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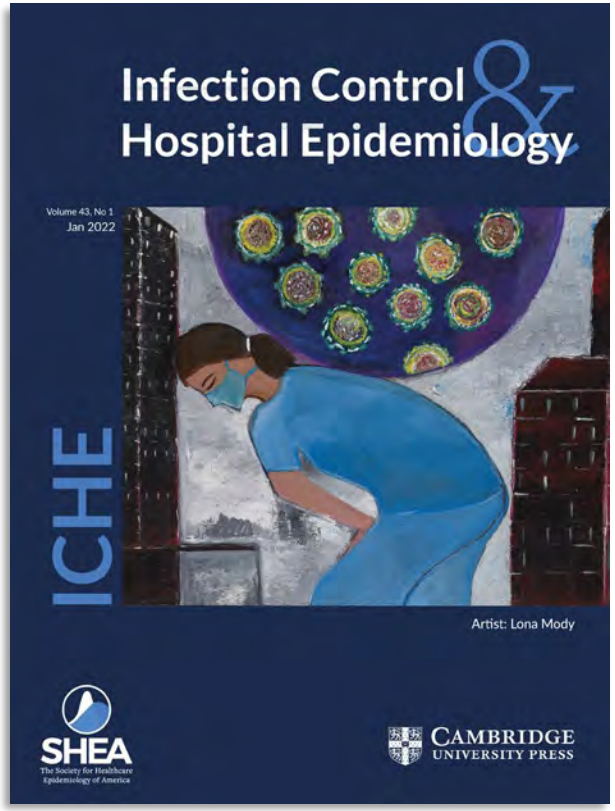

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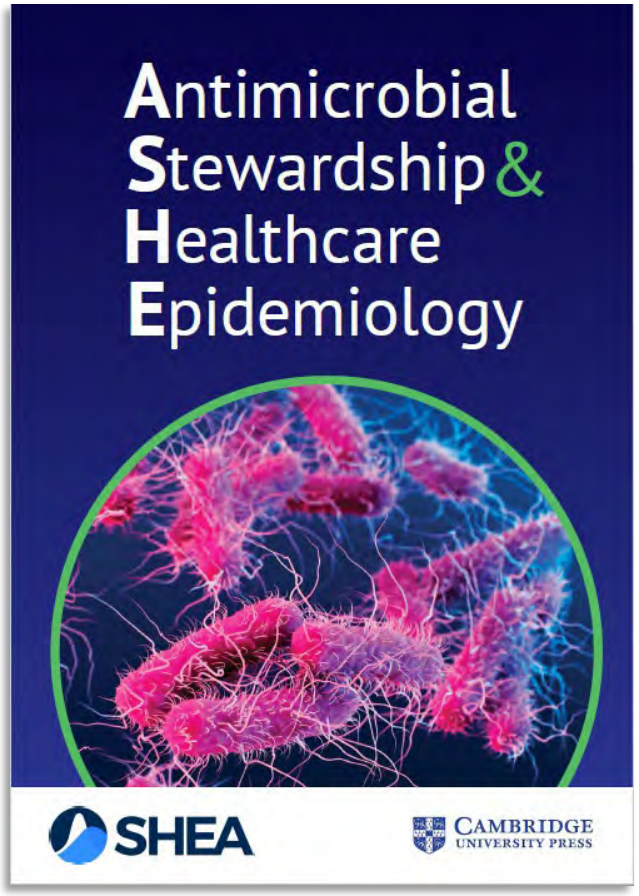

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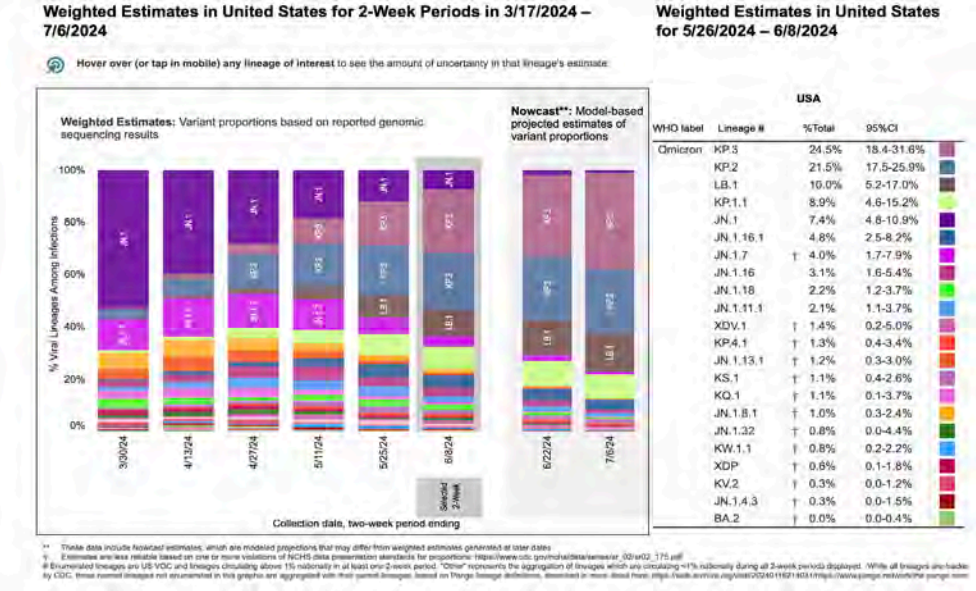
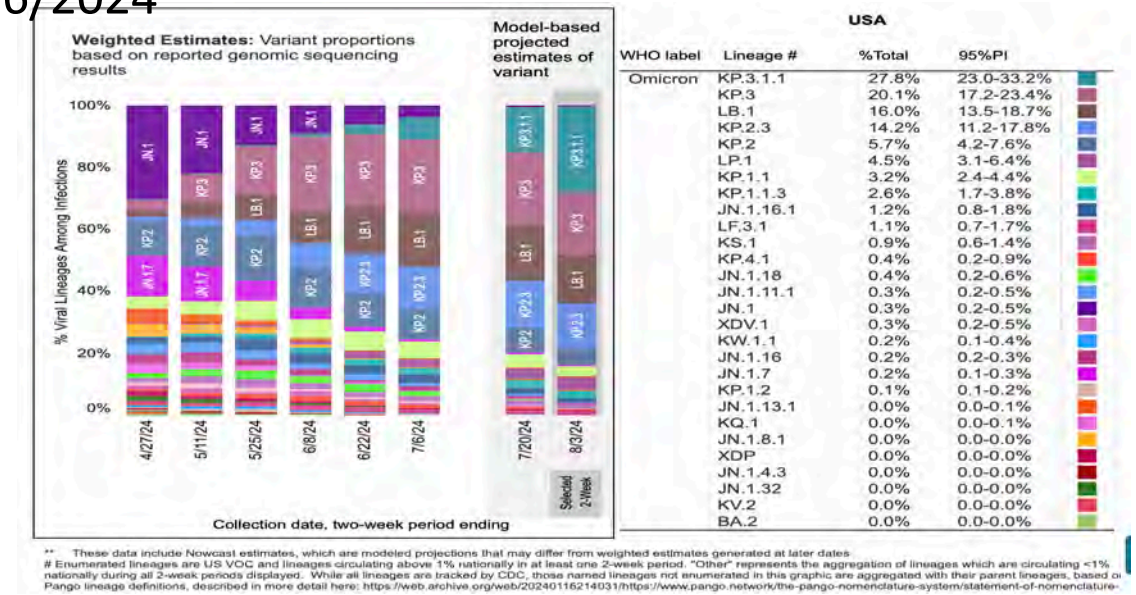
Overview

SARS-CoV-2 Variants, US, CDC



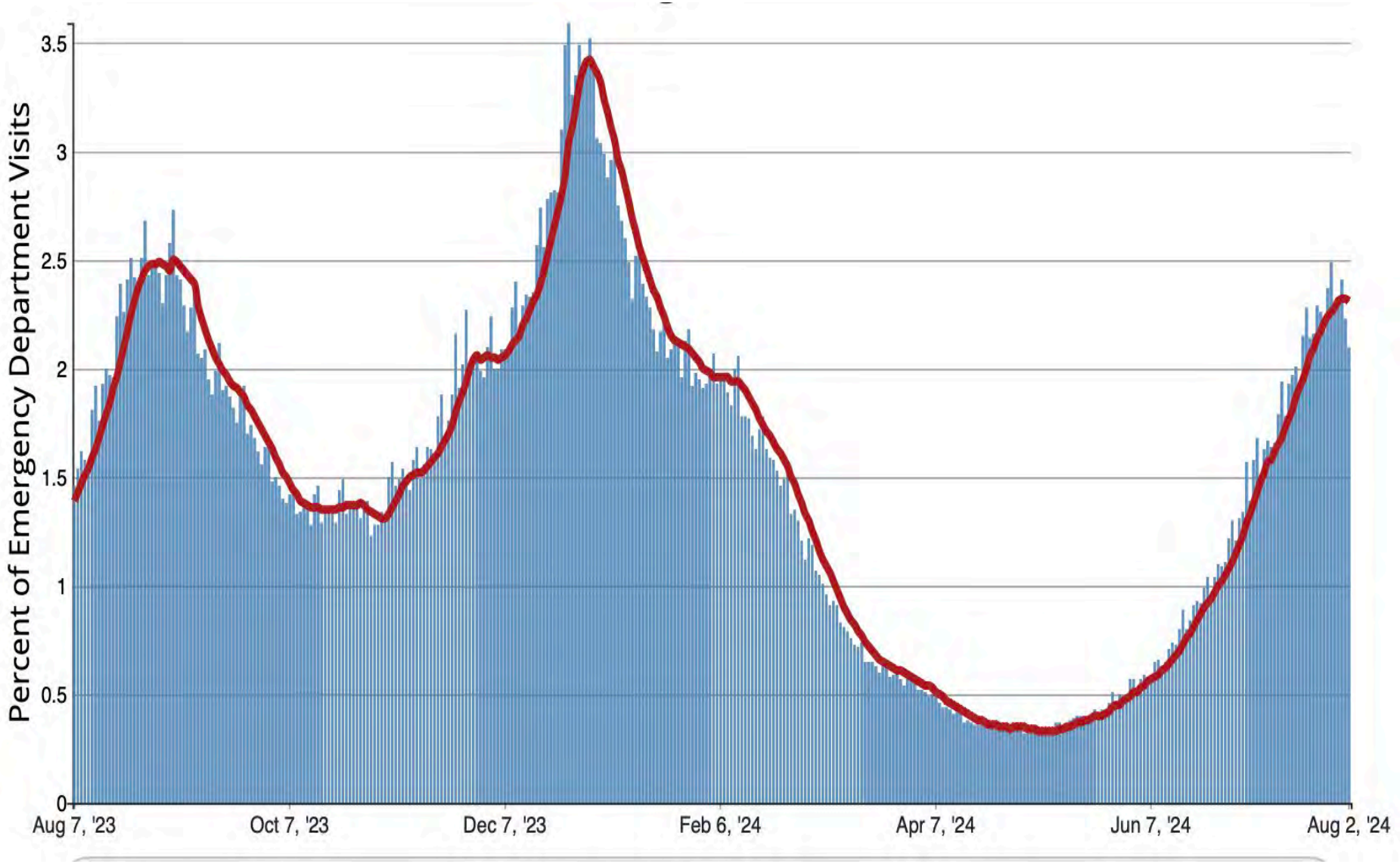
Data from 3/17/24 – 7/6/2024



Data from 4/14/24 – 8/3/2024

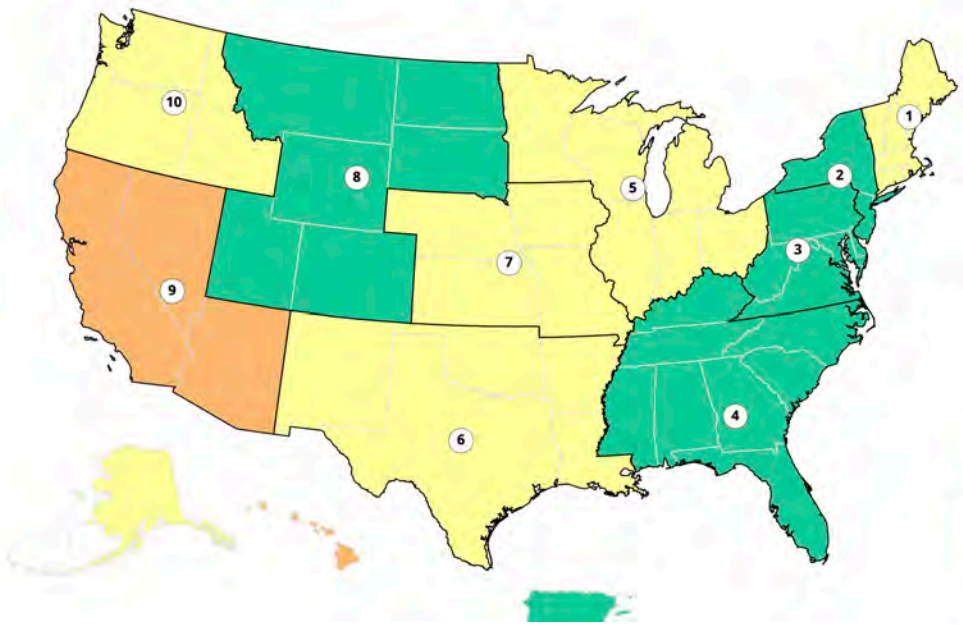
https://covid.cdc.gov/covid-data-tracker/#variant-proportions 8-8-2024

EMERGENCY DEPARTMENT VISITS DUE TO COVID-19

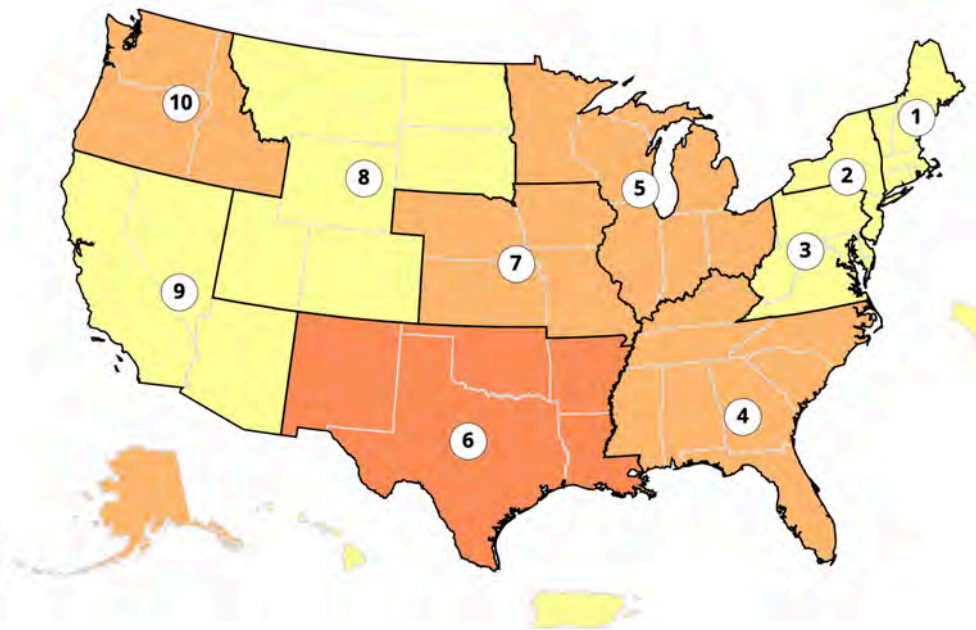


Source: CDC https://covid.cdc.gov/covid-data-tracker/#ed-visits_all_ages_combined 8--8-2024

COVID-19 Test Positivity Rates



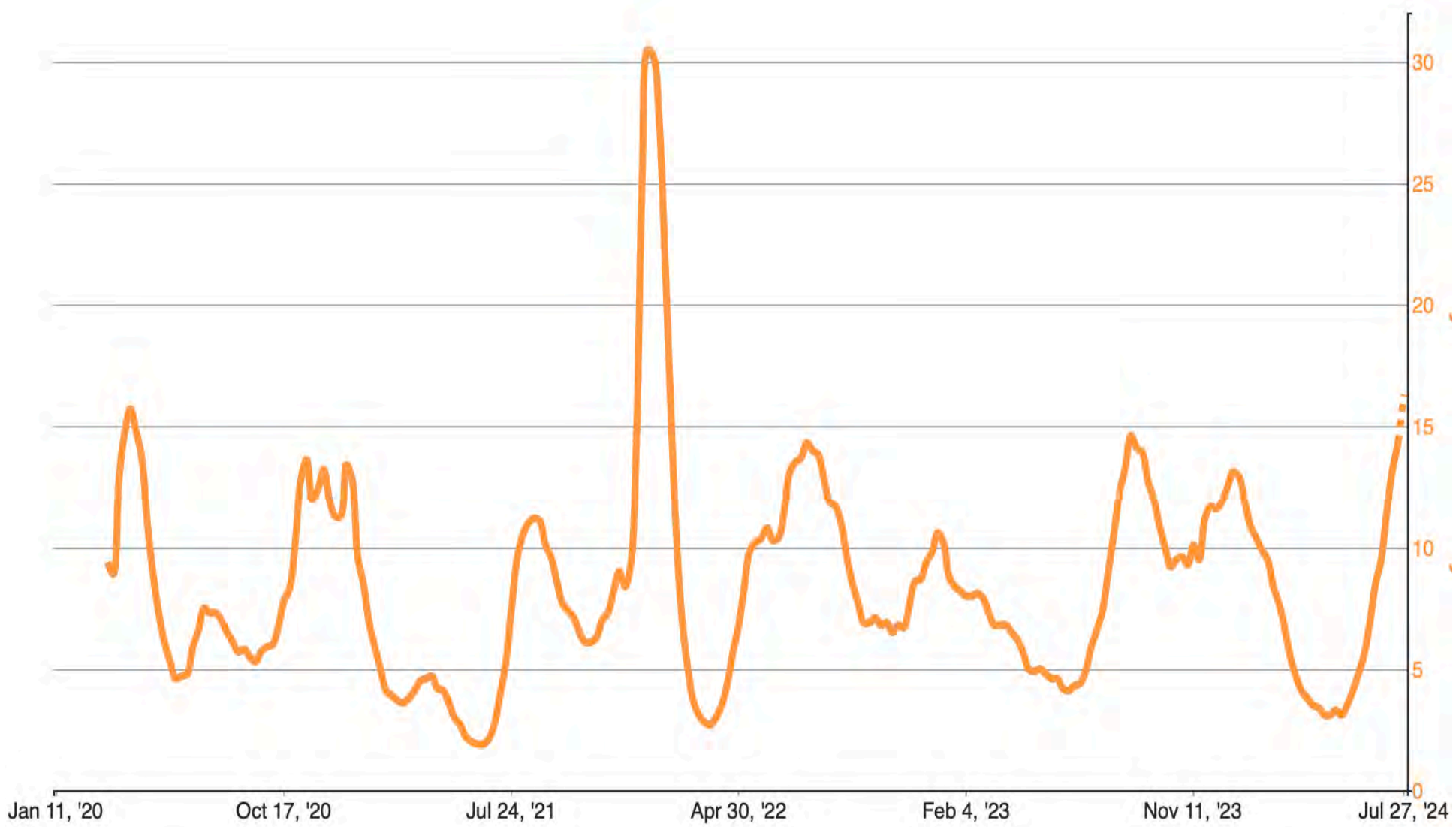
Week of 7/1/2024



Week of 8/1/2024

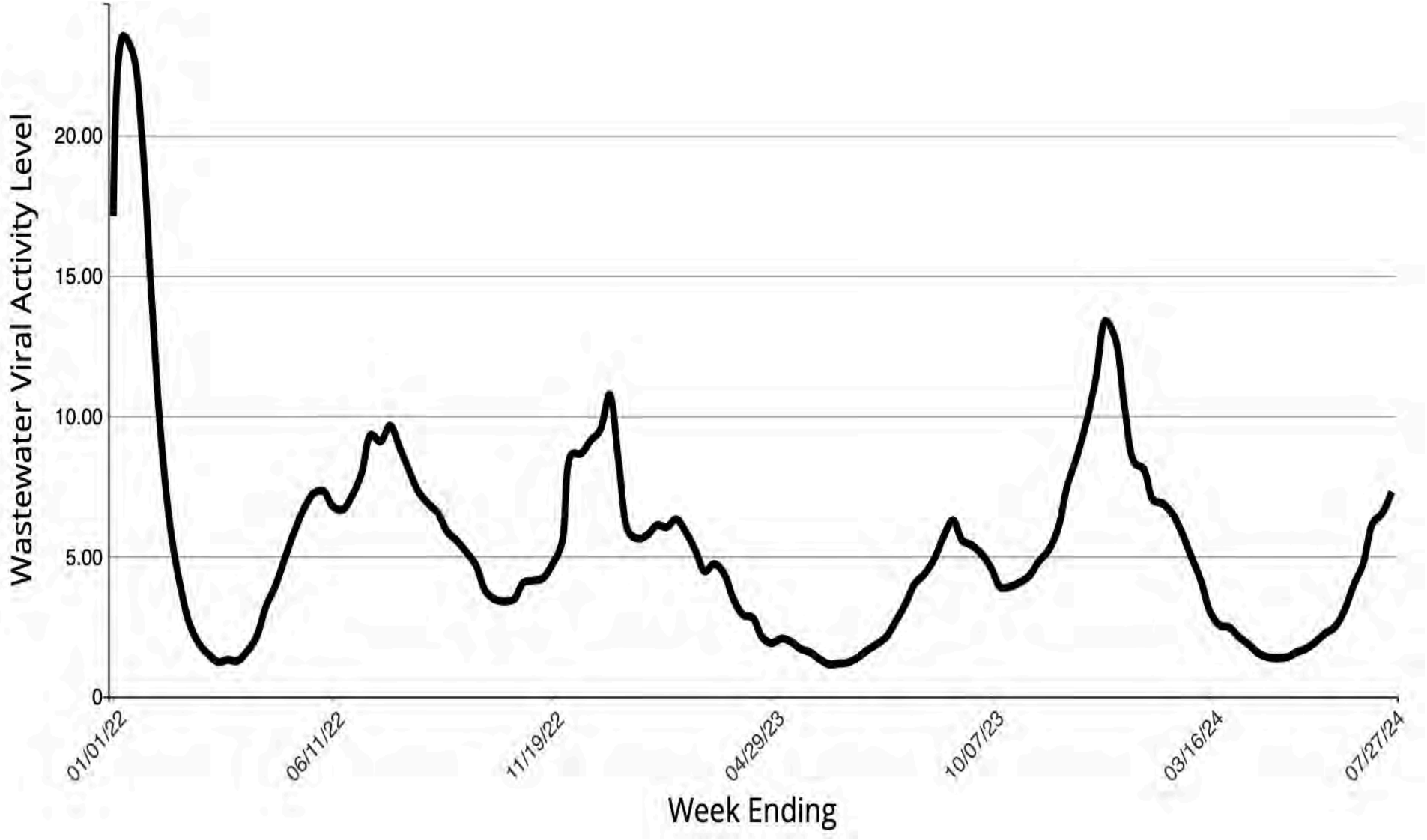
Source: CDC https://covid.cdc.gov/covid-data-tracker/#maps_positivity-week 8-1-2024

COVID-19 Rates of Test Positivity



Source: CDC https://covid.cdc.gov/covid-data-tracker/#trends_weeklyhospitaladmissions_testpositivity_00 8/1-2024

COVID-19 WASTEWATER VIRAL ACTIVITY

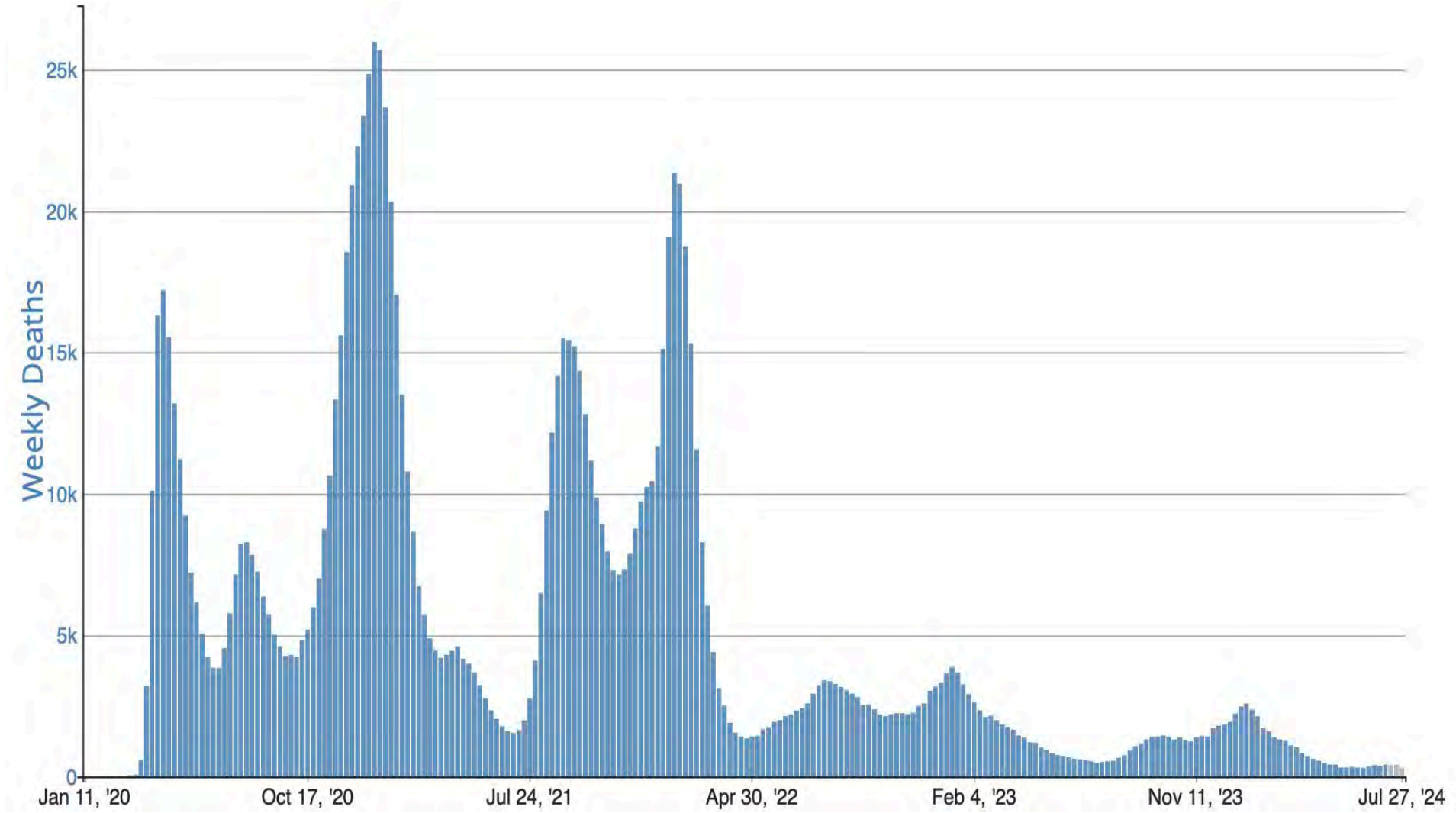


Source: CDC https://covid.cdc.gov/covid-data-tracker/#wastewater-surveillance 8-1-2024

HOSPITALIZATIONS FOR COVID-19 IN THE UNITED STATES

Source: https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalization-network 8-2-24

Weekly Provisional Deaths from COVID-19 in the United States



CDC https://covid.cdc.gov/covid-data-tracker/#trends_weeklydeaths_select_00 8-6-2024

LEADING CAUSES OF DEATH IN THE US, 2019-2023

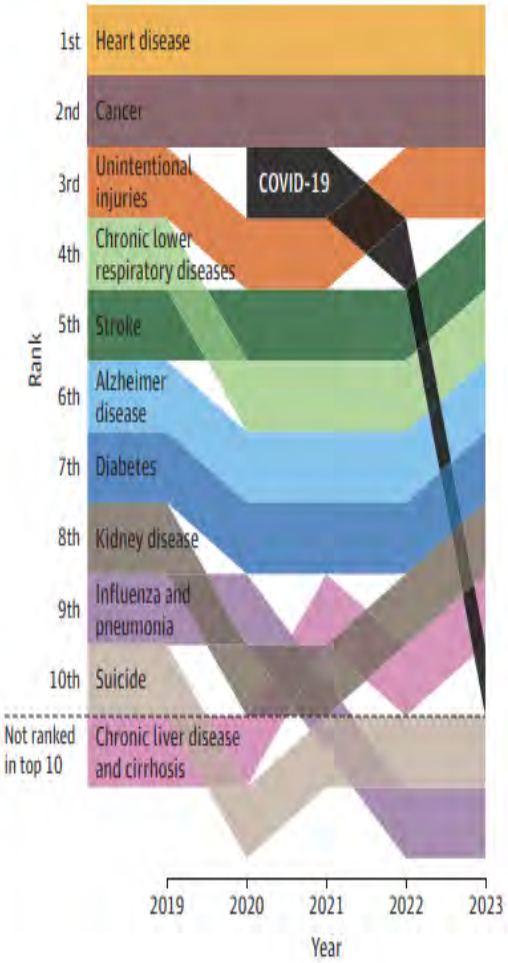
Table. Number of Deaths and Age-Adjusted Rate of Deaths for Leading Causes of Death–US, 2019-2023[a]

	No. of deaths (age-adjusted death rate per 100 000)[b]				
Underlying cause of death	2019	2020	2021	2022	2023
Total deaths	2 854 838 (715.2)	3 383 729 (835.4)	3 464 231 (879.7)	3 279 857 (798.8)	3 090 582 (750.4)
Heart disease	659 041 (161.5)	696 962 (168.2)	695 547 (173.8)	702 880 (167.2)	680 909 (162.1)
Cancer	599 601 (146.2)	602 350 (144.1)	605 213 (146.6)	608 371 (142.3)	613 331 (141.8)
Unintentional injuries	173 040 (49.3)	200 955 (57.6)	224 935 (64.7)	227 039 (64.0)	222 518 (62.3)
Stroke	150 005 (37.0)	160 264 (38.8)	162 890 (41.1)	165 393 (39.5)	162 639 (39.0)
Chronic lower respiratory diseases	156 979 (38.2)	152 657 (36.4)	142 342 (34.7)	147 382 (34.3)	145 350 (33.4)
Alzheimer disease	121 499 (29.8)	134 242 (32.4)	119 399 (31.0)	120 122 (28.9)	114 034 (27.8)
Diabetes	87 647 (21.6)	102 188 (24.8)	103 294 (25.4)	101 209 (24.1)	95 181 (22.4)
Kidney disease	51 565 (12.7)	52 547 (12.7)	54 358 (13.6)	57 937 (13.8)	55 250 (13.1)
Chronic liver disease and cirrhosis	44 358 (11.3)	51 642 (13.3)	56 585 (14.5)	54 803 (13.8)	52 220 (13.0)
COVID-19		350 831 (85.0)	416 893 (104.1)	186 552 (44.5)	49 928 (11.9)
Suicide	47 511 (13.9)	45 979 (13.5)	48 183 (14.1)	49 476 (14.2)	49 303 (14.1)
Influenza and pneumonia	49 783 (12.3)	53 544 (13.0)	41 917 (10.5)	47 052 (11.3)	45 182 (10.8)

[a] Leading causes are classified according to underlying cause and are presented according the number of deaths among US residents. For more information see Curtin et al.[5]

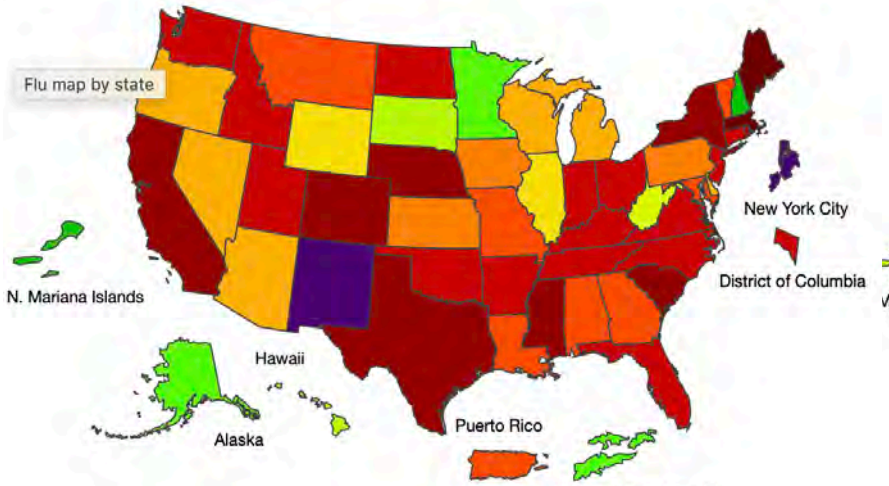
[b] Data for 2019 through 2022 are final. Data for 2023 are provisional.

Figure. Trends in the Ranking of Leading Causes of Death–US, 2019-2023



Ahmad FB, et al. JAMA 2024;8 August; doi:10.1001/jama.2024.15563

Influenza Activity by State in the United States



January 8, 2023

June 6, 2024

July 6, 2024

August 6, 2024

Very High | High | Moderate | Low | Minimal | Insufficient Data

Source: CDC https://www.cdc.gov/flu/weekly/usmap.htm 8-6-2024

Today's Emerging Infectious Disease News

1. Results of a placebo-controlled clinical trial published in **The New England Journal of Medicine** found that Oral Nirmatrelvir–Ritonavir (Paxlovid) was ineffective when administered as Postexposure Prophylaxis for COVID-19..
2. A systematic review and Meta-analysis published in **JAMA Network Open** found that 18.3% of physicians reported symptoms consistent with PTSD during the COVID-19 pandemic, with a higher risk in female physicians, older physicians, and trainees, and with variation by specialty.
3. Another study published in the same issue of **JAMA Network Open** found no association of SARS-CoV-2 infection with the subsequent appearance of myalgic encephalomyelitis/chronic fatigue syndrome.
4. A **New England Journal of Medicine s**tudy describes post-acute sequelae of SARS-CoV-2 Infection (particularly long-COVID) among Veterans' Administration patients in the Pre-Delta, Delta, and Omicron Eras ad found that the cumulative incidence of post-acute sequelae during the first year after SARS-CoV-2 infection decreased over the course of the pandemic.
5. A retrospective study published in **Science Translational Medicine** found immunity from prior SARS-CoV-2 infection but not COVID vaccination associated with lower endemic coronavirus incidence.
6. A paper in **JAMA Health Forum** evaluated the effect of state restrictions during the pandemic on deaths from COVID, finding that stringent COVID-19 restrictions were associated with substantial decreases in excess deaths during the pandemic.
7. A paper in **Clinical Infectious Diseases** found that for COVID-19 patients requiring oxygen support Remdesivir plus standard of care treatment was associated with a 54% lower mortality risk and shorter hospital stays compared with standard of care treatment alone.
8. A paper published in **The New England Journal of Medicine** demonstrated that the new, long-acting anti-retroviral agent, Lenacapavir, was superior to both daily administered FTC/TAF and daily administered FTC/TDF. In fact, no infections were detected in the Lenacapavir arm of the study.

References available in the chat

Today's Emerging Infectious Disease News

9. Results of a fifty-state (plus DC) survey of 443,455 survey respondents published in **JAMA Network Open** found that trust in physicians among respondents decreased substantially from 2020 to 2024. Lower levels of trust were associated with lesser likelihood of vaccination.
10. A paper in **JAMA Network Open** evaluated masking policies at NCI–Designated Cancer Centers during the 2023 -2024 surge and found that universal masking precautions were common at these centers, especially at more established, better-funded, and higher-ranked centers.
11. A study published in **JAMA Internal Medicine** found that the updated, BNT162b2.XBB vaccine provided significant additional protection against a range of COVID-19 outcomes during the the 2023 - 2024 surge. Older versions of COVID-19 vaccines offered little additional protection.
12. Results of a multisite cohort study published in **JAMA Pediatrics** found that among, among live-born infants, first-trimester mRNA COVID-19 vaccine exposure was not associated with an increased risk for selected major structural birth defects.
13. A paper published in **Nature Aging** reported that primary vaccination with an adenovirus-based vaccine with an mRNA vaccine promotes sustained immunological memory in older adults and potentially confers optimal protection against coronavirus disease 2019.
14. A **New England Journal of Medicine** perspectives piece. suggests that we have not learned from COVID, raising concern that that the initial response to H5N! influenza suggests that officials and key decision makers may be relying on "a dangerous type of revisionism," should H5N1 cause a pandemic.
15. A paper published in **Open Forum Infectious Diseases** found that patients with hematologic malignancies had persistently elevated SARS-CoV-2 viral tiers compared with immunosuppressed patients who have solid tumors.
16. A paper in **Science** demonstrated the efficacy of 'therapeutic interfering particles' in suppressing HIV replication in nonhuman primates infected with HIV, opening the door to a new approach to HIV therapy.

References available in the chat

Panelists:

Dr. David Henderson
NIH Consultant

Dr. Sarah Haessler
Baystate Health

Dr. Kristina Bryant
University of Louisville

Dr. David Weber
UNC School of Medicine

BEST PRACTICES FOR BLOOD CULTURE:
MANAGING THE SHORTAGE OF BLOOD CULTURE BOTTLES

David J. Weber, MD, MPH, FIDSA, FSHEA, FRSM (London)
Sanders Distinguished Professor of Medicine, Pediatrics and Epidemiology
Associate Chief Medical Officer, UNC Medical Center
Medical Director, Hospital Epidemiology, UNC Medical Center
University of North Carolina at Chapel Hill

UNC
SCHOOL OF MEDICINE

Disclosures: Consultancy-Pfizer, GSK, PDI, BD, Germitec; Speaker's Bureau-Merck, BD, GAMA

SHORTAGE OF BD BACKTEC™ BLOOD CULTURE BOTTLES

- 10 July 2024: FDA - Disruptions in Availability of BD BACTEC™ Blood Culture Media Bottles - Letter to Health Care Providers
- 13 July: CDC, HAN Alert – Disruptions in Availability of Becton Dickinson (BD) BACTEC™ Blood Culture Bottles
- 1 August, CDC Update: Disruptions in Availability of BD BACTEC Blood Culture Bottles: Current Situation
- 5 August, IDSA: Blood culture bottle shortage

Guide to Utilization of the Microbiology Laboratory for Diagnosis of Infectious Diseases: 2024 Update by IDSA & ASM

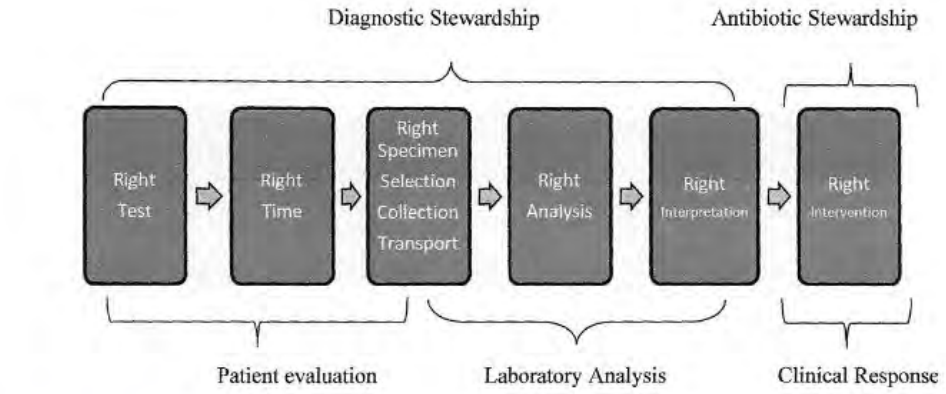


Figure 1. Interaction of diagnostic stewardship and antibiotic stewardship resulting in positive patient outcomes.

Table 3. Recommended Volumes of Blood for Culture in Pediatric Patients [3, 8]

Weight of Patient (kg)	Total Patient Blood Volume (mL)	Recommended Volume of Blood for Culture (mL)		Total Volume for Culture (mL)	% of Total Blood Volume
		Culture No. 1	Culture No. 2		
≤ 1	50–99	2	—	2	4
1.1–2	100–200	2	2	4	4
2.1–12.7	>200	4	2	6	3
12.8–36.3	>800	10	10	20	2.5
>36.3	>2200	20–30	20–30	40–60	1.8–2.7 or less

Key points for the laboratory diagnosis of bloodstream infections:

- Volume of blood collected, not timing, is most critical.
- Disinfect the venipuncture site with chlorhexidine or 2% iodine tincture in adults and children >2 months old (chlorhexidine NOT recommended for children <2 months old.
- Draw blood for culture before initiating antimicrobial therapy.
- Catheter-drawn blood cultures have a higher risk of contamination (false positives).
- Do not submit catheter tips for culture.
- Never refrigerate blood prior to incubation.
- Use a 2–3 bottle blood culture set for adults, at least one aerobic and one anaerobic; use 1–2 aerobic bottles for children.
- *Streptococcus pneumoniae* and some other gram-positive organisms may grow better in anaerobic than aerobic bottles.

Miller JM, et al Clin Infect Dis 2024;5 March

AMERICAN SOCIETY FOR MICROBIOLOGY

BLOOD CULTURE BOTTLE INVENTORY MANAGEMENT AND CLINICAL CONSERVATION DURING SUPPLY SHORTAGES

Endorsed by the Society for Healthcare Epidemiology of America (SHEA)

Authors: Geehan Suleyman,[1] Nicholas M. Moore,[2] Elizabeth Palavecino,[3] Amanda Harrington,[4] Romney Humphries,[5] Paige M.K. Larkin,[6] Rosemary She*,[7] Laura Filkins*[8]

*Co-senior authors

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7. City of Hope, Duarte, CA
8. University of Texas Southwestern Medical Center, Dallas, TX

file:///C:/Users/dweber/Downloads/Blood-Culture-shortage-FAQ_FINAL.pdf

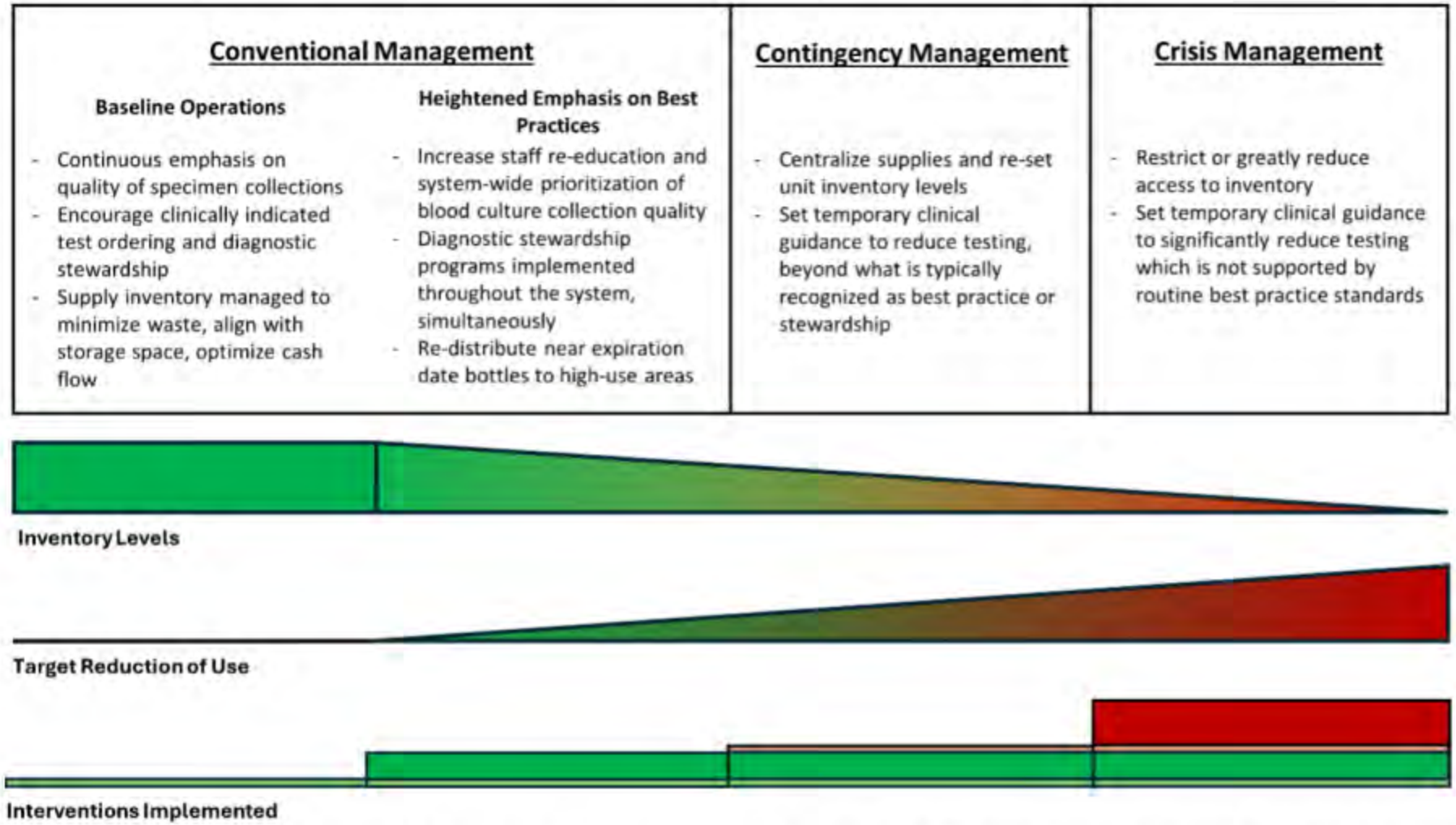


Figure 1. Tiered response categories that may be implemented based on the severity of BC bottle shortages. During BC bottle shortages, healthcare systems should first determine baseline inventory management and clinical utilization practices. Depending on the severity of the BC bottle shortage and target reduction of use required for an individual institution, different interventions may be required. We recommend that first interventions include emphasizing best practices to improve patient care and conserve supplies (conventional management of BC bottle inventory). During severe shortages, best practice interventions may not be sufficient. In those cases, in addition to best practice interventions, systems must identify additional conservation methods that reduce use beyond what is typically recognized as best practice (contingency management) or what is not supported by best practices standards (crisis management).

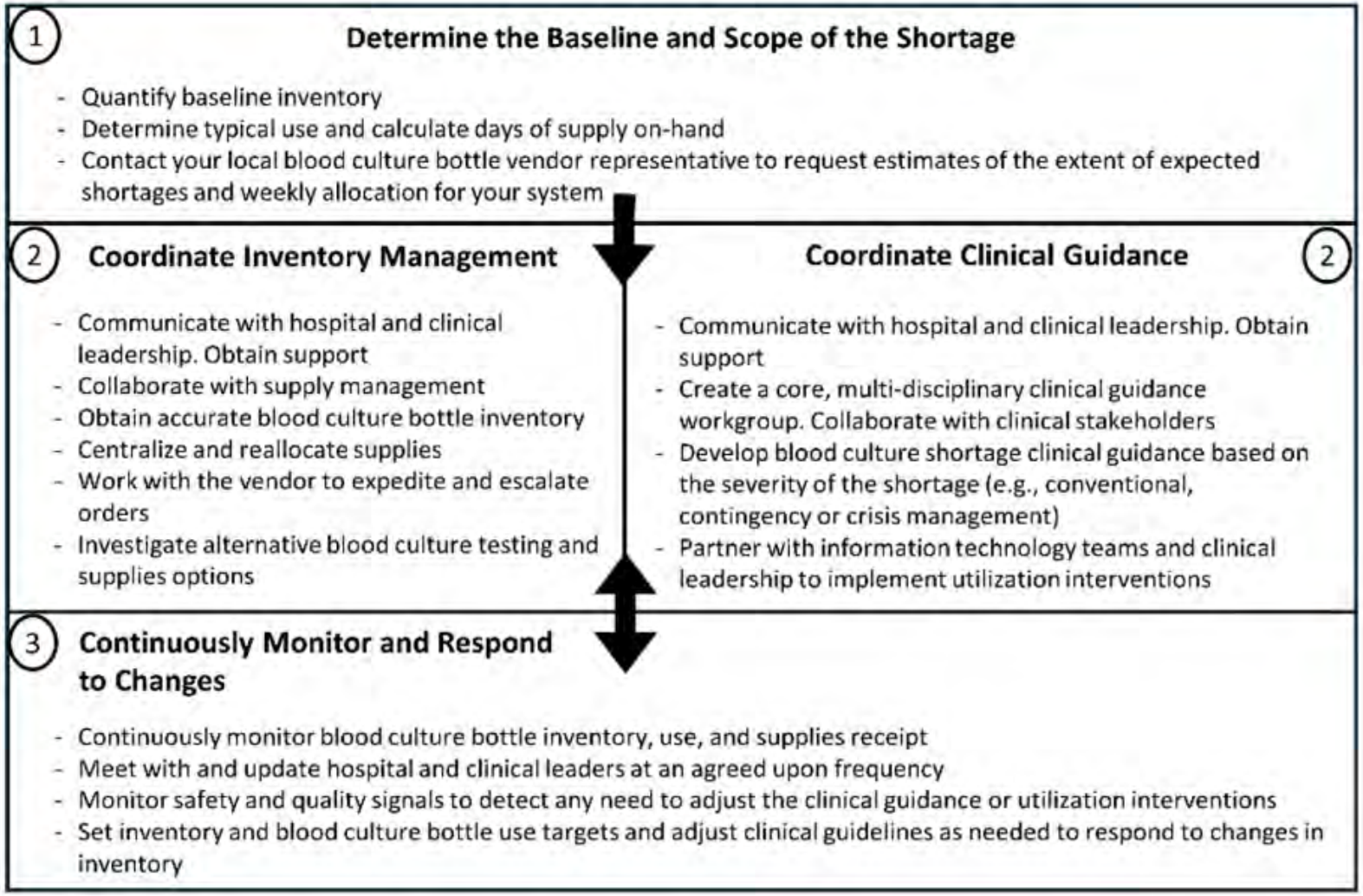
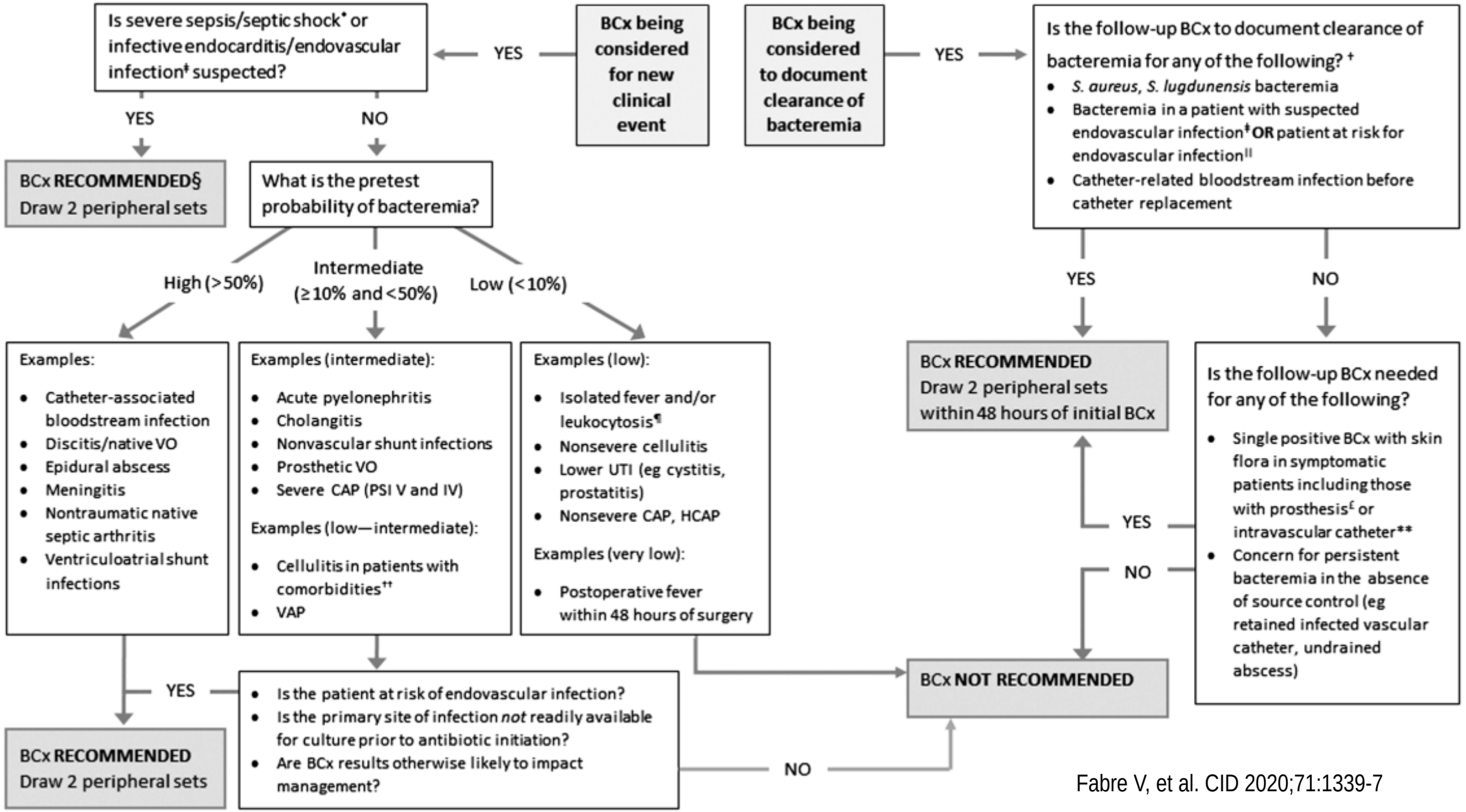


Figure 2. Recommended steps and tasks for laboratories to take to help organize their system's response to a BC bottle shortage. When coordinating a response to BC bottle shortages, we recommend that laboratory leaders first determine the baseline bottle inventory for their system and estimate the extent and scope of the shortage. Next, both inventory management strategies and clinical guidance to reduce use must be coordinated. These activities generally require collaboration with different groups and experts but should be managed at the same time. Depending on the system, laboratory leaders may or may not be delegated to coordinate these responses. Therefore, it is imperative to first communicate with hospital and clinical leadership, determine the status of the system's response, and identify areas in which laboratory expertise is needed. After initial coordination and strategies are developed, an iterative process of monitoring and responding to changes should proceed until the shortage is resolved.



Fabre V, et al. CID 2020;71:1339-7

Algorithm for bacterial blood cultures recommendations in nonneutropenic patients. The algorithm is not a substitute for clinical judgment

Table 1. Pretest Probability of Bacteremia in Common Clinical Scenarios (Percentages as Reported in the Studies)

< 5% (Very Low)	< 10% (Low)	Between 10% and < 20% (Low-moderate)	Between 20% and <50% (Moderate)	≥ 50% (High)
Fever within first 48 h of surgery [12–14, 42, 55]	Uncomplicated cellulitis [6, 15–17, 43, 44], including periorbital cellulitis [45, 46]	Cellulitis in patients with severe comorbidities [18, 27, 28]	Severer sepsis	Discitis and VO [39, 40, 47] Epidural abscesses [40, 41] Acute nontraumatic native septic joints [48]
Isolated fever [5, 6]	Lower urinary tract infection [19, 20]	…	Acute pyelonephritis [29, 30, 49, 50]	Meningitis [6]
…	…	…	Cholangitis [32, 33] Pyogenic liver abscess [34]	…
…	CAP [6, 22, 23, 51–53] HCAP [21, 22, 52, 56]	VAP [25, 26]	Severe CAP [31]	…
…	…	…	Nonvascular shunt infections [35]	Ventriculoatrial shunt infections [35]
…	…	…	Severe sepsis [54, 57] Shaking chills in febrile patient [6]	Septic shock [6] Catheter-related bloodstream infections

Abbreviations: CAP, community-acquired pneumonia; HCAP, healthcare-associated pneumonia; VAP, ventilator-associated pneumonia; VO, vertebral osteomyelitis.

Fabre V, et al. CID 2020;71:1339-7

A Diagnostic Stewardship Intervention To Improve Blood Culture Use among Adult Nonneutropenic Inpatients: the DISTRIBUTE Study

ABSTRACT: Interventions to optimize blood culture (BCx) practices in adult inpatients are limited. We conducted a before-after study evaluating the impact of a diagnostic stewardship program that aimed to optimize BCx use in a medical intensive care unit (MICU) and five medicine units at a large academic center. The program included implementation of an evidence-based algorithm detailing indications for BCx use and education and feedback to providers about BCx rates and indication inappropriateness. Neutropenic patients were excluded. BCx rates from contemporary control units were obtained for comparison. The primary outcome was the change in BCxs ordered with the intervention. Secondary outcomes included proportion of inappropriate BCx, solitary BCx, and positive BCx. Balancing metrics included compliance with the Centers for Medicare and Medicaid Services (CMS) SEP-1 BCx component, 30-day readmission, and all-cause in-hospital and 30-day mortality. After the intervention, BCx rates decreased from 27.7 to 22.8 BCx/100 patient-days (PDs) in the MICU (P <0.001) and from 10.9 to 7.7 BCx/100 PD for the 5 medicine units combined (P <0.001). BCx rates in the control units did not decrease significantly (surgical intensive care unit [ICU], P=0.06; surgical units, P=0.15). The proportion of inappropriate BCxs did not significantly change with the intervention (30% in the MICU and 50% in medicine units). BCx positivity increased in the MICU (from 8% to 11%, P<0.001). Solitary BCxs decreased by 21% in the medicine units (P<0.001). Balancing metrics were similar before and after the intervention. BCx use can be optimized with clinician education and practice guidance without affecting sepsis quality metrics or mortality.

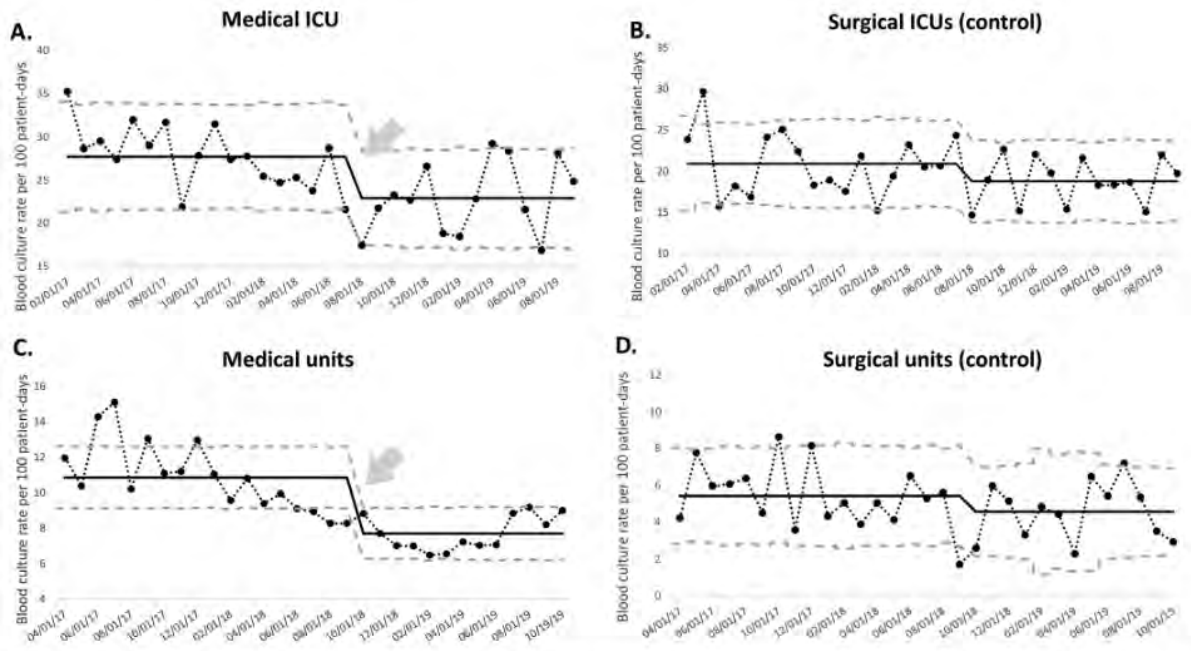


FIG 1 Trends of blood cultures in the intervention and control units during the study period. Arrows indicate the intervention. Black solid lines indicate average blood culture rate, and each black circle indicates average blood culture rate for each month. Upper and lower dashed gray lines indicate "control" limits (average rate + [3 × SD]).

Fabre V, et al. J Clin Microbiol 2020;10:e01053-20

Blood Culture Utilization in the Hospital Setting: a Call for Diagnostic Stewardship

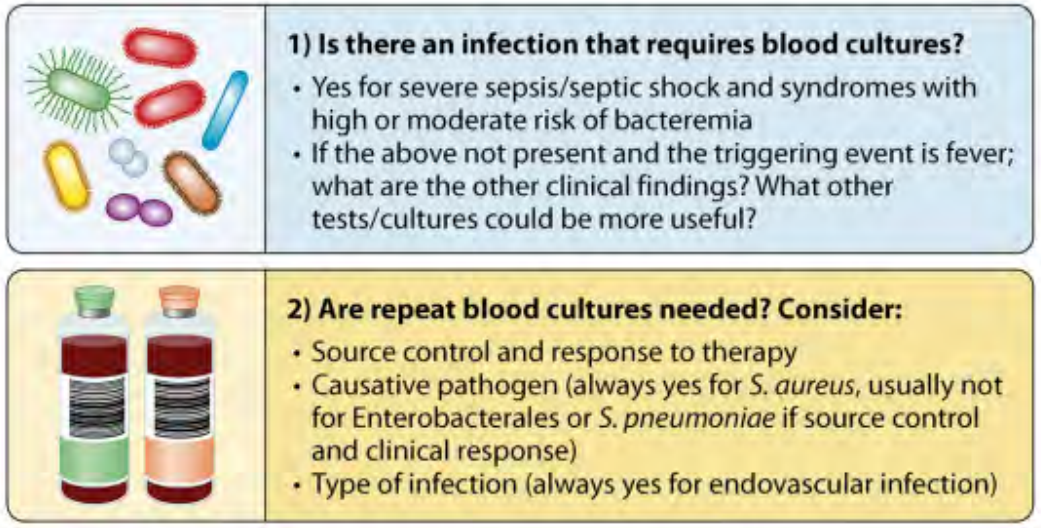


FIG 1 Facilitator questions to guide blood culture decisions.

Fabre V, et al
J Clin Microbiol 2022;60:e1005-21

TABLE 1 Examples of common scenarios when initial blood cultures have high and low diagnostic utility for immunocompetent hosts[a]

Diagnostic value of initial blood cultures	Exception
High diagnostic value	
Severe sepsis/septic shock	NA
Infections associated with high or intermediate risk of bacteremia	NA
Low diagnostic value	
Fever ± leukocytosis in stable patients without suspicion for endovascular infection	Patients with splenectomy
Postoperative fever within 48 h	Presence of severe sepsis/ septic shock
Infections with low risk of bacteremia (e.g., cystitis, prostatitis, cellulitis, non-severe pneumonia, prosthetic joint infection)	Endovascular infection suspected Presence of severe sepsis/ septic shock
Persistent febrile neutropenia in hemodynamically stable patients with 2 negative sets	NA

[a]See references 8 and 50 to 52 for more detail. NA, not applicable.

TABLE 2 Examples of common scenarios when repeat blood cultures have high and low diagnostic utility[a]

Diagnostic value of repeat blood cultures	Exception
High diagnostic value	
To document clearance of *S. aureus* bacteremia	NA
To document clearance of *S. lugdunensis* bacteremia	NA
Any organism suspected to be causing infective endocarditis/endovascular infection	NA
Concern for persistent bacteremia	NA
To distinguish contamination from true bacteremia	NA
Low diagnostic value	
S. pneumoniae or β-hemolytic streptococcus bacteremia from pulmonary source	Infective endocarditis/endovascular infection suspected
Gram-negative organisms from urinary/abdominal source	Infective endocarditis/endovascular infection suspected
Enterococcus bacteremia from urinary or biliary source	Inadequate clinical response
Cases likely to represent contamination[b]	Absence of source control

WHO NEEDS A BLOOD CULTURE? A PROSPECTIVELY DERIVED AND VALIDATED PREDICTION RULE

Abstract: The study objective was to derive and validate a clinical decision rule for obtaining blood cultures in Emergency Department (ED) patients with suspected infection. This was a prospective, observational cohort study of consecutive adult ED patients with blood cultures obtained. The study ran from February 1, 2000 through February 1, 2001.

Table 3. Decision Rule

Major Criteria	Minor Criteria (1 point each)
Suspect endocarditis (3 points)	Temperature 38.3–39.3°C (101.0–102.9°F)
Temperature > 39.4°C (103.0°F) (3 points)	Age > 65 years
Indwelling vascular catheter (2 points)	Chills
	Vomiting
	Hypotension (systolic blood pressure < 90 mm Hg
	White blood cell count > 18,000 cells/mm^3
	Bands > 5%
	Platelets < 150,000 cells/mm^3
	Creatinine > 2.0 mg/dL

Either 1 major criterion or 2 or more minor criteria is an indication to obtain a blood culture. If these are not present, a blood culture is not indicated by the rule.

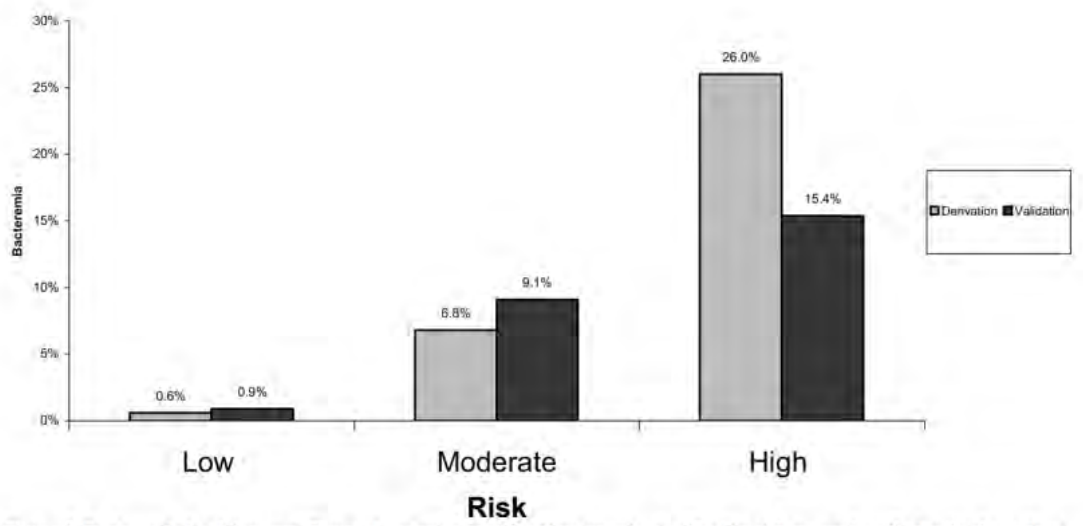


Figure 2. Bacteremia by risk group. Figure demonstrates risk of bacteremia stratified by risk group: low (0–1 points), moderate (2–4 points), and high (> 4 points).

Shapiro NI, et al. J Emerg Med 2008;35:255-64.

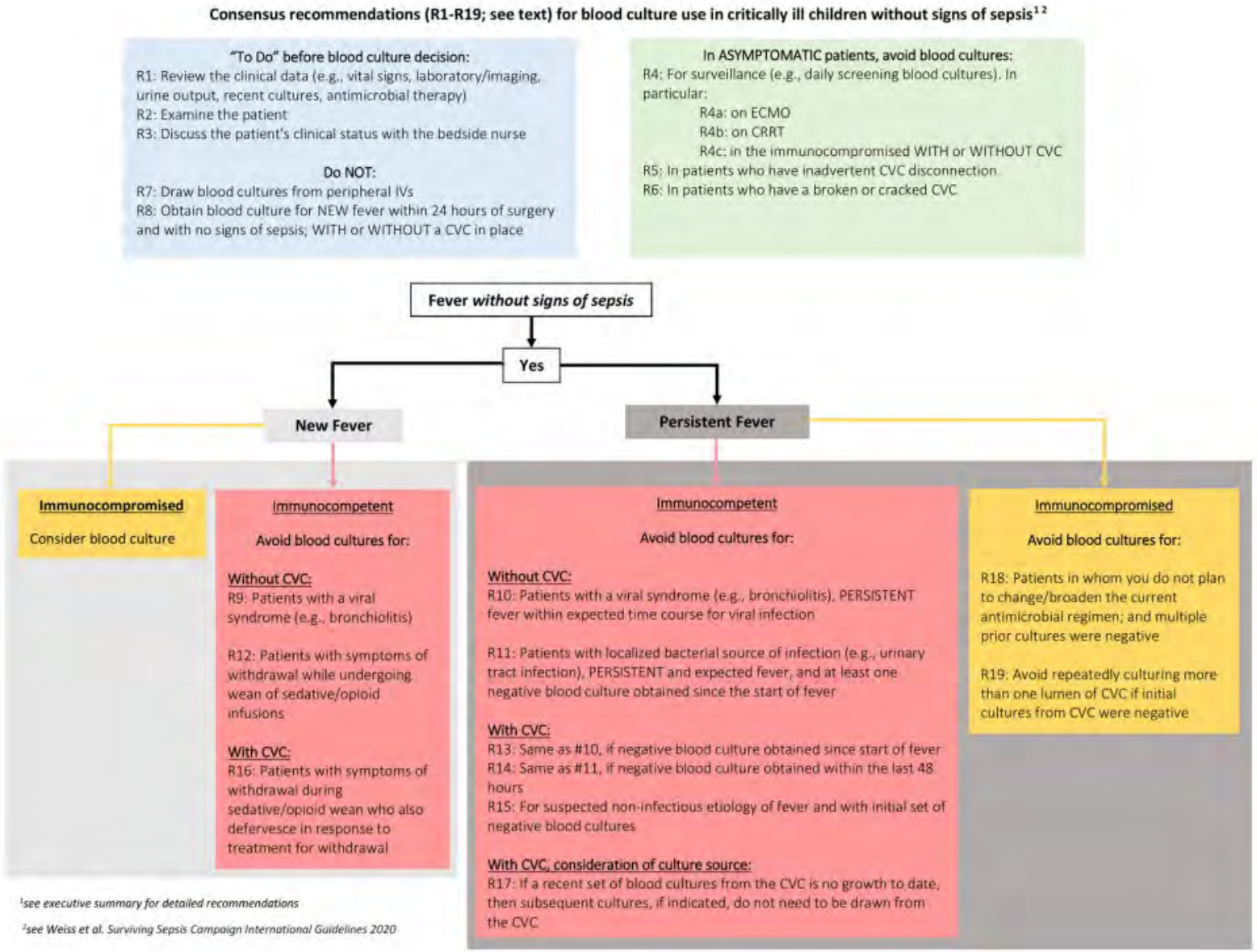


Figure 1.
Delphi consensus recommendations for blood culture use in critically ill children without signs of sepsis

Research in Context

- Blood culture practices in critically ill children vary widely, and overuse of cultures can lead to false positive results, unnecessary antibiotics, and patient harm.
- Diagnostic stewardship efforts can safely reduce blood culture overuse, but no standards or guidelines currently exist to guide clinicians in specific scenarios.
- To meet this need, a multi-center collaborative called Bright STAR used a modified Delphi method to develop the first-ever consensus recommendations for reducing blood culture overuse in the pediatric intensive care unit.

At the bedside

- We recommend that every PICU consider implementing diagnostic stewardship for blood cultures to avoid unnecessary testing and excess antibiotics in critically ill children.
- A multidisciplinary expert panel developed 19 recommendations for blood cultures that can be avoided in critically ill children.
- Additional study is needed to determine optimal implementation strategies.

Woods-Hill, CZ et al.
Pediatr Crit Care Med 2021;22:774-84

Evaluation of expired BD BACTEC blood culture vials

In June 2024, Beckton Dickinson and Company (BD) notified customers that a supply chain disruption had caused a global shortage of BACTEC blood culture vials anticipated to last for several months. On July 10, FDA acknowledged this shortage, providing guidance on conservation strategies. To maintain supply, our hospital system immediately implemented a stewardship strategy to limit low-yield blood culture testing, similar to recently published guidance, and achieved a 30%–40% reduction over a 2-week period. In addition, we explored the feasibility of other interventions should stewardship efforts fail to meet our needs. One such intervention for hospitals to consider is the use of expired blood culture vials. A recent study demonstrated that many brands of blood culture vials are stable for at least 4–7 months after expiration when stored at room temperature. However, BD was not among the brands evaluated. To determine the stability of a lot of expired vials, we performed a quality control evaluation similar to that summarized in BD's certificate of analysis and drawn from established protocols for blood culture media validation.

Expired media passed the visual check and maintained an appropriate pH (observed 7.15 ± 0.01; expected 7.2 ± 0.1) and vacuum (observed 30.5 ± 2 mL; expected >8 mL). For 19 of 20 organisms, growth occurred in both expired and unexpired vials. For one organism (*Corynebacterium* spp. clinical strain), growth only occurred in the expired vial. For the 19 paired vials with detectable growth, there was no difference in time to detection between expired and unexpired media (P = 0.533 by paired t-test).

Our study indicates that BD BACTEC Plus Aerobic/F culture vials are stable for at least 101 days after expiration when stored properly

Klontz EH, et al. J Clin Microbiol 2024;31 July

TABLE 1 Comparison of growth time of organisms in expired vs unexpired media[a] (Table view)

Organism	Inoculum (CFU)	Expired media time to growth (h)	Unexpired media time to growth (h)
Alcaligenes faecalis ATCC 8750	65	24.23	23.75
Candida glabrata ATCC 2950	27	20.63	20.32
Escherichia coli ATCC 25922	22	12.20	12.37
Haemophilus influenzae ATCC 10211	60 + FOS	14.62	14.62
Neisseria meningitidis ATCC 13090	11 + FOS	20.57	20.72
Pseudomonas aeruginosa ATCC 27853	53	17.43	16.27
Staphylococcus aureus ATCC 25923	31	13.20	13.37
Streptococcus pneumoniae ATCC 49619	7	12.47	13.30
Streptococcus pyogenes ATCC 19615	16	11.88	12.88
Staphylococcus lugdunensis clinical strain	22	20.27	19.62
Staphylococcus haemolyticus clinical strain	15	18.10	18.10
Streptococcus mitis/oralis clinical strain	6	14.33	13.33
Enterococcus faecalis clinical strain	24	11.83	11.83
Enterococcus faecium clinical strain	22	13.60	13.60
Corynebacterium spp. clinical strain	36	58.97	No growth 5 days
Klebsiella pneumoniae clinical strain	27	10.48	10.82
Proteus mirabilis clinical strain	40	11.70	11.68
Serratia marcescens clinical strain	60	13.97	13.63
Enterobacter cloacae complex clinical strain	36	12.03	11.87
Aeromonas hydrophila clinical strain	29	10.28	10.28
Negative control	N/A[b]	No growth 5 days	No growth 5 days
Negative control	FOS	No growth 5 days	No growth 5 days

[a]

BLOOD CULTURE BEST PRACTICES IN ADULTS

2024 Shortage Update | UNC Hospitals

Indications for Blood Cultures

- Suspected sepsis
- Suspected bacteremia, fungemia, or endocarditis
- New fever in ICU patient*
- Fever in a neutropenic patient*

*Not more frequently than q 72 hours unless clinically deteriorating

- "Test of cure" >48 hours after the initiation of appropriate antimicrobial therapy is recommended for patients with the following pathogens:
  - Carbapenem-resistant Enterobacterales
  - *Enterococcus* species
  - *Candida* species
  - *Staphylococcus aureus* (MRSA or MSSA)
  - *Staphylococcus lugdunensis*
- For patients with other pathogens who are clinically improving, evidence is weak that a test of cure improves outcomes.

⚠ Global Shortage of Blood Culture Bottles

All UNC Health hospitals and clinics that use BD BACTEC™ blood culture systems are affected by a global blood culture media bottle shortage. Carefully consider when blood cultures are medically indicated to avoid disruption of patient care.

DO

- Wait for an order to be placed before collecting blood.
- Use strict aseptic technique.
- Always obtain at least 2 sets of blood cultures, filling each bottle to the recommended 8-10 ml for accurate results.
- Use two peripheral venipunctures for the lowest rate of false positive cultures.
- Obtain blood cultures PRIOR to initiating antibiotic therapy.

DO NOT

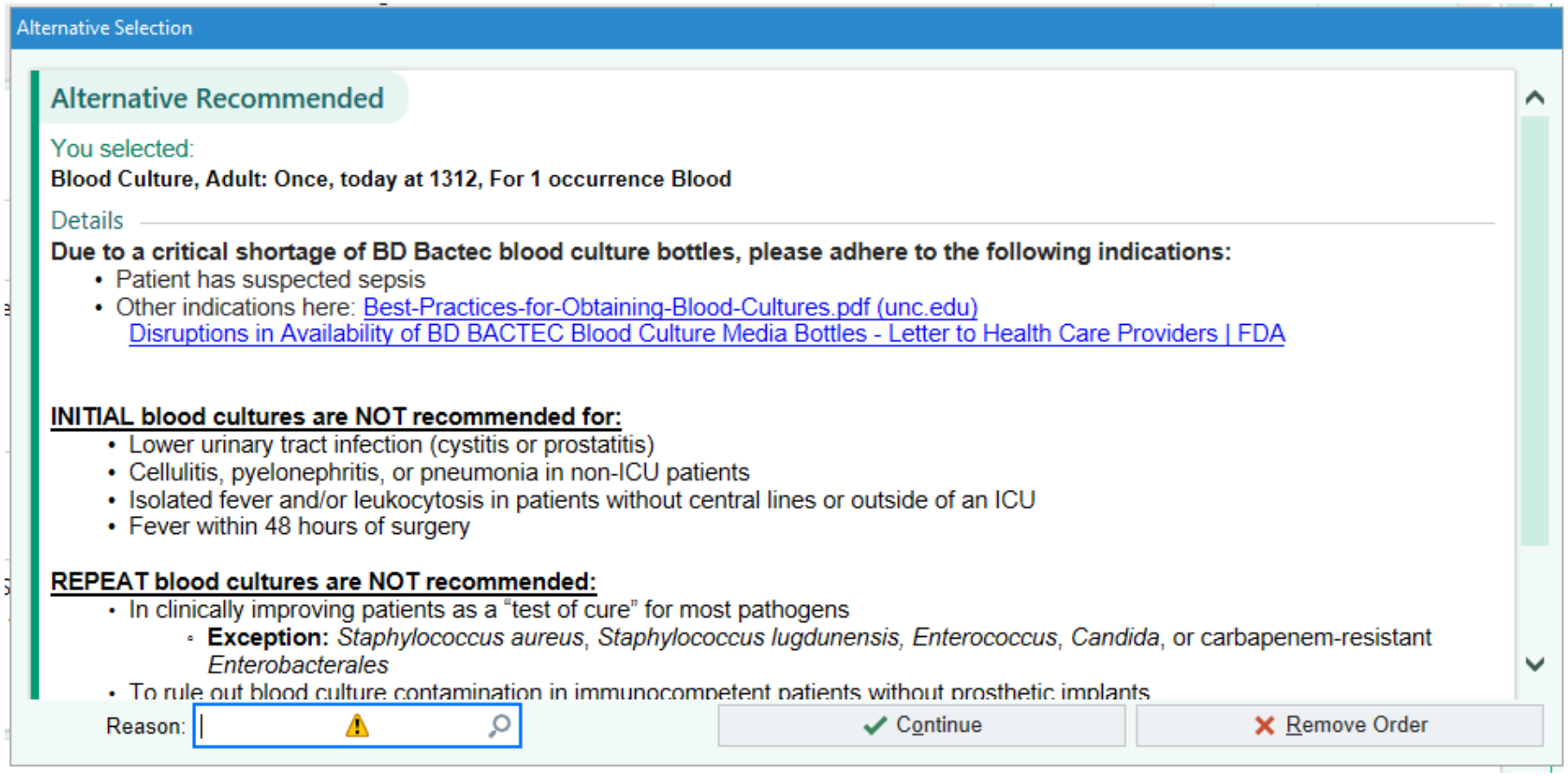
- Do not obtain blood cultures via a peripheral intravenous catheter (PIV) or arterial catheter, even when the catheter is newly placed. This is associated with false positives.
- Do not obtain a single blood sample and then split the blood among multiple blood culture sets.
- Do not obtain blood cultures in an asymptomatic patient unless the cultures are being obtained as a "test of cure" for an indicated pathogen as listed above.
- Do not obtain blood cultures via central venous catheter if possible (higher risk for contamination). However, if there is concern for a central line infection (fever without obvious alternative source) and salvaging the line is being considered, or if it is not feasible to obtain two sets of blood cultures by separate peripheral venipunctures, one set from peripheral venipuncture and one from the central line can be obtained.

UNC Hospitals' Stop Healthcare-associated Infections in Everyone (SHINE - 984-974-7500) & the Carolina Antibiotic Stewardship Program (pager 216-2398). **Full guideline: https://go.unc.edu/bloodcx**

UNC HEALTH

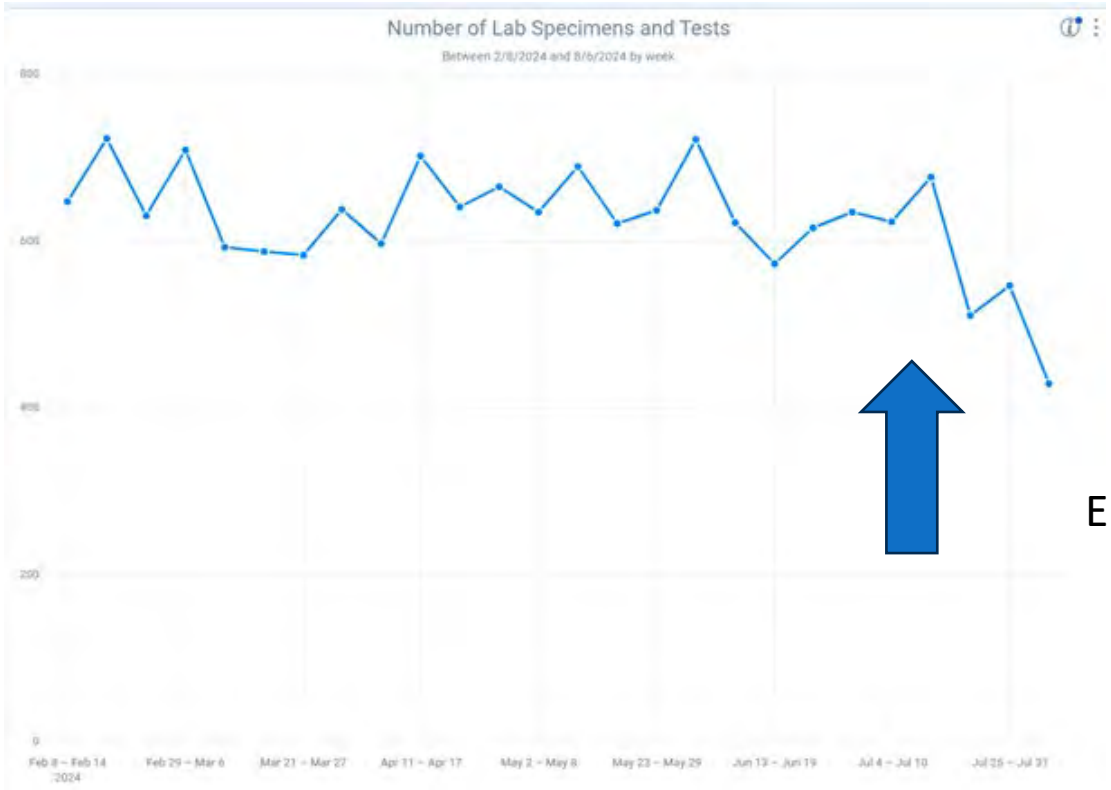
https://www.med.unc.edu/casp/wp-content/uploads/sites/563/2024/08/Shortage-version-2024-Blood-Cultures-Best-Practices-Flyer-2024-Aug-2.pdf

UNC HEALTH: BLOOD CULTURE “POP-UP”



UNC SCHOOL OF MEDICINE

BLOOD CULTURE USE ACROSS UNC HEALTH OVER TIME



EPIC Best Practice Blood Culture Alert Implemented

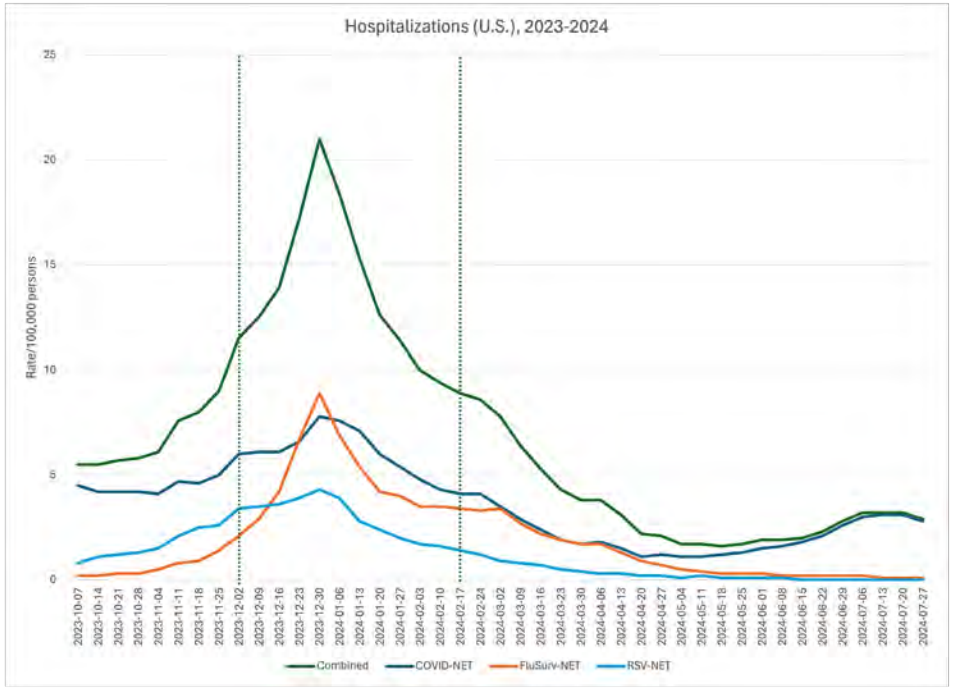
Per UNC Health system supply chain: ~24% decrease in blood culture bottle us since implementation of EPIC popup;
~4-week supply of blood culture bottles on hand

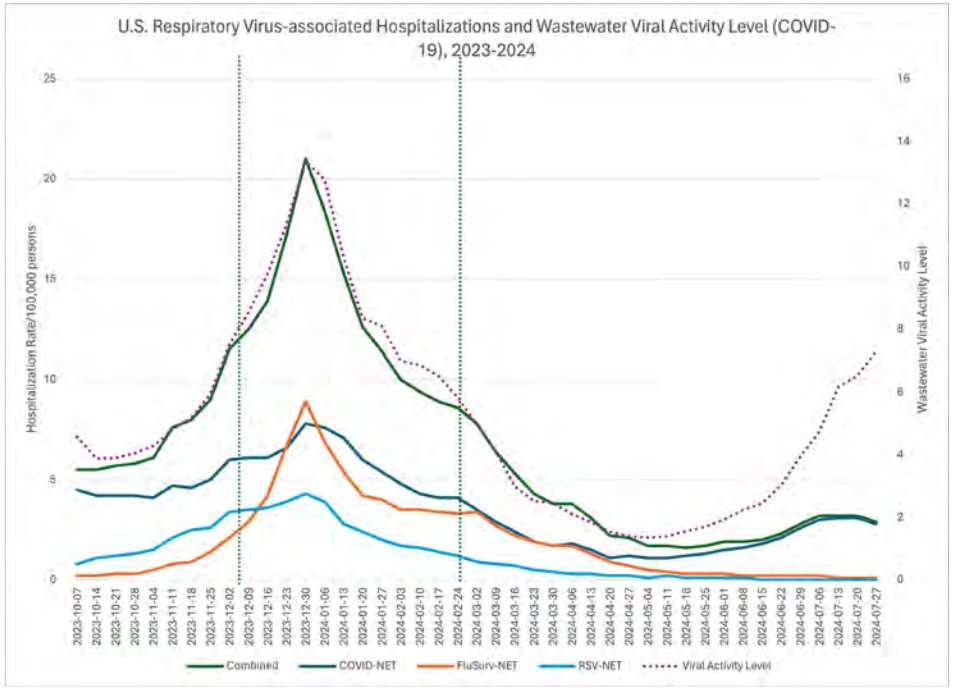
UNC SCHOOL OF MEDICINE

CONCLUSIONS

- Factors increasing yield of positive blood cultures: 1) Increased number of cultures (up to 3, but usually sufficient); 2) Increased volume of blood; 3) Severe sepsis
- Factors reducing yield of positive blood cultures: 1) Presence of antibiotics
- Factors not effecting the yield of positive blood cultures: 1) Arterial vs venous; 2) Timing
- BD BACTEX™ blood culture bottle shortage likely to last for several months
- Adherence to recommended blood culture best practices can reduce number of blood cultures obtained without patient harm (i.e., avoiding obtaining blood cultures for clinical conditions associated with a low yield of positive cultures.
- Recommended blood culture best practices are based on sound scientific evidence
- Potential impact of obtaining only a single set of blood cultures (or no cultures) when recommended by best practices
    - Missed diagnosis of bacteremia/fungemia
    - Increased use of broad-spectrum antibiotics and/or increased duration of antibiotic therapy
    - Failure to meet NHSN definition of bacteremia with “skin flora” (single set of cultures)

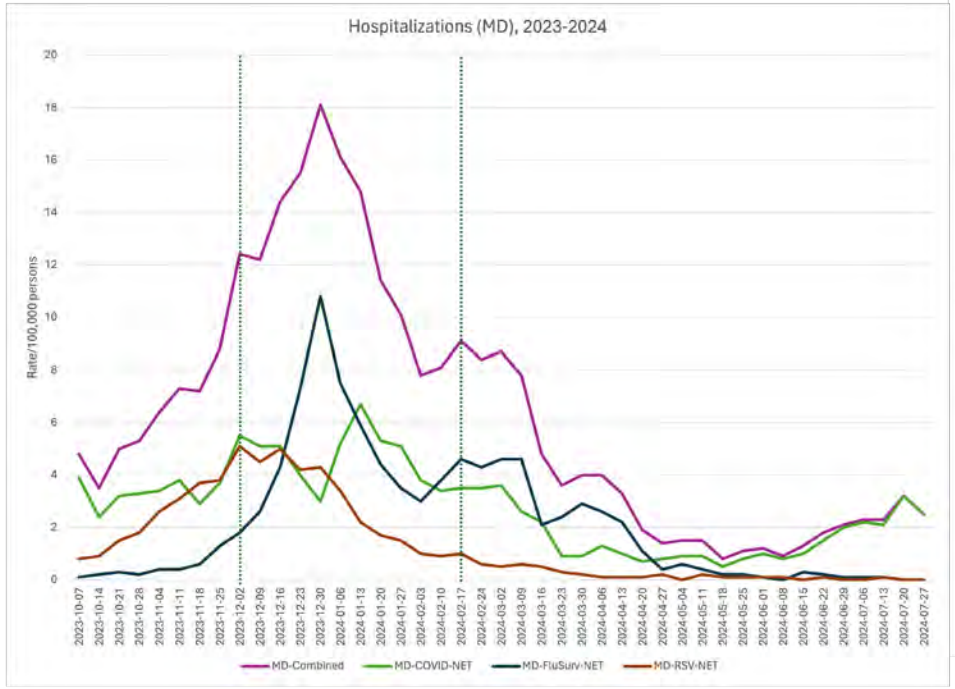
CDC: Hospitalizations and Wastewater

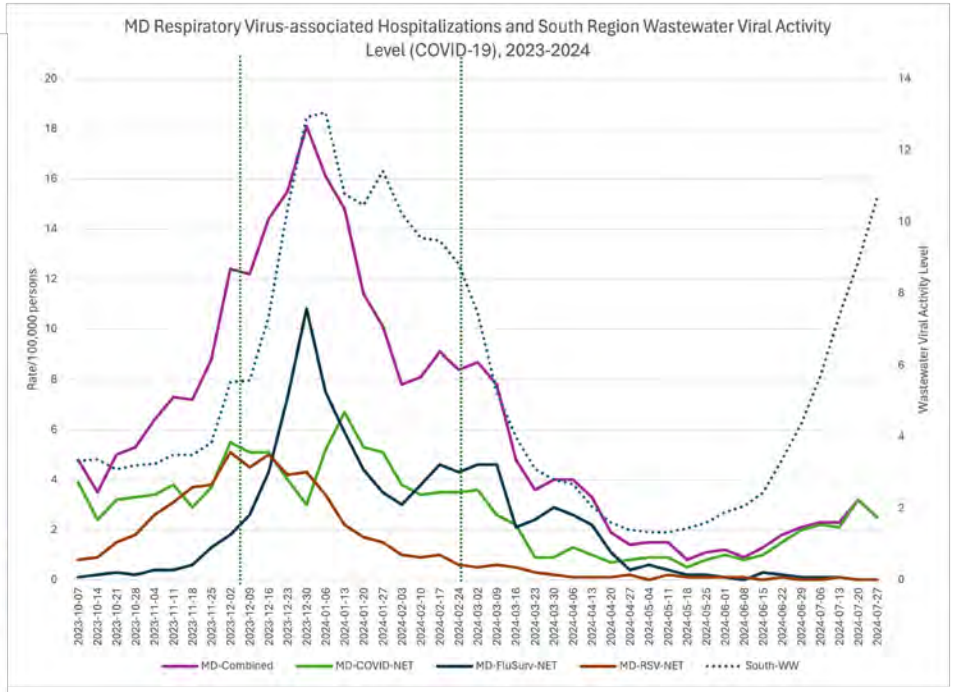




Courtesy of Alison Han, MD, MPH

CDC: Hospitalizations (MD) and Wastewater (Regional)





Courtesy of Alison Han, MD, MPH