

## Manpower Needs in Neonatal Pediatrics

In 1980, the American Academy of Pediatrics' Committee on the Fetus and Newborn and the Section on Perinatal Pediatrics estimated the need for neonatologists.<sup>1</sup> That statement suggested that needs might be satisfied by 1983 and recommended reassessment in the early 1980s. The present report is a reevaluation of those needs and comments concerning the present and future manpower status of neonatal pediatrics.

The previous statement encouraged the participation of pediatricians in all levels of infant care. The Committee reaffirms this participation, especially in Level II care.<sup>2</sup> Pediatricians directing Level II neonatal services should have 6 months of training in neonatal special care. Level III services should be directed by Sub-Board certified neonatologists.

Every subspecialty faces the difficult problem of defining its own manpower needs. Neonatal pediatrics is no exception; it is difficult to ascertain whether the present number of neonatologists is needed to provide optimum care or whether some current care practices are actually created because of the increasing number of neonatologists.<sup>3</sup> Defining the manpower needs in neonatology requires answers to some important questions: (1) What is the current numerical, functional, and geographic status of the subspecialty? (2) How many pediatricians (non-Sub-Board eligible, Sub-Board eligible, and Sub-Board certified) are practicing exclusively in the area of newborn care? (3) How much actual involvement does the Board-certified pediatrician have in providing Level II newborn care? This statement attempts to address these questions.

As of April 1, 1984, there were 1,346 Sub-Board-certified neonatologists (unpublished data, American Board of Pediatrics). There are approximately 125 fellows graduating from neonatal training programs each year.<sup>4</sup> A nationwide telephone survey conducted in late 1983 found an additional 300 physicians who were either Sub-Board-eligible neonatologists or other pediatricians who were de-

voting full time to the care of newborns.<sup>5</sup> It appears that general pediatricians remain actively involved in providing Level II care.

There are other concerns which may be important, but answers are not immediately available: (1) How much time do neonatologists devote to activity outside the subspecialty? (2) How many fellows are there in training and what will happen to training programs in the future? (3) What is the role of the neonatologist in providing care for normal newborns and what is his/her relationship to other care givers? (4) What will be the effects of efforts to decrease the rate of prematurity and of continued improved perinatal health care delivery? (5) What will be the impact of limitations of payment from third party payers? (6) What will be the effects of other legislation or regulation directed toward patient care?

### ESTIMATE OF NEEDS

Two different methods were used to calculate the present and future manpower needs for neonatology. There are insufficient data to determine what a "true" estimate of a patients-to-neonatologist ratio should be.

Method 1 is similar to that used in our previous statement.<sup>1</sup> The assumptions used in method 1 (Table 1) are: (1) Forty infants/1,000 live births will require Level III care for an average of 12 days (Length of stay has been increased from 10 to 12 days because of the increased survival of low-birth-weight infants.) and 30 of those will require an additional 20 days of Level II care. (2) Seventy additional infants/1,000 live births will require ten days of Level II care. (3) Neonatologists are involved in research, teaching, and administration in addition to their clinical activities; therefore, they should care for an average of six patients. (4) Pediatricians provide 50% of the care of Level II infants. Therefore, neonatologists care for half of Level II patients in the ratio of 12 patients per neonatologist.

Method 2 is based on length of hospital stay by birth weight and type of care.<sup>6</sup> Assumptions include: (1) 1.1% of live births are very low-birth-weight

infants (<1,500 g), (2) 7% of live births are low-birth-weight infants (<2,500 g), (3) there are 3,800,000 live births per year, and (4) length of hospital stay assumptions are as shown in Table 2.

Assumptions on length of hospital stay have been used to calculate patient care days (Table 2). Patient care days and average daily patient census have been used to calculate the number of neonatologists needed according to both methods (Table 3).

Common to both methods is the assumption that there are adequate numbers of other health care providers in Level III and II units. These may be physician trainees (interns, residents, or fellows), other physicians, nurse clinicians, or other health care providers working under the supervision of the neonatologist. In the event of their absence, the number of neonatologists required will need to be revised.

## DISCUSSION

The role of the neonatologist at an academic center is that of care provider, educator, researcher, and administrator. The neonatologist's role in other centers is the subject of much debate. We are presently training neonatologists without a clear consensus as to their future role.

The committee feels that physicians trained as pediatricians should maintain an active role in the care of sick newborns.<sup>2,7</sup> The neonatologist should be involved in Level III patient care, education, evaluation, administration, research, and perinatal system planning. Alternatively, the neonatologist may provide Level II patient care but should participate in perinatal planning and relate to a center as part of a perinatal system.

Excessive numbers of neonatologists may be disruptive to regional perinatal programs. Regional

**TABLE 1.** Numerical Estimates of Newborns Requiring Special Care Using Method 1\*

	Level III	Level II
Neonates requiring care/1,000 live births	40	70 + 30
Total neonates (3,800,000 live births)	152,000	226,000 + 114,000
Av length of stay (d)	12	10 + 20
Patient days/yr	1,824,000	2,260,000 + 2,280,000
Av daily patient census	4,997	6,192 + 6,246

\* Level II patients include infants requiring only Level II and graduates of Level III.

**TABLE 2.** Derivation of Length of Stay and Patient Care Days Using Method 2\*

	Level III	Level II
<b>Length of stay</b>		
Very low birth weight (<1,500 g)	33.6 d	14.4 d
Low birth weight (1,500–2,499 g)		
11.8%	10.5 d	10.5 d
88.2%		8 d
Birth weight ≥ 2,500 g		
1.2%	4 d	4 d
1.0%		4 d
<b>Yearly patient care days</b>		
Very low birth weight		
100% × 3,800,000 × 1.1% × 33.6 =	1,404,480 d/yr	
100% × 3,800,000 × 1.1% × 14.4 =		601,920 d/yr
Low birth weight		
11.8% × 3,800,000 × 7% × 10.5 =	277,784 d/yr	
11.8% × 3,800,000 × 7% × 10.5 =		277,784 d/yr
88.2% × 3,800,000 × 7% × 8.0 =		1,581,955 d/yr
Birth weight ≥ 2,500 g		
1.2% × 3,800,000 × 91.9% × 4 =	169,632 d/yr	
1.2% × 3,800,000 × 91.9% × 4 =		169,632 d/yr
1.0% × 3,800,000 × 91.9% × 4 =		141,360 d/yr
<b>Total</b>	<b>1,851,896 d/yr</b>	<b>2,772,651 d/yr</b>

\* These figures were derived from 22% of 1981 US live births. Some infants of birth weight 2,500 g and greater and most low-birth-weight and very low-birth-weight infants require Level III and/or Level II care.

† Calculated as: % total @ Level X (3.8 million births/yr × % in weight category) × length of stay @ Level.

**TABLE 3. Estimate of Neonatologists Needed Using Methods 1 and 2**

Method 1	Level III	Av daily census (Table 1) 6 patients/neonatologist	$\frac{4,997}{6} = 833$
	Level II	Av daily census (Table 1) 12 patients/neonatologist	$\frac{6,219}{12} = 518$
		Neonatologists needed	1,351
Method 2	Level III	Patient care days (Table 2) 6 patients/neonatologist	$\frac{1,851,896}{365} = 846$
	Level II	Patient care days (Table 2) 12 patients/neonatologist	$\frac{2,772,651}{365} = 633$
		Neonatologists needed	1,479

tertiary neonatal intensive care units have been responsible for much of the decline in birth weight/gestational age-specific neonatal mortality.<sup>8,9</sup> There is concern that these advances will be lost if there are more neonatologists caring for fewer patients in smaller units under widely varying circumstances. We believe that increasing numbers of neonatologists practicing in community hospitals are interfering with the desirable role of the practicing pediatrician in providing newborn care. An added concern is increased cost.

Our estimates of current and future needs and available personnel make it apparent that there are presently enough neonatologists. The survey indicated a surprisingly even distribution of neonatologists across the country (one neonatologist per 2,000 to 3,500 births). The survey also indicated that there is currently a low attrition rate (1% to 2%/yr) and a relatively low number in totally administrative roles.<sup>5</sup>

If the number of neonatologists is presently adequate and the fellowships continue to increase that number significantly, then why do there seem to be so many job opportunities? There appears to be increasing use of neonatologists in providing Level I and II care.

The current trends in recruitment of neonatologists appear to be increasingly based upon institutional entrepreneurial efforts rather than patient need as we cannot document lack of physician availability. Such activity is not consistent with regionalized perinatal care.

### CONCLUSIONS AND RECOMMENDATIONS

1. There is presently an adequate supply of neonatologists to fulfill Level II and III program responsibilities.
2. Pediatricians should continue to provide Level I and II care.
3. Increasing the number of neonatologists be-

yond that needed may result in a disturbance of the pediatricians' role in newborn care and in more fragmented and inconsistent care of the sick newborn.

4. We commend the efforts of the Accreditation Council for Graduate Medical Education Residency Review Committee for Pediatrics to ensure quality training in neonatal pediatrics for pediatric residents and neonatal fellows.

5. We continue to support the concept that all neonatologists and pediatricians providing care to sick infants be linked in a regional perinatal system.

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### NEW TRAINING REQUIREMENT FOR PEDIATRIC HEMATOLOGY-ONCOLOGY

The American Board of Pediatrics has recently approved a recommendation of the Sub-Board of Pediatric Hematology-Oncology to require three years of subspecialty training in an accredited program in order to qualify for entrance into the certifying process. This decision was reached by the Sub-Board and the American Board of Pediatrics after lengthy consideration during the past two years. In the process of studying this change in training requirement, the Sub-Board and Board reviewed the findings of a workshop held in 1978 entitled "Graduate Education in Pediatric Hematology-Oncology." It was noted that the participants in this workshop recommended that the training period in hematology-oncology should be increased to three to four years and that the curriculum should include substantial research experience.

The Sub-Board of Pediatric Hematology-Oncology and the American Board of Pediatrics arrived at their decision because of the following compelling reasons:

1. The increasing complexity of the subspecialty of pediatric hematology-oncology involves numerous new dimensions in both diagnosis and management of patients with hematologic and oncologic diseases.
2. This specialty requires an extensive background in many related laboratory areas, which include routine and special hematology, hemostasis, biochemistry, genetics and cytogenetics, pharmacokinetics, hematopathology, radioisotope methodology, immunohematology, blood banking, transplantation immunology, leukocyte function, and other more specialized fields, as well as familiarity with a number of diagnostic imaging techniques and specialized treatment modalities, such as radiation therapy, pheresis techniques and transplantation services.
3. The three-year period will provide more adequate time for the trainee to become familiar with the above spectrum of special diagnostic and treatment facilities essential for the current practice of pediatric hematology-oncology.
4. The increased training period will also allow trainees to develop a substantial background in an area of pediatric hematology-oncology research.

All physicians beginning training in pediatric hematology-oncology on or after January 1, 1986, will need to complete three years of training. The certifying examination to be given in 1990 will be the last opportunity to take the examination for those individuals who have completed only two years of subspecialty training in pediatric hematology-oncology.

Questions concerning this increase in the required length of training should be addressed to the American Board of Pediatrics, 111 Silver Cedar Court, Chapel Hill, NC 27514.

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