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Evaluating Albumin Utilization in a Community-Based Hospital Post-Hetastarch Food and Drug Administration (FDA) Warning

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Evaluating albumin utilization in a community-based hospital post-hetastarch food and drug administration (FDA) warning

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Background

- Albumin is a medication commonly used in the hospital setting.
- The use of albumin is not justified in every clinical situation due to the lack of scientific evidence and the availability of other, equally effective medications.^{1,2}
- In June of 2012, the FDA released a warning regarding an increase in morbidity and mortality when hetastarch is used in several clinical settings.³
- Because albumin and hetastarch are colloids, overlap exists in many of the indications of these two medications. Thus, it is expected that many prescribers will use albumin in place of hetastarch in a variety of clinical scenarios. Consequently, an increase in albumin utilization and associated expenditure is expected.

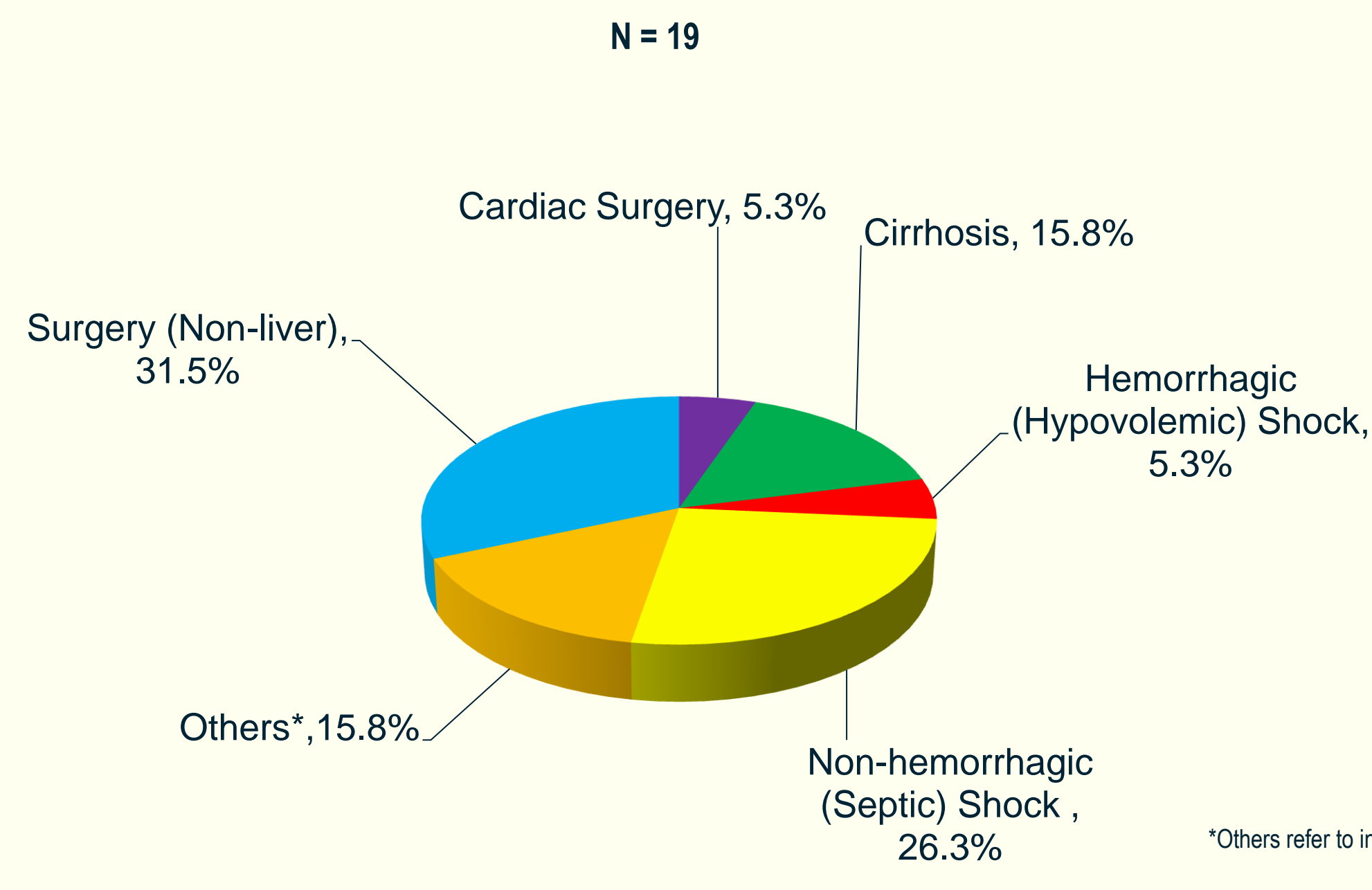
Objectives

- To identify albumin and hetastarch utilization.
- To evaluate if albumin is used for indications consistent with the recommendations from the American Thoracic Society (ATS) guidelines for the use of Colloids¹ or the University Hospital Consortium (UHC) guidelines for the use of albumin, non-protein colloids, and crystalloids.²
- To determine if the new warning against the use of hetastarch³ has affected the prescribing pattern of albumin.
- To complete a cost analysis on albumin misuse.

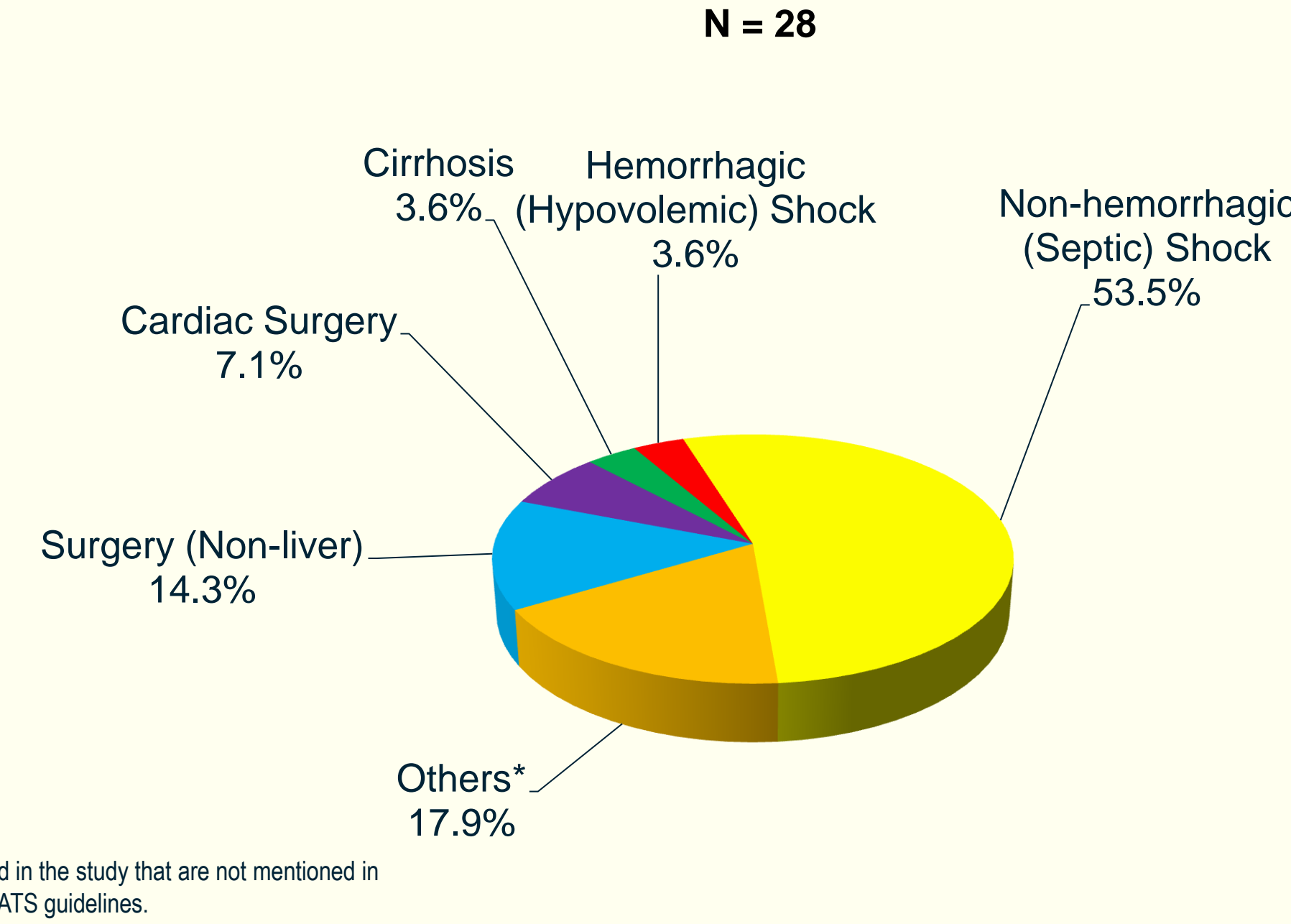
Methodology

- Single-center, Baptist Health South Florida Institutional Review Board-approved, retrospective chart review.
 - Study Period: September of 2012 and September of 2013.
 - Inclusion Criteria:** All patients 18 years of age and older during the study period for which albumin and/or hetastarch were used.
 - Exclusion criteria:** Anyone younger than 18 years of age or who did not use albumin or hetastarch during the study period.
 - A list containing the medical record number of patients for which either albumin and/or hetastarch was used during September of 2012 and September of 2013 was obtained from the pharmacy department system specialist.
 - Patients chart were reviewed in order to collect factors of different criteria described in the UHC and ATS guidelines for the appropriate utilization of albumin.
 - Pricing was obtained from the pharmacy department buyer for cost analysis.
- Data Analysis:
- Descriptive statistics was completed for objectives 1, 2, and 3.
 - A Cost-Utility analysis was conducted for objective 4.

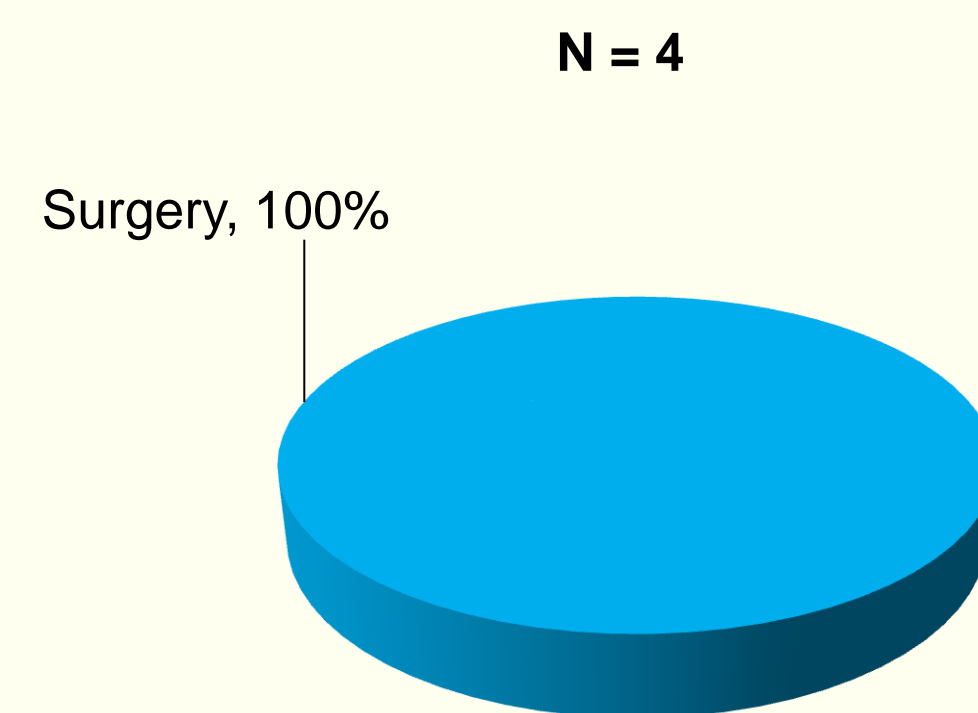
Albumin Utilization 2012



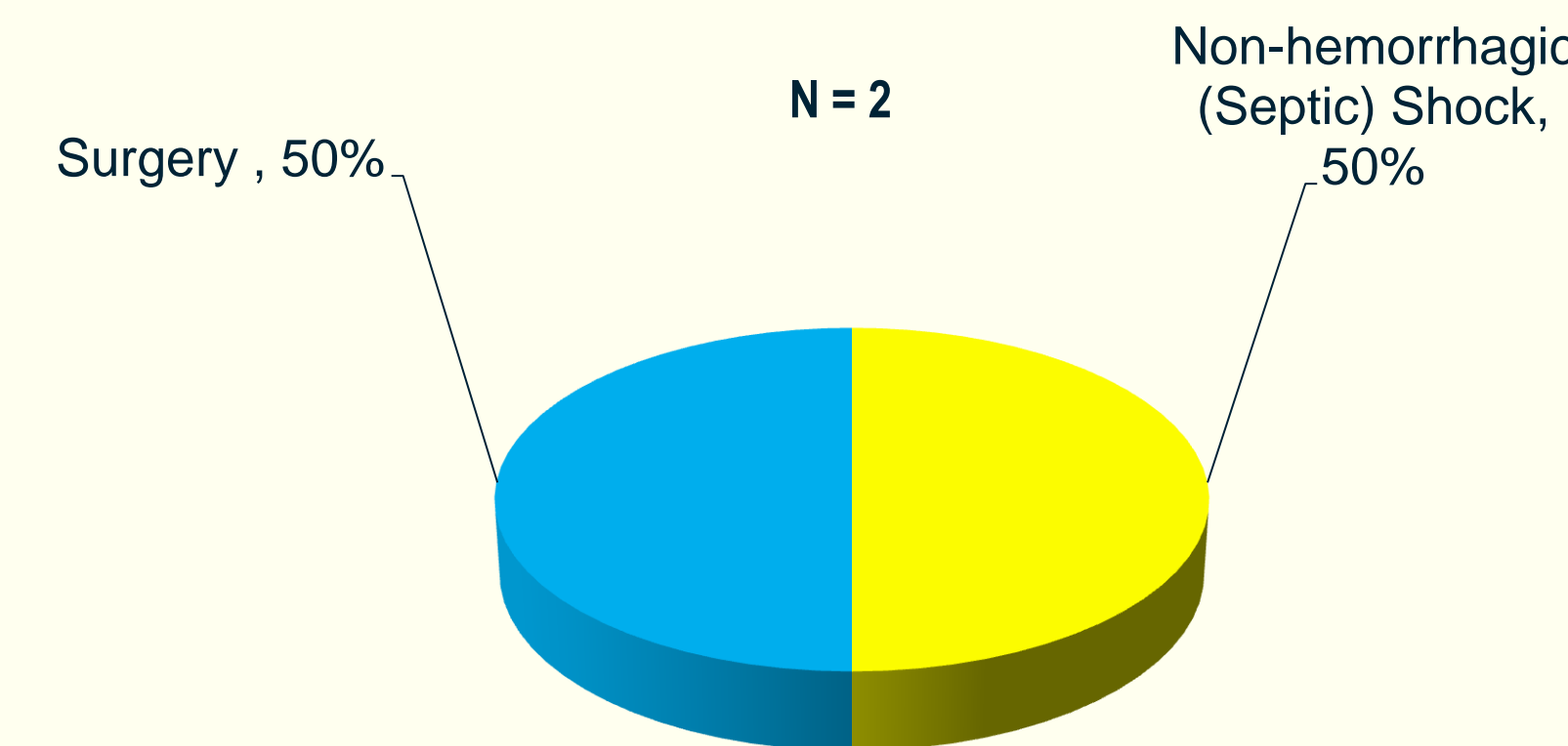
Albumin Utilization 2013



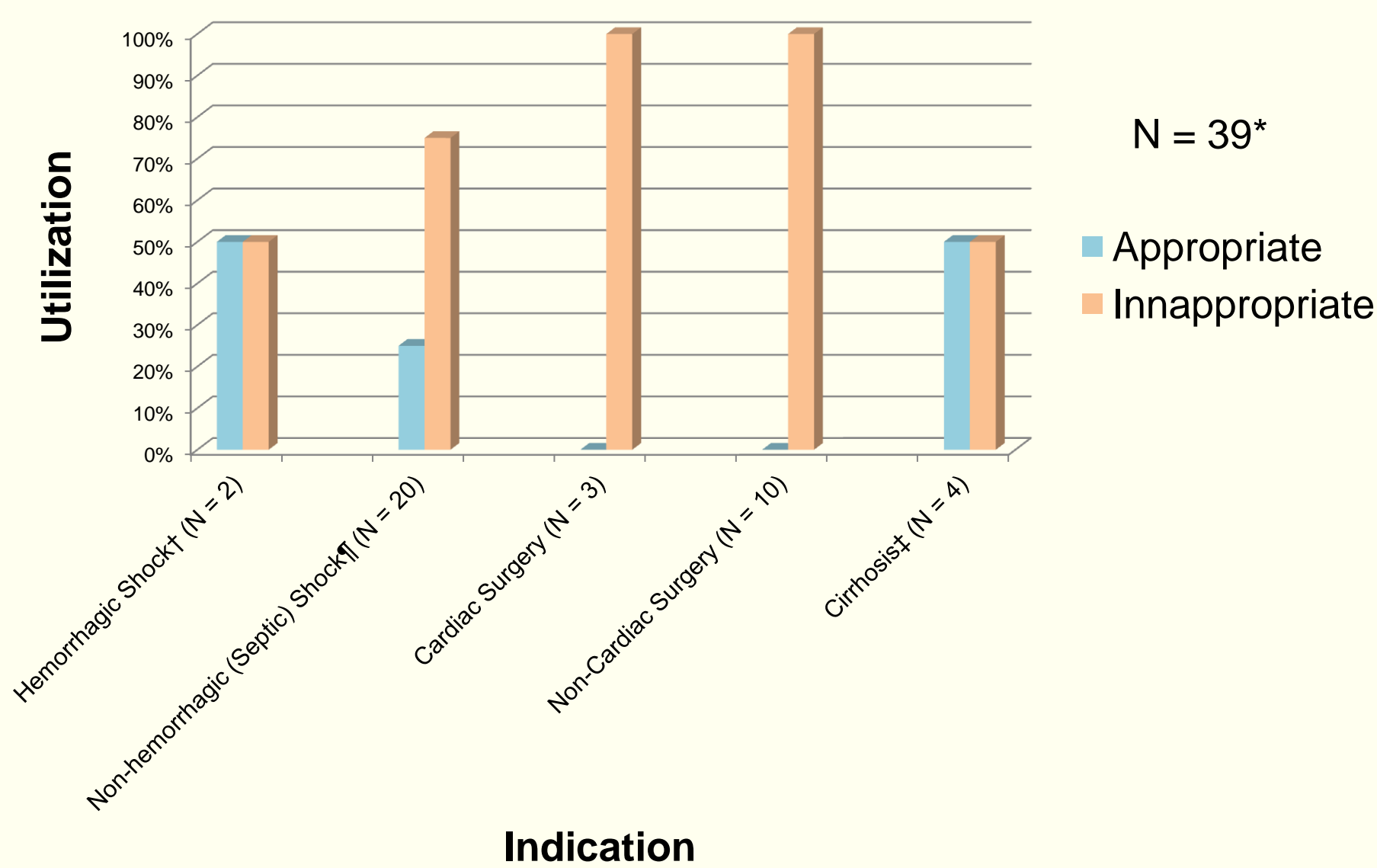
Hetastarch Utilization 2012



Hetastarch Utilization 2013



Albumin Utilization Analysis



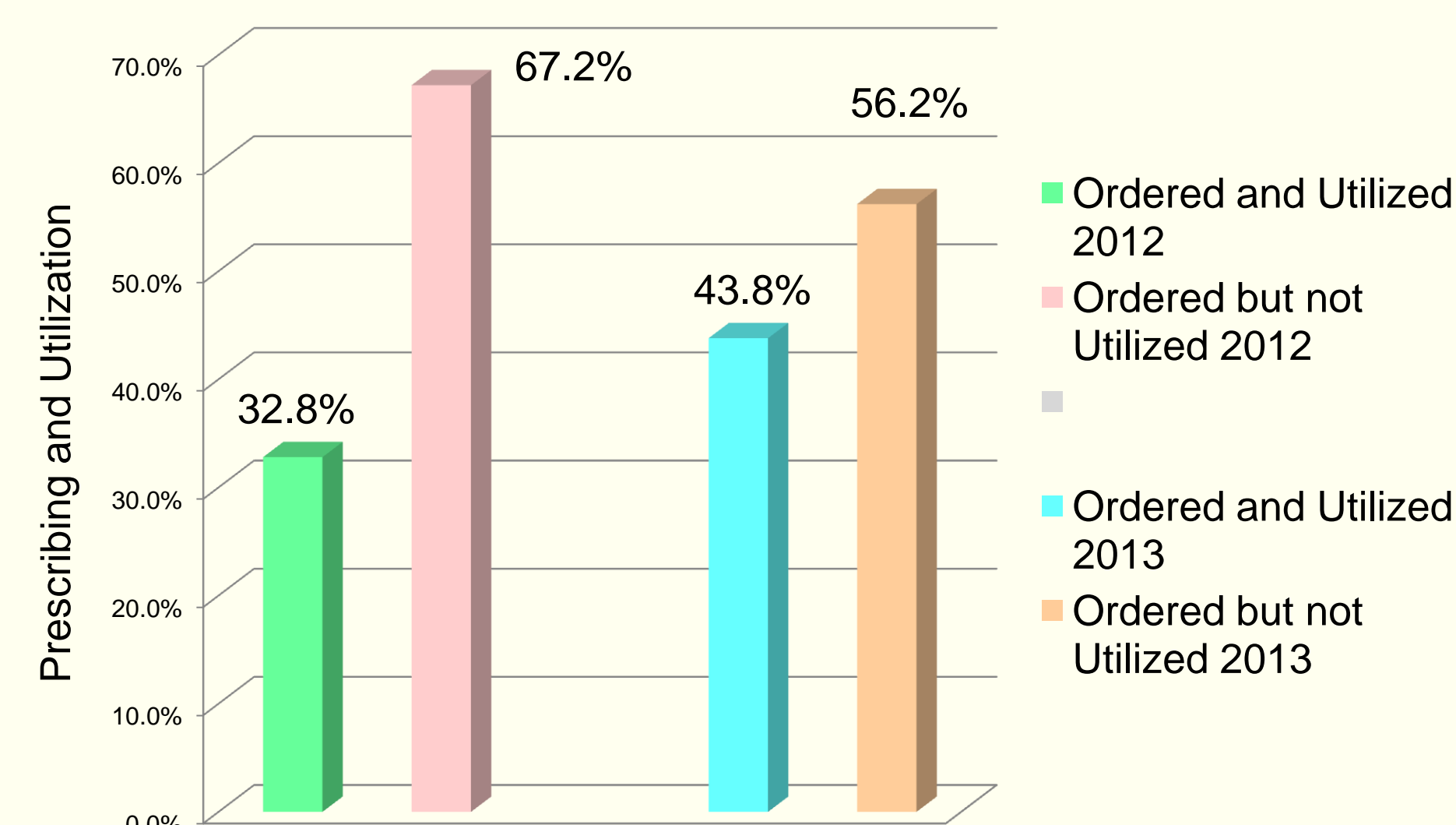
*Out of 47 patients, 8 patients were administered albumin for an indication not mentioned in the UHC or ATS guidelines. Thus, it is not possible to evaluate the utilization of albumin in this subset of patients.

¶ Out of 20 patients, albumin was used after exhausting the use of substantial amounts (≥ 4 L) of crystalloids in only 5 patients.

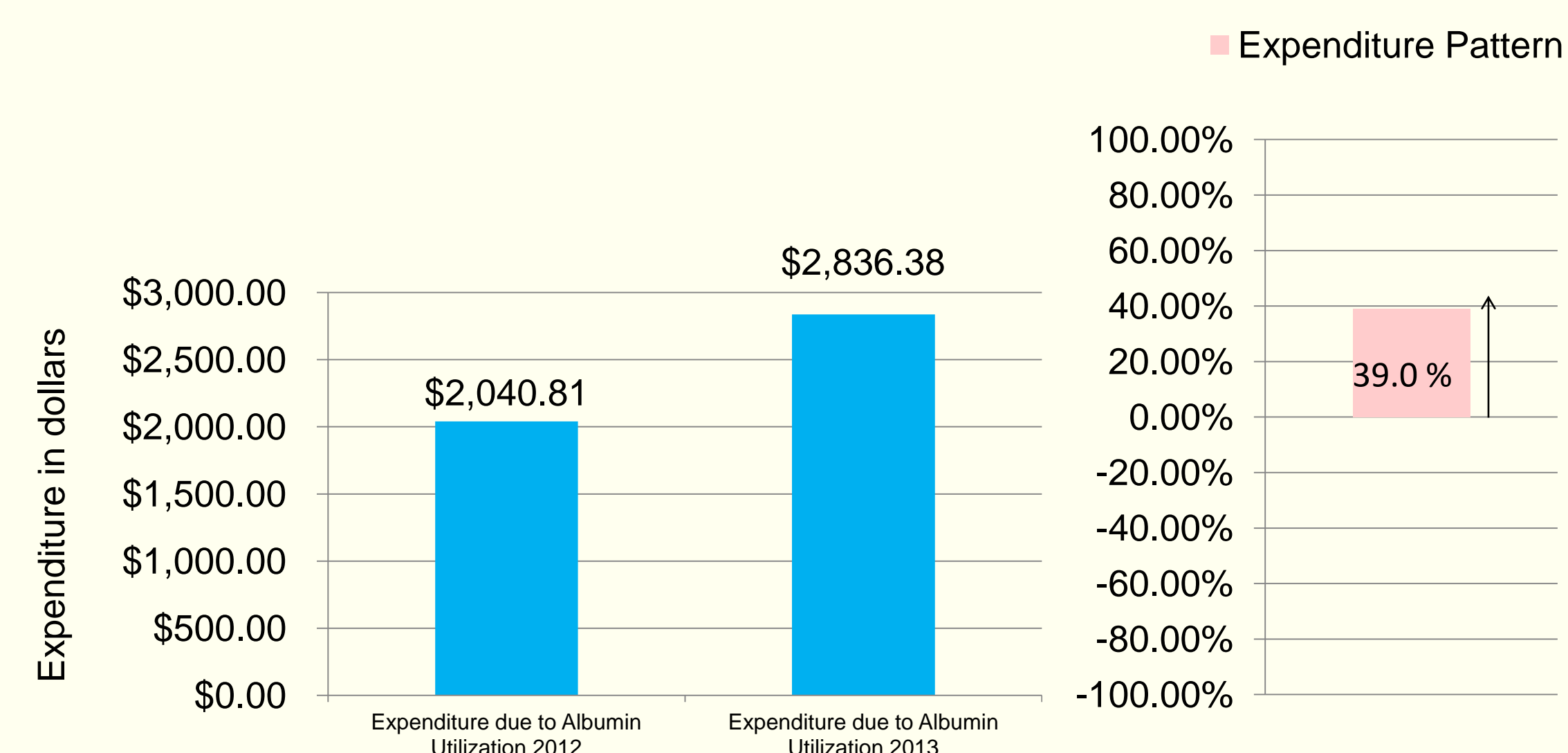
† Out of the two patients, one patient received albumin for hemodialysis-associated hypotension. The use of albumin is considered appropriate for this use according to the ATS guideline (IIa). The other patient received albumin 25% due to hemorrhagic hypovolemia secondary to rectal bleeding. Both the UHC and ATS guidelines state that crystalloids should be considered the initial resuscitation fluid of choice in this setting.

‡ Out of 4 patients, 2 patients received albumin 5% which is not indicated in the setting of liver cirrhosis unless the patient has another indication for the medication according to either the UHC or ATS guideline.

Albumin Prescribing Pattern



Albumin Cost-Utilization Analysis



Discussion

- Albumin was utilized in a variety of clinical conditions, with septic shock being the most common reason for utilization (42.5 %, N = 20).
- Based on the indications described in the UHC and ATS guidelines, albumin utilization during the time period described in this study was appropriately used only 20.5 % of the time.
- Although albumin prescribing only increased by 10.3 % after the warning, the actual utilization of this medication increased by 47.4 %. On the other hand, hetastarch prescribing decreased by 83.9%, while the actual utilization of the medication decreased by 50 %.
- Due to the significant increase in albumin utilization after the FDA warning, the total expenditure due to albumin utilization increased by 39.0 %.

Limitations

- The use of albumin was considered inappropriate only if both guidelines recommended against the use of albumin for the indication being analyzed.
- The type of surgery was not recorded unless it was a liver or cardiac surgery.
- The possibility of conditions precluding the use of normal saline were not considered for sepsis patients.
- Small sample size and study duration.

Conclusion

- Although the data provided by this audit shows that prescribers are following the FDA recommendation of minimizing the use of hetastarch, it is concerning that albumin was appropriately utilized only 20.5 % of the time. Based on these findings, there is an opportunity for improvement in educating prescribers regarding the appropriate use of albumin in order to ensure proper utilization of this medication.

References

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- Technology assessment: albumin, non-protein colloid, and crystalloid solutions. Oak Brook, IL: University Health-System Consortium; 2000.
- FDA Safety Communication: Boxed Warning on increased mortality and severe renal injury, and additional warning on risk of bleeding, for use of hydroxyethyl starch solutions in some settings. [Internet]. 2013 [cited 2013 June 24]. Available at: <http://www.fda.gov/biologicsbloodvaccines/safetyavailability/ucm358271.htm>

Disclosure

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

Wilbert J. Fuerte: Nothing to disclose.
Frances Ordieres: Nothing to disclose.
Judy Tseng: Nothing to disclose.