiles being developed for the Air Force by Northrop Grumman.

Before June ended, researchers had announced their discovery—via satellite images—of what appear to be **hundreds of new missile silos** in Central China. Ever since, nuclear experts have **speculated** on China’s motives, which may include assuring second-strike or escalation-management capabilities.



“Anti-5G” jewelry and sleep masks are radioactive

WRAL-TV

Traffic flowing on I-95 after containers of radioactive material dumped onto highway

A truck carrying a radioactive compound dumped part of its load Wednesday on southbound Interstate 95 in Cumberland County, creating a delicate cleanup and...

Mar 31, 2021



WBIR.com

No injuries or leaks after truck crash in N.C. while carrying radioactive materials

WADE, N.C. — A truck carrying a radioactive chemical was involved in a crash on I-95 South, near Wade, North Carolina, on Wednesday.

Mar 31, 2021



The Fayetteville Observer

Tractor-trailer hauling uranium involved in crash that shuts down I-95 south in Cumberland County

An accident involving a tractor trailer hauling hazardous material shut down travel between exits 55 and 61 on Interstate 95 near Fayetteville on Wednesday.

Mar 31, 2021



KSN-TV

Searchers find radiation pellet after accident in Barton County

GREAT BEND, Kan. (KSNW) — A truck drove over a device containing a radioactive pellet in Barton County Tuesday morning, setting off a chain reaction as more...



NH.K.JP

Fukushima town prepares for return of residents

Tuesday marked the first business day of 2022 in Japan. Officials in Fukushima Prefecture's Futaba Town are planning to welcome residents back later this...



The Star

Germany shuts three of its last six nuclear plants

Germany has pulled the plug on three of its last six nuclear power stations as it moves towards completing its withdrawal from nuclear power as it turns its...



Daily Mail

Chernobyl: UK scientists are fighting Ukraine over seizure of vodka made from 'radioactive' apples

British and Ukrainian scientists have gone to court to fight the seizure of of 1,500 special bottles of vodka made from 'radioactive' apples grown near...



Euronews

35 years since its nuclear disaster, Chernobyl prepares for tourist influx

In the 35 years since the nuclear disaster at Chernobyl, the nearby main thoroughfare in Prip'yat, Ukraine, has been taken over by plants, trees and wildlife...



Reuters

Japan's Tepco to build underwater tunnel for Fukushima water release

The operator of Japan's crippled Fukushima nuclear power plant intends to build an underwater tunnel to release water from the plant into the sea,...



Physics Today

Radiation incident at NIST reactor is linked to staff turnover

An agency report concludes that the February accident at the research reactor can be traced to mistakes made by NIST staff, which has suffered a loss of...



Salon.com

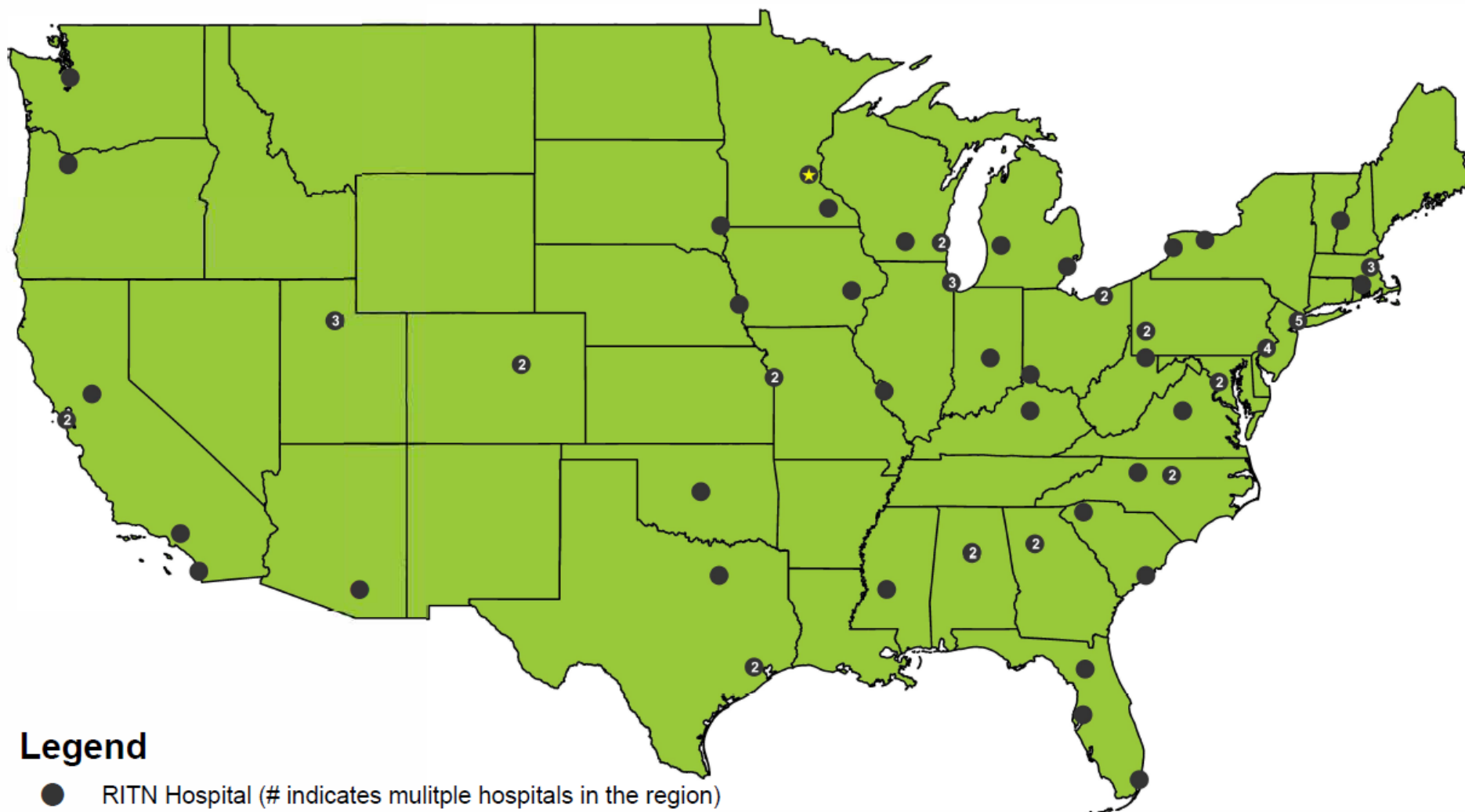
Chernobyl radiation surge "cause for concern," say scientists

Scientists monitoring the Chernobyl nuclear power plant in northern Ukraine are detecting increased fission reactions inside an inaccessible chamber built...





Map of Participating Hospitals



Legend

- RITN Hospital (# indicates multiple hospitals in the region)
- ★ RITN Control Cell

Radiation Injury Treatment Network

| Transplant Centers | | Adult / Pediatric | Trauma Center | Burn Center | NDMS Hospital | HPP Hospital | Transplant Centers (cont.) | | Adult / Pediatric | Trauma Center | Burn Center | NDMS Hospital | HPP Hospital | Transplant Centers (cont.) | | Adult / Pediatric | Trauma Center | Burn Center | NDMS Hospital | HPP Hospital |
|--------------------|---|-------------------|---------------|-------------|---------------|--------------|----------------------------|---|-------------------|---------------|-------------|---------------|--------------|----------------------------|---|-------------------|---------------|-------------|---------------|--------------|
| AL | Children's Hospital of Alabama | P | T1 | • | • | • | MA | Dana Farber/Partners Cancer Care | P/A | | | • | • | OH | University Hospitals Seidman Cancer Center | P/A | T1 | | • | • |
| AL | University of Alabama at Birmingham | P/A | T1 | • | • | • | MA | Massachusetts General Hospital | A | T1 | • | • | • | OK | Oklahoma Univ. Medical Center & Childrens Hosp. | P/A | T1 | | • | • |
| AZ | Banner University Medical Center | P/A | T1 | • | • | • | MD | University of Maryland | A | T1 | | • | • | OR | Oregon Health & Science University | P/A | T1 | | • | • |
| CA | City of Hope National Medical Center | P/A | | | • | • | MI | Barbara Ann Karmanos Cancer Center | A | | | • | • | PA | AHN Cancer Institute West Penn Hospital | A | | • | • | • |
| CA | Scripps Green Hospital | A | | | • | • | MI | Spectrum Health | P/A | T1 | • | • | • | PA | Children's Hospital of Philadelphia | P | T1 | | • | • |
| CA | Stanford Health Care | P | T1 | | • | • | MN | Mayo Clinic Rochester | P/A | T1 | | • | • | PA | Temple University | A | T1 | • | • | • |
| CA | UC Davis | A | T1 | • | • | • | MN | University of Minnesota BMT Program | P/A | T2 | | • | • | PA | Thomas Jefferson University Hospital | A | T1 | • | • | • |
| CA | UCSF Medical Center | P/A | | | • | • | MO | Barnes-Jewish Hospital at Washington | A | T1 | • | • | • | PA | University of Pennsylvania Medical Center | A | T1 | | • | • |
| CO | Presbyterian/St. Lukes Medical Center | A | T4 | | • | • | MO | The Children's Mercy Hospital | P | T1 | • | • | • | PA | UPMC | A | T1 | • | • | • |
| CO | University of Colorado (Aurora) | A | T1 | • | • | • | MS | University of Mississippi Medical Center | P/A | T1 | | • | • | RI | Roger Williams Medical Center | A | | | • | • |
| DC | Medstar Georgetown University Hospital | A | | | • | • | NC | Duke University Medical Center | P/A | T1 | | • | • | SC | Greenville Health System | A | T1 | | | • |
| FL | H. Lee Moffitt Cancer Center | P/A | | | • | • | NC | UNC Hospitals | P/A | T1 | • | • | • | SC | Medical University of South Carolina | P/A | T1 | • | | • |
| FL | Shands Hospital at the University of Florida | P/A | T1 | • | • | • | NC | Wake Forest Baptist Hospital | A | T1 | • | • | • | SD | Avera McKennan Transplant Institute | A | T2 | | | • |
| FL | U of Miami/Sylvester Comprehensive Cancer Ctr | A | | | • | • | NE | Nebraska Medicine | P/A | T1 | | • | • | TX | Baylor University Medical Center | A | T1 | | • | • |
| GA | Emory University | A | | | • | • | NH | Dartmouth-Hitchcock Medical Center | A | T1 | | • | • | TX | M.D. Anderson Cancer Center | P/A | | | • | • |
| GA | Northside Hospital | A | | | • | • | NY | Memorial Sloan-Kettering Cancer Center | P/A | | | • | • | TX | Texas Children's Hospital | P | T1 | | • | • |
| IA | University of Iowa Hospitals and Clinics | P/A | T1 | • | • | • | NY | Mount Sinai Hospital | P/A | T2 | | • | • | UT | LDS Hospital | A | | | • | • |
| IL | Northwestern Memorial Hospital | A | T1 | | • | • | NY | North Shore Medical Center | A | T1 | • | • | • | UT | Primary Children's Medical Center | P | T1 | | • | • |
| IL | Rush University Medical Center | A | | | • | • | NY | NYU Langone Health | A | | | • | • | UT | University of Utah | A | T1 | • | • | • |
| IL | University of Chicago | P/A | T1 | • | • | • | NY | Roswell Park Cancer Institute | P/A | | | | | VA | University of Virginia | A | T1 | | • | • |
| IN | Franciscan Hospital and Health Centers | A | | | • | • | NY | Strong Memorial Hospital | P/A | T1 | • | • | • | WA | Seattle Cancer Care Alliance | P/A | | | | |
| KS | University of Kansas Medical Center | A | T1 | • | • | • | NY | Westchester Medical Center | P/A | T1 | • | • | • | WI | Children's Hosp of WI & Midwest Children's CC | P | T1 | • | | • |
| KY | University of Kentucky | A | T1 | | • | • | OH | Cincinnati Children's Hospital Medical Center | P | T1 | | • | • | WI | Froedtert Memorial Lutheran Hospital | A | T1 | | | • |
| MA | Children's Hospital of Boston | P | T1 | | • | • | OH | Cleveland Clinic Foundation | P/A | | | • | • | WI | University Hospital (Madison) | P/A | T1 | • | | • |
| | | | | | | | | | | | | | | WV | West Virginia University Hospitals | A | T1 | | • | • |



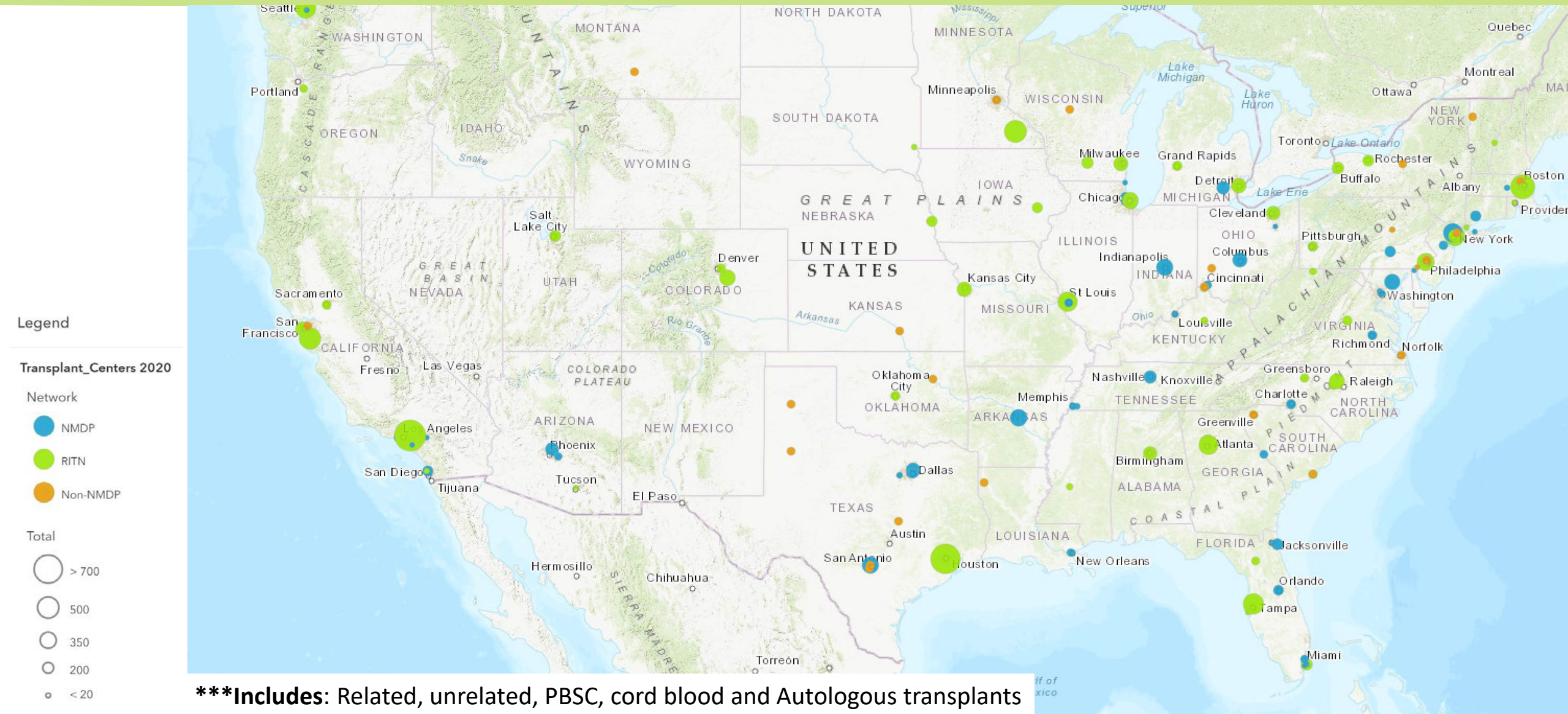
**please report any corrections to this document to RITN@nmdp.org

As of July 27 2021

P = Pediatric patient only facility
A = Adult capable facility
B = Burn center
T = Trauma capable facility (# denotes designation)

| | |
|------------------------------|--------|
| Total number of RITN centers | 73 |
| Total Pediatric or Ped/Adult | 38 52% |
| Total Trauma Centers | 52 71% |
| Total Burn Centers | 26 36% |
| Total NDMS Centers | 57 78% |
| Total HPP Centers | 66 90% |

12,617 Transplants Conducted in 2020 at NMDP Hospitals



***Includes: Related, unrelated, PBSC, cord blood and Autologous transplants

2021 Initiatives

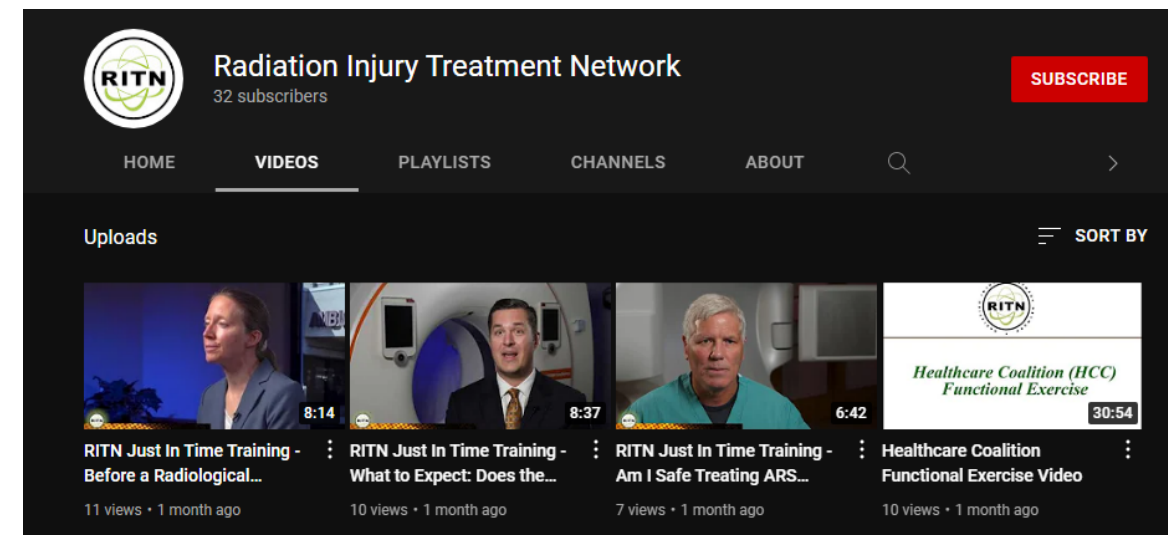
- **Growth**
- **Preparedness**
 - RITN annual tasks
- **Exercises**
 - Full scale, functional, regional tabletop and web based tabletop
- **Increase awareness**
 - Hospital coalition
 - Radiation training
- **Training**
 - Update JIT training into modules
 - Quarterly webinars
- **Special projects:**
 - CDC ARS morbidity tool
 - CDC lab assessment (Gryphon Scientific is lead)
 - NARR Cytokine Treatment
- **Collaboration**
 - With American Burn Association on combined practice guidelines

2021 Highlights

- Growth
 - No new hospitals have joined in two years
 - New fliers for conferences
 - Hosted a booth at the National Healthcare Coalition Preparedness Conference in Orlando (Dec 2021)
- Preparedness Resources
 - Cytokine triage guidelines
 - Functional exercise tool kit

2021 Highlights

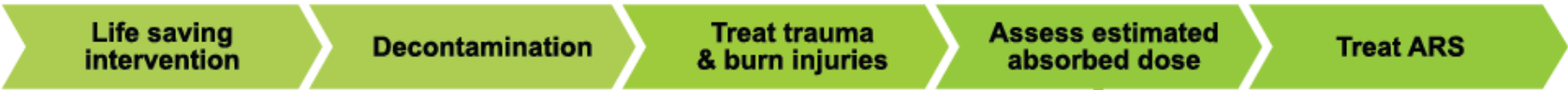
- Training & Education
 - Quarterly webinar series
 - JIT Training Modules: RITN YouTube Channel
- Increased Awareness & Partnerships
 - Continue to work with ABA on combined practice guidelines for burn/rad injuries
 - CDC Morbidity Toolkit project
 - DOD-ABA Combined Injury Workshop



Cytokine Triage Guidelines

Radiation Injury Treatment Network

CYTOKINE ADMINISTRATION TRIAGE GUIDELINES FOR ACUTE RADIATION SYNDROME (ADULT & PEDIATRIC)
For use in the immediate aftermath of a radiological disaster with mass casualties. These triage guidelines assume constrained resources.



| ASSESS ESTIMATED WHOLE BODY ABSORBED DOSE | | | | | | |
|--|--------------|-----------------|-------------------------|---------------------------------------|------------------------------------|---|
| Absolute Assessment of Lymphocyte Count x10 ⁹ cells/L | | | Assess Time to Vomiting | Est. Whole Body Rad Dose Range (Gray) | Treatment Category | Treatment Notes |
| Time since initial radiation exposure | | | | | | |
| 24 Hours | 96 Hours | 192 Hours | | | | |
| > 1.90 | > 0.89 | > 0.33 | > 5 hrs | < 2 | Release and monitor | |
| 1.48 - 1.90 | 0.33 - 0.89 | 0.044 - 0.33 | 1 – 2 hrs | 2 – 4 | Myeloid Cytokine & Supportive Care | Iterative Clinical & Lab Assessment |
| 1.15 – 1.48 | 0.12 - 0.33 | 0.006 - 0.044 | 2 – 5 hrs | 4 - 6 | | |
| 0.89 - 1.15 | 0.044 - 0.12 | < 0.001 - 0.006 | < 1 hrs | 6 – 8 | | Provide comfort care where feasible Re-evaluate based on available resources |
| < 0.89 | < 0.044 | < 0.0001 | < 1 hrs | 8+ | | |

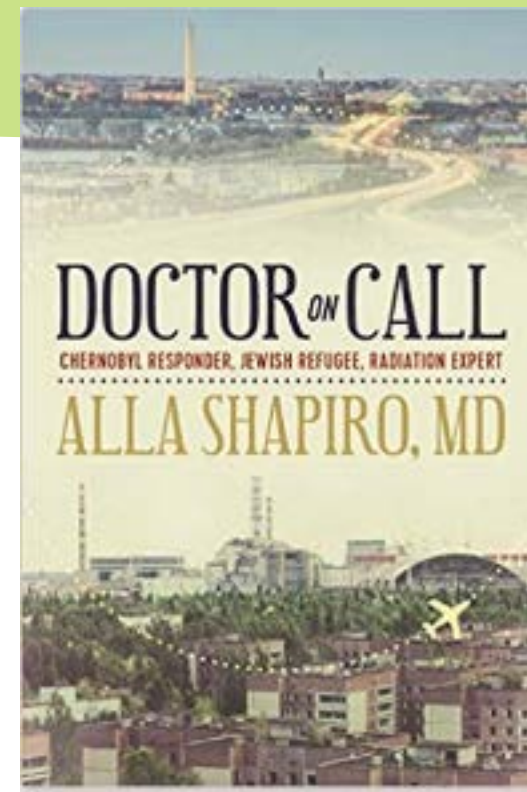
| CYTOKINE DOSING GUIDANCE | | | |
|----------------------------|--|---|---|
| normal supply availability | | | |
| | Neupogen (Filgrastim) | Neulasta (Pegfilgrastim) | Leukine (Sargramostim) |
| Adult | 10 mcg/kg/day subcutaneous | 6 mg subcutaneously (Two doses one week apart) | 7 mcg/kg subcutaneous |
| Pediatric | 10 mcg/kg/day subcutaneous | 31 - 44 kg 4 mg subcutaneous 21 - 30 kg 2.5 mg 10 - 20 kg 1.5 mg < 10 kg = 0.1 mg/kg | 7 mcg/kg subcutaneous |
| Packaging | Single-dose prefilled syringe: 300 mcg/0.5 mL 480 mcg/0.8 mL | 6 mg/0.6 mL | Vial: 500 mcg per mL in multiple-dose vial |

- Cytokine Administration Triage Guidelines for Acute Radiation Syndrome (Adult and Pediatric)
- ritn.net/triage/
- Sizes to download:
 - 4"x6"
 - 8.5" x 11"
 - 24" x 36"



2021 RITN Radiation Disaster Webinars

- Webinar #1
 - Chronicles of the Chernobyl Disaster presented by Dr. Alla Shapiro (FDA – retired)
- Webinar #2
 - Black Swan Incidents Happen: The Power of Preparedness & Partnership for the Fukushima March 2011 Response presented by Dr. C. Norman Coleman (NCI & DHHS-ASPR)
- Webinar #3
 - COVID-19 Cohort Management Program (CCMP): An Adaptable Model For Outpatient Surge Management presented by Memorial Sloan Kettering Cancer Center staff
- Webinar #4
 - September: Chernobyl: 35 Years Later presented by Dr. Alla Shapiro (FDA-retired)



2022 Projects

- Growth
- Preparedness Resources
- Training & Education
 - 2022 RITN Workshop: *Past Informing the Plan, Past Improving the Plan for a Rad/Nuc Incident* (August 4-5, 2022) at the Westin Alexandria Old Town, Alexandria, VA.
 - REAC/TS & AHLS on-site training sessions
- Exercises
 - Annual RITN tabletop
 - Resuming funded functional exercises
 - Nebraska Med. Regional exercise collaboration
- Increased Awareness & Partnerships
 - Continued collaboration with ABA
 - Conference booth at conferences TBD

TASK SUMMARY TABLE:

| | Task 1 | Task 2 | Task 3 |
|----|----------------|----------|-----------|
| | Administrative | Exercise | Education |
| TC | Yes | Yes | Yes |

- Most significant change is scheduling administrative tests throughout the year.

TASK DEADLINES (may also be completed any time before deadline):

1. 1/31/2022 – Healthcare Standard (HCS) capacity survey (Task 1)
2. 3/31/2022 – GETS card test (Task 1)
3. 5/31/2022 – Contact information updated/confirmed (Task 1)
4. 7/31/2022 – Education (Task 3)
5. 8/31/2022
 - a. IRB Approved Marrow Toxic Injury Research Consent Forms Up to Date (Task 1)
 - b. Standard Operating Procedure (SOP) update (Task 1)
6. Three (3) days after completion of Annual Exercise (Task 2) – Exact date will be different for centers depending on when they participate in annual exercise

Questions?