

# Impact of Early Fluid Overload on Mortality in Critically III Children

Priya Bhaskar, MD, Archana Dhar, MD, Raymond Quigley, MD, Vinai Modem, MD Children's Medical Center, Dallas. UT Southwestern Medical Center, Dallas



### **Objectives and Study Design** Introduction Methods • Survivors and non-survivors were compared with respect to Fluid accumulation and fluid overload are commonly seen in Objectives: We performed a retrospective chart review of critically ill critically ill patients and frequently associated with severe fluid accumulation parameters - maximum cumulative fluid Determine the impact of early fluid overload parameters on children in a tertiary level pediatric ICU, admitted between accumulation, presence of fluid overload and duration of fluid AKI. Mortality in critically ill children. September 1, 2009 and March 31, 2010 with sepsis and/or overload during the initial 7 days of ICU admission. shock as one of the admitting diagnoses. Multiple retrospective studies in critically ill patients with AKI Study Design: identified an association between fluid overload and ICU The two groups were compared with respect to other Cumulative fluid accumulation was measured daily for up to Retrospective Cohort Study. outcomes such as mortality 1-5. covariates and multivariable logistic regression analysis was 7 days after ICU admission. Fluid overload was defined as Included children with ICU admission diagnosis of shock performed. cumulative fluid accumulation > 10%. states or sepsis. But the impact of pattern of fluid accumulation, especially Excluded children with ICU stay < 48 hours.</li> early fluid overload, on outcomes in critically ill patients Fluid Balance (in liters) • Cox proportional hazards analysis was performed to compare Fluid Accumulation = X 100 remains to be established. Admission Weight (in Kg) survival between patients with fluid overload and those with no fluid overload. Results Conclusion

### Patient Selection





# Logistic Regression Analysis

		Un-adjusted OR	Adjusted OR	p-value
	3-day Max Cumulative FO	1.13	1.12	0.005
	7-day Max Cumulative FO	1.16	1.20	< 0.001
	Presence of Early FO	6.43	9.93	0.004
	Duration of FO	2.28	3.87	0.001
Covar Ad	ates in the Multivariable Logis mission, Presence of Sepsis a Vasopressors, Presen	tic Regression Models – t ICU Admission, Severi ce of AKI (pRIFLE Cate	Age Group, Hospita ty of Illness (PIM 2 s gories Injury and Fa	I Days prior ( score), Need ilure)

• In our cohort of critically ill children with sepsis and/or shock states, maximum fluid accumulated, presence of fluid overload and duration of fluid overload during the initial 7 days have significant impact on mortality.

Most of the fluid accumulation in the non-survivors occurs during the initial 3 days after ICU admission.

# References

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## Patient Characteristics - Survivors Vs. Non-Survivors

Variable	Overall (N = 115)	Survivors (N = 97)	Non survivors (N = 18)	p-value
Age in months Median (Range)	1.1 (0 – 17.4)	1.1 (0 - 16.6)	0.5 (0 - 17.4)	0.39
Age Categories (Infant : Children : Teen)	56 : 45 : 14	46 : 41 : 10	10:4:4	0.17
Gender (Female : Male)	47 : 68	38 : 59	9:9	0.44
Weight (Kg) Median (Range)	10 (2 – 150)	10 (2 – 150)	5 (3 – 79)	0.70
PIM 2 score Median (Range)	5 (0, 99)	4 (0, 75)	18 (1, 99)	0.002
Respiratory failure	80%	78%	89%	0.52
Shock	52%	44%	94%	< 0.001
pRIFLE (Injury and Failure)	35%	30%	61%	0.01

# Maximum Cumulative Fluid Overload - Survivors Vs. Non-Survivors



# Survival Analysis

