

## Prototype for Adult Medical Orders During a Radiation Incident

Version: April 17, 2017

### Cautions

- Authored by [REMM](#) and [RITN](#) physicians, this set of orders is a prototype only.
  - **Orders must be customized for each patient and incident.**
  - Specific drugs are suggested for function only. Patients may not need any/every category of drug listed.
  - No HHS, CDC, FDA, or other US government entity endorsement of specific drugs or drug doses is intended or implied by inclusion in this order set.
  - Consult the notes at the end of this document for additional, key information.
- 

### Internal contamination (decorporation treatments)

- This **Adult Orders Prototype** lists only FDA-approved medications as radioisotope countermeasures.
  - Some, but not all of these drugs are currently in the [Strategic National Stockpile](#).
  - Prescribers should consult the FDA drug label for complete prescribing information.
  - Decorporation drugs should be used in children with great caution.
  - The online version of REMM has additional recommendations about [additional countermeasure drugs that may be considered](#).
  - This prototype does **not** address threshold levels of [internal contamination](#) that would trigger initiation, continuation, or discontinuation of decorporation treatment. See [REMM Countermeasures Caution and Comment](#), which discusses this issue
- 

### Drug dosages

- All adult drug doses in this prototype are based on a 70 kg adult with normal renal and hepatic function.
  - Appropriate dose adjustments should be made based on age, weight, drug-drug interactions, nutritional status, renal, and hepatic function.
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- After a mass casualty incident, practitioners may encounter counterfeit drugs. This [FDA website](#) will provide information on avoiding and detecting counterfeit drugs and assist with reporting of suspected counterfeit medications.
- If this adult order set, **Version date 4/17/2017**, has been printed for use offline, consult the online version of REMM to see if updates are available.  
<https://www.remm.nlm.gov/adult-order.pdf>

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**1. Administrative information**

Name: \_\_\_\_\_

Unique Identifier: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Spoken language: \_\_\_\_\_

Unaccompanied minor: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Age (years: \_\_\_\_\_

Gender: \_\_\_\_\_

Next of kin contact information (home phone, cell phone, email, or address):

\_\_\_\_\_

**2. Admit to:**

\_\_\_ Inpatient Service \_\_\_\_\_ Area \_\_\_\_\_

\_\_\_ Team: \_\_\_\_\_ PICU \_\_\_\_\_

\_\_\_ Hem/Onc: \_\_\_\_\_ Hematopoietic Stem Cell Transplantation: \_\_\_\_\_

\_\_\_ Admitting Physician: \_\_\_\_\_ Pager: \_\_\_\_\_

\_\_\_ Attending Physician: \_\_\_\_\_ Pager: \_\_\_\_\_

\_\_\_ Other Physician: \_\_\_\_\_ Pager: \_\_\_\_\_

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**3. Diagnoses**

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

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_

**Acute Radiation-related Admission Diagnoses:**

- a. **Radiation contamination?** Yes\_\_\_\_\_ No\_\_\_\_\_

See REMM [Body Chart](#) (page 19) to record whole body radiation survey.

\_\_\_ External contamination with Isotope (Specify or unknown) \_\_\_\_\_

\_\_\_ Internal contamination with Isotope (Specify or unknown) \_\_\_\_\_

\_\_\_ Contamination suspected, Isotope uncertain

- b. **Radiation Exposure / Acute Radiation Syndrome (ARS)?**

Yes\_\_\_\_\_ No\_\_\_\_\_

- Estimated whole body dose from exposure \_\_\_\_\_(units of gray/Gy)

- See also **Item #24, page 11** for additional radiation details and work-up

**Other potential complicating factors**

\_\_\_ Mass casualty incident

\_\_\_ Other, Specify \_\_\_\_\_

**Specific populations potentially requiring more customized management?**

Yes\_\_\_\_\_ No\_\_\_\_\_

\_\_\_ Age > 65 y

\_\_\_ Pregnant/Possibly pregnant Duration of Pregnancy (weeks): \_\_\_\_\_

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\_\_\_ Immunosuppressed

\_\_\_ Other, Specify \_\_\_\_\_

- See REMM page about [at-risk populations](#)

**4. Precautions:**

**Infectious**

\_\_\_ Contact

\_\_\_ Droplet

\_\_\_ Airborne

\_\_\_ Reverse Isolation/Neutropenic

**Radiation precautions**

- For persons with known or suspected [external or internal contamination](#).
- Persons with [exposure](#) but NO [contamination](#) are NOT radioactive.
- Patients with exposure only do not need Radiation Precautions.

\_\_\_ **Precautions:** Single room, gown, mask, cap, boots, and gloves

\_\_\_ Use medical facility procedures for discarding all biological/physical/radioactive waste, including linens/towels/trash/personal protective equipment.

\_\_\_ Contact Radiation Safety Officer for additional instructions.

Phone: \_\_\_\_\_ Pager: \_\_\_\_\_

\_\_\_ Place Radiation Safety Sign on door if patient has internal or external radioactive contamination

\_\_\_ Notify pregnant staff that entry to room is prohibited if patient is/may be contaminated.

\_\_\_ Everyone entering room/area of contaminated patient must wear personal radiation dosimeter assigned by Radiation Safety.

\_\_\_ Use medical facility procedures for disposal of **radiation** waste, including linens/towels/trash/personal protective equipment.

- **See guidance**

- [2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings](#), Healthcare Infection Control Practices Advisory Committee (HHS/CDC)

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**5. Urgent consultations: specify**

- |   |   |
|---|---|
| <input type="checkbox"/> Intensive Care   | <input type="checkbox"/> Transfusion Medicine             |
| <input type="checkbox"/> Hematopoietic Stem Cell Transplantation  | <input type="checkbox"/> Radiation Oncology               |
| <input type="checkbox"/> Mental Health / Psychiatry   | <input type="checkbox"/> Endocrinology                    |
| <input type="checkbox"/> Ophthalmology  | <input type="checkbox"/> Palliative Care and Pain Service |
| <input type="checkbox"/> Dermatology / Plastic Surgery  | <input type="checkbox"/> Gastroenterology                 |
| <input type="checkbox"/> Radiation Safety   | <input type="checkbox"/> Burn Therapy                     |
| <input type="checkbox"/> Surgery: <input type="checkbox"/> General <input type="checkbox"/> Trauma <input type="checkbox"/> Thoracic <input type="checkbox"/> Orthopedics |   |
| <input type="checkbox"/> Hepatology   | <input type="checkbox"/> Infectious Disease               |
| <input type="checkbox"/> Pulmonary  | <input type="checkbox"/> Plastic Surgery                  |
| <input type="checkbox"/> Cardiology   | <input type="checkbox"/> Nephrology                       |
| <input type="checkbox"/> ENT  |   |
| <input type="checkbox"/> Other _____  |   |

**6. Condition:**

- Good    Fair    Stable    Guarded    Critical

**7. Vital Signs:**

- q 2 hours X 4                       Ward routine  
 q 4 hours X 4

**Notify physician for:**

- Temperature \_\_\_\_\_ > 38 °C  
SBP: \_\_\_\_\_ > 180, < 100  
DBP: \_\_\_\_\_ > 100 < 50  
HR: \_\_\_\_\_ > 100 < 50  
RR: \_\_\_\_\_ > 30 < 8  
O<sub>2</sub> saturation: \_\_\_\_\_ < 92%

- |                    |
|--------------------|
| _____ Other: _____ |
| _____ Other: _____ |
| _____ Other: _____ |
| _____ Other: _____ |
| _____ Other: _____ |
| _____ Other: _____ |

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**8. Allergies:**

No Known Drug Allergies (NKDA)

Allergies (drugs, foods)

If yes, specify: \_\_\_\_\_

**9. Activity:**

Bed rest

Bathroom privileges

Out of bed/up to chair every \_\_\_\_ hrs.

Ambulate as tolerated

Confine to room

**10. Diet:**

Regular Diet     Liquids (full, clear)     NPO

Advance as tolerated

Neutropenic diet

Special dietary needs/requests: \_\_\_\_\_

**11. Height, weight:**

Height: \_\_\_\_ cm

Weight: \_\_\_\_ kg

Repeat body weight:

q \_\_\_\_ hours

q \_\_\_\_ days

**12. Admission studies: Labs**

CBC w/differential     w/ Platelet count

Comprehensive Metabolic Panel (CMP) / Chem 14

PT or INR/PTT/fibrinogen/TT

Urinalysis - Collection method: \_\_\_\_\_

Urine culture

Blood culture - Collection method: \_\_\_\_\_ Sets: \_\_\_\_\_

Type of culture: Bacteria, fungal, aerobic, anaerobic

Sputum culture

Urine HCG (for all girls  $\geq 10$  years or post-menarche, whichever is earlier)

Serum HCG (for any girls  $\geq 10$  years or post-menarche, whichever is earlier)

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Thyroid Function Tests (Specify) \_\_\_\_\_

Wound cultures

**Serologies:**

- Herpes Simplex Virus type 1 (HSV-1)
- Herpes Simplex Virus type 2 (HSV-2)
- Cytomegalovirus (CMV)
- Varicella-zoster virus (VZV)
- Epstein Barr Virus (EBV)

**13. Standing labs / studies**

CBC w/diff and platelets q \_\_\_\_\_ hours, x \_\_\_\_\_ days,  
Followed by q \_\_\_\_\_ until further orders

Comprehensive Metabolic Panel (CMP) / Chem 14  
Followed by q \_\_\_\_\_ hours, x \_\_\_\_\_ days  
Followed by q \_\_\_\_\_ until further orders

Other \_\_\_\_\_ (specify test and frequency)

**14. Blood bank**

(May set institutional transfusion parameters, e.g.: PRBC transfusion for Hgb < (7 g/dl) and platelet count < 20000/micL unless otherwise specified by medical staff.)

Type and cross match

Type and screen

For \_\_\_\_\_ units or \_\_\_\_\_ ml of packed red blood cells (~10-15 ml/kg)

For \_\_\_\_\_ units or \_\_\_\_\_ ml of platelets (~5-10 ml/kg)

**Note:**

- Use only leukoreduced AND irradiated products, if available, unless it is known with certainty that the patient was exposed to allow dose of radiation, e.g. less than 100 cGy.
- If radiation whole body dose is not known with certainty, leukoreduced AND irradiated products are preferred, if available.
- See [REMM blood use page](#) for additional information.



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**15. Imaging**

- Chest x-ray Urgency: \_\_\_\_\_
- PA/Lateral Urgency: \_\_\_\_\_
- Portable Urgency: \_\_\_\_\_
  
- Other imaging studies Specify: \_\_\_\_\_ Urgency: \_\_\_\_\_

**16. Electrocardiogram**

- Electrocardiogram
- STAT Electrocardiogram for chest pain, notify physician

**17. IV fluid management:**

- IV Fluids: \_\_\_\_\_ @ \_\_\_\_\_ cc/hr, with additive \_\_\_\_\_
- IV Fluids: \_\_\_\_\_ @ \_\_\_\_\_ cc/hr, with additive \_\_\_\_\_

**18.  Foley catheter management (specify) \_\_\_\_\_**

- Use radiation precautions for urine and feces for patients with internal radiation contamination.

**19.  Monitor I / O**

Frequency \_\_\_\_\_

- Use radiation precautions for urine and feces for patients with internal radiation contamination.

**20. Deep Venous Thrombosis (DVT) prophylaxis:**

- TED hose to Bilateral Lower-Extremities
- Sequential Compression Devices (SCD)
- Anticoagulation regimen \_\_\_\_\_
- Other

**Note:** The potential benefit of any anticoagulation regimen (e.g. **heparin**) should be balanced against the risk of excessive bleeding in patients with severe thrombocytopenia or significant gastrointestinal toxicity.

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**21. Respiratory Therapy:**

Use radiation precautions for personnel, equipment, and waste if patient has internal radiation contamination.

Room air     Chest tube care (Specify) \_\_\_\_\_

Titrate oxygen supplementation for Oxygen saturation > \_\_\_\_%

Nebulizer treatment (Specify) \_\_\_\_\_

**22. Wound care: (see also item 25)**

Decontaminate external wounds if there is external radiation contamination. See REMM radiation [contaminated wound](#) care recommendations.

Sterile dressing to wounds daily

Monitor waste

Use medical facility procedures for discarding biological/**radioactive**/physical waste and linens/towels/trash/personal protective equipment.

**Radiation precautions** (needed if patient has radiation contamination)

**Silvadene ([Silver Sulfadiazine](#))** cream topically to burns

**Bacitracin** topically to burns

Plastic Surgery Consultation

Other wound management per Burn team/Dermatology/Surgery:  
Pager \_\_\_\_\_ Phone \_\_\_\_\_

**23. Orthopedic care:**

Splint/brace/cast/crutches

Other orthopedic management procedure per orthopedics:  
Pager \_\_\_\_\_ Phone \_\_\_\_\_

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**24. Radiation Dose Assessment**

**A. Biodosimetry and Bioassay assays**

- [Difference between Biodosimetry and Bioassay](#)
- [Define biodosimetry](#)
- [More about biodosimetry](#)
- [Dicentric chromosome assay](#)

**B. Biodosimetry assays for [radiation exposure](#)**

- See REMM information on
  - [Dose Estimator for Exposure: 3 biodosimetry tools](#)
  - [Dose Reconstruction](#)
- **Estimated whole body dose from exposure:** \_\_\_\_\_ (Gray)
  - Using which tool(s) \_\_\_\_\_  
e.g., vomiting, lymphocyte depletion kinetics, dicentric chromosome assay  
Note: if different assays give different results
- METREPOL Scores: Heme\_\_\_ GI\_\_\_ Neuro\_\_\_ Cutaneous\_\_\_
- Response Category (RC score) \_\_\_\_\_  
[Explain METREPOL](#)  
[Consider Response Category in clinical triage](#) (Interactive tool for ARS)
- Date of exposure: \_\_\_\_\_
- Time of exposure: \_\_\_\_\_
- Location of patient at time of exposure: \_\_\_\_\_
- Estimated whole body/partial body dose, specify \_\_\_\_\_ (dose)
- Dose unknown: \_\_\_\_\_

**Dicentric Chromosome Assay Instructions:**

- Draw extra green top tube and provide: date \_\_\_\_\_ time \_\_\_\_\_
- See REMM for location of approved US [laboratories that perform this test](#).
- Send this tube **ON ICE** for outside lab study
  - To the attention of: \_\_\_\_\_
  - Name of lab: \_\_\_\_\_
  - Address of lab: \_\_\_\_\_

**C. [Radiation bioassay for evaluating/managing internal decontamination](#)**

- Collect ≥ 70 mL spot urine for \_\_\_\_\_ (name of radioactive isotope)
- See directions for sample collection, labeling, packaging and shipping bioassay specimen to CDC bioassay lab: <https://emergency.cdc.gov/radiation/labinfo.asp>

**Note:** Consult senior radiation event medical managers for name and location of other laboratories that may become available to perform this test in a large mass casualty incident. Routine labs generally cannot perform this test, although in large incidents, senior managers may announce special arrangements.

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**25. General Medications:**

- Drug names are generally listed as follows **Generic (Brand)** names
- Some drugs with **bold blue font** have [DailyMed](#) hyperlinks with additional information.

**For gastric acid suppression:**

\_\_\_ **Lansoprazole (Prevacid)** 15-30 mg PO daily

**For radiation-induced nausea & vomiting:**

\_\_\_ **Ondansetron (Zofran)** 4-8 mg IV/PO q 8h PRN nausea/emesis

\_\_\_ **Lorazepam (Ativan)** 0.5 mg – 1 mg PO q 6-8h PRN  
anxiety/insomnia/breakthrough nausea

\_\_\_ **Prochlorperazine** 10 mg PO/IV/IM (if adequate platelets) q 6-8h PRN  
anxiety/insomnia/breakthrough nausea

See [REMM bibliography on treatment of nausea and vomiting](#)

**For fever:**

\_\_\_ **Acetaminophen** 650 mg PO q 6 – 8h PRN temperature > 38 °C

**For diarrhea:**

- \_\_\_ **Loperamide hydrochloride (Imodium):**
- Recommended initial dose is 4 mg (2 capsules) followed by 2 mg (1 capsule) after each unformed stool.
  - Daily dose should not exceed 16 mg (8 capsules)

**For rash:**

- \_\_\_ Topical sterile dressing
- \_\_\_ **Diphenhydramine hydrochloride (Benadryl)** 25-50 mg PO q 4-6 hours  
for pruritis, not to exceed 300 mg/24 hours

**For pain:**

- \_\_\_ **Morphine sulphate** \_\_\_\_ mg \_\_\_\_ route \_\_\_\_ frequency
- \_\_\_ **Other pain medication** (specify): name, dose, route, frequency
-

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**For skin burns: (see also item 18: wound care)**

Burn topical regimen \_\_\_\_\_

Replace body fluid \_\_\_\_\_

Other burn therapy \_\_\_\_\_

**For oral mucositis:**

Mouth care regimen \_\_\_\_\_

**26. Radioisotope decorporation or blocking agents:**

- **Note: Only FDA approved radiation countermeasures are listed in table below.**
- **See [REMM Table](#) for longer list of countermeasures which have been recommended by some experts but are not FDA approved as radiation countermeasures.**

Medical Countermeasure	Administered for	Route of Administration	Dosage	Duration
<b>Ca-DTPA<sup>1,3</sup></b> <b>Zn-DTPA<sup>1,3</sup></b>  <a href="#">See REMM's DTPA information.</a>  <a href="#">See FDA's Zn-DTPA drug label.</a>  <a href="#">See FDA's Ca-DTPA drug label.</a>	Americium (Am-241) <sup>1</sup>  Californium (Cf-252) <sup>2</sup>  Cobalt (Co-60) <sup>2</sup>  Curium (Cm-244) <sup>1</sup>  Plutonium (Pu-238 and Pu-239) <sup>1</sup>  Yttrium (Y-90) <sup>2</sup>	<b>IV<sup>1</sup>:</b> Give once daily as a bolus or as a single infusion, i.e., do not fractionate the dose.  DTPA is FDA-approved for intravenous Rx of known or suspected internal contamination with Am, Cm, and Pu only.  <b>Nebulized inhalation<sup>1</sup>:</b> DTPA is FDA-approved for nebulized inhalation in adults only, and if the route of contamination is through inhalation.	<b>IV:</b> 1 g in 5 cc 5% dextrose in water (D5W) or 0.9% sodium chloride (normal saline, NS) slow IV push over 3-4 minutes  OR  1 g in 100-250 cc D5W or NS as an infusion over 30 minutes  <b>Nebulized inhalation:</b> 1 g in 1:1 dilution with sterile water or NS over 15-20 min	<ul style="list-style-type: none"> <li>• Ca-DTPA for the first dose</li> <li>• Give Zn-DTPA for any follow-up doses (i.e., maintenance as indicated)</li> <li>• Duration of therapy depends on total body burden and response to treatment</li> </ul>

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Medical Countermeasure	Administered for	Route of Administration	Dosage	Duration
<p><b>Potassium iodide<sup>1</sup></b></p> <p><a href="#">See REMM's KI summary information.</a></p> <p><a href="#">See FDA's KI information.</a></p>	<p>Iodine (I-131)</p>	<p>PO</p>	<p><b>Adults &gt;40 years:</b> 130 mg/day (for projected thyroid exposure <b>≥500 cGy</b>)</p> <p><b>Adults 18-40 years:</b> 130 mg/day (for projected thyroid exposure <b>≥ 10 cGy</b>)</p> <p><b>Pregnant or lactating women of any age:</b> 130 mg/day (for projected thyroid exposure <b>≥ 5 cGy</b>)</p>	<ul style="list-style-type: none"> <li>• Some incidents will require only a single dose of KI.</li> <li>• Incident managers may recommend additional doses if ongoing radioactive iodine ingestion or inhalation represents a continuing threat.</li> <li>• See <a href="#">REMM page about duration.</a></li> <li>• See <a href="#">FDA page about duration.</a></li> </ul>
<p><b>Prussian blue, insoluble<sup>1</sup></b></p> <p><a href="#">See REMM page on Prussian Blue</a></p> <p><a href="#">See FDA Prussian Blue information page.</a></p> <p><a href="#">See FDA's Prussian Blue drug label.</a></p>	<p>Cesium (Cs-137)</p> <p>Thallium (TI-201)</p>	<p>PO</p>	<p><b>Adults:</b> 3 g PO tid (See <a href="#">FDA package insert</a>)</p> <p>OR</p> <p>1 - 3 g PO tid with 100-200 mL water, up to 10-12 g/day (based on <a href="#">Goiania accident data</a>)</p>	<ul style="list-style-type: none"> <li>• Minimum 30 days course per FDA</li> <li>• Obtain <a href="#">bioassay</a> and whole body counting to assess treatment of efficacy</li> <li>• Duration of therapy depends on total body burden and response to treatment</li> </ul>

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**27. Neutropenia therapy ± antimicrobials**

**Neutropenia definition:**

Total count of neutrophils + bands in the peripheral blood <1,000 /microL

- The 2 drugs listed below have been approved by the FDA for the indication of acute exposure to myelosuppressive doses of radiation
- See [REMM cytokines page](#) for much more detailed information, especially potential need for [dose alterations during large mass casualty incidents when medical countermeasures may be scarce](#).

**Myeloid cytokines approved by the FDA for the indication of acute exposure to myelosuppressive doses of radiation**

Cytokine	Adult dose
<p style="text-align: center;">G-CSF or filgrastim (<a href="#">Neupogen</a>® drug label)</p>	<ul style="list-style-type: none"> <li>• 10 mcg/kg/day as a single daily subcutaneous injection in adults and children</li> <li>• Continue administration daily until absolute neutrophil count remains greater than 1,000/mm<sup>3</sup> (= 1.0 x 10<sup>9</sup> cells/L) for 3 consecutive (daily) CBCs or exceeds 10,000/mm<sup>3</sup> (= 10 x 10<sup>9</sup> cells/L) after a radiation-induced nadir.</li> <li>• See <a href="#">REMM cytokines page</a> for more information about potential dose alterations during large mass casualty incidents when medical countermeasures may be scarce.</li> </ul>
<p style="text-align: center;">Pegylated G-CSF or pegfilgrastim (<a href="#">Neulasta</a>® drug label)</p>	<ul style="list-style-type: none"> <li>• Two doses, 6 mg each, administered subcutaneously one week apart.</li> <li>• A CBC should be obtained prior to administration of the second dose of Neulasta®. Subject matter experts recommend not administering the second dose if absolute neutrophil count is greater than 5,000/mm<sup>3</sup> (= 5.0 x 10<sup>9</sup> cells/L).</li> <li>• See <a href="#">REMM cytokines page</a> for more information about potential dose alterations during large mass casualty incidents when medical countermeasures may be scarce.</li> </ul>
<p style="text-align: center;">GM-CSF or sargramostim (<a href="#">Leukine</a>® drug label)</p>	<ul style="list-style-type: none"> <li>• This drug is in clinical use for various indications but is NOT approved by the FDA for the specific indication of acute exposure to myelosuppressive doses of radiation.</li> <li>• Although Leukine® has not been approved for this indication, CDC has filed a <a href="#">pre-EUA</a> with the FDA to support the issuance of an EUA under a declared emergency. Leukine® has been added to the SNS <a href="#">as noted on the REMM web site</a>.</li> <li>• <a href="#">See drug label for prescribing information</a>.</li> <li>• See <a href="#">REMM cytokines page</a> for more information about potential dose alterations during large mass casualty incidents when medical countermeasures may be scarce.</li> </ul>

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### See Clinical Practice Guidelines for Myeloid Cytokines (Adults)

- Smith TJ, Bohlke K, Lyman GH, Carson KR, Crawford J, Cross SJ, Goldberg JM, Khatcheressian JL, Leighl NB, Perkins CL, Somlo G, Wade JL, Wozniak AJ, Armitage JO. [Recommendations for the Use of WBC Growth Factors: American Society of Clinical Oncology Clinical Practice Guideline Update](#). (2015 ASCO guideline) J Clin Oncol. 2015 Oct 1;33(28):3199-212. [PubMed Citation] (This 2015 ASCO guideline updates the [2006 myeloid cytokine guideline](#))
  - [NCCN Clinical Practice Guidelines in Oncology, Myeloid Growth Factors, Version 2.2016](#). See section entitled "NCCN Guidelines for Supportive Care" > "Myeloid Growth Factors". (Registration required.)
  - Dainiak N, Gent RN, et al. [First Global Consensus for Evidence-Based Management of the Hematopoietic Syndrome Resulting From Exposure to Ionizing Radiation](#). Disaster Med Public Health Prep. 2011 Oct;5(3):202-212. [PubMed Citation] ([Full text](#))
- 

### **For Antimicrobial prophylaxis (no fever) with neutropenia:**

- **For patients with neutropenia who have NOT HAD NEUTROPENIC FEVER.**
- Use as appropriate for each patient.
- Drugs listed are examples only.

#### **Anti-bacterial prophylaxis:**

\_\_\_ Levofloxacin ([Levaquin](#)) 500 mg PO/IV daily

#### **Anti-viral prophylaxis (neutropenia without fever)**

\_\_\_ Acyclovir ([Zovirax](#)) 400 mg PO q12h, or  
\_\_\_ Acyclovir ([Zovirax](#)) 250 mg/m<sup>2</sup> IV q12h

#### **Anti-fungal prophylaxis (neutropenia without fever)**

\_\_\_ Fluconazole ([Diflucan](#)) 400 mg PO/IV daily – beginning when absolute neutrophil Count (ANC) becomes < 1000

or

\_\_\_ Posaconazole ([Noxafil](#)) extended release tablets – 300 mg – one tablet twice daily day 1, then one tablet daily thereafter. Suspension is 200 mg TID– beginning when Absolute Neutrophil Count (ANC) becomes < 1000.

---

**For treatment of neutropenia AND fever** (defined as T>38 °C while neutropenic)



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**Anti-microbial work-up and therapy**

- Blood cultures
  - Urinalysis w/culture
  - Sputum culture + sensitivity
  - Chest x-ray
  - Cefepime ([Maxipime](#)) 2gm IV q 8h
  - Vancomycin ([Vancocin](#)) 1gm IV q 12h –  
Consider if: suspected catheter-related infection, skin or soft tissue infection,  
pneumonia or hemodynamic instability.
- Consider trough level before 4th dose.

**Antifungal therapy**

Consider one of the following if: fever >72 hours on antibacterial therapy,  
evidence of fungal infection or hemodynamic instability.

- Voriconazole ([Vfend](#)) 6mg/kg IV q12h for two doses, then 4 mg/kg IV q12h

Maintenance oral dose: Weight <40 kg: 100 mg PO every 12 hours

Weight ≥40 kg: 200 mg PO every 12 hours

- Caspofungin ([Cancidas](#)) 70 mg IV once then 50 mg IV daily
- Liposomal amphotericin B ([Ambisome](#)) 3 mg/kg/day IV over 1-4h
- Amphotericin B lipid complex ([Abelcet](#)) 3 mg/kg/day IV over 1-4h

See REMM page on peer-reviewed [Fever and Neutropenia Guidelines](#)

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**Prototype for Adult Medical Orders  
During a Radiation Incident**

Version: April 17, 2017

**NOTES**

1. FDA approved for this indication
2. This drug is not approved by the FDA for this indication. If used, this would be an "off label use", and physician discretion is strongly advised.
3. Ca-DTPA and Zn-DTPA have not been approved by FDA for treating internal contamination with californium, thorium, and yttrium. For initial treatment, Ca-DTPA is recommended, if available, within the first 24 hours after internal contamination. Zn-DTPA is preferred for maintenance after the first 24 hours, if available, due to safety concerns associated with prolonged use of Ca-DTPA.

**Prototype for Adult Medical Orders  
During a Radiation Incident**

Version: April 17, 2017

**Body Chart for Recording Results of Radiation Survey**

