Supplementary

Appendix 1

Search history

Pubmed		
#	Query	Results
1	"VolumeView"[Title/Abstract] OR "Surflash"[Title/Abstract] OR "Suresite IV"[Title/Abstract] OR "Supercath 5"[Title/Abstract] OR "PowerStick"[Title/Abstract] OR "peripheral venous line"[Title/Abstract] OR "peripheral venous catheter"[Title/Abstract] OR "peripheral venous access catheter"[Title/Abstract] OR "peripheral vascular catheter"[Title/Abstract] OR "peripheral intravenous catheterization kit"[Title/Abstract] OR "peripheral intravenous catheter"[Title/Abstract] OR "NovaCath"[Title/Abstract] OR "Nexiva"[Title/Abstract] OR "Neoflon"[Title/Abstract] OR "Midline Catheter Kit"[Title/Abstract] OR "Jelco"[Title/Abstract] OR "Introcan"[Title/Abstract] OR "Insyte Autoguard"[Title/Abstract] OR "ClariVein"[Title/Abstract] OR "BD Nexiva Diffusics"[Title/Abstract] OR "BD Nexiva BD Q Syte"[Title/Abstract] OR "BD Nexiva"[Title/Abstract] OR "BD Insyte W"[Title/Abstract] OR "BD Insyte N Autoguard"[Title/Abstract] OR "BD Insyte N"[Title/Abstract] OR "BD Insyte Autoguard"[Title/Abstract] OR "BD Insyte"[Title/Abstract] OR "BD Cathena Safety IV Catheter"[Title/Abstract] OR "BD Angiocath N Autoguard"[Title/Abstract] OR "BD Angiocath Autoguard"[Title/Abstract] OR "BD Angiocath"[Title/Abstract] OR "Angiocath Autoguard"[Title/Abstract] OR "Angiocath"[Title/Abstract] OR "Abbocath"[Title/Abstract] OR "Peripherally Inserted Central Catheter*"[Title/Abstract] OR "Midline Catheters"[Title/Abstract] OR "peripheral infusion"[Title/Abstract] OR "peripheral cannula"[Title/Abstract] OR "peripheral administration"[Title/Abstract] OR "PICC"[Title/Abstract] OR "PIVC"[Title/Abstract] OR "PVC"[Title/Abstract] OR "midline catheter*"[Title/Abstract]	17,284
2	Vasoconstrictor Agents[MeSH Terms]	24,920
3	"Vasopressor Agents"[Title/Abstract] OR "Vasopressor Agent"[Title/Abstract] OR "Vasoconstrictors"[Title/Abstract] OR "Vasoconstrictor"[Title/Abstract] OR "vasoconstrictive"[Title/Abstract] OR "vasoconstricting"[Title/Abstract] OR "Vasoactive"[Title/Abstract] OR "vaconstrictor substance"[Title/Abstract] OR "blood vessel constrictor"[Title/Abstract] OR "Dopamine"[Title/Abstract] OR "noradrenaline"[Title/Abstract] OR "norepinephrine"[Title/Abstract] OR "adrenaline"[Title/Abstract] OR "epinephrine"[Title/Abstract] OR "phenylephrine"[Title/Abstract] OR "ephedrine"[Title/Abstract] OR "metaraminol"[Title/Abstract] OR "vasopressin"[Title/Abstract] OR "methylene blue"[Title/Abstract]	391,749
4	#1 AND (#2 OR #3)	539

Embase		
#	Query	Results
1	'vasoconstrictor agent'/exp OR 'vasoconstrictor agent'	357367
2	'vasopressor agents':ab,ti,kw OR 'vasopressor agent':ab,ti,kw OR 'vasoconstrictors':ab,ti,kw OR 'vasoconstrictor':ab,ti,kw OR 'vasoconstrictive':ab,ti,kw OR 'vasoconstricting':ab,ti,kw OR 'vasoactive':ab,ti,kw OR 'vaconstrictor substance':ab,ti,kw OR 'blood vessel constrictor':ab,ti,kw OR 'dopamine':ab,ti,kw OR 'noradrenaline':ab,ti,kw OR 'norepinephrine':ab,ti,kw OR 'adrenaline':ab,ti,kw OR 'epinephrine':ab,ti,kw OR 'phenylephrine':ab,ti,kw OR 'ephedrine':ab,ti,kw OR 'metaraminol':ab,ti,kw OR 'vasopressin':ab,ti,kw OR 'methylene blue':ab,ti,kw	503487
3	'volumeview':ab,ti,kw OR 'surflash':ab,ti,kw OR 'suresite iv':ab,ti,kw OR 'supercath 5':ab,ti,kw OR 'powerstick':ab,ti,kw OR 'peripheral venous line':ab,ti,kw OR 'peripheral venous catheter':ab,ti,kw OR 'peripheral venous access catheter':ab,ti,kw OR 'peripheral vascular catheter':ab,ti,kw OR 'peripheral intravenous catheterization kit':ab,ti,kw OR 'peripheral intravenous catheter':ab,ti,kw OR 'novacath':ab,ti,kw OR 'nexiva':ab,ti,kw OR 'neoflon':ab,ti,kw OR 'midline catheter kit':ab,ti,kw OR 'jelco':ab,ti,kw OR 'introcan':ab,ti,kw OR 'insyte autoguard':ab,ti,kw OR 'clarivein':ab,ti,kw OR 'bd nexiva diffusics':ab,ti,kw OR 'bd nexiva bd q syte':ab,ti,kw OR 'bd nexiva':ab,ti,kw OR 'bd insyte w':ab,ti,kw OR 'bd insyte n autoguard':ab,ti,kw OR 'bd insyte n':ab,ti,kw OR 'bd insyte autoguard':ab,ti,kw OR 'bd insyte':ab,ti,kw OR 'bd cathena safety iv catheter':ab,ti,kw OR 'bd angiocath n autoguard':ab,ti,kw OR 'bd angiocath autoguard':ab,ti,kw OR 'bd angiocath':ab,ti,kw OR 'angiocath autoguard':ab,ti,kw OR 'angiocath':ab,ti,kw OR 'abbocath':ab,ti,kw OR 'peripherally inserted central catheter':ab,ti,kw OR 'peripheral infusion':ab,ti,kw OR 'peripheral cannula':ab,ti,kw OR 'peripheral administration':ab,ti,kw OR 'picc':ab,ti,kw OR 'pivc':ab,ti,kw OR 'pvc':ab,ti,kw OR 'midline catheter':ab,ti,kw OR 'midline catheters':ab,ti,kw OR 'peripherally inserted central catheters':ab,ti,kw	26281
4	(#1 OR #2) AND #3	974

https://dx.doi.org/10.21037/cdt-2025-290

Cochrane Library		
#	Query	Results
1	(‘VolumeView' OR 'Surflash' OR 'Suresite IV' OR 'Supercath 5' OR 'PowerStick' OR 'peripheral venous line' OR 'peripheral venous catheter' OR 'peripheral venous access catheter' OR 'peripheral vascular catheter' OR 'peripheral intravenous catheterization kit' OR 'peripheral intravenous catheter' OR 'NovaCath' OR 'Nexiva' OR 'Neoflon' OR 'Midline Catheter Kit' OR 'Jelco' OR 'Introcan' OR 'Insyte Autoguard' OR 'ClariVein' OR 'BD Nexiva Diffusics' OR 'BD Nexiva BD Q Syte' OR 'BD Nexiva' OR 'BD Insyte W' OR 'BD Insyte N Autoguard' OR 'BD Insyte N' OR 'BD Insyte Autoguard' OR 'BD Insyte' OR 'BD Cathena Safety IV Catheter' OR 'BD Angiocath N Autoguard' OR 'BD Angiocath Autoguard' OR 'BD Angiocath' OR 'Angiocath Autoguard' OR 'Angiocath' OR 'Abbocath' OR 'Peripherally Inserted Central Catheter' OR 'Midline Catheters' OR 'peripheral infusion' OR 'peripheral cannula' OR 'peripheral administration’OR ‘PICC' OR 'PIVC' OR 'PVC' OR 'midline catheter' OR 'midline catheters' OR 'Peripherally Inserted Central Catheters'):AB,TI,KW	8420
2	MeSH descriptor: [Vasoconstrictor Agents] explode all trees	2281
3	(‘Vasopressor Agents' OR 'Vasopressor Agent' OR 'Vasoconstrictors' OR 'Vasoconstrictor' OR 'vasoconstrictive' OR 'vasoconstricting' OR 'Vasoactive' OR 'vaconstrictor substance' OR 'blood vessel constrictor' OR 'Dopamine' OR 'noradrenaline' OR 'norepinephrine' OR 'adrenaline' OR 'epinephrine' OR 'phenylephrine' OR 'ephedrine' OR 'metaraminol' OR 'vasopressin' OR 'methylene blue’):AB,TI,KW	38851
4	#1 AND (#2 OR #3)	630

Web of Science	
Query	Results
TS=(“Vasopressor Agents" OR "Vasopressor Agent" OR "Vasoconstrictors" OR "Vasoconstrictor" OR "vasoconstrictive" OR "vasoconstricting" OR "Vasoactive" OR "vaconstrictor substance" OR "blood vessel constrictor" OR "Dopamine" OR "noradrenaline" OR "norepinephrine" OR "adrenaline" OR "epinephrine" OR "phenylephrine" OR "ephedrine" OR "metaraminol" OR "vasopressin" OR "methylene blue”)	366333
TS=("VolumeView" OR "Surflash" OR "Suresite IV" OR "Supercath 5" OR "PowerStick" OR "peripheral venous line" OR "peripheral venous catheter" OR "peripheral venous access catheter" OR "peripheral vascular catheter" OR "peripheral intravenous catheterization kit" OR "peripheral intravenous catheter" OR "NovaCath" OR "Nexiva" OR "Neoflon" OR "Midline Catheter Kit" OR "Jelco" OR "Introcan" OR "Insyte Autoguard" OR "ClariVein" OR "BD Nexiva Diffusics" OR "BD Nexiva BD Q Syte" OR "BD Nexiva" OR "BD Insyte W" OR "BD Insyte N Autoguard" OR "BD Insyte N" OR "BD Insyte Autoguard" OR "BD Insyte" OR "BD Cathena Safety IV Catheter" OR "BD Angiocath N Autoguard" OR "BD Angiocath Autoguard" OR "BD Angiocath" OR "Angiocath Autoguard" OR "Angiocath" OR "Abbocath" OR "Peripherally Inserted Central Catheter" OR "Midline Catheters" OR "peripheral infusion" OR "peripheral cannula" OR "peripheral administration"OR "PICC" OR "PIVC" OR "PVC" OR “midline catheter” OR “midline catheters” OR “Peripherally Inserted Central Catheters”)	33241
#2 AND #1	479

CNKI	
Query	Results
(TIAB: Peripheral intravenous catheters + peripherally inserted central catheters + midline catheters + peripheral vein + PIVC + PVC + PICC (exact)) AND (TIAB: vasopressors + vasopressor + norepinephrine + dopamine + epinephrine (exact))	211

VIP	
Query	Results
(((((((Title or Keyword=Peripheral Venous Catheter OR Title or Keyword=Peripherally Inserted Central Catheter) OR Title or Keyword=Midline Catheter) OR Title or Keyword=Peripheral Vein) OR Title or Keyword=PIVC) OR Title or Keyword=PVC) OR Title or Keyword=PICC) AND ((((Title or Keyword=Vasopressor OR Title or Keyword=Vasopressors) OR Title or Keyword=Norepinephrine) OR Title or Keyword=Dopamine) OR Title or Keyword=Epinephrine))	28

https://dx.doi.org/10.21037/cdt-2025-290

WF	
Query	Results
Title or Keyword:(Peripheral Venous Catheter OR Peripherally Inserted Central Catheter OR Midline Catheter OR Peripheral Vein OR PIVC OR PVC OR PICC) and Title or Keyword:(Vasopressor OR Vasopressors OR Norepinephrine OR Dopamine OR Epinephrine)	94

SinoMed	
Query	Results
("Peripheral Venous Catheter"[All Fields:Intelligent] OR "Peripherally Inserted Central Catheter"[All Fields:Intelligent] OR "Midline Catheter"[All Fields:Intelligent] OR "Peripheral Vein"[All Fields:Intelligent] OR "PIVC"[All Fields:Intelligent] OR "PVC"[All Fields:Intelligent] OR "PICC"[All Fields:Intelligent]) AND ("Vasopressor"[All Fields:Intelligent] OR "Vasopressors"[All Fields:Intelligent] OR "Norepinephrine"[All Fields:Intelligent] OR "Dopamine"[All Fields:Intelligent] OR "Epinephrine"[All Fields:Intelligent])	289

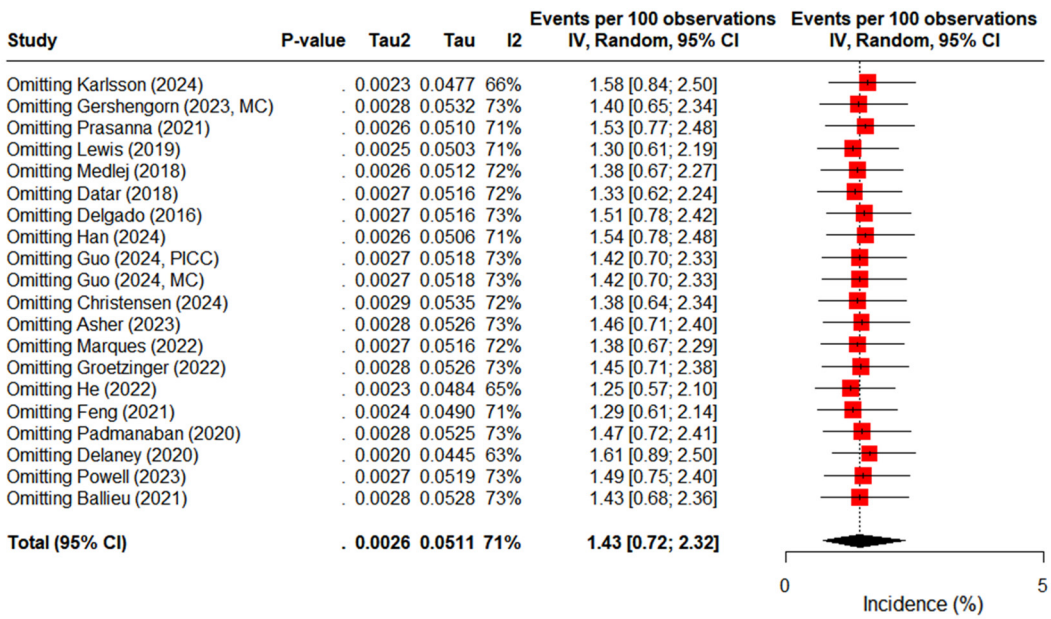

Figure S1 Sensitivity analysis results for extravasation.

https://dx.doi.org/10.21037/cdt-2025-290

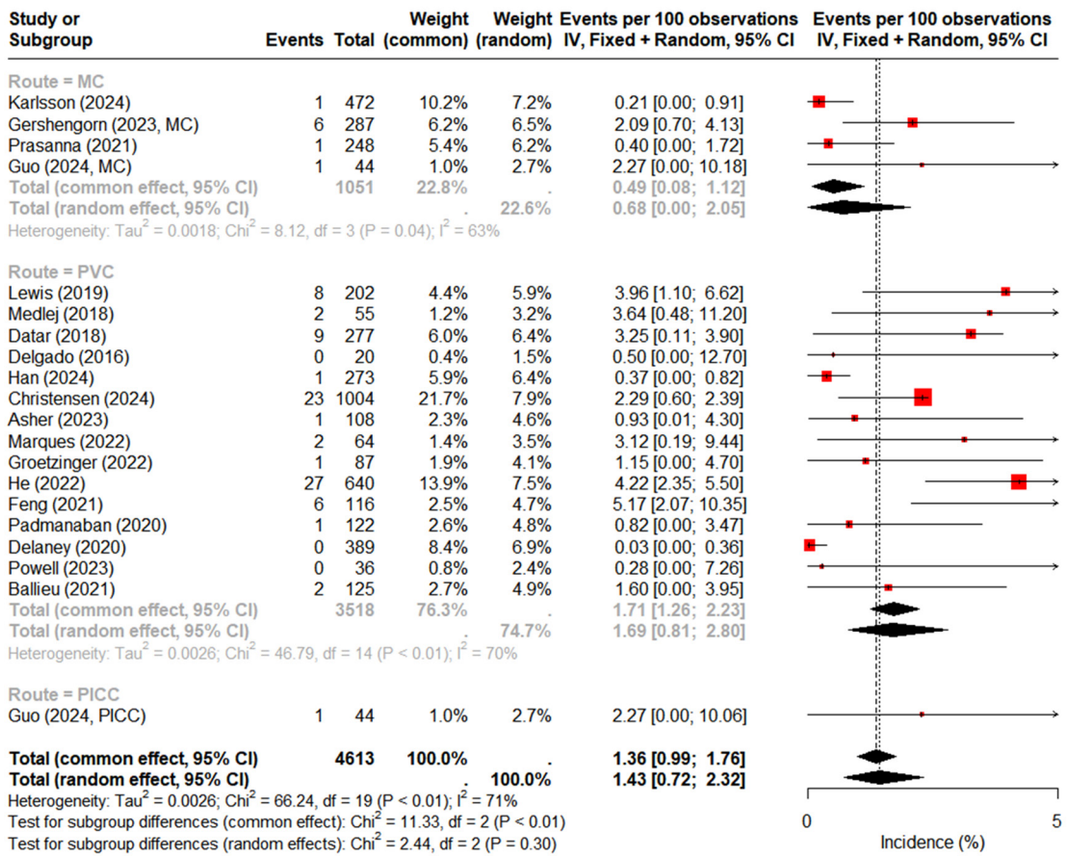

Figure S2 Subgroup analysis results of extravasation according to peripheral catheter administration methods.

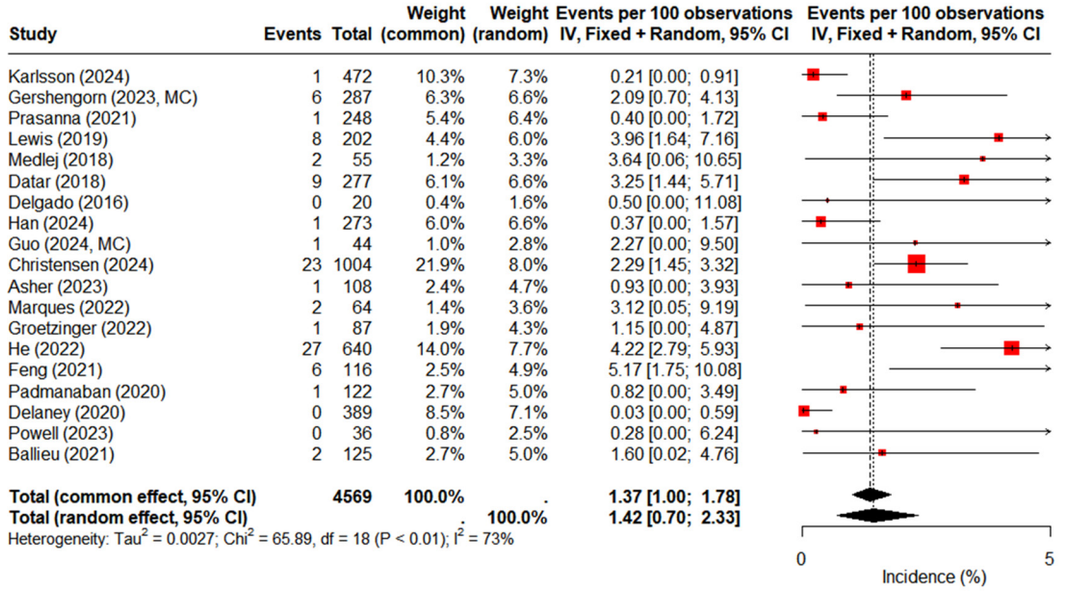

Figure S3 Overall forest plot results after removing the PICC subgroup data.

https://dx.doi.org/10.21037/cdt-2025-290

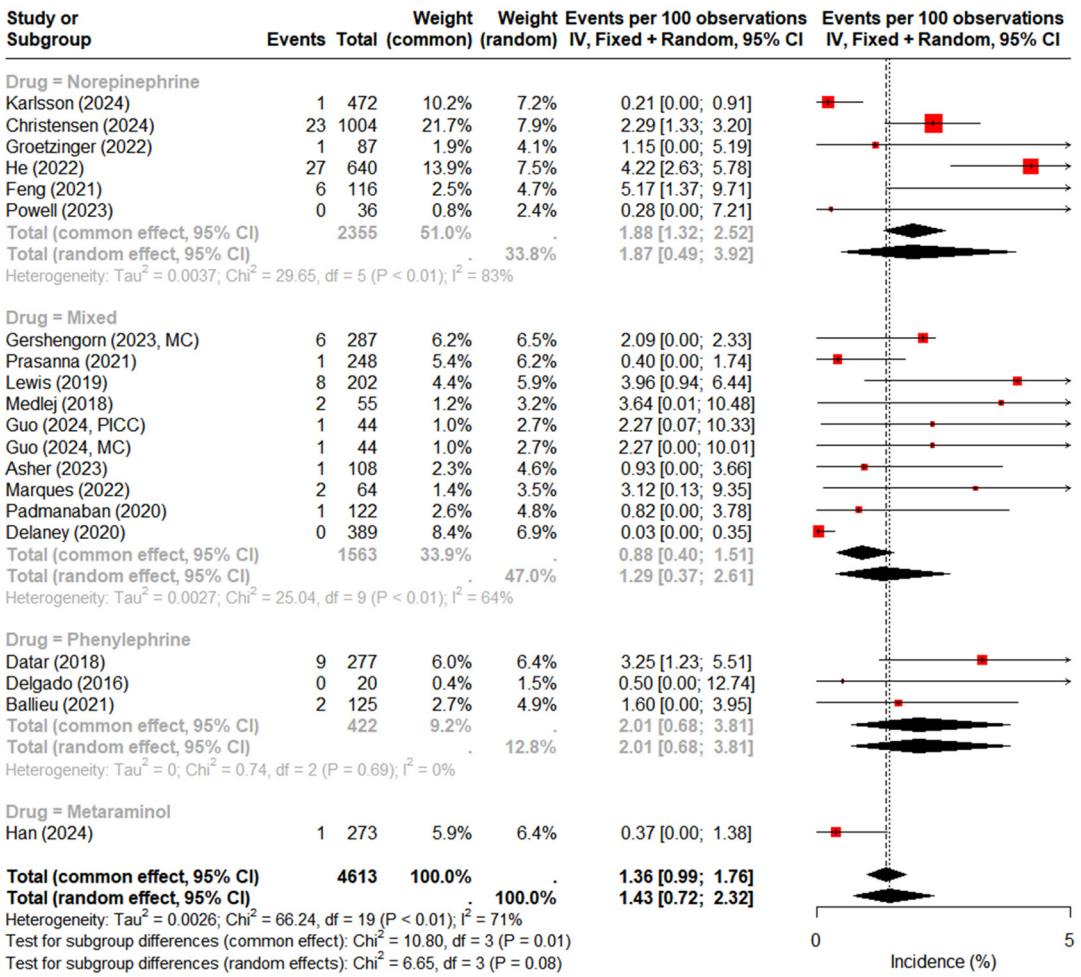

Figure S4 Subgroup analysis of extravasation results stratified by drug type.

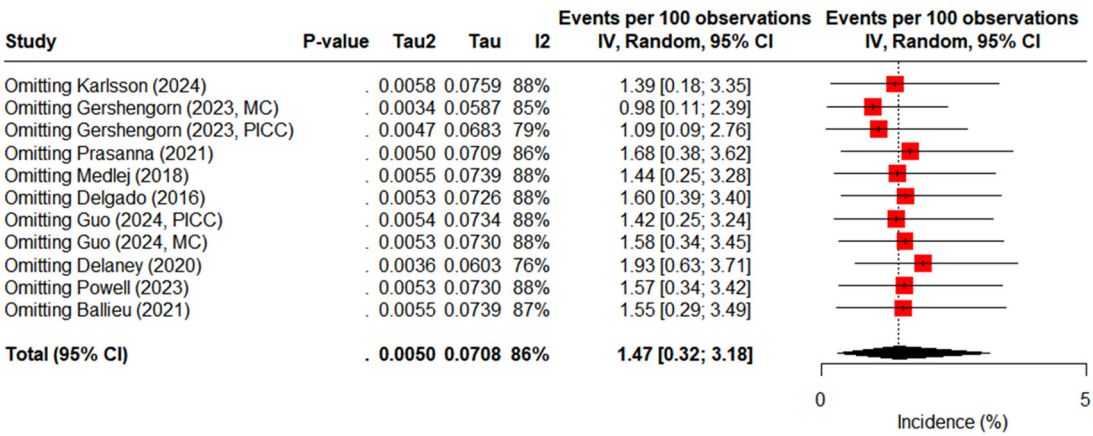

Figure S5 Sensitivity analysis of thrombosis.

https://dx.doi.org/10.21037/cdt-2025-290

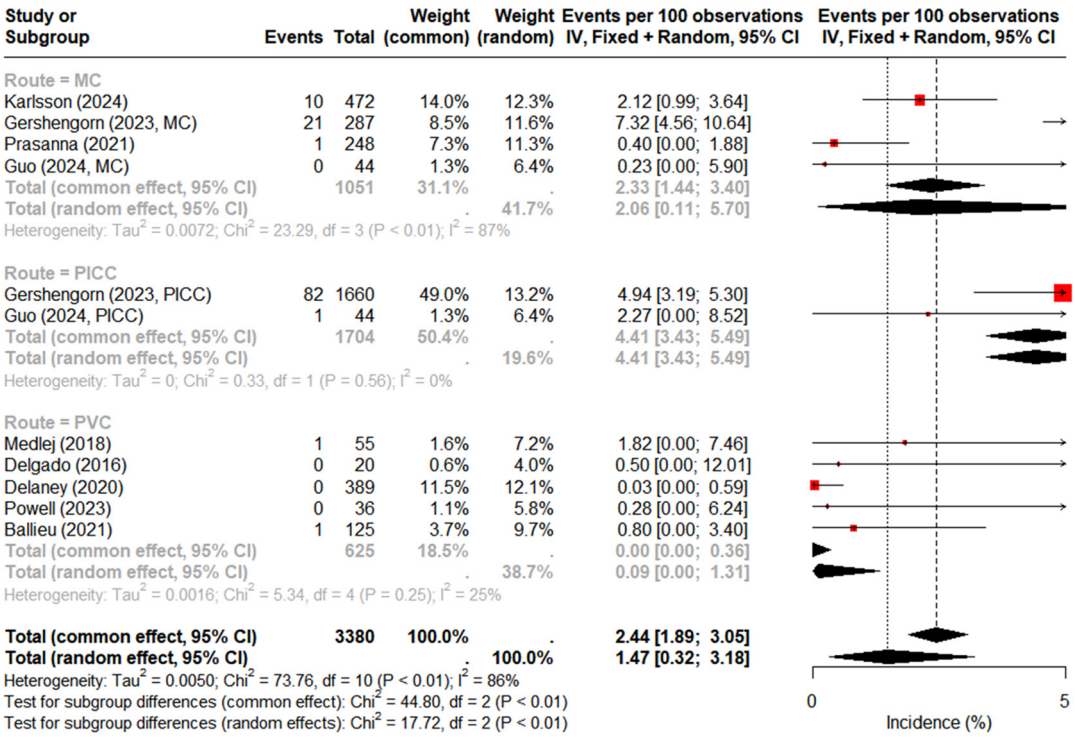

Figure S6 Subgroup analysis for thrombosis by peripheral catheter administration methods.

https://dx.doi.org/10.21037/cdt-2025-290

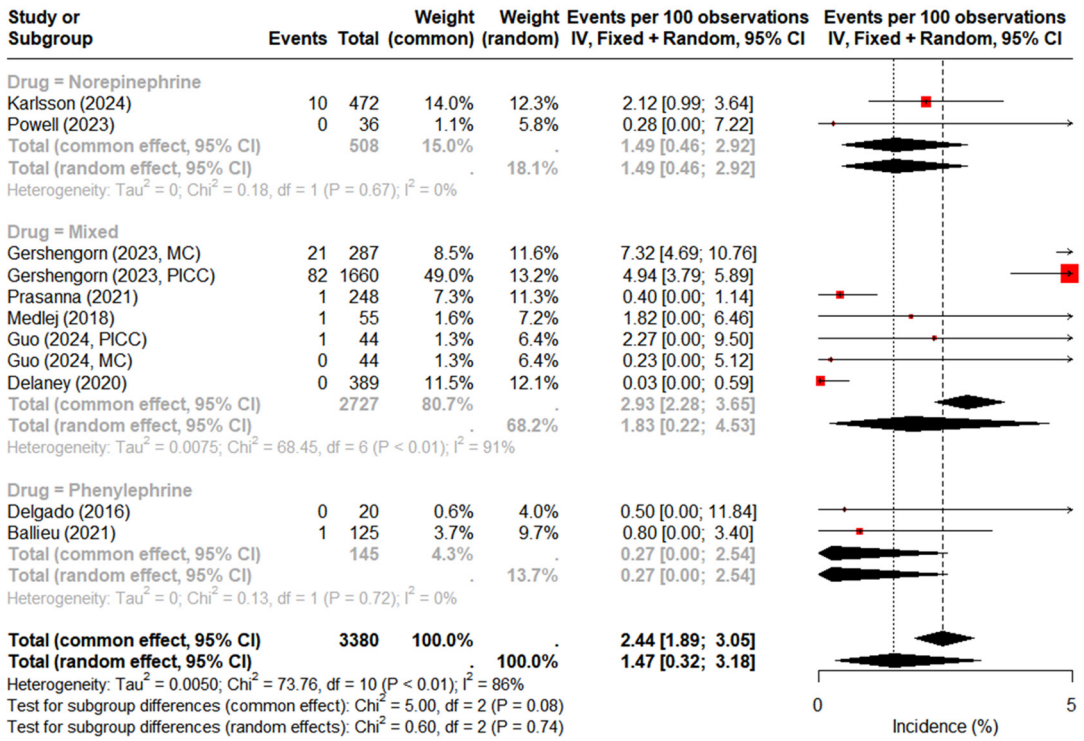

Figure S7 Subgroup analysis of thrombosis by drug type.

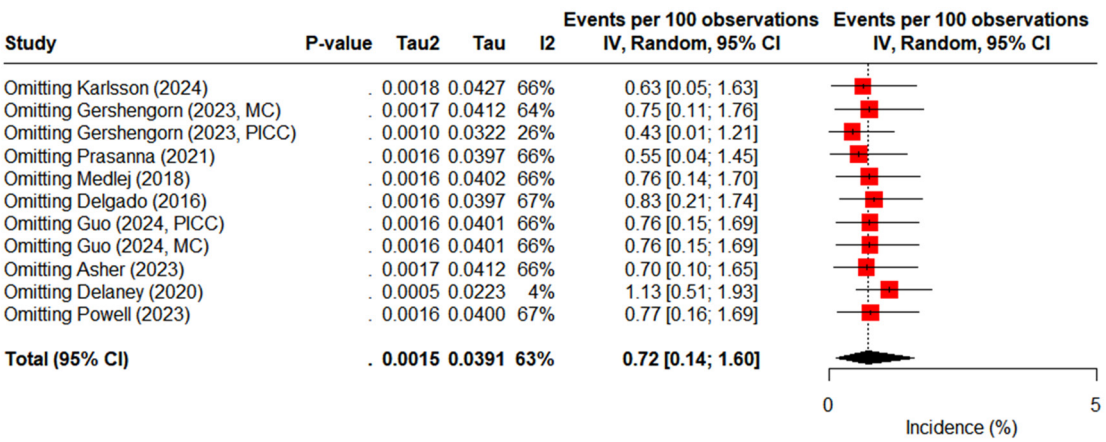

Figure S8 Sensitivity analysis results for infection.

https://dx.doi.org/10.21037/cdt-2025-290

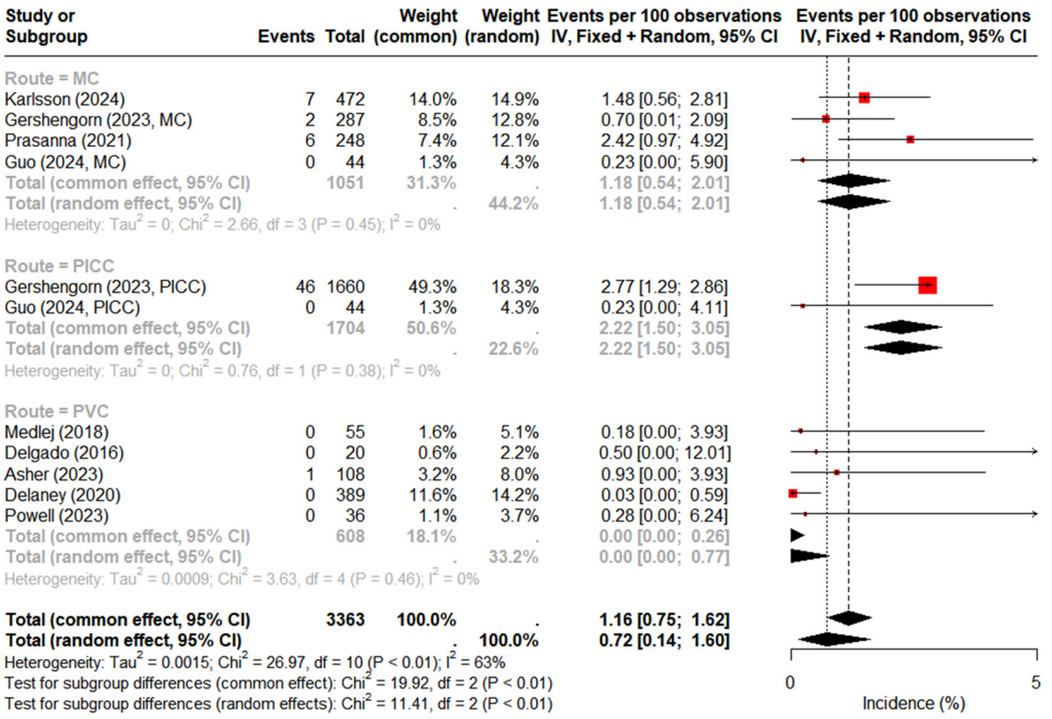

Figure S9 Subgroup analysis for infection by peripheral catheter administration methods.

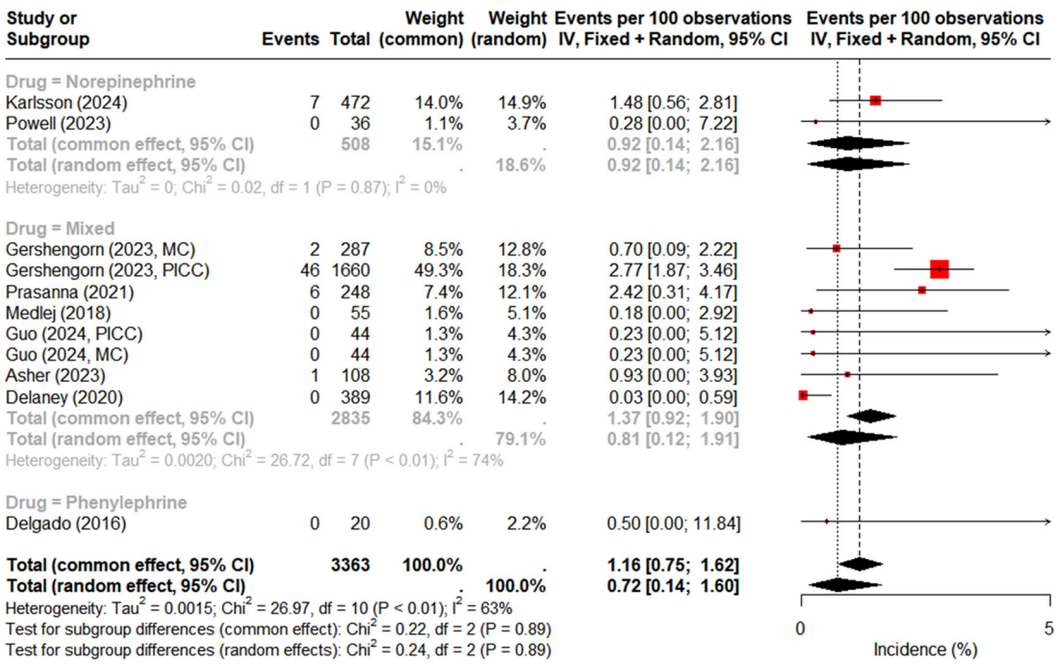

Figure S10 Subgroup analysis for infection by drug type.

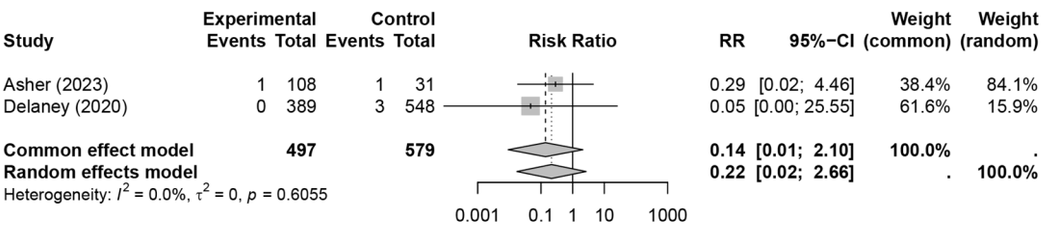

Figure S11 Forest plot of extravasation risk for PVCs compared with CVCs.

https://dx.doi.org/10.21037/cdt-2025-290

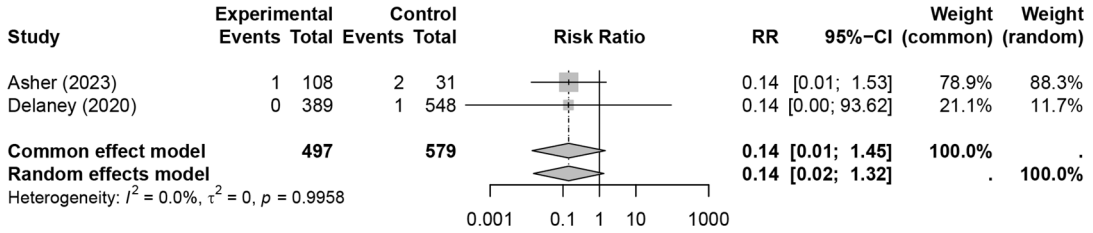

Figure S12 Forest plot of catheter-related infection risk for PVCs compared with CVCs.

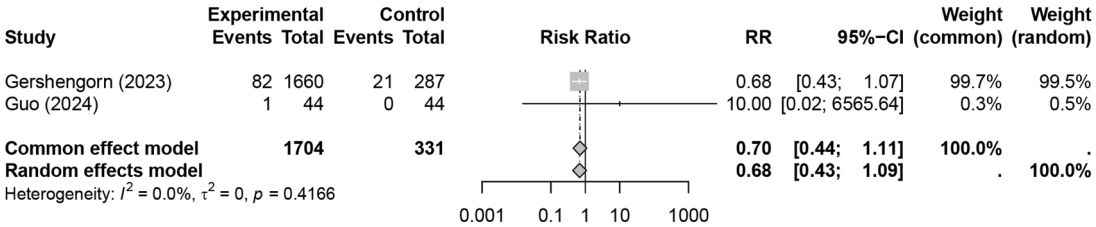

Figure S13 Forest plot of thrombosis risk for PICCs compared with MCs.

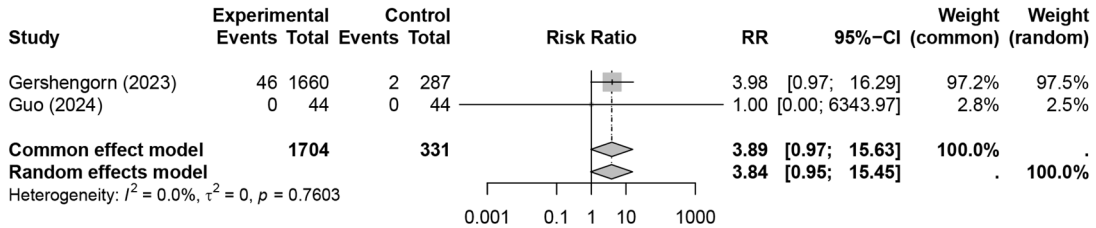

Figure S14 Forest plot of catheter-related infection risk for PICCs compared with MCs.

https://dx.doi.org/10.21037/cdt-2025-290

Table S1 Reasons for exclusion of studies

Author (year)	Title	Reason
Aykanat (2022)	Low-Concentration Norepinephrine Infusion for Major Surgery: A Safety and Feasibility Pilot Randomized Controlled Trial	The study was excluded because the intervention did not meet the inclusion criteria regarding catheter type. Although norepinephrine was administered peripherally in some patients, the study design also allowed central venous catheter (CVC) administration, and outcomes were not reported separately by catheter type. Therefore, the study population could not be clearly classified under peripheral intravenous catheter infusion of vasopressors, which was the focus of this meta-analysis
Nguyen (2021)	Utilization and extravasation of peripheral norepinephrine in the emergency department	This study was excluded because the intervention did not meet the inclusion criteria regarding catheter type. Although norepinephrine was initiated peripherally in the emergency department, the protocol mandated early conversion to central venous catheter (CVC) infusion in most patients (over 80%), and outcomes were not stratified or reported separately by catheter type. Therefore, the study population could not be clearly classified as receiving vasopressors exclusively through peripheral intravenous catheters, which was the focus of this meta-analysis
Poletti (2018)	Efficacy and safety of peripherally inserted central venous catheters in acute cardiac care management	This study was excluded because the catheter type was not clearly defined. Although peripherally inserted central catheters (PICCs) were included, a proportion of patients were converted to central venous catheters (CVCs), and outcome data were not reported separately by catheter type. As a result, it was not possible to determine whether the adverse events were attributable to PICCs or CVCs. Therefore, this study did not meet the inclusion criteria for our meta-analysis
Messina (2021)	Norepinephrine Infusion in the Emergency Department in Septic Shock Patients: A Retrospective 2-Year Analysis	This study was excluded because the catheter type was not clearly defined. The authors reported the use of both peripheral and central venous catheters for norepinephrine infusion, but outcome data were not stratified or analyzed separately by catheter type. As a result, it was not possible to determine whether the reported adverse events were attributable to peripheral intravenous catheters, which was the focus of our meta-analysis
H S Vitharana (2023)	Study on Ward-Based Practice of Vasopressor Administration for Patients with Sepsis, in National Hospital of Sri Lanka (NHSL)	This study was excluded because the catheter type was not clearly defined. The authors mentioned the use of vasopressors in ward-based practice but did not specify or stratify the outcomes according to catheter type. As a result, it was unclear whether the adverse events were associated with peripheral intravenous catheters, which was the focus of our meta-analysis
Bahl (2022)	Risk Factors for Midline Catheter Failure: A Secondary Analysis of an Existing Trial	This study was excluded because the reported outcomes did not meet the criteria of our meta-analysis. The study focused on midline catheter failure rates and associated risk factors, but it did not provide data on adverse events related to peripheral vasopressor infusion, such as extravasation, thrombosis, or infection, which were the outcomes of interest in our analysis
Bima (2022)	Norepinephrine may improve survival of septic shock patients in a low-resource setting: a proof-of-concept study on feasibility and efficacy outside the Intensive Care Unit	This study was excluded because the reported outcomes did not satisfy the requirements of our meta-analysis. The primary focus was on survival benefits of norepinephrine use in septic shock patients in a low-resource setting, but it did not provide data on adverse events associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest in our analysis
Cape (2022)	Implementation of a Protocol for Peripheral Intravenous Norepinephrine: Does It Save Central Line Insertion, Is It Safe?	This study was excluded because the reported outcomes did not meet the inclusion criteria of our meta-analysis. The primary outcomes focused on central line utilization and protocol feasibility, but it did not provide data regarding adverse events of peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Charbel (2021)	Safety of early norepinephrine infusion through peripheral vascular access during transport of critically ill children	This study was excluded because the outcomes reported were not consistent with the endpoints of our meta-analysis. The focus was primarily on transport feasibility and short-term safety during transfer, without providing detailed data on adverse events of peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Charkoudian (2005)	Interactions of plasma osmolality with arterial and central venous pressures in control of sympathetic activity and heart rate in humans	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. The article investigated physiological mechanisms of plasma osmolality, arterial, and central venous pressure regulation, but did not report the adverse events associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Contenti (2024)	Is the lactate value predictive of the return of spontaneous circulation during CPR in nontraumatic OHCA?	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. The article investigated physiological mechanisms of plasma osmolality, arterial, and central venous pressure regulation, but did not report the adverse events associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Deveau (2023)	Safety of peripherally administered 3% hypertonic saline	This study was excluded because the study population did not match our inclusion criteria. Participants received 3% hypertonic saline via peripheral IV for hyponatremia or intracranial pressure management rather than peripheral vasopressors; therefore, the population was not representative of patients receiving peripheral vasopressor infusion targeted by our meta-analysis
Franzen (2021)	Differential Effects of Angiotensin-II Compared to Phenylephrine on Arterial Stiffness and Hemodynamics: A Placebo-Controlled Study in Healthy Humans	This study was excluded because the reported outcomes did not align with the endpoints of our meta-analysis. The article focused on arterial stiffness and hemodynamic effects of angiotensin-II and phenylephrine but did not evaluate adverse events related to peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Gordon (2014)	The Interaction of Vasopressin and Corticosteroids in Septic Shock: A Pilot Randomized Controlled Trial	This study was excluded because the reported outcomes did not align with the endpoints of our meta-analysis. The trial investigated the interaction between vasopressin and corticosteroids in septic shock and reported hemodynamic responses and survival outcomes, but it did not assess adverse events related to peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Hallengren (2017)	Septic shock and the use of norepinephrine in an intermediate care unit: Mortality and adverse events	This study was excluded because the reported outcomes did not align with the endpoints of our meta-analysis. The article primarily investigated mortality and general adverse events in patients with septic shock but did not specifically report adverse events related to peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Kalinoski (2024)	The use of peripheral vasopressors and its implications for hospital medicine	This study was excluded because the reported outcomes did not align with the predefined endpoints of our meta-analysis. While it discussed the clinical implications and safety considerations of peripheral vasopressor use, it did not provide data on adverse events of interest—extravasation, thrombosis, or infection—that were required for inclusion
Kashiura (2022)	Risk factors for peripheral venous catheter-related phlebitis stratified by body mass index in critically ill patients: A post-hoc analysis of the AMOR-VENUS study	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. The article primarily investigated risk factors for peripheral venous catheter-related phlebitis stratified by body mass index, but it did not report adverse events of interest associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection)
Munroe (2024)	Use and Outcomes of Peripheral Vasopressors in Early Sepsis-Induced Hypotension Across Michigan Hospitals	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. Although it examined the use and outcomes of peripheral vasopressors in sepsis-induced hypotension, it did not specifically report the adverse events of interest—extravasation, thrombosis, or infection—associated with peripheral vasopressor infusion

Table S1 (*continued*)

https://dx.doi.org/10.21037/cdt-2025-290

Table S1 (*continued*)

Author (year)	Title	Reason
Nilsen (1984)	Venous Thrombosis Following Diagnostic Transvenous Catheterization by Percutaneous Catheter Insertion: An Evaluation of Desmopressin as a Thromboprophylactic Agent	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. The article focused on venous thrombosis following diagnostic transvenous catheterization procedures, rather than adverse events specifically associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection)
Shinzato (2025)	Risk factors of phlebitis in patients admitted to the intensive care unit vary according to the duration of catheter dwelling: A post-hoc analysis of the AMOR-VENUS study	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. Although it analyzed risk factors for phlebitis related to peripheral intravenous catheterization, it did not specifically report the adverse events of interest—extravasation, thrombosis, or infection—associated with peripheral vasopressor infusion
Spiegel (2020)	The Utility of Midline Intravenous Catheters in Critically Ill Emergency Department Patients	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. While it evaluated the use and utility of midline intravenous catheters in critically ill emergency department patients, it did not report the adverse events of interest—extravasation, thrombosis, or infection—specifically associated with peripheral vasopressor infusion
Fabick (2023)	Comparison of Extravasation Events Related to the Peripheral Administration of Vasopressors Prior to Central Venous Catheter Placement	This study was excluded because the intervention (I) was not clearly defined. Although it investigated extravasation events with vasopressors, the study mixed peripheral and central venous administration contexts without clearly isolating outcomes attributable solely to peripheral intravenous catheter use. Therefore, the intervention did not meet the inclusion criteria of our meta-analysis
Yasuda (2025)	Impact of Noradrenaline Administration Dosage on the Occurrence of Peripheral Intravenous Catheter–Related Phlebitis	This study was excluded because the outcomes (O) did not align with the endpoints of our meta-analysis. The article focused on the incidence of peripheral intravenous catheter–related phlebitis associated with noradrenaline dosage, but it did not report the adverse events of interest in our analysis (extravasation, thrombosis, or infection)
Yerke (2023)	Peripheral Administration of Norepinephrine: A Prospective Observational Study	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. Although it investigated norepinephrine administration via peripheral access, it did not specifically report the adverse events of interest—extravasation, thrombosis, or infection—associated with peripheral vasopressor infusion
Nielsen (2021)	The efficacy of midline catheters—a prospective, randomized, active-controlled study	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. While it evaluated the efficacy of midline catheters, it did not specifically report the adverse events associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the outcomes of interest
Peshimam (2022)	Peripheral and Central/Intraosseous Vasoactive Infusions During and After Pediatric Critical Care Transport: Retrospective Cohort Study of Extravasation Injury	This study was excluded because the study population did not meet the eligibility criteria of our meta-analysis. The article focused on pediatric patients during and after critical care transport, whereas our meta-analysis specifically targeted adult populations receiving peripheral vasopressor infusion.
Hao (2015)	fficacy of Ailefu Thin Foam Dressing in Preventing Phlebitis Induced by Dopamine Infusion	This study primarily focused on the preventive effect of thin foam dressings on phlebitis caused by continuous peripheral dopamine infusion. The main emphasis was on a nursing intervention (foam dressing) rather than the incidence of adverse events (extravasation, thrombosis, or infection) associated with peripheral vasopressor infusion. Therefore, the reported outcomes did not meet the eligibility criteria for this meta-analysis and the study was excluded
Zhang	Prevention and Nursing Care of Phlebitis Caused by Continuous Peripheral Intravenous Infusion of Dopamine	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. While it focused on nursing interventions for preventing phlebitis due to continuous dopamine infusion, it did not evaluate or report the adverse events of interest in our analysis (extravasation, thrombosis, or infection) associated with peripheral vasopressor administration
Lu (2012)	Nursing and Management of Complications of Dopamine Infusion via Peripheral Vein	This study was excluded due to poor methodological quality. The article mainly described nursing experiences and complication handling, lacking rigorous study design, clear outcome reporting, and standardized evaluation, which did not meet the quality requirements for inclusion in our meta-analysis
Su (2018)	Nursing Safety Management of Noradrenaline Infusion through Peripheral Venous Catheter	This study was excluded due to poor methodological quality. The article mainly described nursing experiences and complication handling, lacking rigorous study design, clear outcome reporting, and standardized evaluation, which did not meet the quality requirements for inclusion in our meta-analysis
Dansereau (2024)	Evaluation of the Safety and Efficacy of Peripheral Vasopressors to Decrease Central Line Placement and Associated Blood Stream Infections	This study was excluded because the outcomes did not align with the endpoints of our meta-analysis. The article focused on central line placement reduction and bloodstream infection rates, but it did not clearly report adverse events directly associated with peripheral vasopressor infusion (extravasation, thrombosis, or infection), which were the primary outcomes of interest

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