

# Get Up, Stand Up: Pushing the Limits of Medical Management for ICP

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## Introduction

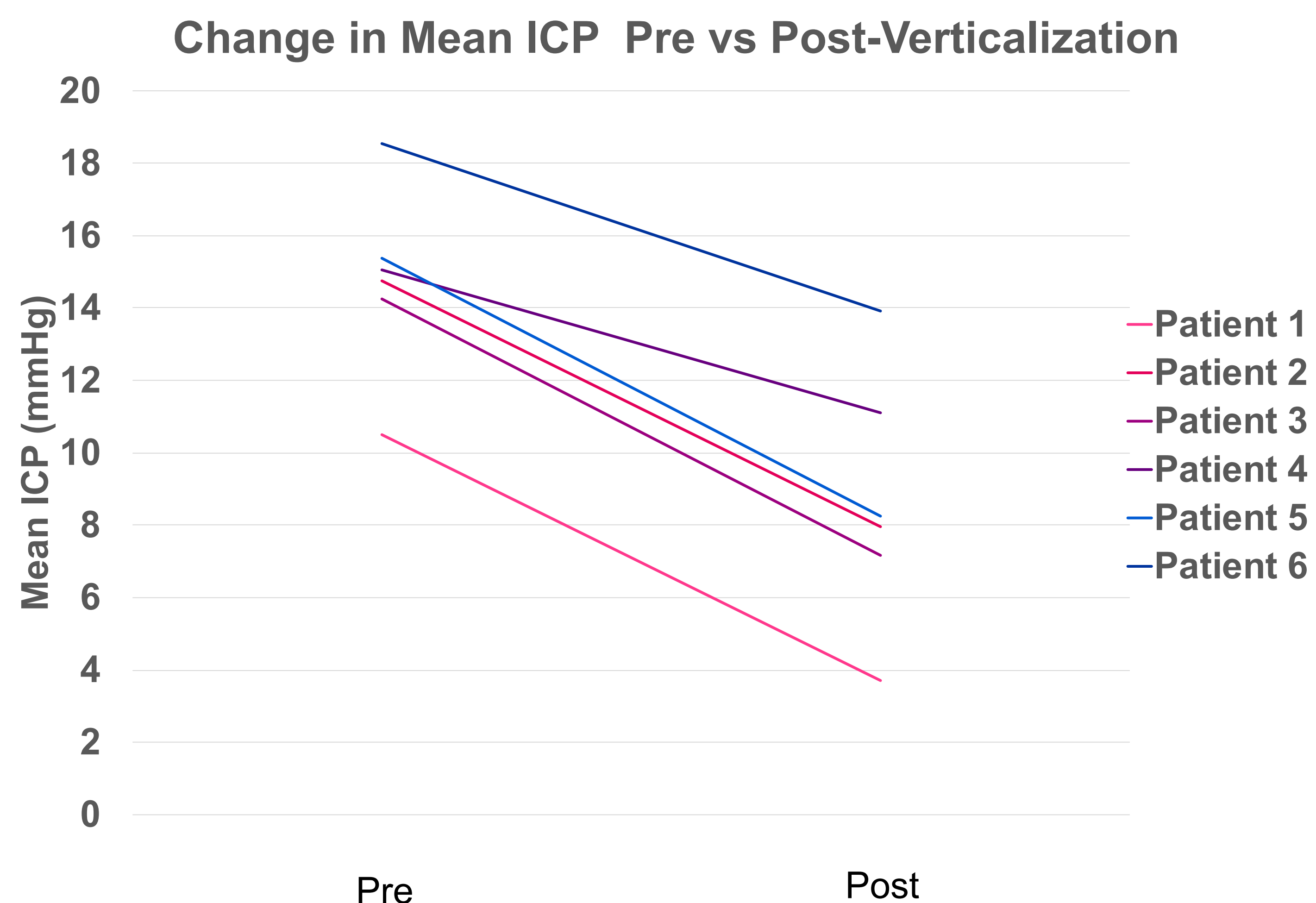
- Refractory intracranial hypertension is strongly associated with mortality
- Current guidelines include the use of sedation, hyperosmotic agents, barbiturates, hypothermia, paralytics, and surgical intervention
- We describe a novel intervention of verticalization, using an upright, standing bed, for lowering refractory intracranial hypertension**

## Methods

- Single center retrospective review of 6 cases of refractory intracranial hypertension in a tertiary center
- All patients treated with maximal standard-of-care for lowering intracranial pressure (ICP), measured by Therapy Intensity Level (TIL) score with persistent ICP >20mmHg
- Treated with verticalization for at least 24 hours
- Compared hourly ICP, number of ICP spikes >20mmHg, and percent ICP >20mmHg 24h prior vs. 24h post-verticalization
- Compared number of interventions for ICP pre vs post verticalization
- Compared total TIL score pre vs post verticalization

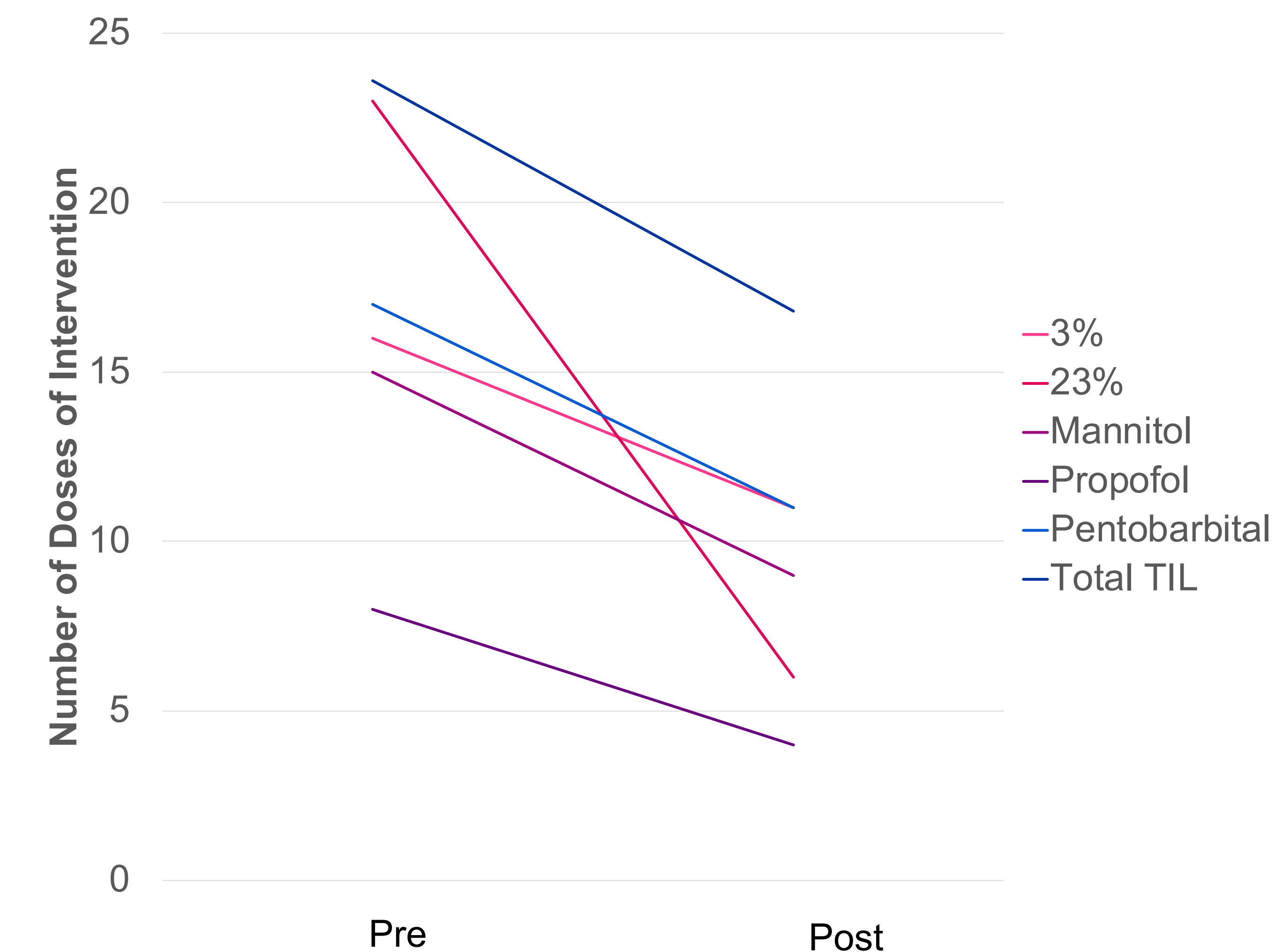
## Results

Table 1	Age	Diagnosis	Severity	Peak ICP (mmHg)	Duration Standing (days)
Patient 1	60	ICH	ICH 3	26	7
Patient 2	35	SAH	HH5 mF4	31	7
Patient 3	55	SAH	HH5 mF3	35	10
Patient 4	63	SAH	HH5 mF4	27	1
Patient 5	59	SAH	HH5 mF4	30	2
Patient 6	21	SAH	HH5 mF3	32	2



## Results

### ICP Interventions Pre vs Post-Verticalization



## Discussion

- Verticalization is an effective, non-invasive intervention for lowering intracranial pressure in refractory intracranial hypertension
- Verticalization decreased the number of doses of medical interventions for refractory intracranial hypertension
- The most common adverse events were bradycardia (3, 50%) and pressure wounds (4, 66%)