Real World Application of Monoclonal Antibody Therapy for COVID 19

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Monoclonal Efficacy and Safety

- Best when given early in the symptom course
- BLAZE-1 (Bamlanivimab):
  - Hospitalization 6.3% vs 1.6%, RR 0.26 (CI 0.09-0.75, NNT=21.2)
  - High risk strata: 7/48 (15%) vs 4/95 (4%), RR 0.29 (CI 0.09-0.94, NNT 9.1)
  - 2.3% Infusion reaction
- SPIKE (Casirivimab/Imdevimab):
  - Medically-attended visits: 6.5% vs 2.8%
  - 72% relative reduction in high-risk strata
  - 1.5% Infusion reaction

Real World Challenges – Monoclonal Antibodies

- *Early* patient identification and referral
- Limited infusion capacity:
  - Maintain access to infusion centers for oncology/autoimmune patients
  - Infection control risk of contagious patients in infusion locations
  - Need to be able to manage infusion reactions
  - 2 ½ hour infusion and observation time
  - Complicated reconstitution
- Goal: match limited capacity to patients most likely to benefit
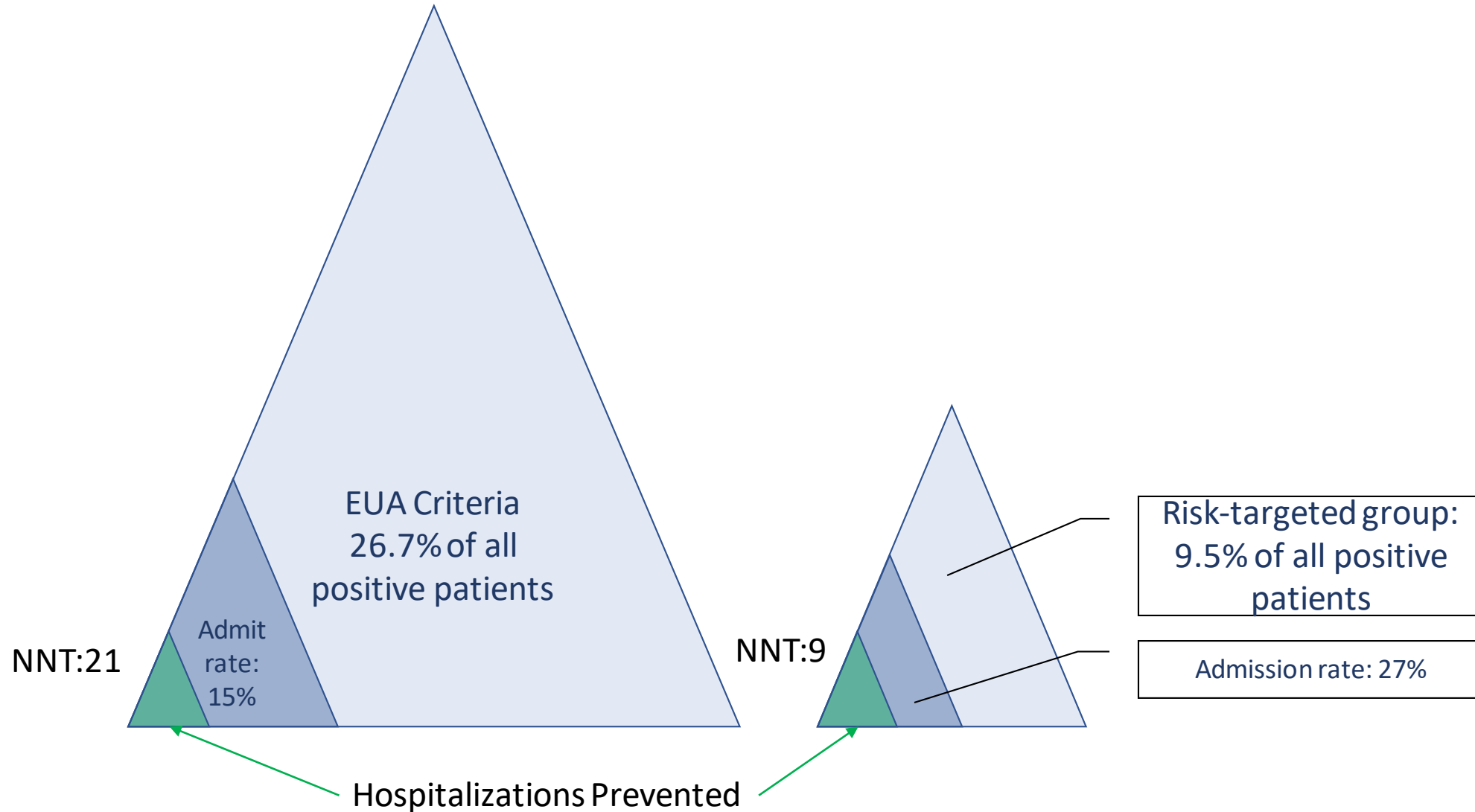
COVID-19 Risk Calculator

Risk Factor	Points
Demographic Factors	
Age	0.5 pts / decade
Male	1
Non-White Race or Hispanic/Latinx	2
Symptom Factor	
Shortness of breath	1
Major Comorbidities	
Diabetes mellitus	2
Immunocompromised	2
Obesity	2
Other Comorbidities	
Hypertension	1
Coronary artery disease (MI)	1
Cardiac Arrhythmia	1
Congestive Heart Failure	1
Chronic Kidney Disease	1
Chronic Pulmonary Disease	1
Chronic Liver Disease	1
Cerebrovascular disease	1
Chronic Neurologic disease	1

https://coronavirus.utah.gov/noveltherapeutics/

	Derivation Cohort N=16,030, Hospitalized N=990 (6.2%)		Validation Cohort N=5976, Hospitalized N=408 (6.8%)	
	AUROC	95% CI	AUROC	95% CI
Hospitalization	0.82	0.81-0.84	0.8	0.78-0.82
28-day Mortality	0.91	0.83-0.94	0.8	0.69-0.9

Scarcity in Delivery: Law of Diminishing Returns

EUA Criteria
26.7% of all
positive patients

NNT:21

Admit
rate:
15%

Hospitalizations Prevented

NNT:9

Risk-targeted group:
9.5% of all positive
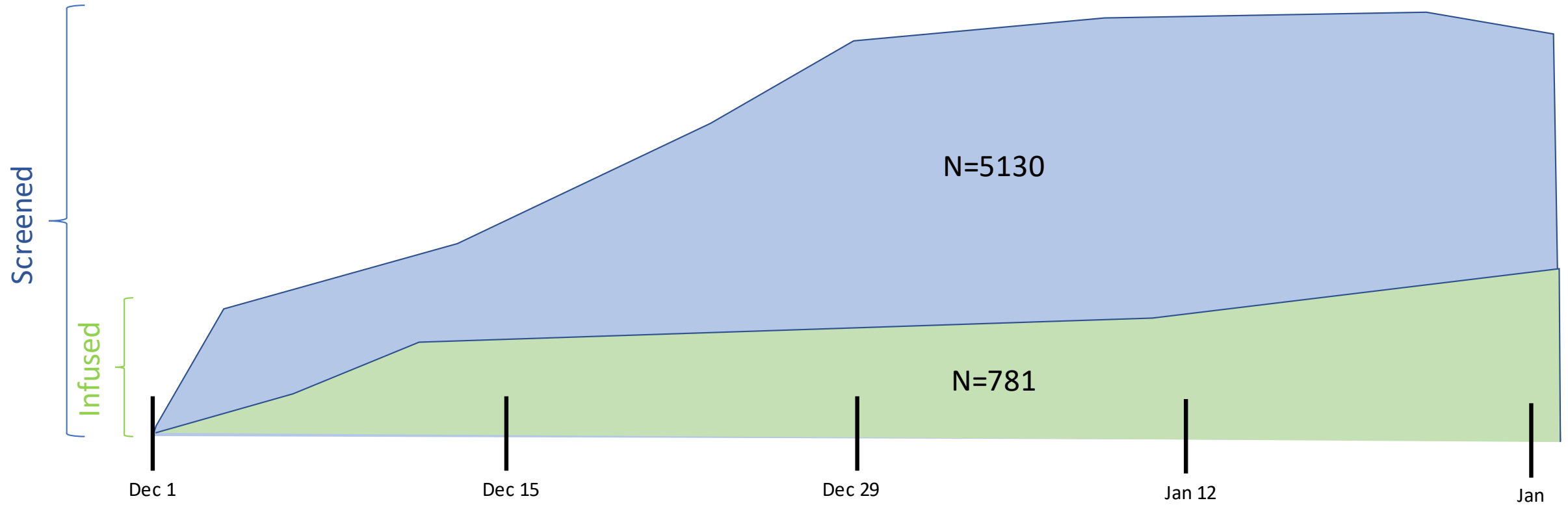patients

Admission rate: 27%
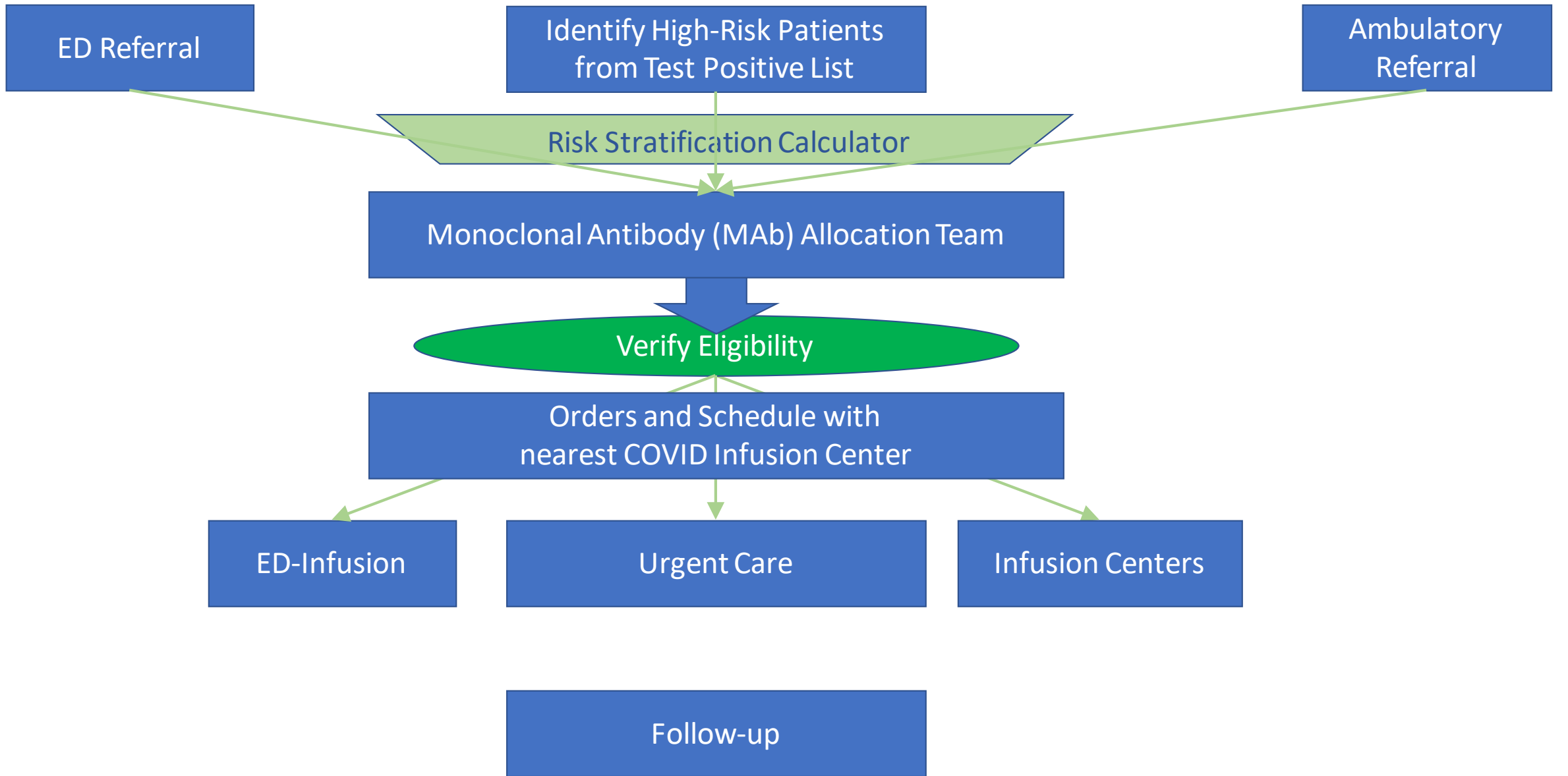
- Strategic geographic placement
- Case density
- Equity
- Preserve clinical access to other services (chemo, urgent care)
- 8 infusion centers
- 10 urgent care centers
- Most of Utah's 3.2 million population are within 60 min drive of an infusion site

Intermountain Healthcare
Major Intermountain Facilities

Experience to date

Feature	Result
Infusions:	781
Infusions with 14 days of f/u	601
Age (median, IQI):	66 (56-74)
Female	40%
Communities of color:	16.7%
Comorbidities (median, IQI)	5 (3-6)
Estimated Risk of Hospitalization:	96th percentile, est. 15% hospitalization rate
14-day admission rate:	4.3%
Infusion Reactions:	1.0%, none severe