

Comparison of NICU Medical Directors to Clinical Neonatologists

Eric Horowitz¹, Anisha Bhatia², Holly Ruch-Ross³, Lauren Barone³, Mark L. Hudak⁴

¹Newborn Medicine, Boston Children's Hospital, Boston, MA; ²Northeast Ohio Medical University, Rootstown, OH;

³American Academy of Pediatrics, Itasca, IL; ⁴University of Florida College of Medicine, Jacksonville, FL

BACKGROUND

- Other studies have documented that the medical director role requires a diverse skill set and have reported on their leadership experiences.
- We lack data that summarize the diverse professional activities of a NICU medical director.
- Such data are needed to align resources with expectations to empower neonatologists in this critical leadership role to build expert and collaborative clinical teams and to improve newborn care.

OBJECTIVE

- To compare the professional profiles of neonatologists who served as NICU medical directors and neonatologists who self-identified as primary clinicians without administrative responsibilities.

METHODS

- The AAP conducted a voluntary anonymous survey of all board-eligible and board-certified United States neonatologists from July through November 2021.
- 2113, or 30%, of surveyed individuals responded.
- The survey included questions about professional duties, social factors, and compensation.
- We analyzed the subset of respondents who were board-eligible or board-certified, held a full-time position, and self-identified as either a medical director or a clinical neonatologist (defined in the survey as a neonatologist focused on providing clinical care to patients, with or without supervision of students, residents or others).
- Statistical analyses, including t-test of means, Wilcoxon test of medians, and chi-square analysis of proportions, as appropriate, were performed using JMP 16.1.0 by SAS (Cary, NC).

We sought to describe the duties of Neonatology Medical Directors.

Compared to Clinical Neonatologists, Medical Directors reported:

- Engaging to a greater extent in research (48% vs 27%, p<0.001)
- Producing more annual publications (4 vs 3, p=0.005)
- Holding an academic appointment more often (71% vs 60%, p<0.001)
- Achieving a higher academic rank (p<0.001)
- Expending more time on administration (12 vs 5 weeks, p<0.001)
- Holding more leadership titles
- Receiving higher cash compensation (\$310,000 vs \$265,000, p<0.001)

Medical directors reported greater administrative and scholarly effort compared to clinical neonatologists. Improved understanding of the professional productivity of medical directors will better inform institutional strategic planning and development of clearer professional expectations.

Table 1: Respondent Characteristics

	All	Clinical Neonatologist	Medical Director	p-value
Sample Size	n = 792	391 (49%)	401 (51%)	
On Academic Track (Yes)*	494 (62%)	221 (57%)	273 (68%)	<0.001
Gender Identity**				
Male	306 (41%)	145 (38%)	161 (43%)	NS
Female	433 (57%)	229 (60%)	204 (55%)	
Prefer to self-describe	1 (0%)	0 (0%)	1 (0%)	
Decline	14 (2%)	7 (2%)	7 (2%)	
Ethnic and Racial Identity*				
Hispanic/Latinx	60 (8%)	33 (9%)	27 (7%)	NS
Asian	135 (18%)	72 (19%)	63 (17%)	NS
Native Hawaiian/Pacific Islander	3 (0%)	1 (0%)	2 (1%)	NS
Black/African American	29 (4%)	16 (4%)	13 (4%)	NS
Middle Eastern/North African	18 (2%)	8 (2%)	10 (3%)	NS
American Indian/Alaska Native	3 (0%)	2 (1%)	1 (0%)	NS
White	513 (69%)	251 (66%)	262 (71%)	NS
Other	25 (3%)	16 (4%)	9 (2%)	NS
Declined	38 (5%)	19 (5%)	19 (5%)	NS
Sexual Identity**				
Lesbian or gay	16 (2%)	9 (2%)	7 (2%)	NS
Straight, that is, not lesbian or gay	683 (91%)	350 (92%)	333 (91%)	
Bisexual	7 (1%)	5 (1%)	2 (1%)	
Something else	2 (0%)	0 (0%)	2 (1%)	
I don't know	1 (0%)	0 (0%)	1 (0%)	
Decline to respond	39 (5%)	17 (4%)	22 (6%)	
Age**				
31-35	36 (5%)	31 (8%)	5 (1%)	<0.001
36-40	108 (15%)	67 (18%)	41 (11%)	
41-45	127 (17%)	57 (15%)	70 (19%)	
46-50	115 (16%)	47 (13%)	68 (19%)	
51-55	87 (12%)	40 (11%)	47 (13%)	
56-60	86 (12%)	43 (12%)	43 (12%)	
61-65	83 (11%)	29 (8%)	54 (15%)	
66-70	63 (9%)	37 (10%)	26 (7%)	
71 years or older	29 (4%)	21 (6%)	8 (2%)	
Medical School**				
United States	575 (77%)	274 (72%)	301 (81%)	0.038
Canada	2 (0%)	1 (0%)	1 (0%)	
Caribbean	23 (3%)	13 (3%)	10 (3%)	
Other	150 (20%)	91 (24%)	59 (16%)	
AAP Membership**				
AAP only	82 (10%)	49 (13%)	33 (8%)	<0.001
Both AAP and SONPM	613 (77%)	279 (71%)	334 (83%)	
Neither the AAP nor SONPM	97 (12%)	63 (16%)	34 (8%)	
AAP District Location**				
District I (CT, ME, MA, NH, RI, VT)	36 (5%)	18 (5%)	18 (5%)	NS
District II (NY)	42 (6%)	25 (7%)	17 (4%)	
District III (DE, DC, MD, NJ, PA, WV)	82 (11%)	44 (12%)	38 (10%)	
District IV (KY, NC, SC, TN, VA)	78 (10%)	36 (10%)	42 (11%)	
District V (IN, MI, OH)	68 (9%)	37 (10%)	31 (8%)	
District VI (IL, IA, KA, MN, MO, NE, ND, SD, WI)	57 (7%)	27 (7%)	30 (8%)	
District VII (AR, LA, MS, OK, TX)	112 (15%)	49 (13%)	63 (16%)	
District VIII (AK, AZ, CO, HI, ID, MN, NV, NM, OR, UT, WA, WY)	114 (15%)	63 (17%)	51 (13%)	
District IX (CA)	92 (12%)	43 (12%)	49 (13%)	
District X (AL, FL, GA, PR)	82 (11%)	32 (9%)	50 (13%)	

We used *t-tests to compare means of normally distributed data and **chi-square analysis for categorical data

Table 2: Professional Duties and Expectations – Medical Directors and Clinical Neonatologists

	All	Clinical Neonatologist	Medical Director	p-value
Sample Size	n = 792	391 (49%)	401 (51%)	
Weekday (Monday through Friday)*	80 (48 - 120)	80 (48 - 120)	80 (50 - 120)	NS
Weeknight (night of Monday through Friday)*	30 (15 - 48.5)	36 (20 - 52)	26 (12 - 40)	<0.001
Weekend day (Saturday or Sunday)*	24 (14 - 30)	24 (14 - 30)	24 (12 - 30.5)	NS
Weekend nights* (night of Saturday or Sunday)*	14 (9 - 24)	15 (10 - 24)	12 (8 - 24)	0.019
Clinical Hours*	1570 (975.5 - 2209.5)	1673.5 (1038.75 - 2304)	1448 (936 - 2106)	0.009
Average Daily Census**				
Critical Care	6 (4 - 10)	5 (4 - 10)	7 (4 - 10)	0.035
Intensive Care	10 (5 - 12)	9 (5 - 12)	10 (5 - 12)	NS
Non-Critical Care	0 (0 - 4)	0 (0 - 4)	0 (0 - 3)	NS
Normal Newborn	0 (0 - 4)	0 (0 - 4)	0 (0 - 3.25)	NS
Total Rounding Census	20 (15 - 26.75)	20 (15 - 27)	20 (15 - 26)	NS
Level nursery where most time spent**				
Level 4	282 (36%)	120 (31%)	162 (41%)	0.022
Level 3	429 (54%)	223 (57%)	206 (52%)	NS
Level 2	73 (9%)	43 (11%)	30 (8%)	NS
Level 1	5 (1%)	4 (1%)	1 (0%)	NS
Have Outpatient Duties				
Yes**	152 (19%)	61 (16%)	91 (23%)	NS
Outpatient Days*	15 (8 - 35.5)	12 (6 - 30)	20 (12 - 39)	0.012
Engage in Research				
Yes**	297 (38%)	107 (27%)	190 (48%)	<0.001
Annual Funding*	\$0 (\$0 - \$38,750)	\$0 (\$0 - \$17,500)	\$0 (\$0 - \$50,000)	NS
Scholarly Productivity*				
Paper submissions	2 (1 - 4)	1 (1 - 3)	2 (1 - 4.25)	<0.001
Publications in Past Year	2 (1 - 3)	1 (1 - 3)	2 (1 - 3.5)	0.005
Principal Authorship	3 (1 - 8)	3 (1 - 6)	4 (2 - 10)	0.005
Presentations	4 (2 - 6)	4 (2 - 5)	4 (2 - 6)	NS
Academic Appointment***				
No	276 (35%)	158 (40%)	118 (29%)	<0.001
Yes (not tenure)	435 (55%)	204 (52%)	231 (58%)	
Yes (tenure track)	59 (7%)	17 (4%)	42 (10%)	
Academic Rank***				
Instructor	39 (8%)	26 (12%)	13 (5%)	<0.001
Assistant professor	207 (42%)	116 (52%)	91 (33%)	
Associate professor	131 (27%)	43 (19%)	88 (32%)	
Full professor	81 (16%)	18 (8%)	63 (23%)	
Adjunct	20 (4%)	9 (4%)	11 (4%)	
Administrative Time*				
Weeks	10 (4 - 20)	5 (2 - 12)	12 (5 - 24.5)	<0.001
Internal Roles**				
Chair, Institutional Committee	62 (8%)	14 (4%)	48 (12%)	<0.001
Training Director	42 (5%)	11 (3%)	31 (8%)	0.002
Division Chief	62 (8%)	13 (3%)	49 (12%)	<0.001
Department Chair	30 (4%)	5 (1%)	25 (6%)	<0.001
None	255 (32%)	255 (65%)	0 (0%)	<0.001
External Roles**				
State Committee Chair	18 (2%)	4 (1%)	14 (4%)	0.017
National Committee Chair	17 (2%)	5 (1%)	12 (3%)	NS
Inter-institutional Collab Director	11 (1%)	1 (0%)	10 (3%)	0.006
International Collab Chair	3 (0%)	0 (0%)	3 (1%)	NS
None	500 (67%)	299 (80%)	201 (54%)	<0.001
Cash Compensation*				
Base Compensation	\$250,000 (\$220,000 - \$300,000)	\$244,000 (\$200,000 - \$300,000)	\$270,000 (\$229,000 - \$317,500)	<0.001
Administrative stipend	\$20,000 (\$6,250 - \$40,000)	\$5,000 (\$2,000 - \$25,000)	\$25,000 (\$10,000 - \$40,000)	<0.001
Extra duty earnings	\$20,000 (\$10,000 - \$50,000)	\$20,000 (\$10,000 - \$45,000)	\$23,760 (\$10,000 - \$50,000)	NS
Productivity incentive	\$25,000 (\$10,000 - \$80,000)	\$25,000 (\$10,000 - \$80,000)	\$24,500 (\$9,500 - \$80,000)	NS
Quality incentive	\$11,000 (\$5,000 - \$25,000)	\$13,000 (\$5,000 - \$23,425)	\$10,000 (\$5,000 - \$25,000)	NS
Research incentive	\$10,000 (\$5,000 - \$20,000)	\$15,000 (\$10,000 - \$20,000)	\$5,000 (\$2,550 - \$22,149)	NS
Calculated Total Cash Compensation	\$295,000 (\$235,000 - \$360,000)	\$265,000 (\$206,500 - \$340,000)	\$310,000 (\$260,000 - \$385,000)	<0.001
Employment Status**				
Employee	661 (84%)	324 (83%)	337 (84%)	NS
Full/Part owner	53 (7%)	26 (7%)	27 (7%)	NS
Contractor	79 (10%)	42 (11%)	37 (9%)	NS
Other Employment Type	17 (2%)	10 (3%)	7 (2%)	NS
Benefits**				
Bonus	465 (59%)	225 (58%)	240 (61%)	NS
Health Insurance	728 (93%)	345 (89%)	383 (97%)	<0.001
Malpractice	749 (96%)	367 (95%)	382 (96%)	NS
Loan Repayment	12 (2%)	3 (1%)	9 (2%)	NS
Reimburse for Professional Expenses	668 (85%)	320 (83%)	348 (88%)	0.049
Tuition Reimbursement	108 (14%)	41 (11%)	67 (17%)	0.011
Paid Family Care Leave	235 (30%)	93 (24%)	142 (36%)	<0.001
Paid Family Medical Leave	336 (43%)	139 (36%)	197 (50%)	<0.001
Dependent Care Leave	290 (37%)	134 (35%)	156 (39%)	NS
Life Insurance	593 (76%)	274 (71%)	319 (81%)	<0.002
Long-Term Disability Ins	521 (67%)	243 (63%)	278 (70%)	0.032
Short-Term Disability Ins	494 (63%)	230 (60%)	264 (67%)	0.04
Retirement	610 (78%)	294 (76%)	316 (80%)	NS
Other	22 (3%)	12 (3%)	10 (3%)	NS

We used *Wilcoxon test for medians of data with skewed distribution, **t-tests to compare means of normally distributed data, and ***chi-square analysis for categorical data.

