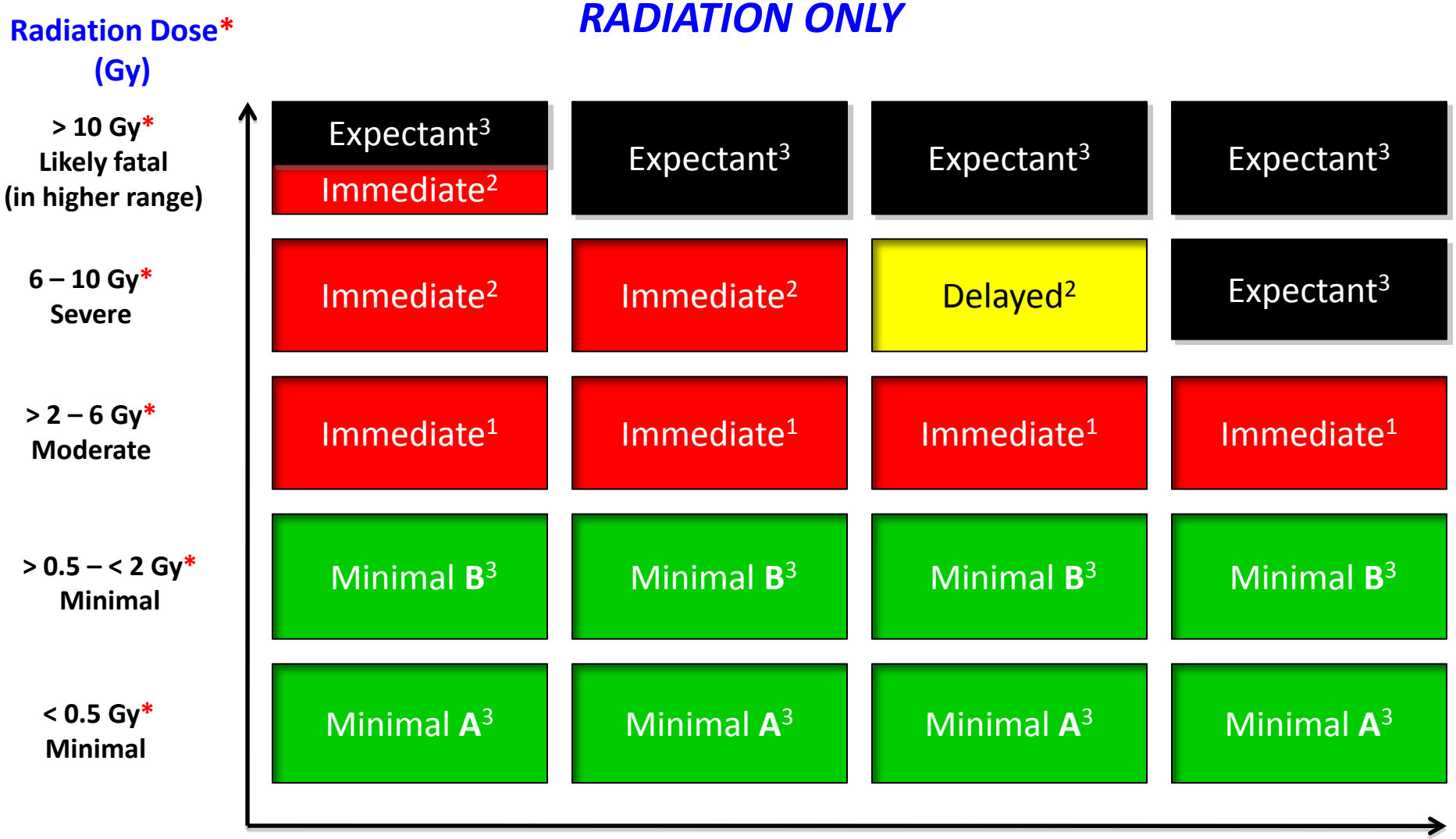
Triage category affected by radiation dose and resource availability

RADIATION ONLY



¶ **Resource availability:**	Normal	Good	Fair	Poor
§ **Standard of care:**	Conventional	Contingency	Crisis	Crisis

For * , ¶ , §, and numbered superscripts (Myeloid Cytokine Category): See legend for Card 1

CARD 1

Legend for Card 1: Radiation Only

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

The red/black split triage category for > 10 Gy indicates that some victims may receive aggressive treatment at discretion of physician, especially if 10 Gy is received over prolonged time period.

§ **Standard of care**: from "Guidance for establishing crisis standards of care for use in disaster situations: A letter report", Institute of Medicine, National Academies of Science, Washington, D.C., 2009.

¶**Resource availability** for conditions below NORMAL:

GOOD conditions allow for maintenance of "functionally-equivalent" care through contingency operations

FAIR conditions require delaying care for severe injuries after moderate injuries

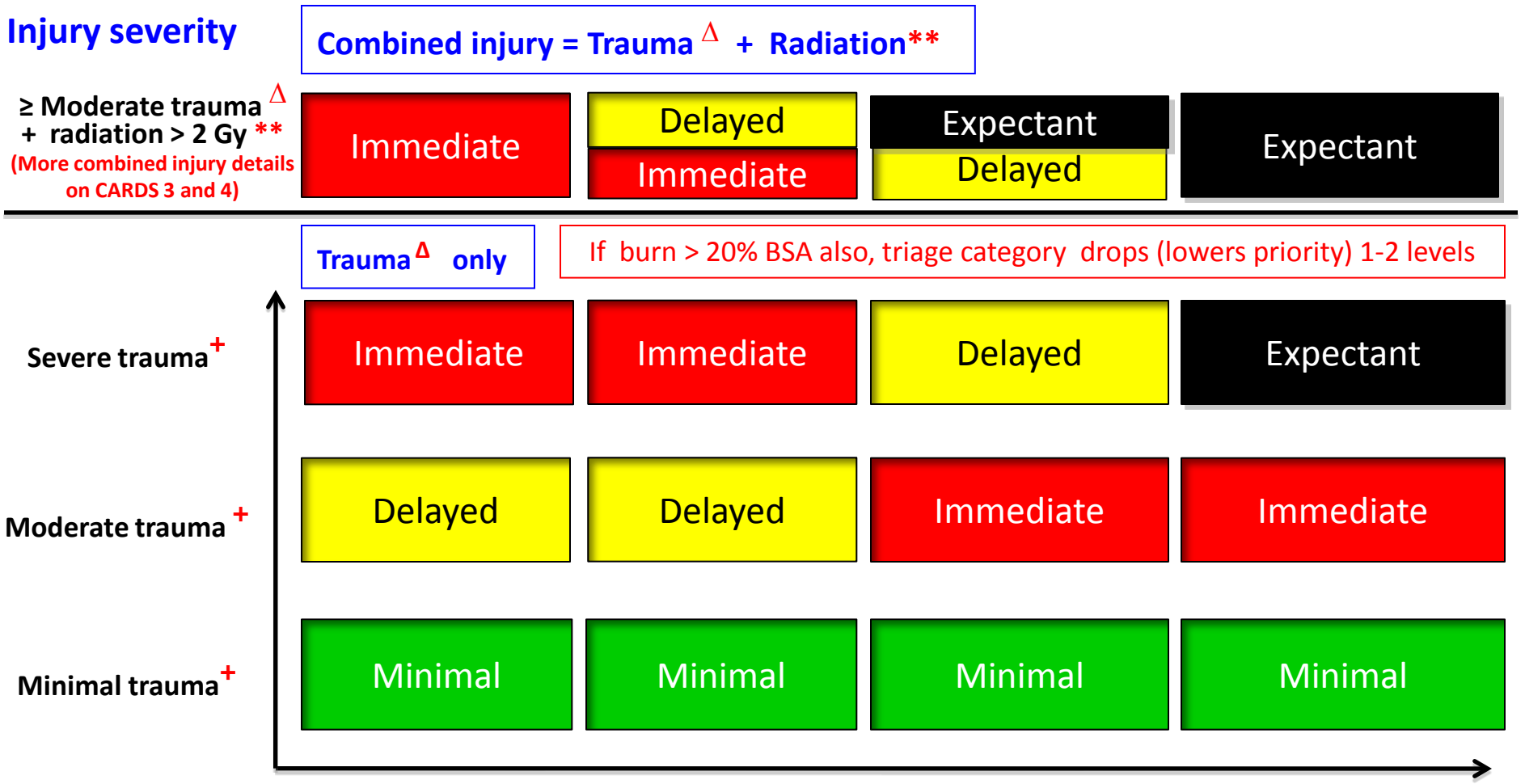
POOR conditions require classifying severe injuries as expectant

Minimal B: Consider repeating both biodosimetry and clinical reassessments, especially at high end of this dose range (0.5 – 2 Gy)

Minimal A: Those with physical dose estimates based on location below 0.5 Gy need not report for medical evaluation. Joining a registry may be suggested after the incident.

Myeloid Cytokine Category	G-CSF Recommendation
1	G-CSF indicated.
2	G-CSF indicated, lower priority than Category 1.
3	G-CSF not indicated.

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



¶Resource availability:	Normal	Good	Fair	Poor
§Standard of care:	Conventional	Contingency	Crisis	Crisis

CARD 2

Legend for Cards 2, 3, and 4: Trauma alone and combined injury

Δ Adding > 20% total body surface area (BSA) burn to trauma drops (lowers triage priority) 1-2 levels

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

At higher radiation doses (>6 Gy), triage category may worsen - as on Cards 3 and 4.

¶ Resource availability: see legend for CARD 1

§Standard of care: see legend for CARD 1

Trauma Category+	Description
Combined injury	• Radiation dose of > 2Gy to whole body or significant portion of whole body ***plus*** *moderate or severe* trauma and/or burn injury.
Severe trauma+	• Stabilization requires complex treatment; • > 20% chance of death even with treatment.
Moderate trauma+	• Without stabilization, potential for death within hours • <20% chance of death with stabilization and treatment.
Minimal trauma+	• Injuries pose no significant risk to life and limb in next 3-4 days • Limited or no treatment prior to referral in the next 3-4 days.

Myeloid Cytokine (G-CSF) priority categories for "normal or good" resource availability

Radiation dose (Gy)	RADIATION ONLY or minimal trauma	COMBINED INJURY Moderate or severe injury Δ + radiation** > 2 Gy	
	Minimal trauma +	Moderate Trauma +	Severe trauma +
> 10 Gy Likely fatal	Expectant[3] / Immediate[2]	Expectant[3]	Expectant[3]
> 6 – 10 Gy Severe	Immediate[2]	Delayed[2]	Expectant[3]
≥ 2 – 6 Gy Moderate	Immediate[1]	Immediate[1]	Delayed[2]

Superscripts indicate Myeloid Cytokine Category

For +, Δ, **, : see legend for CARD 2

Myeloid Cytokine Category	G-CSF Recommendation
1	G-CSF indicated.
2	G-CSF indicated, lower priority than Category 1.
3	G-CSF not indicated.

Legend for Card 3:

Estimating radiation dose from a single Absolute Lymphocyte Count (ALC)

1) Determine patient ALC.
2) Determine how many hours after exposure began that CBC was drawn.
3) Intersection of "ALC" and "hours after exposure began…" provides estimate of whole body dose.

NOTE: Serial ALCs over time provide a more accurate estimate of dose than a single ALC.
See REMM Dose Estimator Tool to input multiple ALC values (www.remm.nlm.gov/ars_wbd.htm)

		Absolute Lymphocyte Count (ALC) Value x 10^9 cells/liter (single value)												
		1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
		Estimate of whole body dose from radiation exposure												
		Below 2 Gy				2 - 6 Gy					Above 6 Gy			
Hours after exposure began that CBC drawn	24	0	0	1.8	2.5	3.3	4.2	5.2	6.3	7.7	9.3	>10	>10	>10
	48	0	0	0	1.5	2.0	2.5	3.1	3.8	4.6	5.6	6.9	8.7	>10
	72	0	0	0	0	0.9	1.8	2.2	2.7	3.2	3.9	4.8	6.1	8.2
	96	0	0	0	0	0	0	1.7	2.1	2.5	3.1	3.8	4.8	6.5

Table adapted from the REMM Dose Estimator Tool (www.remm.nlm.gov/ars_wbd.htm)

Myeloid Cytokine (G-CSF) priority categories for "fair or poor" resource availability

Radiation dose (Gy)	RADIATION ONLY or minimal trauma		COMBINED INJURY: Moderate or severe injury Δ + radiation** > 2 Gy	
	Minimal trauma+		Moderate trauma +	Severe trauma +
>10 Gy Likely fatal	Expectant[3]	Expectant[3]	Expectant[3]	Expectant[3]
> 6 – 10 Gy Severe	Delayed[2]	Expectant[3]	Expectant[3]	Expectant[3]
≥ 2 – 6 Gy Moderate	Immediate[1]	Immediate[1]	Delayed[2]	Expectant[3]

¶Resource availability: Fair Poor Fair and Poor

Numerical superscripts indicate Myeloid Cytokine Category

For +, Δ and **, see Legend for CARD 2
For ¶, see Legend for CARD 1

Myeloid Cytokine Category	G-CSF Recommendation
1	G-CSF indicated.
2	G-CSF indicated, lower priority than Category 1.
3	G-CSF not indicated.

CARD 4

Legend for Card 3:

Estimating radiation dose from a single Absolute Lymphocyte Count (ALC)

1) Determine patient ALC.
2) Determine how many hours after exposure began that CBC was drawn.
3) Intersection of "ALC" and "hours after exposure began…" provides estimate of whole body dose.

NOTE: Serial ALCs over time provide a more accurate estimate of dose than a single ALC.
See REMM Dose Estimator Tool to input multiple ALC values (www.remm.nlm.gov/ars_wbd.htm)

		Absolute Lymphocyte Count (ALC) Value x 10^9 cells/liter (single value)												
		1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
		Estimate of whole body dose from radiation exposure												
		Below 2 Gy				2 - 6 Gy						Above 6 Gy		
Hours after exposure began that CBC drawn	24	0	0	1.8	2.5	3.3	4.2	5.2	6.3	7.7	9.3	>10	>10	>10
	48	0	0	0	1.5	2.0	2.5	3.1	3.8	4.6	5.6	6.9	8.7	>10
	72	0	0	0	0	0.9	1.8	2.2	2.7	3.2	3.9	4.8	6.1	8.2
	96	0	0	0	0	0	0	1.7	2.1	2.5	3.1	3.8	4.8	6.5

Table adapted from the REMM Dose Estimator Tool (www.remm.nlm.gov/ars_wbd.htm)

LEGEND: CARD 5

Standards of Care (IOM report)

Incident demand / resource imbalance increases →
Risk of morbidity / mortality to patient increases →
← Recovery

	Conventional	Contingency	Crisis
Space	Usual patient care space fully utilized	Patient care areas re-purposed (PACU, monitored units for ICU-level care)	Facility damaged / unsafe or non-patient care areas (classrooms, etc) used for patient care
Staff	Usual staff called in and utilized	Staff extension (brief deferrals of non-emergent service, supervision of broader group of patients, change in responsibilities, documentation, etc)	Trained staff unavailable or unable to adequately cae for volume of patients even with extension techniques
Supplies	Cached and usual supplies used	Conservation, adaptation, and substitution of supplies with occasional re-use of select supplies	Critical supplies lacking, possible re-allocation of life-sustaining resources
Standard of care	Usual care	Functionally equivalent care	Crisis standards of care[1]

Usual operating conditions

Austere operating conditions

Indicator: potential for crisis standards[2]

Trigger: crisis standards of care[3]

1) Unless temporary, requires state empowerment, clinical guidance, and protection for triage decisions and authorization for alternate care sites / techniques. Once situational awareness achieved, triage decisions should be as systematic and integrated into institutional process, review, and documentation as possible.
2) Institutions consider impact on the community of resource utilization (consider 'greatest good' vs. individual patient needs – for example, conserve resources when possible) but patient-centered decision-making is still the focus
3) Institutions (and providers) must make triage decisions balancing the availability of resources to others and the individual patient's needs – shift to community-centered decision-making

IOM Letter Report, September 2009

CARD 5

BOX 2
Conventional, Contingency, and Crisis Capacity

Conventional capacity—The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.

Contingency capacity—The spaces, staff, and supplies used are not consistent with daily practices, but provide care that is *functionally equivalent* to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources).

Crisis capacity—Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a *significant* adjustment to standards of care (Hick et al., 2009).

LEGEND: CARD 5