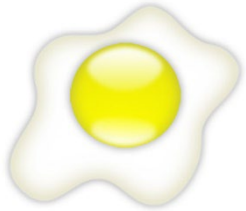


# INTRAVENOUS ALBUMIN

Right reason

Right way

# Disclosures

- Research funding from Canadian Blood Services and Octapharma
- Chair, Intravenous Albumin Guideline, International Collaborative for Transfusion Medicine Guidelines (ICTMG)

# Outline

- Evidence for use
- Complications of albumin
- Albumin trends in Ontario

# Question

- Which of the following is an evidence-based indication for albumin?

A. Patient with presumed sepsis just admitted to the Emergency Department
B. Patient intraoperative undergoing a hip replacement surgery
C. Patient post cardiac surgery with active bleeding from chest tubes
D. Patient with cirrhosis admitted with spontaneous bacterial peritonitis
E. Patient undergoing large volume paracentesis for ovarian cancer

# EVIDENCE

[EXCLUDING NEONATES – NO EVIDENCE]

There are a lot of randomized controlled trials

# International Collaborative for Transfusion Medicine Guidelines

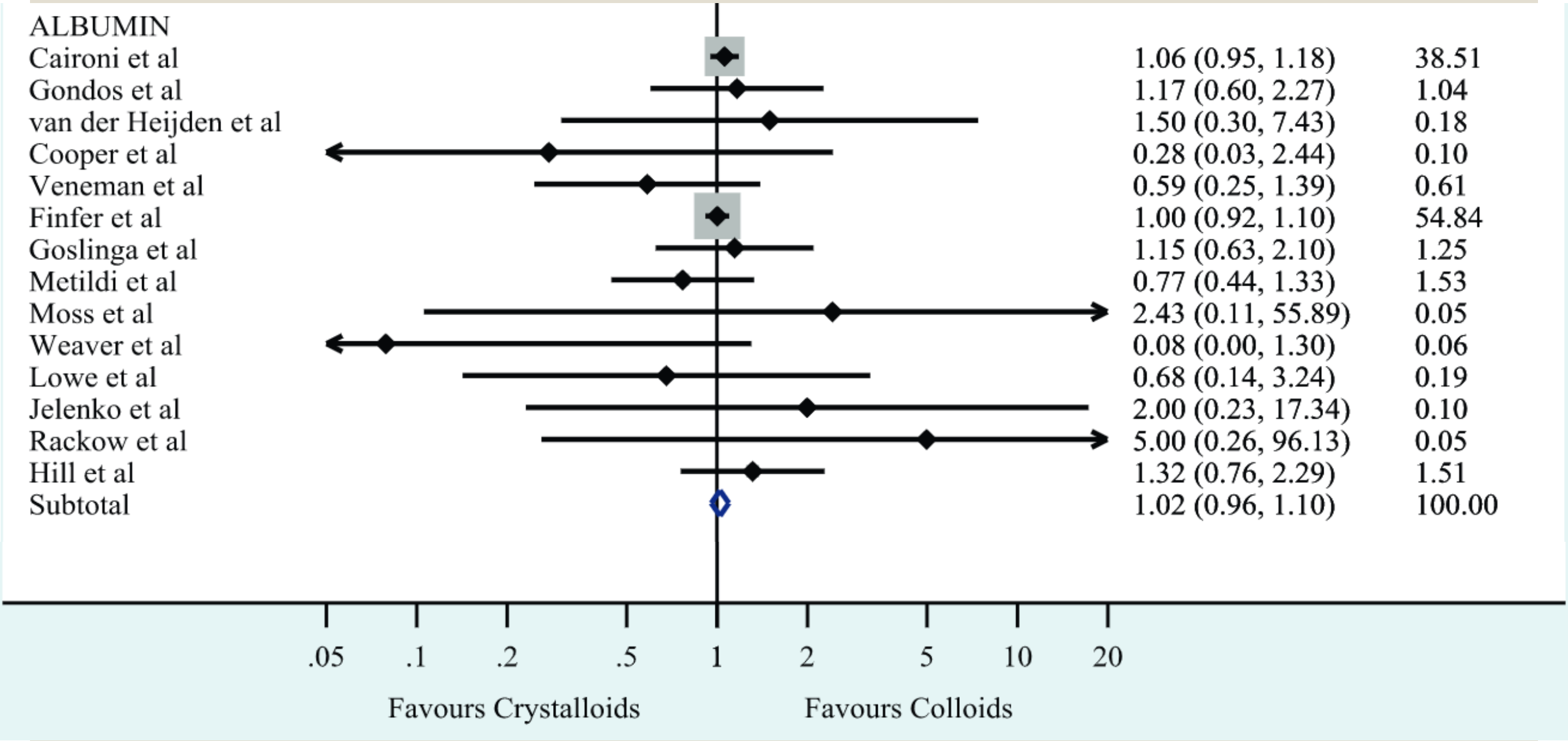
Jeannie Callum, MD; Nikolaos J. Skubas, MD; Aarti Bathla, MPharm, MPH; Homa Keshavarz, PhD; Edward G. Clark, MD; Bram Rochwerg, MD; Dean Fergusson, PhD; Sesmu Arbous, MD; Seth R. Bauer, PharmD; Louise China, MD; Mark Fung, MD; Rachel Jug, MD; Michael Neill; Cary Paine, MD; Katerina Pavenski, MD; Prakesh S Shah, MD; Susan Robinson, MD; Hua Shan, MD; Zbigniew M. Szczepiorkowski, MD, PhD; Thierry Thevenot, MD; Bovey Wu; Simon Stanworth, MD, PhD; Nadine Shehata, MD **on behalf of the ICTMG Intravenous Albumin Guideline Group**.

Cardiac surgery systematic review – BJA 2024 in press
Guideline (with SR) – re-submitted

**Recommendation 1**: In critically ill adult patients (excluding patients with thermal injuries and acute respiratory distress syndrome), intravenous albumin is not suggested for first-line volume replacement or to increase serum albumin levels (conditional recommendation, moderate certainty of evidence of effect).

**Recommendation 2:** In critically ill adult patients with thermal injuries or acute respiratory distress syndrome, intravenous albumin is not suggested for volume replacement or to increase serum albumin level (conditional recommendation, very low certainty of evidence of effect).

**Recommendation 3**: In critically ill adult patients, intravenous albumin in conjunction with diuretics is not suggested for removal of extravascular fluid (conditional recommendation, very low certainty of evidence of effect).




MORTALITY

Journal of Critical Care 50 (2019) 144–154

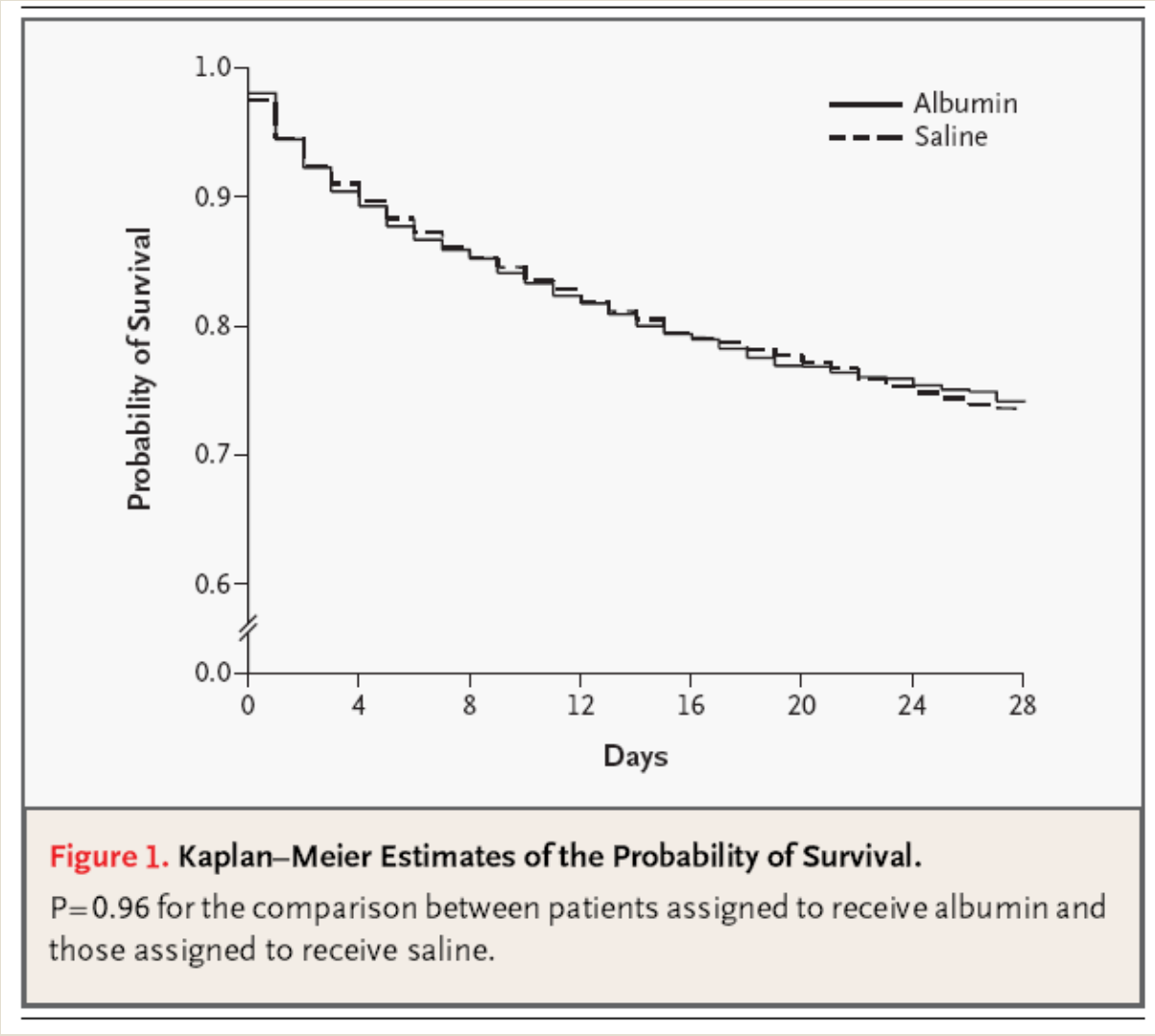



**Figure 1. Kaplan–Meier Estimates of the Probability of Survival.**

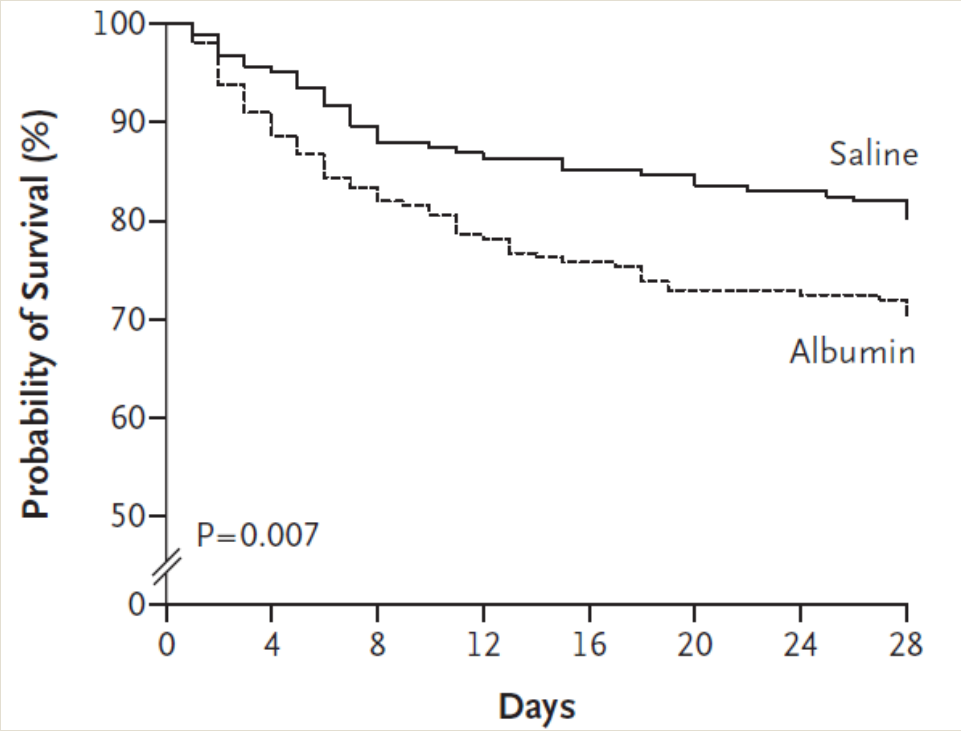
P=0.96 for the comparison between patients assigned to receive albumin and those assigned to receive saline.

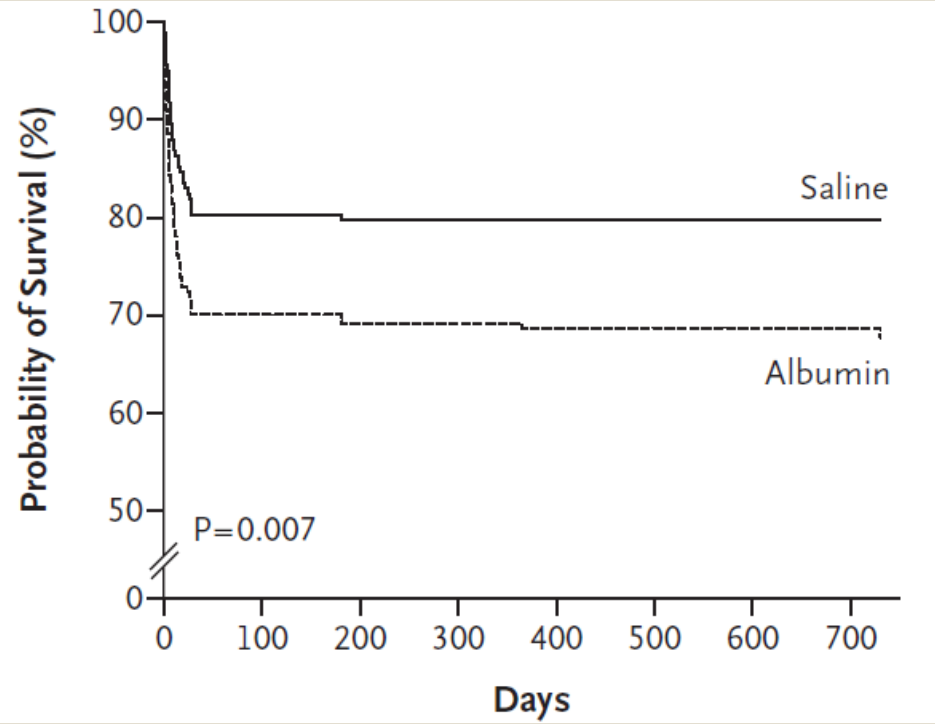
Only difference:

More transfusions
In albumin group

The SAFE Study Investigators. NEJM 2004; 350: 2247-2256.

# Harm in traumatic brain injury

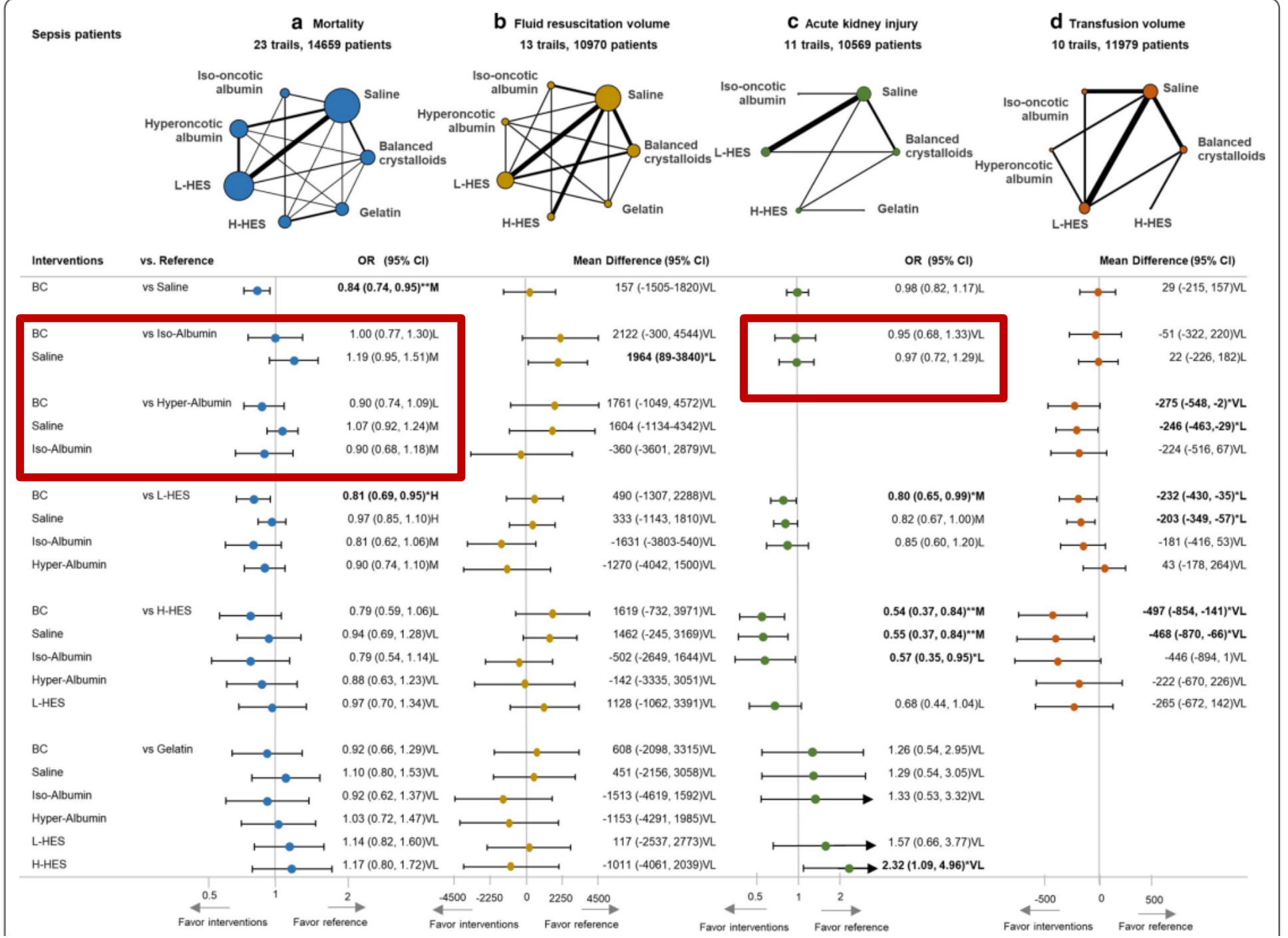


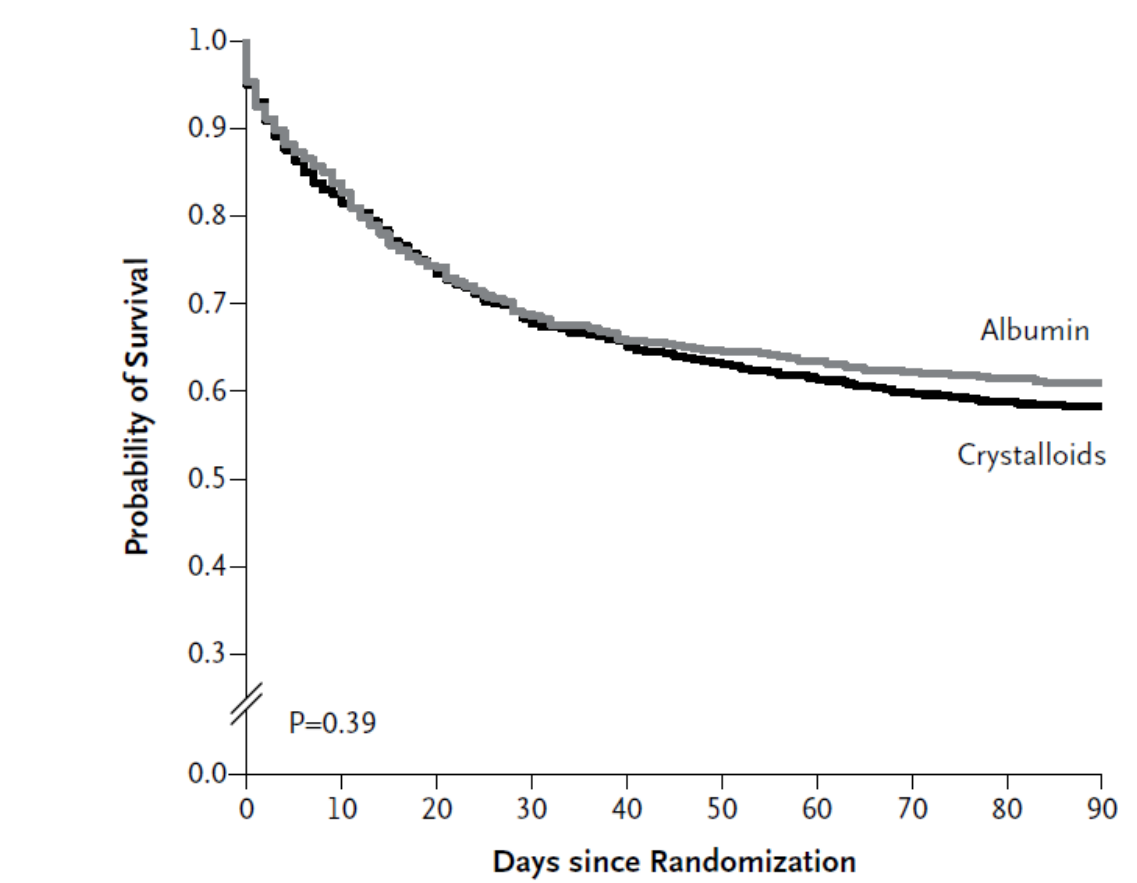

N Engl J Med 2007;357:874-84

# Sepsis

Tseng *et al. Crit Care* *(2020) 24:693*
https://doi.org/10.1186/s13054-020-03419-y



# ALBIOS




| No. at Risk | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Albumin | 903 | 733 | 647 | 597 | 567 | 556 | 545 | 535 | 529 | 523 |
| Crystalloids | 907 | 729 | 652 | 598 | 676 | 551 | 538 | 521 | 511 | 504 |

# Twitter

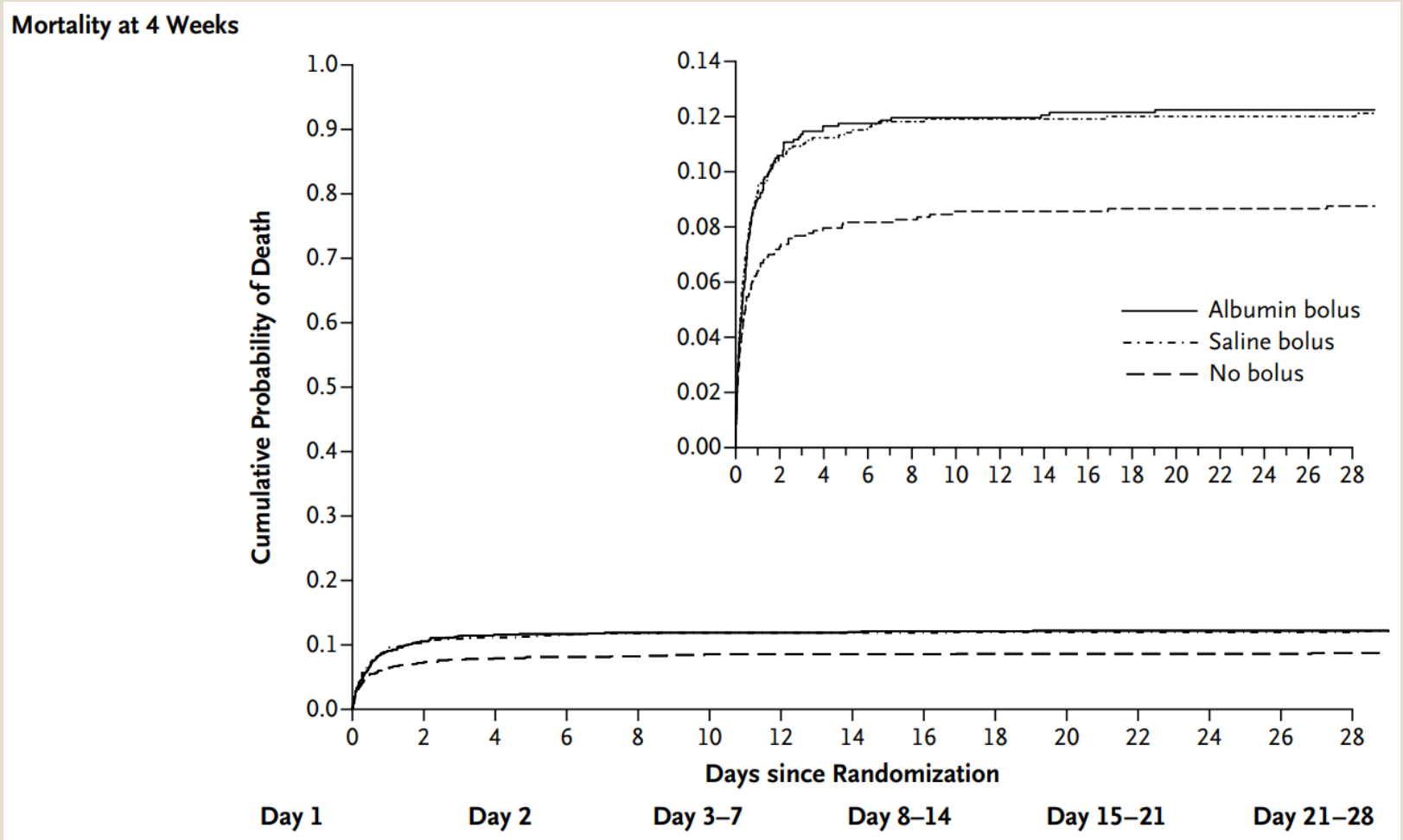

You Retweeted
Bram Rochwerg
@Bram_Rochwerg
I've stopped prescribing i
critically ill patients.
Other than confirmed SBP and follov
paracentesis there's really no eviden
beneficial compared to crystalloid, n
and resources.
#ChoosingWisely
10:06 AM · Oct 26, 2021 · Twitter Web App
NISHANTH BALIGA @BaligaNishanth · Oct 26
Replying to @Bram_Rochwerg
What about albumin as a resuscitation fluid instead of large volume crystalloids
1
Bram Rochwerg @Bra
I've stopped. I'm not conv
cost.
Sho
Michelle
Replying
What ab
prescribe
albumin
even pos
1
Bram Ro
We have
setting b
Oliver Karam, MD PhD @DrOliverKaram · Nov 5
Replying to @Bram_Rochwerg
Smart move! I can't tell you how frustrated I am when I hear Albumin was given overnight, to increase urine output...
1
Emma Watson @EmWat650 · Oct 27
Replying to @Bram_Rochwerg and @HaldenHB
Wow, that's big since my experience in Canada was that albumin is 'first line' in ICU (unlike the U.K. where it's only used for specific reasons). Not only is it expensive, it's a blood product so carries risk. It's evidence based in Hepatorenal syndrome too
3
Marcelo Zapata-Canivilo, MD. @marcelo_zapata · Oct 26
Replying to @Bram_Rochwerg
Even for SBP the evidence is bad
1
1

# The Sandwich for edema

- Meta-analysis
- 10 Studies
- Increases urine output and sodium excretion at 8 hours…but difference gone at 24 hours
- No other important effects
- Conclusion: large RCTs would be needed to test this hypothesis

Journal of Critical Care 29 (2014) 253–259

**Recommendation 4**: In pediatric patients with infection and hypoperfusion, intravenous albumin is not recommended to reduce mortality (strong recommendation, moderate certainty of evidence).




FEAST RCT

3141 children

Sepsis

N Engl J Med 2011;364:2483-95.

**Recommendation 7:** In patients undergoing kidney replacement therapy, intravenous albumin is not suggested for prevention or treatment of intradialytic hypotension or for improving ultrafiltration (conditional recommendation, very low certainty of evidence).

- 3 trials involving 65 patients = no improvement in ultrafiltration
- Single RCT of 65 patients with hypoalbuminemia requiring hemodialysis
  - Less hypotension and improved ultrafiltration rate when 25% albumin was compared to saline

Knoll GA et al. J Am Soc Nephrol. 2004;15(2):487-92.
Rostoker G, et al. J Nephrol. 2011;24(2):208-17.
van der Sande FM, et al. J Am Soc Nephrol. 1999;10(6):1303-8.
Macedo E, et al. Crit Care. 2021;25(1):18.

**Recommendation 8**: In adult patients undergoing cardiovascular surgery, intravenous albumin is not suggested for priming the cardiovascular bypass circuit or volume replacement (conditional recommendation, moderate certainty of evidence of effect).

**Recommendation 9**: In pediatric patients undergoing cardiovascular surgery, intravenous albumin is not suggested for priming the cardiovascular bypass circuit or volume replacement (conditional recommendation, very low certainty of evidence of effect).

# Systematic Review

Cardiac Surgery

Adults and Kids

Albumin vs other fluid

Either pump prime or for hemodynamic support

No difference in:

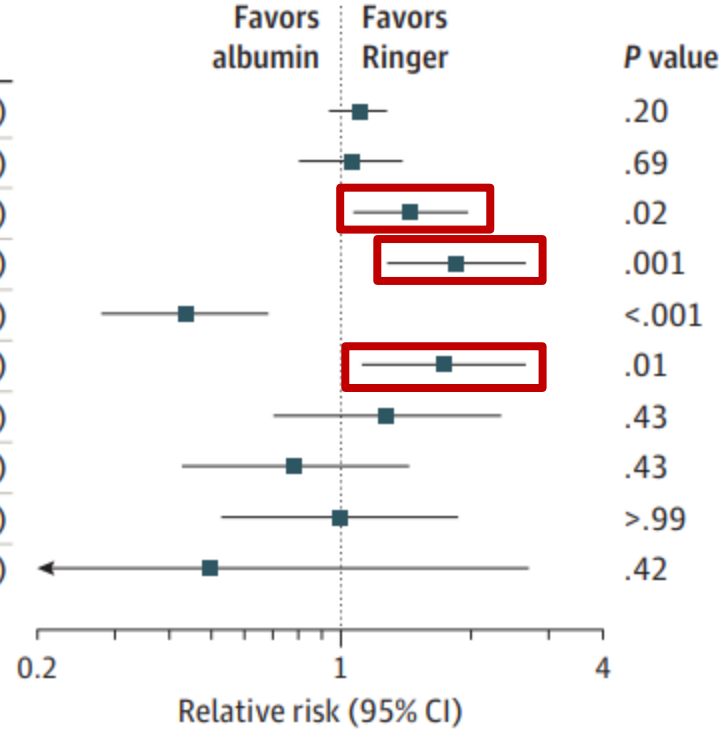
- Mortality
- Renal failure
- Length of stay in ICU
- Length of stay in hospital
- Blood loss
- Transfusion
- Cardiac index

BJA 2024 in press

# ALBICS Study

**Figure 2. Primary Composite Outcome of Major Adverse Events After Cardiac Surgery**

| | No. (%) of patients | | | |
|---|---|---|---|---|
| | Albumin (n = 693) | Ringer (n = 693) | Difference (95% CI), % | Relative risk (95% CI) |
| Major adverse events | 257 (37.1) | 234 (33.8) | 3.3 (-1.7 to 8.4) | 1.10 (0.95 to 1.27) |
| Arrhythmia | 91 (13.1) | 86 (12.4) | 0.7 (-2.8 to 4.2) | 1.06 (0.80 to 1.39) |
| Infection | 90 (13.0) | 62 (8.9) | 4.0 (0.8 to 7.3) | 1.45 (1.07 to 1.97) |
| Resternotomy | 74 (10.7) | 40 (5.8) | 4.9 (2.0 to 7.8) | 1.85 (1.28 to 2.68) |
| Myocardial injury | 27 (3.9) | 62 (8.9) | -5.1 (-7.6 to -2.5) | 0.44 (0.28 to 0.68) |
| Bleeding | 52 (7.5) | 30 (4.3) | 3.2 (0.7 to 5.7) | 1.73 (1.12 to 2.68) |
| Acute kidney injury | 23 (3.3) | 18 (2.6) | 0.7 (-1.1 to 2.5) | 1.28 (0.70 to 2.35) |
| Heart failure | 18 (2.6) | 23 (3.3) | -0.7 (-2.5 to 1.1) | 0.78 (0.43 to 1.44) |
| Stroke | 19 (2.7) | 19 (2.7) | 0.0 (-1.7 to 1.7) | 1.00 (0.53 to 1.87) |
| Death | 2 (0.3) | 4 (0.6) | -0.3 (-1.0 to 0.4) | 0.50 (0.09 to 2.72) |




Myocardial injury = elevated CK-MB 10x ULN on day 1 post-op
No differences in other cardiac events

*JAMA*. 2022;328(3):251-258. doi:10.1001/jama.2022.10461

**Recommendation 10:** In patients with cirrhosis and ascites undergoing large volume paracentesis, intravenous albumin is suggested to prevent paracentesis-induced circulatory dysfunction (conditional recommendation, low certainty of evidence).

**Recommendation 11:** In patients with cirrhosis and spontaneous bacterial peritonitis, intravenous albumin is suggested to reduce mortality (conditional recommendation, low certainty of evidence).

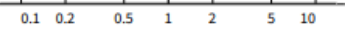
**Recommendation 12**: In hospitalized decompensated cirrhotic patients with hypoalbuminemia (<30 g/L), repeated intravenous albumin to increase albumin levels >30 g/L is not suggested to reduce infection, renal dysfunction or death (conditional recommendation, low certainty of evidence).

**Recommendation 13:** In outpatients with cirrhosis and uncomplicated ascites despite diuretic therapy, intravenous albumin is not suggested (conditional recommendation, low certainty of evidence).

Large volume Paracentesis > 5 L

**Analysis 7.8. Comparison 7 Experimental plasma expanders versus albumin, Outcome 8 Post-paracentesis circulatory dysfunction.**

| Study or subgroup | Exp plasma expanders n/N | Albumin n/N | Risk Ratio M-H, Random, 95% CI | Weight | Risk Ratio M-H, Random, 95% CI |
|---|---|---|---|---|---|
| **7.8.1 Dextran** | | | | | |
| Ginès 1996 | 34/93 | 9/49 | | 40.75% | 1.99[1.04,3.81] |
| **Subtotal (95% CI)** | **93** | **49** | | **40.75%** | **1.99[1.04,3.81]** |
| Total events: 34 (Exp plasma expanders), 9 (Albumin) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=2.08(P=0.04) | | | | | |
| **7.8.2 Hydroxylethyl starch** | | | | | |
| Al Sebaey 2012 | 2/25 | 6/50 | | 7.35% | 0.67[0.14,3.07] |
| **Subtotal (95% CI)** | **25** | **50** | | **7.35%** | **0.67[0.14,3.07]** |
| Total events: 2 (Exp plasma expanders), 6 (Albumin) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.52(P=0.6) | | | | | |
| **7.8.3 Polygeline** | | | | | |
| Ginès 1996 | 34/99 | 8/48 | | 36.1% | 2.06[1.03,4.1] |
| **Subtotal (95% CI)** | **99** | **48** | | **36.1%** | **2.06[1.03,4.1]** |
| Total events: 34 (Exp plasma expanders), 8 (Albumin) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=2.06(P=0.04) | | | | | |
| **7.8.4 Crystalloids** | | | | | |
| Sola-Vera 2003 | 11/33 | 4/35 | | 15.8% | 2.92[1.03,8.26] |
| **Subtotal (95% CI)** | **33** | **35** | | **15.8%** | **2.92[1.03,8.26]** |
| Total events: 11 (Exp plasma expanders), 4 (Albumin) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=2.02(P=0.04) | | | | | |
| **Total (95% CI)** | **250** | **182** | | **100%** | **1.98[1.31,2.99]** |
| Total events: 81 (Exp plasma expanders), 27 (Albumin) | | | | | |
| Heterogeneity: Tau²=0; Chi²=2.5, df=3(P=0.48); I²=0% | | | | | |
| Test for overall effect: Z=3.23(P=0) | | | | | |
| Test for subgroup differences: Chi²=2.5, df=1 (P=0.48), I²=0% | | | | | |




Exp plasma expanders — Albumin

Cochrane Library
Cochrane Database of Systematic Reviews

Simonetti RG, et al. Cochrane Database Syst Rev. 2019 Jun 28;6(6):CD004039.

| Trial | Mortality | | | | Odds ratio (CI) | Wgt. (%) |
|---|---|---|---|---|---|---|
| | Albumin | | Control | | | |
| | Event | Total | Event | Total | | |
| Sort et al, 1999[11] | 14 | 63 | 26 | 63 | 0.41 (0.19–0.88) | 54.6 |
| Xue et al, 2002[17] | 5 | 56 | 17 | 56 | 0.22 (0.08–0.66) | 28.2 |
| Fernández et al, 2005[18] | 0 | 10 | 2 | 10 | 0.16 (0.01–3.85) | 3.3 |
| Chen et al, 2009[19] | 4 | 15 | 6 | 15 | 0.55 (0.12–2.55) | 13.9 |
| Total | 23 | 144 | 51 | 144 | 0.34 (0.19–0.60) | 100.0 |

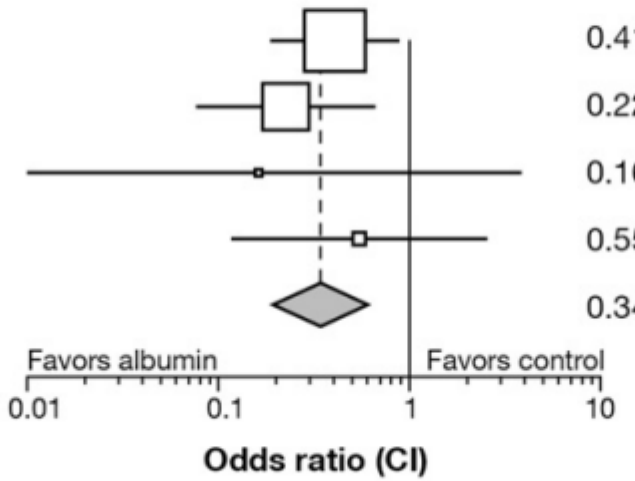



**Figure 3.** Mortality. CI is shown by *error bars*. Data points for individual trials scaled according to meta-analytic weight.

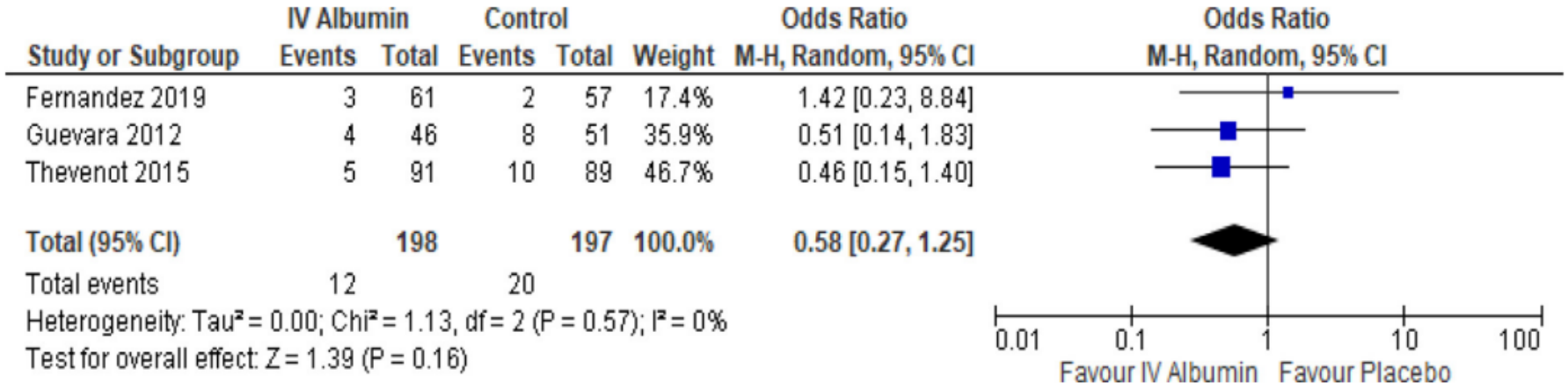



**Fig. 1.** IV albumin and renal impairment among cirrhosis with non-SBP infection

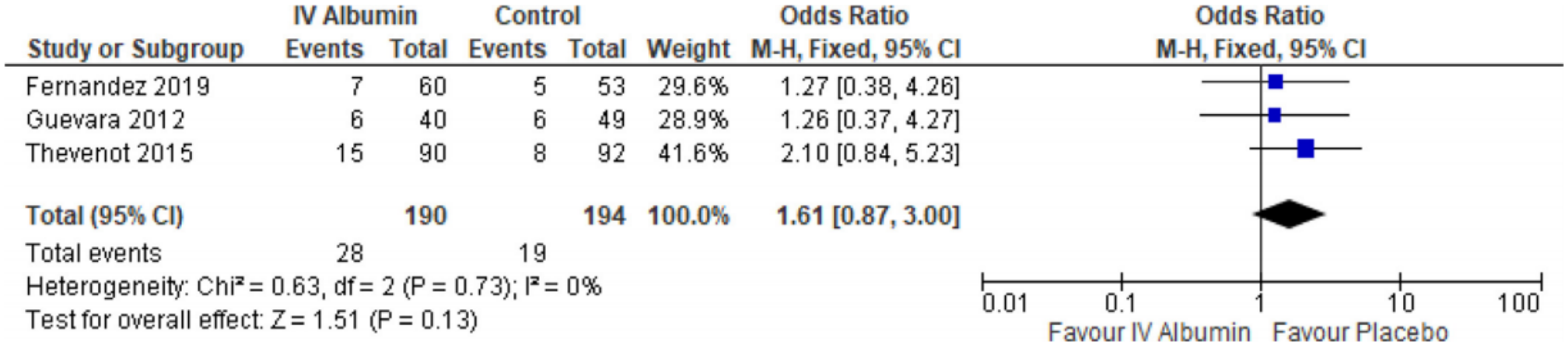



**Fig. 2.** IV albumin and 30-days mortality among cirrhosis with non-SBP infection

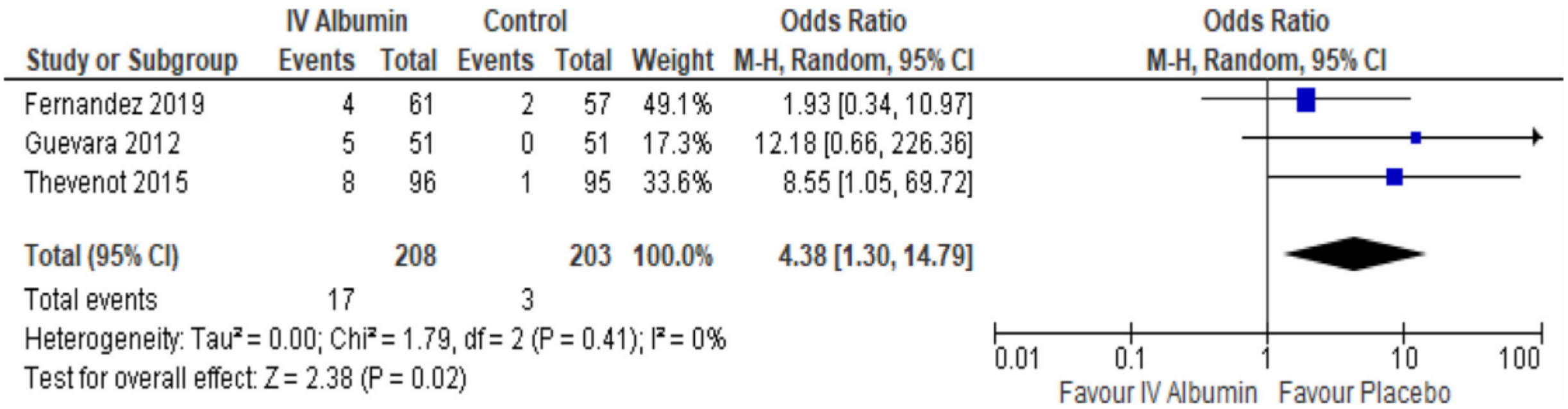



**Fig. 4.** Pulmonary edema among cirrhosis with non-SBP infection

# ATTIRE Study (n=777)

Cirrhosis, inpatient, hypoalbuminemia (<30), 200 g (=8 bottles)

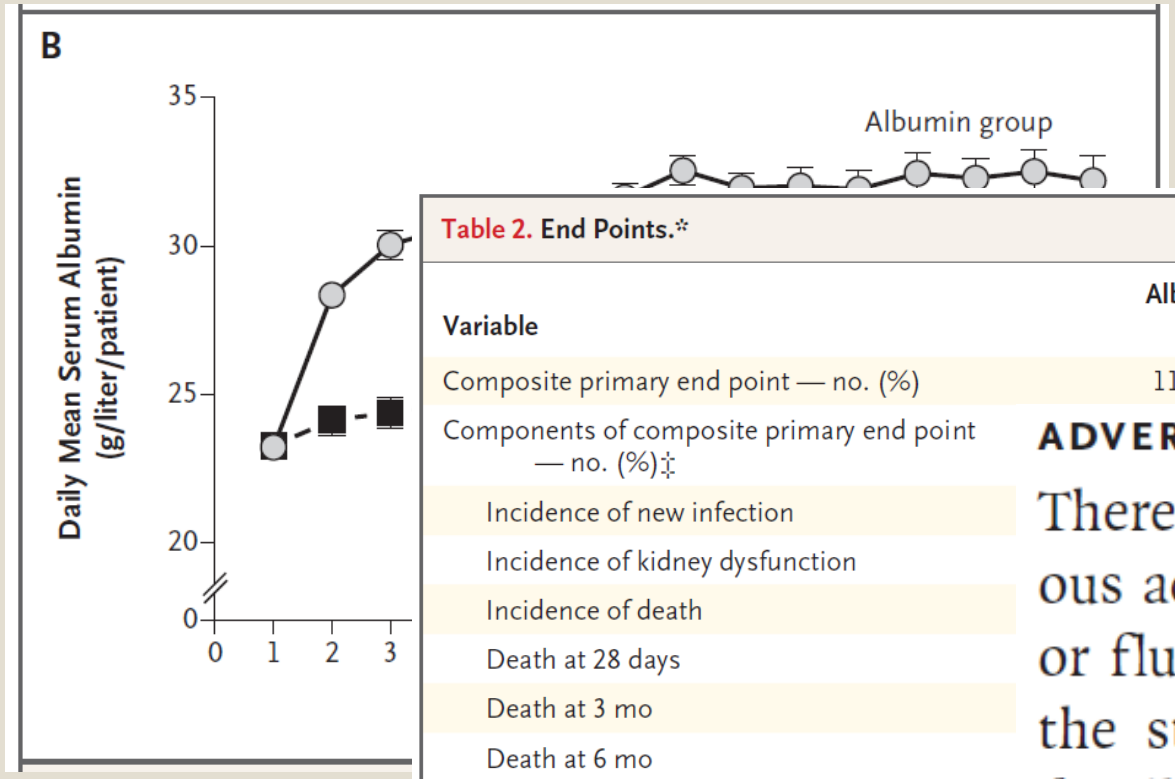



**Table 2. End Points.***

| Variable | Albumin Group (N = 380) | Standard-Care Group (N = 397) | Adjusted Odds Ratio (95% CI)† | P Value |
|---|---|---|---|---|
| Composite primary end point — no. (%) | 113 (29.7) | 120 (30.2) | 0.98 (0.71–1.33) | 0.87 |
| Components of composite primary end point — no. (%)‡ | | | | |
| Incidence of new infection | | | | |
| Incidence of kidney dysfunction | | | | |
| Incidence of death | | | | |
| Death at 28 days | | | | |
| Death at 3 mo | | | | |
| Death at 6 mo | | | | |
| Total median albumin infused per patient (IQR) | | | | |

**ADVERSE EVENTS**

There were more severe or life-threatening serious adverse events, especially pulmonary edema or fluid overload, in the albumin group than in the standard-care group (Table 3). Additional details are provided in Tables S9 and S10.

China L, N Engl J Med. 2021 Mar 4;384(9):808-817

# Question

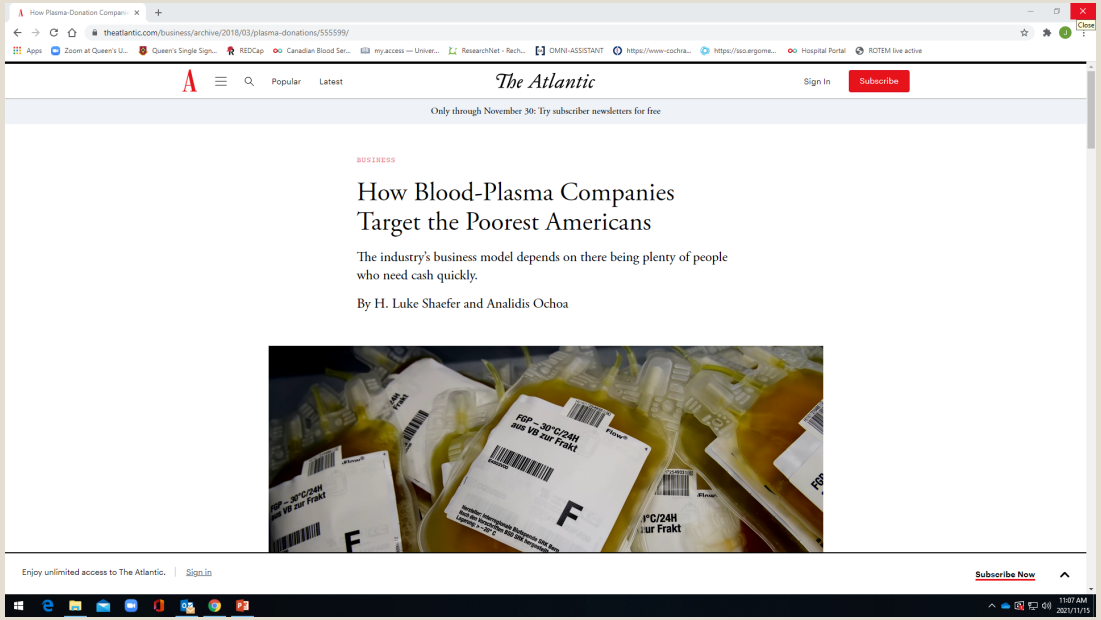
- Which of the following is an evidence-based indication for albumin?

A. Patient with presumed sepsis just admitted to the Emergency Department
B. Patient intraoperative undergoing a hip replacement surgery
C. Patient post cardiac surgery with active bleeding from chest tubes
D. Patient with cirrhosis admitted with spontaneous bacterial peritonitis
E. Patient undergoing large volume paracentesis for ovarian cancer

# ADVERSE CONSEQUENCES

# Risks

- Heart failure
- More bleeding (dilution of coagulation factors?)
- More RBC transfusions (dilution vs. bleeding?)
- More infections (dilution of immunoglobulins?)
- Anaphylaxis (antibodies to plasma proteins)
- Peripheral gangrene (dilution of anticoagulants?)
- Risks to the plasma donor (and ethical issues)

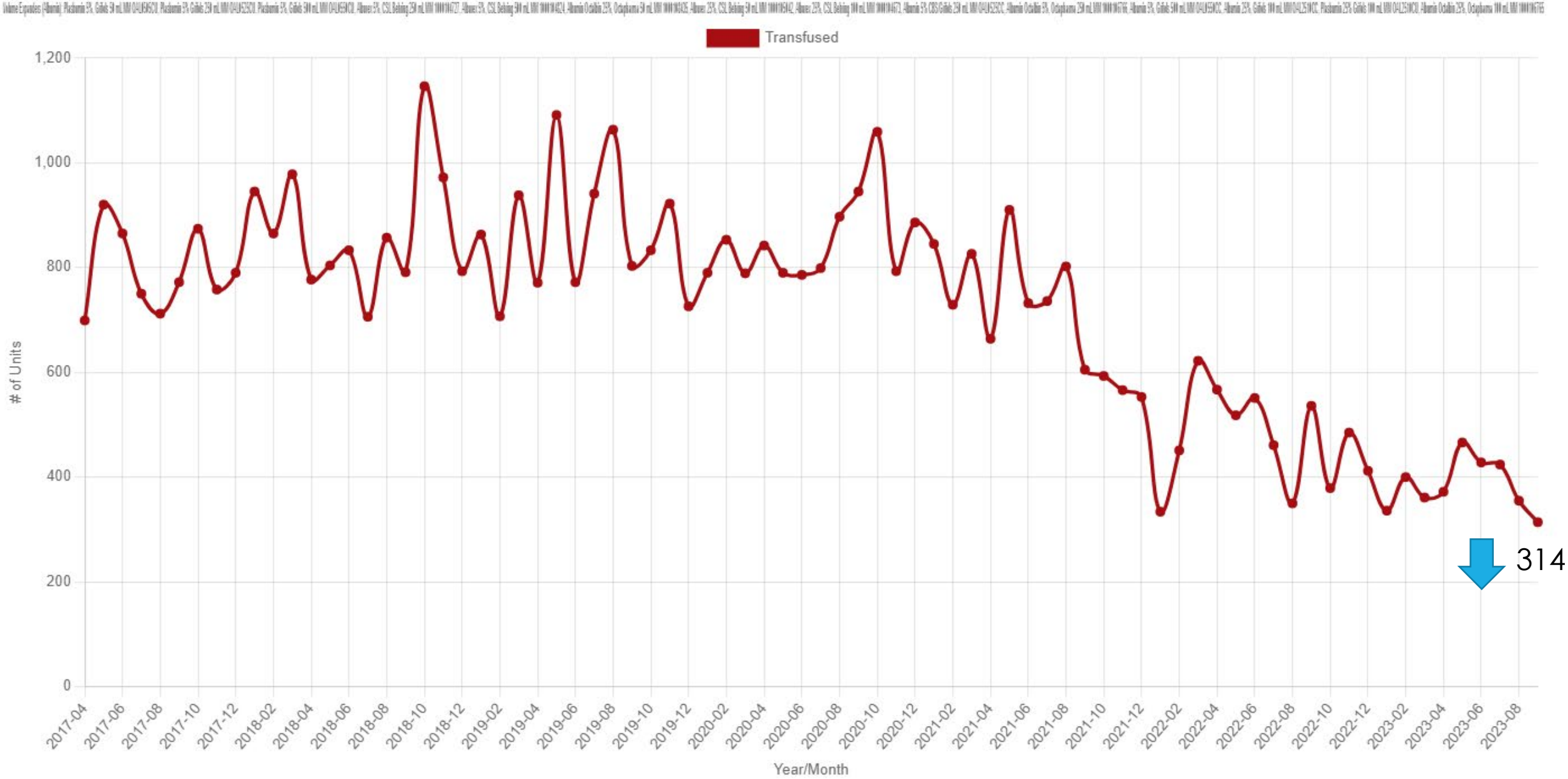


# CHANGE IS HAPPENING

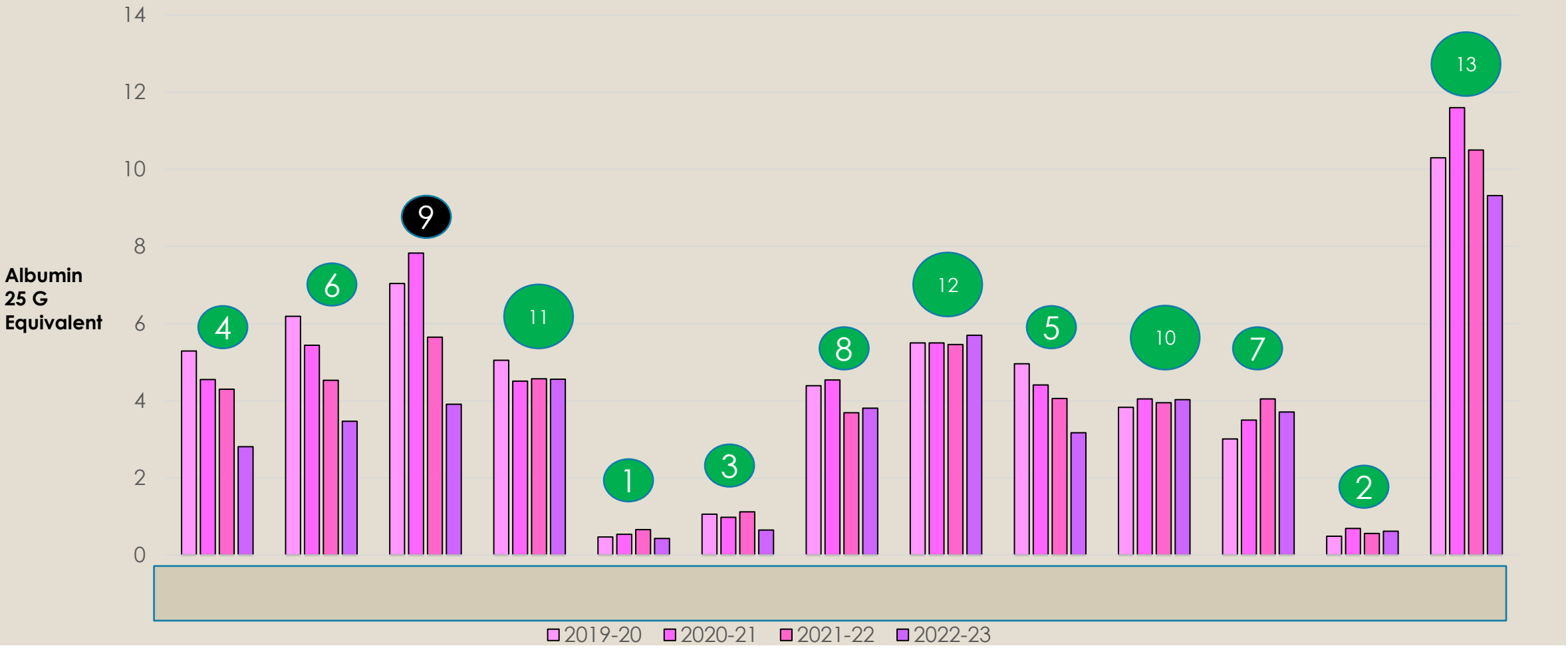
Maybe not everywhere

# Kingston Health Sciences Centre

## Plasma Protein and Related Products, Transfused



# Albumin (25G Eq) Per 100 AIP Days for Ontario Teaching Hospitals



# Summary

- There are only a few evidence-based indications
  - Large volume paracentesis and spontaneous bacterial peritonitis
  - Maybe for refractory sepsis not responding to crystalloids and inotropes as a rare rescue treatment
  - Sparingly during and after cardiac surgery (harm) – and probably any bleeding patient
  - Never with traumatic brain injury
- There are risks
- We are changing how we use albumin in Ontario
  - Bring this back to your hospital
  - Ask why your patient has been ordered albumin
  - Report complications of albumin to Health Canada

# Questions welcome

1. Know why your patient is getting albumin
2. Find out if the order is aligned with the guidelines
3. Know the complications of albumin
4. Never waste a bottle of albumin
5. Report complications to your blood bank

# INTRAVENOUS ALBUMIN:

giving it for the right reason and the right way

# Pre-Transfusion Knowledge Question 1

Jackie is a 65- year- old female undergoing large volume paracentesis today, due to ascites 7 liters of fluid to be removed. Her physician has also ordered Albumin 5% 200ml IV, infuse over 2.5 hours (80/ml/hour)

Jackie's nurse should ( select all that apply)

a) Review the albumin monograph for guidance.
b) Call the physician to confirm the product ( 5% vs 25% albumin)
c) Send blood work for group and screen
d) Start IV of Ringers lactate TKVO

# Outline

**Indications and Benefits**: Understand when and why intravenous albumin is used and its therapeutic benefits in clinical practice.

**Safe Administration**: Learn the proper procedures for administering albumin, ensuring patient safety and minimizing risks.

**Effective Documentation**: Emphasize accurate documentation and interprofessional communication when using intravenous albumin as part of patient care.

# Improving patient outcomes and safety

Identify indications for albumin use.

Understand the mechanism of action and therapeutic effect of albumin

Recognize possible adverse events associated with administration of albumin

Storage and Transportation

Dosing and Administration

Monitoring

***Nurse must feel comfortable reviewing the proper use of albumin with the interprofessional team to improve patient outcomes and safety.***

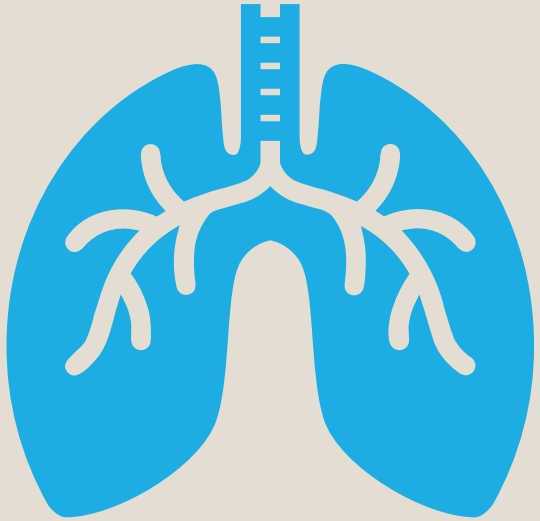
# Percentages of Albumin

**5% Albumin**

1. Plasma Exchange
2. Thermal injury (burns) involving > 50% total body surface area, if unresponsive to crystalloid (only after transfer to specialized burn centre).

**25% Albumin**

1. Liver failure patients with ascites undergoing large volume paracentesis
2. In conjunction with specific medications in Type 1 hepatorenal syndrome



# Dosage

Intravascular volume response

**500ml** of 5% albumin=25 grams of albumin and will give you **500ml** increase in intravascular volume

**100ml** of 25% albumin =25 grams of albumin and will give you **450ml** increase in intravascular volume.

Administering 25% albumin instead of 5% in error could result in circulatory overload!

# **Giving Albumin:** Indications

***See albumin clinical practice recommendations***

**Gastrointestinal Indications: Large Volume paracentesis in patients with cirrhosis**

1. Paracentesis – for large volume paracentesis albumin should be considered as the fluid of choice.

| Volume of Ascites | = | 25% Albumin volume |
|---|---|---|
| <5L | – | albumin is not necessary |
| 5-6 L | = | 100ml of albumin 25% |
| 6-8 L | = | 200ml of albumin 25 % |
| >8 L | = | 300ml of albumin 25% |

2. Spontaneous bacterial peritonitis

3. Hepatorenal syndrome – use of intravenous albumin alone is ineffective for hepatorenal syndrome.

4. Therapeutic Plasma Exchange +/- crystalloid with some exceptions.

1. Hypovolemia with or without shock- second line therapy. Albumin is not superior to crystalloid for resuscitation in critical care.

2. Thermal injury involving >50% total body surface area, if unresponsive to crystalloid. Intravenous albumin should only be commenced after transfer or consult with a specialized burn unit.

3. Cardiopulmonary bypass: There is no evidence to support the use of albumin, as compared to crystalloid, for

a) Priming fluid for cardiopulmonary bypass

b) Post-cardiopulmonary bypass

4. Hypotension during hemodialysis

5. Acute lung injury

# Giving Albumin: current medical literature does not support.

# Mechanism of Action

Albumin has two essential physiological functions

| Contributes to colloid osmotic pressure | Transporting vitamins, enzymes, and hormones throughout your body. |
| --- | --- |

The principle mechanism of action of albumin infusion is to increase the colloid osmotic pressure . Driving the  interstitial fluid into the intravascular compartment and increasing the effective volume of the circulatory system.

# UNINTENDED CONSEQUENCES

***Nurse must feel comfortable reviewing the proper use of albumin with the interprofessional team to improve patient outcomes and safety.***

# Contraindications

Hypersensitivity to any component in albumin preparation

**TACO:** Contraindications include clinical situations that present with volume overloads, such as stabilized chronic anemia, congestive heart failure, or renal insufficiency, at high risk of hemodynamic instability when treated with albumin solutions.

Do not dilute any albumin solution with sterile water because it may cause hemolysis and acute kidney injury (AKI) in the recipient.

If solution shows turbidity or sediment do not use.

Hypotension possible in patients on ACE inhibitors

All reactions must be reported to blood bank

# Adverse Events

Fever

Chills

Tachycardia

Nausea

Vomiting

Hypotension

Edema and **fluid overload** are common adverse effects, depending on the volume, speed of infusion, and the clinical scenario.

***Since albumin is human derived blood product, adverse effects are rare***.

# Storage and Transportation

- Availability from the blood bank
- Albumin is stored at room temperature – not to exceed 30degrees Celsius
- Shelf life is two to five years- exp date on each package
- Blood products in glass bottles such as albumin do not require blood tubing and filter. Vented tubing is required for infusions directly from glass bottles.

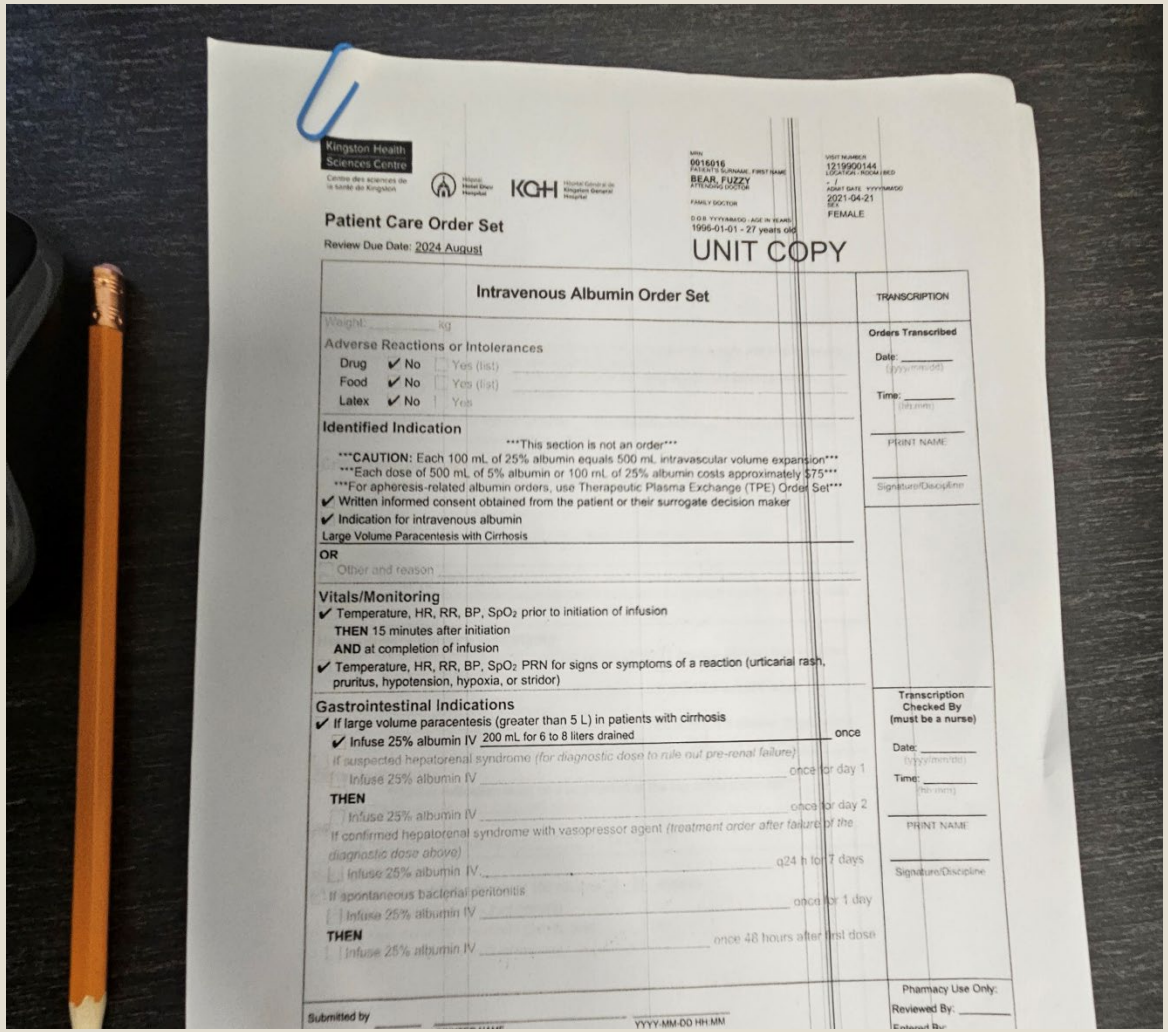
**Do not administer if:**

1. Solution is frozen
2. Solution is turbid
3. Vials are damaged
4. Particulate material ( glass or cork) is visible within the solution.

# What to consider before administering albumin

- Identified indication on patient care order set
- The concentration of the albumin preparation
- Adverse reactions or intolerances
- Albumin is a blood product. Written informed consent is required.
- Must be administered by IV infusion
- Vented IV tubing must be used; a filter is not required
- Compatible with all IV fluids: the choice of which solution to use depends whether the patient requires a higher colloid osmotic activity.
- The infusion rate of 5% albumin should not exceed 5ml/min and the infusion rate for 25% albumin should not exceed 2ml/min. Must be specified by a physician and adjusted to individual patient requirements.
- It must be used within 4 hours of opening
- Record lot number, expiration date and volume of albumin administered in patient record.
- Vitals and monitoring: vital required pretransfusion, at 15 minutes, at the end of transfusion, and at any reaction.

# Patient care order set



Kingston Health Sciences Centre

Patient Care Order Set

Review Due Date: 2024 August

UNIT COPY

BEAR, FUZZY

1996-01-01 - 27 years old

2021-04-21

FEMALE

**Intravenous Albumin Order Set**

TRANSCRIPTION

Orders Transcribed

Date: _____ (yyyy/mm/dd)

Time: _____ (hh:mm)

PRINT NAME

Signature/Discipline

Weight: _____ kg

Adverse Reactions or Intolerances

Drug ✔ No ☐ Yes (list) _____

Food ✔ No ☐ Yes (list) _____

Latex ✔ No ☐ Yes

**Identified Indication**

***This section is not an order***

***CAUTION: Each 100 mL of 25% albumin equals 500 mL intravascular volume expansion***

***Each dose of 500 mL of 5% albumin or 100 mL of 25% albumin costs approximately $75***

***For apheresis-related albumin orders, use Therapeutic Plasma Exchange (TPE) Order Set***

✔ Written informed consent obtained from the patient or their surrogate decision maker

✔ Indication for intravenous albumin

Large Volume Paracentesis with Cirrhosis

OR

Other and reason _____

**Vitals/Monitoring**

✔ Temperature, HR, RR, BP, $SpO_2$ prior to initiation of infusion

**THEN** 15 minutes after initiation

**AND** at completion of infusion

✔ Temperature, HR, RR, BP, $SpO_2$ PRN for signs or symptoms of a reaction (urticarial rash, pruritus, hypotension, hypoxia, or stridor)

**Gastrointestinal Indications**

✔ If large volume paracentesis (greater than 5 L) in patients with cirrhosis

✔ Infuse 25% albumin IV 200 mL for 6 to 8 liters drained once

If suspected hepatorenal syndrome *(for diagnostic dose to rule out pre-renal failure)*

☐ Infuse 25% albumin IV _____ once for day 1

**THEN**

☐ Infuse 25% albumin IV _____ once for day 2

If confirmed hepatorenal syndrome with vasopressor agent *(treatment order after failure of the diagnostic dose above)*

☐ Infuse 25% albumin IV _____ q24 h for 7 days

If spontaneous bacterial peritonitis

☐ Infuse 25% albumin IV _____ once for 1 day

**THEN**

☐ Infuse 25% albumin IV _____ once 48 hours after first dose

Transcription Checked By (must be a nurse)

Date: _____ (yyyy/mm/dd)

Time: _____ (hh:mm)

PRINT NAME

Signature/Discipline

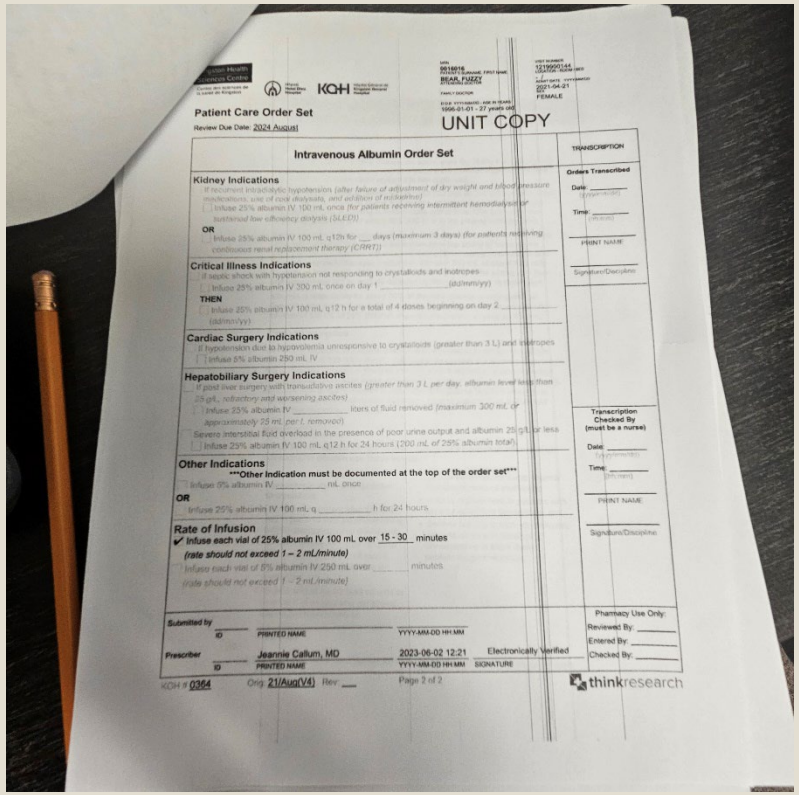
Pharmacy Use Only:

Reviewed By: _____

Entered By: _____

Submitted by _____ _____ _____

ID PRINTED NAME YYYY-MM-DD HH:MM



Patient Care Order Set

Review Due Date: 2024 August

UNIT COPY

**Intravenous Albumin Order Set**

TRANSCRIPTION

Orders Transcribed

Date: _____ (yyyy/mm/dd)

Time: _____ (hh:mm)

PRINT NAME

Signature/Discipline

**Kidney Indications**

If treatment hemodialytic hypotension (after failure of adjustment of dry weight and blood pressure medications, use of cool dialysate, and addition of midodrine)

☐ Infuse 25% albumin IV 100 mL once (for patients receiving intermittent hemodialysis or sustained low efficiency dialysis (SLED))

OR

☐ Infuse 25% albumin IV 100 mL q12h for ___ days (maximum 3 days) (for patients receiving continuous renal replacement therapy (CRRT))

**Critical Illness Indications**

If septic shock with hypotension not responding to crystalloids and inotropes

☐ Infuse 25% albumin IV 200 mL once on day 1 _____ (dd/mm/yy)

THEN

☐ Infuse 25% albumin IV 100 mL q12 h for a total of 4 doses beginning on day 2 _____ (dd/mm/yy)

**Cardiac Surgery Indications**

If hypotension due to hypovolemia unresponsive to crystalloids (greater than 3 L) and inotropes

☐ Infuse 5% albumin 250 mL IV

**Hepatobiliary Surgery Indications**

If post liver surgery with transfusions needs *(greater than 3 L per day, albumin level less than 25 g/L, refractory and worsening ascites)*

☐ Infuse 25% albumin IV _____ liters of fluid removed (maximum 300 mL or approximately 25 mL per L removed)

Severe interstitial fluid overload in the presence of poor urine output and albumin 25 g/L or less

☐ Infuse 25% albumin IV 100 mL q12 h for 24 hours (200 mL of 25% albumin total)

**Other Indications**

***Other Indication must be documented at the top of the order set***

☐ Infuse 5% albumin IV _____ mL once

OR

☐ Infuse 25% albumin IV 100 mL q _____ h for 24 hours

**Rate of Infusion**

✔ *Infuse each vial of 25% albumin IV 100 mL over 15 - 30 minutes*

*(rate should not exceed 1 – 2 mL/minute)*

☐ Infuse each vial of 5% albumin IV 250 mL over _____ minutes

*(rate should not exceed 1 – 2 mL/minute)*

Transcription Checked By (must be a nurse)

Date: _____ (yyyy/mm/dd)

Time: _____ (hh:mm)

PRINT NAME

Signature/Discipline

Pharmacy Use Only:

Reviewed By: _____

Entered By: _____

Checked By: _____

Submitted by _____ _____ _____

ID PRINTED NAME YYYY-MM-DD HH:MM

Prescriber _____ Jeannie Callum, MD 2023-06-02 12:21 Electronically Verified

ID PRINTED NAME YYYY-MM-DD HH:MM SIGNATURE

KGH # 0364 Orig: 21/Aug(V4) Rev: ___ Page 2 of 2

thinkresearch

# TIPS AND TRICKS

Hanging Albumin

# Post-Transfusion Knowledge Question 1

Jackie is a 65- year- old female undergoing large volume paracentesis today, due to ascites 7 liters of fluid to be removed. Her physician has also ordered Albumin 5% 200ml IV, infuse over 2.5 hours (80/ml/hour)

Jackie's nurse should ( select all that apply)

a) Review the albumin monograph for guidance.
b) Call the physician to confirm the product ( 5% vs 25% albumin)
c) Send blood work for group and screen
d) Start IV of Ringers lactate TKVO