2026 Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA) and European Society of Clinical Microbiology and Infectious Diseases (ESCMID) on Staphylococcus aureus Bacteremia: Risk Stratification, Diagnostic Evaluation, and Management of Adults and Children

Consensus Statement 3 on the Diagnostic Evaluation of Patients with *Staphylococcus aureus* Bacteremia (SAB)

Clinical question 3

Should a transthoracic echocardiogram (TTE) be performed in all patients with SAB?

Supplementary Material

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Conflicts of Interest

All members of the expert panel complied with the IDSA policy on conflict of interest (COI), which requires disclosure of any financial, intellectual, or other interest that might be construed as constituting an actual, potential, or apparent conflict. Evaluation of such relationships as potential conflicts of interest was determined by a review process which included assessment by the Standards and Practice Guideline Subcommittee (SPGS) Chair, the SPGS liaison to the Guideline panel, and the Board of Directors liaison to the SPGS, and if necessary, the COI Taskforce of the Board. This assessment of disclosed relationships for possible COI was based on the relative weight of the financial relationship (i.e., monetary amount) and the relevance of the relationship (i.e., the degree to which an independent observer might reasonably interpret an association as related to the topic or consensus statement of consideration). The reader of these guidelines should be mindful of this when the list of disclosures is reviewed.

Possible conflicts of interest (COI)

The panelists have reported the following disclosures with the indicated companies: **C.A.A.** Serves as a writer for UptoDate and editor in Chief for AAC for the American Society for Microbiology; is named as inventor of a patent application (# 64/002,464); has received a researched grant from Entasis Pharmaceuticals; has served as a standing member of the Microbiology and Infectious Diseases Study Section and Chair of AIRT (Anti-infective Resistance and Targets) with NIH/NIAID; served as a member of the Physician Scientist Development Committee for the American Society for Clinical Investigation and the Anti-infective Pipeline Panel for the World Health Organization. The following relationships were divested prior to joining the panel: Promotional (non-CME) Speakers Bureau for Pfizer, The Medecins Company, Merck, and Actavis; research grants from Merck, The Medecins Company, Actavis, Theravance and MeMed Diagnostics; and advisor for Merck, Theravance, and Bayer Global. **D.B.** serves as an editor for Sanford Guide. **T.B.** serves as a research consultant for MSD and Pfizer; receives an honorarium from GSK; receives research funding from Simonsen Foundation; has received honoraria from Pfizer and Gilead Sciences; has served as an advisor for GSK, Abbvie, Astra Zeneca, Boehring Ingelheim, Janssen, Pfizer, Gilead, MSD, Moderna, Shionogi; and has received research funding from Medimmune, Innovationsfonden, National Institutes of Allergy and Infectious Diseases, Aarhaus University, Denmark, Roche, Novartis, Bavarian Nordic, Jannsen, MSD, CSL Seqirus, Simonsens Foundation, Gilead, and Lundbeck Foundation. **H.W.B.** serves as an editor for Sanford Guide; serves as Editor, ID Clinics of North America for Elsevier; receives a research grant from NIH's ARLG; has served as an advisor for Actelion, Merck, Cardeas; received remuneration from ABIM and ASM; has received honoraria from NIH and Elsevier; has provided expert testimony for CRICO; has served as Member and Chair, Board of Trustees for Physicians of Tufts Medical Center and College of Holy Cross; and has served as Member of the ID Test Committee and Member and of the ID Board for the American Board of Internal Medicine; and has served as Editor, AAC for ASM. **A.J.C.** receives research funding

from NIHR, CARB-X, and UKRI; serves on Conference Organizing Committee and has served as the Chair of Committee for Scientific Affairs and Awards for the European Society for Paediatric Infectious Disease; has served on Conference Organizing Committee for the European Congress on Tropical Medicine and International Health; has received research funding from the European Commission, UK Research and Innovation, European and Developing Countries Clinical Trials Partnership, EU Horizon 2020, and Rosetrees Trust; spouse is a former employee of GlaxoSmithKline. **V.F.** serves as a research consultant for GSK, Akagera, AstraZeneca, and Armata; serves as a research advisor for Basilea and Debiopharm; receives a grant through Duke/DCRI from Basilea, from Exponential Deep Examination // Research of Technologies and Biophotonics, Ltd., AstraZeneca, Contrafect, Merck, Karius, Janssen, and NIH; receives royalties from UpToDate; stock options from Valanbio; patent pending sepsis diagnostic; has served as an advisor for Pfizer, Truis/Cubist/Merck, Novartis, Defined Healthcare Research, Insyght; has served as a consultant for LEK and Novadigm; received research grants from Cubist/Merck, Cerexa/Forest/Actavis/Allergan, Genentech, Medimmune, Medimmune, Advanced Liquid Logic; has coauthored chapters in UptoDate; and has served as an contact PI for an NIH leadership group. **M.H.** serves as a writer for UptoDate; and has received project funding from the World Health Organization. **A.J.K.** receives research funding from the Federal Ministry of Research, Technology and Space (BMFTR), from Ministerium für Wissenschaft, Energie Klimaschutz und Umwelt des Landes Sachsen-Anhalt (MWU); has served as a scientific consultant for the German Center for Infection Research (DZIF), for Staatskanzlei des Landes Sachsen-Anhalt, and Institut für Medizinische und Pharmazeutische Prüfungsfragen (IMPP); has received payments for lectures byLandesärztekammer Sachsen-Anhalt, Donau University Krems, Austria, Limbach Group, Deutsche Gesellschaft für Infektiologie (DGI), and AMEOS KH Labor GmbH; has received research grants from Deutsche Forschungsgemeinschaft (DFG) and served as site principal investigator in clinical studies funded by the European Union; has served as Chairperson for the German Sepsis Society (DSG). **W.V.K.** has received research funding from Baden-Württemberg Federal State Ministry of Science and Art, MSD, BMS, Janssen, Gilead, ViiV; has received honoraria from Gilead; has served as a consultant for Roche, Stiftung Warentest; has received an organizational benefit from Akademie für Infektionsmedzin; and has served as programme director and chair for ESCMID. **V.L.M.** has served as a marketing consultant for Sanofi Aventis and Advanz; has served as a research advisor for Pfizer; has received sponsorship from Advanz Pharma; has received funding from ANRS and French Ministry of Health; has served as a scientific advisor for Advanz Pharma; and has served as a marketing advisor for Gilead. **C.L.** receives research funding from SNIPR Biome; has served as a member of an independent efficacy adjudication committee for Theravance and clinical events committee for DCRI/ ARLG; and has received research funding from NIAID/NIH, Pfizer, University of Queensland, Houston Methodist Hospital, and Johns Hopkins University. **M.J.L.** receives

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(ASHE); has served as a consultant for XBiotech, CR Bard, 3M, Teleflex, Allecra, and Medpace; has received research funding from Magnolia, ContraFect, NIH/DCRI; and was a liaison to CDC for SHEA. **M.S.** receives lecture honoraria from various universities; serves as chair of advisory board for DoseMe; receives research grants from NIH/FDA, University of Pennsylvania, and University of Michigan; serves on the Board of Directors with the American College of Clinical Pharmacy; serves as Associate Editor for International Journal of Antimicrobial Agents; is a co-owner of SafeGate Therepeutics, LLC; and owns a patent; has provided expert testimony for Chambless, Higdon, Richardson, Katz & Griggs, LLP, for Hall, Booth, Smith, P.C., for Reminger Co., L.P.A., and for Taylor, English, Duma, LLP; has served as a legal consultant for Duke ARLG, Chambless, Higdon, Richardson, Katz& Griggs, LLP, for Hall, Booth, Smith, P.C., and for Reminger Co., L.P.A.; has served as a consultant or advisor for Innoviva, Abbvie, Guidepoint Global, Roche, Spero, Seikagaku Corporation, Meitheal Pharmaceuticals, Inc., Chattem, Inc., Xellia, Duke/ARLG, ARK, Cidara, Third Pole Therapeutics, F2G, Merck, Takeda, Nevakar, Achaogen, Paratek, Bayer, SuperTrans Medical, University of Michigan, Premier Healthcare Solutions, iFAST, DoseMe, Inc, Lykos Therapeutics; has received research funding from Cystic Fibrosis Foundation, Allecra, Nevakar, Hauser, DHHS/FDA/OAGS/DAO, NIAID, Midwestern University Intramural, Cubist Pharmaceuticals, Illinois Department of healthcare, CARE Foundation, International Institute for Nanotechnology Seed Project; received remuneration from NIH, ASHP, SuperTrans Medical, Cystic Fibrosis Foundation, Taylor, English, Duma, LLP, Allecra, Merck, SIGA Technologies, CARE Foundation, Astellas, Allergan, UIC, Premier Inc.; and has received honoraria from St. Jude, Monash University, SHEA, Roosevelt University, ACCP, MAD-ID, NIH, University of Cincinnati. **A.S.** serves on the Promotional (non-CME) Speakers Bureau for Shionogi, Menarini, and Pfizer; receives research funding from Gilead and Advance Pharma; has served as a research and marketing advisor for Pfizer; has served as a research consultant for Pfizer and Advance Pharma; has served on the Promotional (non-CME) Speakers Bureau for Merk Sharp and Dohme, Angelini, Novartis, and Gilead; has received research funding from Fondos de Investigación Sanitari, Gilead, and Pfizer; and has served on the Promotional (non-CME) Speakers Bureau for Gilead. **B.S.** receives funding from Analog Devices; has served on the advisory board for Basilia Pharmaceutica; has served on the advisory board for MicroGenDx; has served as a panel member for ARLG; has received research grants from NIAID and DARPA; and has served as a consultant for Pfizer and Regeneron. **L.S.** has received research funding from NID/NIAID/DMID. **H.C.**'s spouse has stocks in Merck; has stock in Moderna; serves on a Data Safety Monitoring Board for Merck; serves as a consultant for GSK; receives funding from NIH; serves as an editor of the Sanford Guide to Antimicrobial Therapy; has served as a past editor on Antimicrobial Agents and Chemotherapy with ASM; receives research funding from NIH/NIAID; has provided expert testimony for Lilly and Nexus; had stock in Merck; has served as an advisor to TAXIS, Theravance, Allergan, Anacor, Genetech, Cempras, and Quorum; has received past

research funding from NIH, Allergan, The Medicine Company, and Genentech. **S.Y.C.T.** serves as a research advisor for AstraZeneca; receives research funding from NHMRC and NIH; receives royalties from UpToDate; has served as an advisor for Roivant; has served as a member of ESCMID; has received research funding from BHP, Minderoo, Macquarie Group, Pratt Foundation, NHMRC, and MRFF; has served as a member of an expert writing group for Therapeutic Guidelines: Antibiotic; and has served as a steering committee member for WikiGuidelines. **F.V.** serves as co-funder and medical director of Weezion; receives funding from the French National Research Agency; and has received research funding from bioMérieux, European community, FINOVI Foundation, Boaster Technology Research Agency, and Ministry of Health.

No disclosures were reported from **B.H.**

Review and Approval Process

Feedback was obtained from three external peer expert reviewers, and involved organizations, i.e., SIDP (Society of Infectious Diseases Pharmacists), European Society of Clinical Microbiology and Infectious Diseases (ESCMID), Pediatric Infectious Diseases Society (PIDS), American Society of Health-System Pharmacists (ASHP), and the Society for Healthcare Epidemiology of America (SHEA). In addition, the guideline was reviewed by the IDSA Standards and Practice Guidelines Subcommittee (SPGS) and the IDSA Board of Directors. After review and approval by the various organizations and reviewers, the guideline was posted online prior to publication to facilitate a public comment period requesting feedback on the full guideline. The panel reviewed the feedback from the public comment phase and updated the guideline prior to final approval by the IDSA SPGS and Board of Directors.

Process for Updating

IDSA guidelines and consensus statements are regularly reviewed for currency. The need for updates to the guidelines and consensus statements is determined by a scan of current literature and the likelihood that any new data would impact the consensus statement. Any changes to the consensus statement will be submitted for review and approval to the appropriate Committees and Board of IDSA.

Other Tables and Figures

Table 1: Overview of SAB Risk Prediction Scores for Endocarditis [1-10]

PREDICT		**POSITIVE***		**VIRSTA**		**LAUSTAPHEN**	
Item	Points assigned	Item	Points assigned	Item	Points assigned	Item	Points assigned
Day 1 Cutoff≥4		**Cutoff > 4**		**Cutoff≥3 (at 48h of SAB diagnosis)**		**Any factor present at 96h of SAB diagnosis**	
ICD	2	TTP < 9 hrs.	5	Cerebral or peripheral emboli	5	Cardiac predisposing factors	1
PPM	3	TTP > 9 but < 11 hrs.	3	Meningitis	5	CIED	1
Community-onset	2	TTP > 11 but < 13 hrs.	2	Permanent intracardiac device or previous endocarditis	4	Positive blood culture ≥48h	1
Healthcare-onset	1	Intravenous drug use	3	Intravenous drug use	4	Vascular phenomena	1
		Vascular phenomena	6	Pre-existing native valve disease	3	Native bone & joint infection	1
Day 5 Cutoff≥2		Predisposing heart disease	5	Positive blood cx≥48h	3		
ICD	2			Community-onset bacteremia	2		
PPM	3			Severe sepsis or septic shock	1		
Community-onset	2			CRP > 190 mg/L	1		
Healthcare-onset	1			**VIRSTA+**			
Positive blood culture ≥72h	2			VIRSTA score and TTP ≤11.5 hrs.			

*Excludes patients who received antibiotics prior to blood cultures; Cutoff refers to the score at or above which TEE should be performed. ICD: implantable cardioverter-defibrillator; PPM: permanent pacemaker; TTP: time to positivity; CRP: C-reactive protein; CIED: cardiac implantable electronic device

Table 2: Performance characteristics of the ten studies reporting on clinical prediction scores for infective endocarditis among patients with SAB [1-12]

Score for high risk for endocarditis	Study	Population	Prevalence of definite endocarditis%	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	False neg/ endocarditis misclassified as low risk %
VIRSTA ≥3	Tubiana 2016 (derivation cohort)	N=2008 SAB 8 university hospitals, France (2009-2012)	11(221/ 2008)	95.8	44.2	17.6	98.8		.09	1.1
VIRSTA ≥3	Peinado-Acevedo 2021 (external validation cohort)	N=922 SAB 2 hospitals, Columbia (2012-2018)	6.7 (62/ 922)	96.7	52.5	12.8	99.5	2.00	.06	0.44
VIRSTA ≥3	Kahn 2021 (external validation cohort)	N= 531 SAB 10 hospitals, Sweden (2016-2017)	5.1(27/5 31)	100	44	8.8	100		.06	0
VIRSTA ≥3	Van der Vaart 2022 (external validation cohort)	N=477 SAB 7 hospitals, Netherlands (2017-2019)	18.2(87/ 477)	98.9	35.7	25.5	99.3			
VIRSTA ≥3	Calderon-Parra 2022 (external	N=404 SAB	12.4(50/ 404)	92	50.8	20.8	97.8	1.84	0.16	2.2

	validation cohort)	1 university hospital, Spain (2015-2020)								
VIRSTA ≥3	Papdimitriou-Olivgeris 2022 (external validation cohort)	N=821 SAB 1 university hospital, Switzerland (2015-2021)	14.4(118/821)	96.6	38.1	20.8	98.5	1.56	.09	3.4%
VIRSTA ≥3	Vignau 2023 (external validation cohort)	N=123 SAB 1 hospital, France (2020-2021)	12 (15/123)	100	41.7	19.2	100			
VIRSTA ≥3	Simos 2022 (external validation cohort)	N=106 SAB 2 hospitals, Australia (2019-2020)	17 (18/106)	94.4	37.5	23.6	97.1	1.50	0.2	2.9%
VIRSTA+ (TTP added to VIRSTA score)	Simos 2022 (external validation cohort)	N=106 SAB 2 hospitals, Australia (2019-2020)	17(18/106)	100	33	23.4	100	1.50	0	0%
VIRSTA ≥3	Ngiam, 2024 (external validation cohort)	N=634 SAB 1 hospital, Singapore (2008-2014)	5.7 (36/634)	66.7	79.1	16.1	97.5			
PREDICT D1≥4	Palraj 2015 (derivation cohort)	N=678 SAB Mayo clinic, US (2006-2011)	13(85/678)	21.2	95.6	40.9	89.4			78.8%
PREDICT D5≥2	Palraj 2015 (derivation cohort)	N=678 SAB Mayo clinic, US (2006-2011)	13(85/678)	94	41.1	18.6	97.9			6%
PREDICT D1≥4	Abu Saleh 2021 (prospective	N=199 SAB 3 Mayo Clinic hospitals, US (2015-2017)	11.6 (23/199)	30.4	93.8	38.9	91.2			

	validation cohort)									
PREDICT D5≥2	Abu Saleh 2021 (prospective validation cohort)	N=199 SAB 3 Mayo Clinic, hospitals, US (2015-2017)	11.6 (23/ 199)	100	32.4	16.2	100			
PREDICT D1≥4	Peinado-Acevedo 2021 (external validation cohort)	N=922 SAB 2 hospitals, Columbia (2012-2018)	6.7 (62/ 922)	4.8	98.6	20	93.5	3.40	0.97	
PREDICT D5≥2	Peinado-Acevedo 2021 (external validation cohort)	N=922 SAB 2 hospitals, Columbia (2012-2018)	6.7 (62/ 922)	51.6	68.8	10.6	95.1	1.60	0.7	4.8
PREDICT D1≥4	Kahn 2021 (external validation cohort)	N= 531 SAB 10 hospitals, Sweden (2016-2017)	5.1 (27/531)	15	95	13.9	95.4			
PREDICT D5≥2	Kahn 2021 (external validation cohort)	N= 531 SAB 10 hospitals, Sweden (2016-2017)	5.1(27/5 31)	95	46	8.6	99.4			
PREDICT D1≥4	Van der Vaart 2022 (external validation cohort)	N=477 SAB 7 hospitals, Netherlands (2017-2019)	18.2(87/ 477)	22.9	97.4	66.7	85			
PREDICT D5≥2	Van der Vaart 2022 (external validation cohort)	N=477 SAB 7 hospitals, Netherlands (2017-2019)	18.2(87/ 477)	85.1	56.9	30.5	94.5			

PREDICT D5≥2	Calderon-Parra 2022 (external validation cohort)	N=404 SAB 1 university hospital, Spain (2015-2020)	12.4(50/404)	90	37.1	16.7	96.4	1.43	0.27	3.6
PREDICT D5≥2	Papdimitriou-Olivgeris 2022 (external validation cohort)	N=821 SAB 1 university hospital, Switzerland (2015-2021)	14.4(118/821)	86.4	51.4	23.0	95.8	1.78	0.26	13.6
PREDICT D1≥4	Simos 2022 (external validation cohort)	N=106 SAB 2 hospitals, Australia (2019-2020)	17(18/106)	5.6	97.7	33.3	83.5	2.40	1.0	
PREDICT D5≥2	Simos 2022 (external validation cohort)	N=106 SAB 2 hospitals, Australia (2019-2020)	17(18/106)	94.4	26.1	20.7	95.8	1.30	0.2	4.2
PREDICT D1≥4	Vignau 2023 (external validation cohort)	N=123 SAB 1 hospital, France (2020-2021)	1 (15/123)	0	92.6	0	87.0			
PREDICT D5≥2	Vignau 2023 (external validation cohort)	N=123 SAB 1 hospital, France (2020-2021)	12 (15/123)	100	68.5	30.6	100			
PREDICT D1≥4	Ngiam, 2024 (external validation cohort)	N=634 SAB 1 hospital, Singapore (2008-2014)	5.7 (36/634)	0	99.3	0	94.3			
PREDICT D5≥2	Ngiam, 2024 (external validation cohort)	N=634 SAB 1 hospital, Singapore (2008-2014)	5.7 (36/634)	58.3	71.4	10.9	96.6			

POSITIVE	Kahn 2021 (external validation cohort)	N= 531 SAB 10 hospitals, Sweden (2016-2017)	5.1 (27/531)	93	70	14.3	99.5			
POSITIVE	Van der Vaart 2022 (external validation cohort)	N=477 SAB 7 hospitals, Netherlands (2017-2019)	18.2 (87/477)	77.6	63.1	32.3	92.5			
POSITIVE	Calderon-Parra 2022 (external validation cohort)	N=404 SAB 1 university hospital, Spain (2015-2020)	12.4 (50/404)	76	65.5	23.6	95.1	2.17	0.37	
POSITIVE	Calderon-Parra 2022 (external validation cohort)	N=404 SAB 1 university hospital, Spain (2015-2020)	12.4 (50/404)	76.5	74.7	31.2	95.5	3.03	0.31	23.5
POSITIVE	Simos 2022 (external validation cohort)	N=106 SAB 2 hospitals, Australia (2019-2020)	17(18/106)	77.8	73.9%	37.8	94.2	3.00	0.3	
POSITIVE	Vignau 2023 (external validation cohort)	N=123 SAB 1 hospital, France (2020-2021)	12(15/123)	80	69.4	26.7	96.2			
LAUSTAPHEN	Papdimitriou-Olivgeris 2022 (derivation cohort)	N=821 SAB 1 university hospital, Switzerland (2015-2021)	14.4(118/821)	96.5	57.5	26.3	99.1	2.27	.06	3.5

LAUSTAPHEN	Papdimitriou-Olivgeris 2022 (validation cohort)	N=821 SAB 1 university hospital, Switzerland (2015-2021)	14.4(118/821)	96.7	54.3	27.4	98.9	2.11	.06	3.3
SABIER	Lai 2024	N=15,741 Territory hospital data, Hong Kong	4.2% (658/15,741)	65.0	70.0	8.1	98.0			

Table 3: List of definitions and comments*

Term	Definitions and comments
Disease definition	
Staphylococcus aureus bacteremia (SAB)	The presence of *S. aureus* in the bloodstream, due to an infectious process. *S. aureus* is rarely a blood culture contaminant.
Bacteremic *Staphylococcus (S.) aureus* infection	Most accurate description of the disease.
S. aureus bloodstream infection (SAB, SABSI, SABI)	Common shorthand for bacteremic *S. aureus* infection.
Patient with SAB	Any patient with ≥1 positive blood culture for *S. aureus* due to infection.
Start of infection	
Onset of bacteremia	The timepoint when the first blood culture positive with *S. aureus* was drawn (recognizing that bacteremia may have been present before its collection).
Clinical onset of SAB	The time point when the first clinical symptoms caused by SAB began.
Hospital-onset SAB	Onset of bacteremia (first positive blood culture) at ≥48 hours after hospital admission. Delayed recognition of community-onset infection may be misclassified as hospital-onset (e.g., no blood cultures drawn until day four of the hospitalization).
Community-onset SAB	Onset of bacteremia (first positive blood culture) at <48 hours of admission or before hospitalization. Community-acquired SAB is an alternative term, but its use is discouraged. It may be used to differentiate between “community-onset SAB without healthcare-association" (i.e., community-acquired SAB) and “community-onset with healthcare-association".
Community-onset SAB with healthcare association	Community-onset SAB with recent healthcare exposure (e.g., attending dialysis clinic, intravenous therapy, wound care, recent hospitalization, nursing home). This patient population is exposed to risks associated with healthcare settings (e.g., venous catheters).
Site of infection	
Portal of entry	The site where *S. aureus* first enters the body.

	An infection is often established at the site of barrier crossing, e.g., a skin and soft tissue infection, a respiratory infection, and, less frequently, a urinary tract infection. However, infection may or may not be present at the portal of entry, and in many cases, the portal of entry is unknown. In some cases, direct inoculation of deeper tissues occurs (e.g., trauma, surgery).
Infective focus	Body site or device with active infection. Several infective foci can be present. Alternative: "focus of infection".
Source of infection	Sometimes used interchangeably with "infective focus" but sometimes used as a synonym for "portal of entry". These other terms are generally preferred due to greater precision.
Deep-seated focus of infection	Serious complication of SAB that includes a non-cutaneous and non-intravenous line-associated site of *S. aureus* infection of deep tissues or infection in sites or organs (e.g., endocarditis, osteomyelitis, splenic abscess, psoas abscess, septic thrombophlebitis, cardiac device-associated infection).
Embolic event	Embolic events are a result of dislodgement and travel of fragments of potentially infected material (e.g., thrombus) from a primary infection site through the bloodstream to distant sites, causing infarction or secondary sites of infection. Some examples may include septic embolic to the lungs, cerebral emboli, splenic or renal infarcts and peripheral manifestations such as Janeway lesions and splinter hemorrhages.
Metastatic seeding	The process of spreading through the bloodstream to form distant foci of infection.
Metastatic focus	Infectious focus that has arisen through metastatic seeding. The term implies that there is another primary site or portal of entry (known or unknown) distinct from the metastatic focus from which bacteria have seeded. This term is often used when several foci are present and a sequence of events is likely (e.g., endocarditis with splenic metastatic foci). "Secondary focus" is an alternative term.
Primary focus	Original site of infection from which bacteria have seeded. In practice, the sequence of events cannot always be determined, and the primary focus may not be known.
Contiguous spread	Extension of the infection from an infective focus to adjacent tissues.
Superficial focus of infection	Localized, surface-level infection (e.g., skin-soft-tissue infections, cutaneous abscesses, or catheter-related infections).
Dominant focus	Focus requiring the longest or most complex treatment when multiple infective foci are present.
Classification	

Primary bacteremia	A microbiologically documented bloodstream infection without a known source (including an intravenous or arterial line infection). The term is most often used when data on the infective focus is not collected, mainly in epidemiological studies. The use of the term is discouraged outside of epidemiological studies.
Secondary bacteremia	A local infection leading to bacteremia (e.g., bacteremic skin and soft tissue infection). Easily confused with secondary focus; therefore, use is discouraged.
Complicated SAB	SAB with infection of deep tissues or organs (e.g., endocarditis and other endovascular structures, osteomyelitis, septic arthritis, myositis, kidney, deep tissue planes), relapse, or infection-related mortality. Definitions vary, and the use of this term is discouraged.
Uncomplicated SAB	Superficial/removable source with no deep-seated infection, relapse, or infection-related mortality. Definitions vary, and the use of this term is discouraged.
Low-risk SAB	SAB with no risk factors or signs of deep tissues or metastatic foci of infection (including endocarditis) or relapse.
Increased-risk SAB	SAB with at least one risk factor for infection of deep tissues, metastatic foci, or relapse (see Consensus Statement 1).
Predisposing heart valve conditions	Previous history of endocarditis, prosthetic valve, previous valve repair, congenital heart disease, more than mild regurgitation or stenosis of any etiology, endovascular intracardiac implantable electronic device, hypertrophic obstructive cardiomyopathy. Refer to 2023 Duke-ISCVID criteria for additional details [13].
Disease Course	
Central venous catheter-related infection	SAB that arises from, or is directly associated with, a central venous catheter. Diagnosis is usually posed when the same *S. aureus* isolate (based on antibiotic susceptibility) is identified in one of the following scenarios: • Present in both a peripheral blood culture and the catheter tip culture, **or** • Present in both a blood culture and a pus or skin swab from the catheter exit site, **or** • Present in two initial blood cultures—one drawn from a peripheral site and the other through the catheter—with a differential time to positivity (DTTP) of at least 120 minutes

	(i.e., the catheter-drawn culture becomes positive at least 120 minutes earlier than the peripheral culture), **and** • No other plausible source of infection is identified. Strong clinical suspicion for catheter-related infection: Cultures not obtained, but signs such as pus, redness, pain at exit/tunneled site, or chills during infusion, with no other plausible source.
Central-line associated bloodstream infection (CLABSI)	Laboratory confirmed bloodstream infection that develops in a patient with a central line (>48h in place) and the infection is not related to another site of infection. The term CLABSI was designed primarily for surveillance purposes and should not be used to classify clinical diagnoses of SAB. The term CLABSI is non-specific, and surveillance criteria do not clearly characterize the role of the CVC. Thus, patients identified as having a CLABSI may not meet clinical criteria for CVC-related infections.
Source control	An intervention to eliminate or control a focus of *S. aureus* infection that would be unlikely to respond to antibiotic therapy alone and would increase risk for ongoing sepsis, spread of infection, or relapse. Examples include removal of central line or implanted device, incision and drainage of a skin abscess, interventional drainage of a liver abscess, surgical debridement of an epidural abscess, amputation of an infected diabetic foot, and surgical valve replacement for a perivalvular abscess.
Recurrence	Denotes relapse or re-infection.
Relapse or relapsed bacteremia	Return of *S. aureus* infection due to unresolved initial infection. Often defined as occurring after completion of a course of therapy. Most relapses occur within 90 days after index infection.
Re-infection	Another episode *of S. aureus* infection (bacteremic or not) independent from the initial episode of the infection. It can be distinguished from relapse by whole-genome sequencing or other genetic markers when these differ between the two isolates. However, same-strain re-infections can occur, e.g., because of colonization. Most recurrences occur more than 90 days after the index infection.
Diagnostics	
Blood culture set	One aerobic and one anaerobic blood culture bottle from a single draw.
Follow-up blood culture	Blood culture drawn after an initial positive blood culture to monitor the duration of blood culture positivity and document the timing of blood culture clearance.

Blood culture clearance	Day of sampling of the first negative blood culture after which there are no positive blood cultures with *S. aureus*. The date of blood culture clearance is typically sed as a start date for counting the duration of antibiotic therapy (see Consensus Statement 2 for additional details).
Time-to-positivity (TTP)	Incubation time of a blood culture for sufficient growth to be detected as "positive" in the blood culture instrument. When several bottles (e.g., aerobic and anaerobic blood culture bottles) are incubated, the shortest time is considered the TTP. TTP is used to calculate the differential time-to-positivity (DTTP) which is used to define CVC-related bloodstream infections (see above).
Skip phenomenon	Intermittent blood culture positivity (i.e., negative follow-up blood cultures followed by positive). The consecutive blood cultures need to be closely spaced and early in the course of infection to distinguish from relapse (see Consensus Statement 2).

*The terms defined here reflect both their usage in the literature and the panel's assessment of their appropriateness. This table is intended to promote a shared vocabulary for future research and to guide consistent terminology. It also serves an educational purpose by providing definitions for terms that may be unfamiliar to some but are useful for accurately describing study characteristics.

Abbreviations

CI	Confidence Interval
CHD	Congenital Heart Disease
CT	Computed Tomography
COI	Conflict of interest
DVT	Deep vein thrombosis
ESCMID	European Society of Clinical Microbiology and Infectious Diseases
HR	Hazard Ratio
IDSA	Infectious Disease Society of America
IQR	Interquartile range
MeSH	Medical Subject Headings
OR	Odds Ratio
RR	Relative Risk
SAB	*Staphylococcus aureus* bacteremia
SPGS	Standards and Practice Guideline Subcommittee
TEE	Transesophageal Echocardiography
TTE	Trans-thoracic echocardiography

Search strategies

January 2025

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily 1946 to January 18, 2025

1	exp *Staphylococcal Infections/
2	Bacteremia/mo, mi or *Bacteremia/
3	*Sepsis/
4	2 or 3
5	1 and 4
6	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj1 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ti.
7	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj3 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ab. /freq=2
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9	*Endocarditis/
10	or/8-9
11	exp *Echocardiography/ or Echocardiography, Transesophageal/
12	(echocardiograp* or (echo* adj1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))).tw.
13	or/11-12
14	10 and 13
15	8 and exp Endocarditis/di, dg
16	(((staphylococ* adj aureu*) or "s. aureu*") and echo*).tw.
17	8 and (endocardit* and echo*).tw.
18	(endocardit* and echo*).ti. and bacter*.tw.
19	or/14-18
20	(Animals/ or Models, Animal/ or Disease Models, Animal/) not ((Animals/ or Models, Animal/ or Disease Models, Animal/) and Humans/)
21	((animal or animals or cat or cats or dog or dogs or feline or hamster* or lamb? or mice or monkey? or mouse or murine or pig or pigs or piglet* or porcine or primate* or rabbit* or rat or rats or rodent* or sheep* or veterinar*) not (human* or patient*)).ti,kf,jw.
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2	*staphylococcal infections/
3	*bacteremia/
4	*Sepsis/
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8	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj3 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ab. /freq=3
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11	or/9-10
12	*transthoracic echocardiography/ or *transesophageal echocardiography/
13	(echocardiograp* or (echo* adj1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))).tw.
14	or/12-13
15	11 and 14
16	9 and (endocarditis/di or (*Endocarditis/ and *diagnostic imaging/))
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18	9 and (endocardit* and echo*).tw.
19	(endocardit* and echo*).ti. and bacter*.tw.
20	or/15-19
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22	((animal or animals or cat or cats or dog or dogs or feline or hamster* or lamb? or mice or monkey? or mouse or murine or pig or pigs or piglet* or porcine or primate* or rabbit* or rat or rats or rodent* or sheep* or veterinar*) not (human* or patient*)).ti,kw,jx.
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26	("31542330" or "30532791" or "29934419" or "33244328" or "33312777" or "31679647" or "32569366" or "33311916" or "30181406" or "30145842" or "32173704" or "33399806" or "29603533" or "30269839" or "31705577" or "31564706" or "32844380" or "30066725" or "29563378" or "30803027" or "32548206" or "29671174" or "29483462" or "32206750" or "33130757" or "29506451" or "33754100" or "33059372" or "30611162" or "33143535" or "31738753" or "30552202" or "29979391" or "33155779" or "32917139" or "29546685" or "32860844" or "31558692" or "30817369" or "30440064" or "31291779" or "31368237" or "29426281" or "31076822" or "30834557" or "31593558" or "31897079" or "30318995" or "30866989" or "33442594" or "31590699" or "30558065" or "31570684" or "30409329" or "32490507" or "31770258" or "29971399" or "30220657" or "33936821" or "31679901" or "32888687" or "31188916" or "33653292" or "31842764" or "33975834" or "33129270" or "31456555" or "33858337" or "31109768" or "32840911" or "31526640" or "28778771" or "29133025" or "31476290" or "29309899" or "32800619" or "30139783" or "33355663" or "30608383" or "30701822" or "31369076" or "32713936" or "33852085" or "33268748" or "29705358" or "29799067" or "31738598" or "31757432" or "32496427" or "30802585" or "31296292" or "29525758" or "29206911" or "29372516" or "30194636" or "28943190" or "31902093" or "31453103" or "30783530" or "33476451" or "32044737" or "33604614" or "31953235" or "29279974" or "33357643" or "30165412" or "30767267" or "31215692" or "33234190" or "31504413" or "32805090" or "30690018" or "30866024" or "31411630" or "33216736" or "29569281" or "32049387" or "33986933" or "31275664" or "31312292" or "31932285" or "30683481" or "33228561" or "29581048" or "30555848" or "32271391" or "29357050" or "32974484" or "30382475" or "31402124" or "29506483" or "32683888" or "29628470" or "31676266" or "30643945" or "33172308" or "31653245" or "32299668" or "28951083" or "29764833" or "31412911" or "32616369" or "33130722" or "33394239" or "30109836" or "30430377" or "30389305" or "28862762" or "31480970" or "30513313" or "32205954" or "30593283" or "32600427" or "34025833" or "28859469" or "31120386" or "31881849" or "30488883" or "33197608" or "33717742" or "29617502" or "32671194" or "32085966" or "33986239" or "32711545" or "29186369" or "29555833" or "29229527" or "32904995" or "33757367" or "32878837" or "28329276" or "29762262" or "33606007" or "31832355" or "29439300" or "33831877" or "33014670" or "29768393" or "33900140" or "32047717" or "29317805" or "31751055" or "31174479" or "32082143" or "33392784" or "31536152" or "33359950" or "29622424" or "29178314" or "32190711" or "32665381" or "32180317" or "31123928" or "32539873" or "30266614" or "29564624" or "29064261" or "32437335" or "32925870" or "28913626" or "33902079" or "29512101" or "30455813" or "29174748" or "31751437" or "31087390" or "29951322" or "32759380" or "30004347" or "33134204" or "31562024" or "32015917" or "29642927" or "31385793" or "29866682" or "33740628" or "33437821" or "30004375" or "29657725" or "30625099" or "31163703" or "33061145" or "30597017" or "30325676" or "33881653" or "30221617" or "32995724" or "32055442" or "33950948" or "29396671" or "31891431" or "29225254" or "30068854" or "31588110" or "31497168" or "30304636" or "31076496" or "31366344" or "32791760" or "28756505" or "31105761" or "29382606" or "30444758" or "30704409" or "31107503" or "33031309" or "29234970" or "33687580" or "29269657" or "32673830" or "29713878" or "33837032" or "30626769" or "30689215" or "32067793" or "30326931" or "33537758" or "33276840" or "30805998" or "29154747" or "31066721" or "29169985" or "31734932" or "30921827" or "30073620" or "31489075" or "30170639" or "30720859" or "30949538" or "31703633" or "29293961" or "31093389" or "29942754" or "32876540" or "29555840" or "32548015" or "30269522" or "32282945" or "29338037" or "33435885" or "32911296" or "32505877" or "31012135" or "31142138" or "31626092" or "33457119" or "33203784" or "32700630" or "30036664" or "29339678" or "31772771" or "32884586" or "29949090" or

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27	("2007883903" or "2012110945" or "2007308186" or "635093407" or "2007745063" or "2010766977" or "2010970866" or "2011134731" or "2011391366" or "2011616199" or "633811867" or "2010127863" or "2007369654" or "2012048808" or "2012223411" or "2011348360" or "2010881789" or "2005801098" or "2006719198" or "2007633369" or "635111507" or "631320955" or "630557735" or "632192891" or "2011100326" or "2003383801" or "2005426682" or "2007440015" or "2006947814" or "633365689" or "2005544406" or "2005474336" or "2005157770" or "2008431631" or "2010759401" or "2007439133" or "2005392639" or "631805391" or "2007017144" or "632290671" or "631318590" or "633202157" or "2011829788" or "2010099420" or "2005167718" or "2008015443" or "2011100331" or "2007873775" or "2006004439" or "627687000" or "2003353342" or "2001645346" or "2002701563" or "2002577050" or "628064211" or "630141039" or "2002240320" or "2001959438" or "2003333480" or "2002439712" or "2001389400" or "627701689" or "2002986009" or "2002870292" or "630833162" or "2004511925" or "631636995" or "619140617" or "2000680310" or "2001015541" or "614306982" or "618003401" or "625143589" or "625581239" or "625143606" or "624539256" or "626283551" or "622649943" or "620188103" or "622268177" or "2001075085" or "2001877751" or "630963378" or "622361930" or "630098883" or "2011943649" or "623338966" or "623325414" or "622059557" or "626239754" or "624184134").an. [Remove Embase UI 2021]
28	("37333679" or "36839526" or "36800065" or "37321394" or "37090761" or "36824114" or "37339684" or "36946284" or "35787151" or "37283912" or "36951528" or "37298319" or "37422613" or "36740820" or "37170311" or "37168364" or "36764907" or "37266639" or "36750785" or "36657271" or "37332438" or "36584815" or "37415115" or "36402219" or "37124030" or "37339827" or "36923766" or "37051284" or "37021952" or "36317461" or "36948955" or "37115239" or "37180286" or "35420122" or "37407924" or "36535906" or "37150921" or "37147149" or "35319379" or "37438953" or "37013024" or "37207105" or "36535133" or "36413272" or "35241206" or "36331961" or "36647036" or "36179908" or "36990190" or "36538998" or "37193466" or "37010977" or "36632025" or "37067213" or "35383546" or "36941016" or "37243912" or "37210620" or "37441214" or "37416006" or "37158846" or "37427202" or "37118732" or "37003680" or "36283610" or "36959580" or "36793069" or "36717895" or "36973675" or "35686908" or "36588314" or "36126764" or "37386329" or "36682434" or "36996394" or "37032324" or"37367192" or "37193472" or "37303391" or "36647330" or "37366438" or "37100563" or "35295731" or "36476330" or "35207230" or "35655684" or "36569694" or "36358111" or "35982726" or "35867569" or "35982140" or "36543370" or "36283012" or "35372759" or "36526988" or "35906495" or "34510310" or "36002040" or "34272564" or "36259995" or "35181535" or "35351040" or "35204417" or "35535794" or "35473990" or "35660691" or "36644435" or "36309644" or "35754355" or "35425988" or "35487472" or "35623657" or "35749315" or "35501070" or "35058285" or "36151865" or "36100093" or "35852791" or "35711129" or "36104198" or "36156522" or "34791600" or "35031488" or "35172690" or "32602786" or "36344030" or "35448079" or "35208630" or "34169473" or "35445085" or "33269664" or "35587244" or "35726179" or "34979975" or "34292291" or "36568565" or "35663809" or "36162848" or "35319455" or "35730935" or "35712763" or "35855043" or "34931370" or "35902328" or "35643752" or "35582071" or "35733298" or "35587808" or "35431307" or "35546041" or "35734318" or "35289962" or "34728063" or "34923683" or "35066786" or "35984543" or

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31	25 not (or/26-30)
32	limit 31 to (books or chapter or conference abstract or conference paper or "conference review" or editorial or letter or note)
33	31 not 32

Cochrane (WILEY) JANUARY 18, 2025

1	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin NEAR/0 (resistant or susceptible)) or (staphylococ* NEAR/0 aureu*) or "s. NEXT aureu*)) NEAR/1 (bacter* or septic* or sepsis* or (blood* NEXT infect*))):ti
2	(((staphylococ* aureu*) or (s NEXT aureu*)) NEAR/1 (bacter* or septic* or sepsis* or (blood* NEAR/0 infect*))):ab
3	#1 OR #2
4	(echocardiograp* or (echo* NEAR/1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))):ti,ab
5	#3 AND #4
6	(((staphylococ* aureu*) or s NEXT aureu*) and echo*):ti,ab
7	(endocardit* and echo*):ti,ab
8	#5 OR #6 OR #7
9	#5 OR #6 OR #7 with Cochrane Library publication date Between Jul 2023 and Feb 2025

July 2023

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily <1946 to July 18, 2023

1	exp *Staphylococcal Infections/
2	Bacteremia/mo, mi or *Bacteremia/
3	*Sepsis/
4	2 or 3
5	1 and 4
6	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj1 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ti.
7	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj3 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ab. /freq=2
8	or/5-7 [SAB]
9	*Endocarditis/
10	or/8-9
11	exp *Echocardiography/ or Echocardiography, Transesophageal/

12	(echocardiograp* or (echo* adj1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))).tw.
13	or/11-12
14	10 and 13
15	8 and exp Endocarditis/di, dg
16	(((staphylococ* adj aureu*) or "s. aureu*") and echo*).tw.
17	8 and (endocardit* and echo*).tw.
18	(endocardit* and echo*).ti. and bacter*.tw.
19	or/14-18
20	(Animals/ or Models, Animal/ or Disease Models, Animal/) not ((Animals/ or Models, Animal/ or Disease Models, Animal/) and Humans/)
21	((animal or animals or cat or cats or dog or dogs or feline or hamster* or lamb? or mice or monkey? or mouse or murine or pig or pigs or piglet* or porcine or primate* or rabbit* or rat or rats or rodent* or sheep* or veterinar*) not (human* or patient*)).ti,kf,jw.
22	19 not (20 or 21)
23	limit 22 to yr="2021 -Current"
24	remove duplicates from 23

Ovid Embase 1947 to July 18, 2023

1	*staphylococcal bacteremia/
2	*staphylococcal infections/
3	*bacteremia/
4	*Sepsis/
5	3 or 4
6	1 or (2 and 5)
7	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj1 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ti.
8	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj3 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ab. /freq=3
9	or/6-8 [SAB]
10	*Endocarditis/
11	or/9-10
12	*transthoracic echocardiography/ or *transesophageal echocardiography/
13	(echocardiograp* or (echo* adj1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))).tw.
14	or/12-13
15	11 and 14
16	9 and (endocarditis/di or (*Endocarditis/ and *diagnostic imaging/))
17	(((staphylococ* adj aureu*) or "s. aureu*") and echo*).tw.
18	9 and (endocardit* and echo*).tw.
19	(endocardit* and echo*).ti. and bacter*.tw.
20	or/15-19
21	(exp animal/ or exp juvenile animal/ or adult animal/ or animal cell/ or animal experiment/ or animal model/ or animal tissue/ or nonhuman/) not human/
22	((animal or animals or cat or cats or dog or dogs or feline or hamster* or lamb? or mice or monkey? or mouse or murine or pig or pigs or piglet* or porcine or primate* or rabbit* or rat or rats or rodent* or sheep* or veterinar*) not (human* or patient*)).ti,kw,jx.
23	20 not (21 or 22)

24	limit 23 to yr="2021 -Current"
25	remove duplicates from 24

Cochrane (WILEY) JULY 19, 2023

#1	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin NEAR/0 (resistant or susceptible)) or (staphylococ* NEAR/0 aureu*) or "s. aureu*")) NEAR/1 (bacter* or septic* or sepsis* or (blood* NEAR/0 infect*))):ti,ab
#2	(((staphylococ* aureu*) or ("s. aureu*")) NEAR/1 (bacter* or septic* or sepsis* or (blood* NEAR/0 infect*))):ti,ab
#3	#1 OR #2
#4	(echocardiograp* or (echo* NEAR/1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))):ti,ab
#5	#3 AND #4
#6	(((staphylococ* aureu*) or "s. aureu*") and echo*):ti,ab
#7	(endocardit* and echo*):ti,ab
#8	#5 OR #6 OR #7
#9	#5 OR #6 OR #7 with Cochrane Library publication date Between Jul 2021 and Jul 2023

July 2021

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily <1946 to June 04, 2021

1	exp *Staphylococcal Infections/
2	Bacteremia/mo, mi or *Bacteremia/
3	*Sepsis/
4	2 or 3
5	1 and 4
6	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj1 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ti.
7	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj3 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ab. /freq=2
8	or/5-7 [SAB]
9	*Endocarditis/
10	or/8-9
11	exp *Echocardiography/ or Echocardiography, Transesophageal/
12	(echocardiograp* or (echo* adj1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))).tw.
13	or/11-12
14	10 and 13
15	8 and exp Endocarditis/di, dg
16	(((staphylococ* adj aureu*) or "s. aureu*") and echo*).tw.
17	8 and (endocardit* and echo*).tw.
18	(endocardit* and echo*).ti. and bacter*.tw.
19	or/14-18
20	(Animals/ or Models, Animal/ or Disease Models, Animal/) not ((Animals/ or Models, Animal/ or Disease Models, Animal/) and Humans/)

21	((animal or animals or cat or cats or dog or dogs or feline or hamster* or lamb? or mice or monkey? or mouse or murine or pig or pigs or piglet* or porcine or primate* or rabbit* or rat or rats or rodent* or sheep* or veterinar*) not (human* or patient*)).ti,kf,jw.
22	19 not (20 or 21)
23	limit 22 to yr="2018 -Current"
24	remove duplicates from 23

Ovid Embase 1947 to June 04, 2021

1	*staphylococcal bacteremia/
2	*staphylococcal infections/
3	*bacteremia/
4	*Sepsis/
5	3 or 4
6	1 or (2 and 5)
7	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj1 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ti.
8	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin adj (resistant or susceptible)) or (staphylococ* adj aureu*) or "s. aureu*")) adj3 (bacter* or septic* or sepsis* or (blood* adj1 infect*))).ab. /freq=3
9	or/6-8 [SAB]
10	*Endocarditis/
11	or/9-10
12	*transthoracic echocardiography/ or *transesophageal echocardiography/
13	(echocardiograp* or (echo* adj1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))).tw.
14	or/12-13
15	11 and 14
16	9 and (endocarditis/di or (*Endocarditis/ and *diagnostic imaging/))
17	(((staphylococ* adj aureu*) or "s. aureu*") and echo*).tw.
18	9 and (endocardit* and echo*).tw.
19	(endocardit* and echo*).ti. and bacter*.tw.
20	or/15-19
21	(exp animal/ or exp juvenile animal/ or adult animal/ or animal cell/ or animal experiment/ or animal model/ or animal tissue/ or nonhuman/) not human/
22	((animal or animals or cat or cats or dog or dogs or feline or hamster* or lamb? or mice or monkey? or mouse or murine or pig or pigs or piglet* or porcine or primate* or rabbit* or rat or rats or rodent* or sheep* or veterinar*) not (human* or patient*)).ti,kw,jx.
23	20 not (21 or 22)
24	limit 23 to yr="2018 -Current"
25	remove duplicates from 24

Cochrane (WILEY) JUNE 6, 2021

#1	(((SAB and (staphylococ* or aureu*)) or (SABSI or MRSAB or MSSA or MRSA or (methicillin NEAR/0 (resistant or susceptible)) or (staphylococ* NEAR/0 aureu*) or "s. aureu*")) NEAR/1 (bacter* or septic* or sepsis* or (blood* NEAR/0 infect*))):ti,ab
#2	(((staphylococ* aureu*) or ("s. aureu*")) NEAR/1 (bacter* or septic* or sepsis* or (blood* NEAR/0 infect*))):ti,ab
#3	#1 OR #2

#4	(echocardiograp* or (echo* NEAR/1 (cardiograph* or transthor* or trans-thor* or transesophag* or trans-esophag*))):ti,ab
#5	#3 AND #4
#6	(((staphylococ* aureu*) or "s. aureu*") and echo*):ti,ab
#7	(endocardit* and echo*):ti,ab
#8	#5 OR #6 OR #7
#9	#5 OR #6 OR #7 with Cochrane Library publication date Between Jan 2018 and Jun 2021

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