## CAFFEINE AUTO-WEAN STRATEGY: REDUCING COST AND DRUG EXPOSURE

#### Shabih Manzar, MD, MPH LSUHS, Shreveport, Louisiana, USA

## Aim

• There is a gap in the literature regarding the weaning plan of caffeine in

stable, low-risk preterm infants.

• As a quality improvement initiative, we planned this study with the aim of decreasing caffeine utilization and cost by ensuing an auto-wean strategy.











Balancing factors:

Number of apneic episodes (apnea > 20 seconds) Desaturations < 90% (> 5-10 seconds, requiring stimulation or increase oxygen/flow)

# Results

Case no	Birth weight	GA	Sex	Race	Weight at 32 weeks (kg)	Caffeine dose (mg) at 32 weeks	Caffeine dose (mg) per kg [dose/weig ht]	Actual ml [dose x 0.05 CF]	Weight (kg) at 34 weeks	Caffeine expected 10 mg/kg dose at 34 weeks	Predicted mL [dose x 0.05]	Difference in mL [predicted - actual]	Cost \$ (conversion factor) 3.06 for PO [ml x 3.06]
Case 1	1100	27	F	W	1.95	17.2	8.82	0.86	2.47	24.7	1.24	0.38	1.15
Case 2	1680	31.5	Μ	W	1.6	16.8	10.50	0.84	1.865	18.65	0.93	0.09	0.28
Case 3	1250	31.4	F	В	1.22	11.8	9.67	0.59	1.34	13.4	0.67	0.08	0.24
Case 4	470	23.6	F	В	1.03	8.6	8.35	0.43	1.38	13.8	0.69	0.26	0.80
Case 5	2350	31.5	Μ	Н	2.29	23.6	10.31	1.18	2.4	24	1.20	0.02	0.06
Case 6	1280	30.1	F	В	1.27	12.8	10.08	0.64	1.48	14.8	0.74	0.10	0.31
Case 7	870	30.1	F	В	0.74	8.8	11.89	0.44	1.01	10.1	0.51	0.06	0.20
Case 8	670	26.6	Μ	В	1.12	10.8	9.64	0.54	1.405	14.05	0.70	0.16	0.50
Case 9	685	23.6	Μ	В	1.37	13.4	9.78	0.49	1.68	16.8	0.84	0.35	1.07
Case 10	550	26	F	В	1.165	11.2	9.61	0.48	1.43	14.3	0.72	0.23	0.72
Case 11	800	25.6	Μ	В	1.71	16.8	9.82	0.49	2.165	21.65	1.08	0.59	1.81
Case 12	670	25.5	F	В	1.195	13.2	11.05	0.55	1.53	15.3	0.77	0.21	0.65
Case 13	1005	28.2	F	В	1.21	12	9.92	0.50	1.775	17.75	0.89	0.39	1.20
Case 14	545	26.5	Μ	W	1.19	10.2	8.57	0.43	1.405	14.05	0.70	0.27	0.84
Case 15	755	26.5	Μ	W	1.305	13	9.96	0.50	1.66	16.6	0.83	0.33	1.02
Case 16	1035	30	Μ	В	1.21	12	9.92	0.5	1.72	17.2	0.86	0.36	1.10

The median birth weight was 835 grams (range 470-2350 grams).

The median gestational age was 26.8 weeks (range 23.6-31.5 weeks).

The male-to-female ratio was 8:8.

Out of sixteen, eleven infants were African American, 4 were White, and 1 was Hispanic

### The mg to mL Conversion Factor (CF) of 0.05 was obtained from:

20 mg in 1 ml

1 mg = 1/20 = 0.05

Actual dose (mL) = Caffeine dose at 32 weeks x 0.05 (CF)

Predicted dose (mL) = Caffeine dose expected at 34 weeks (if weight adjusted to 10 mg/kg) x 0.05 (CF)

#### The mL to cost (\$) Conversion Factor (CF) of 3.06 was obtained from:

Oral Caffeine is supplied as 20mg/mL in 3mL Vials. The cost is \$92.12/Pack of 10

*So, 1 vial would be \$9.2 (92.12 divided by 10)* 

Cost per vial of 3 mL = \$9.2 or \$3.06 per mL (9.2 divided by 3)

# Results



## Conclusion

We demonstrated effective auto-weaning of caffeine in stable, low-risk preterm infants. Although the cost saving is small in terms of dollars, reducing drug exposure may have potential benefits on hepatic and renal functions in preterm infants. This being a single institutional study, more such studies are needed at other institutions to look at the external validity of our findings.

# **Author & Affiliation**

## Shabih Manzar, MD, MPH

Division of Neonatology **Department** of **Pediatrics** Louisiana State University Health Sciences Center at Shreveport Louisiana, USA





