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Telemedicine Consultation to Assess Neonatal Encephalopathy in Rural Community Hospitals

Rachel Coffey, DO; Misty Melendi, MD; Anya J. Cutler, MS, MPH; Alexa K. Craig, MD

We studied the feasibility of teleconsults in community hospitals for neonatal encephalopathy evaluation

BACKGROUND

- NE is as a clinical syndrome of abnormal neurological function in neonates >35 weeks GA
- TH inclusion criteria can be challenging to assess
- NE teleconsult evaluations in tertiary care centers are feasible
- In a prior study, time for NE consult was about 5 hours for community hospital born babies¹

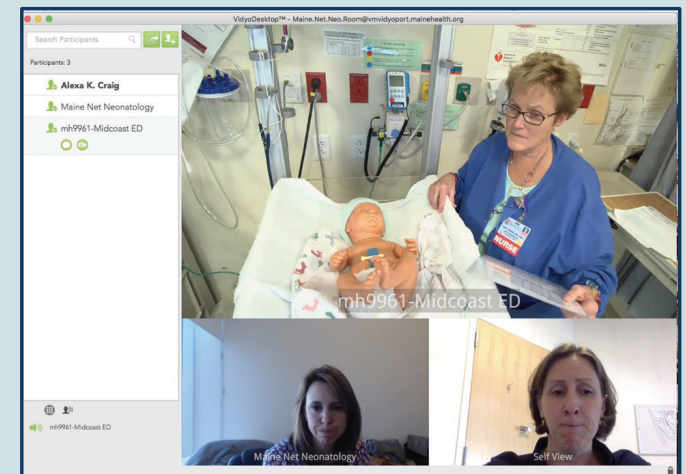
NE: Neonatal Encephalopathy, TH: Therapeutic Hypothermia

OBJECTIVE: Decrease the disparity between timeliness of teleconsults initiated in community vs tertiary care hospitals



METHODS

- Prospective study
- 1 tertiary care center, 9 community hospitals
- 1^o outcome: time to initial consult
- Provider survey



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Table 1: Maternal and neonatal characteristics

Characteristic	Tertiary Care Center, N = 19 ¹	Community Hospitals, N = 34 ¹	p-value e ²
Maternal Age	30 (6)	30 (5)	0.8
Unknown	0	4	
Gestational Diabetes	4 (21%)	4 (12%)	0.4
GBS Positive	5 (26%)	6 (18%)	0.5
Preeclampsia/Eclampsia	2 (11%)	2 (5.9%)	0.6
Prolonged Rupture of Membranes	2 (11%)	9 (26%)	0.3
C-Section	13 (68%)	10 (29%)	0.006
Gestational Age 35-36 wks	4 (21%)	1 (2.9%)	0.050
Male Sex	11 (58%)	24 (71%)	0.3
Birth Weight (kg)	3.17 (0.53)	3.64 (0.52)	0.004
Unknown	0	3	
APGAR at 1 Minute	3 (2)	2 (2)	0.6
APGAR at 5 Minutes	7 (2)	5 (2)	0.016
APGAR at 10 Minutes	7 (1)	6 (2)	0.4
Unknown	11	7	
Umbilical Cord ABG/VBG Obtained	18 (95%)	26 (76%)	0.13
Arterial Cord pH	7.07 (0.16)	7.15 (0.14)	0.11
Unknown	2	10	
Arterial Base Deficit	-13.6 (7.4)	-10.0 (4.9)	0.085
Unknown	2	12	
Venous Cord pH	7.14 (0.14)	7.20 (0.11)	0.2
Unknown	2	11	
Venous Base Deficit	-10.9 (5.9)	-8.6 (4.5)	0.3
Unknown	2	12	
Infant ABG or VBG or capillary blood gas within First Hour of Life	10 (53%)	16 (48%)	0.8
Unknown	0	1	
pH	7.25 (0.09)	7.17 (0.16)	0.14
Unknown	9	18	
Base Deficit	-11.5 (5.3)	-10.8 (5.9)	0.8
Unknown	9	20	
Received Therapeutic Hypothermia	7 (37%)	17 (50%)	0.4

¹Mean (SD); n (%)

²Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test; Welch Two Sample t-test

Table 2: Encephalopathy scores and timing of scores

Characteristic	Tertiary Care Center, N = 19	Community Hospitals, N = 34	p-value ¹
First Encephalopathy Score			0.4
N	19	34	
Median (IQR)	4 (2, 6)	6 (1, 9)	
Time from birth to first consult (min)	66 (43, 91)	98 (76, 127)	0.004
Second Encephalopathy Score			0.5
N	14	12	
Median (IQR)	2 (0, 4)	4 (0, 8)	
Time from first to second consult (min)	106 (94, 132)	151 (103, 194)	0.3
Third Encephalopathy Score			0.10
N	4	2	
Median (IQR)	0 (0, 2)	9 (8, 10)	
Time from second to third consult (min)	130 (116, 146)	108 (99, 116)	0.5

¹Wilcoxon rank sum test

FINDINGS

- Community neonates time to consult improved from 5hrs in the prior study to 1.5hrs in this study
- All community pediatricians reported teleconsults assisted with clinical decision making
- Serial consults can help triage transfers

Teleconsults in community hospitals can successfully be performed to assess neonatal encephalopathy

References: ¹Craig AK, McAllister LM, Evans S, et al. Telemedicine consults to assess neonatal encephalopathy are feasible in the neonatal intensive care unit. *J Perinatol* 2020 doi: 10.1038/s41372-020-00828-3