

Quality of Care

Because health care encompasses both technical care and the art of care (146), the quality of both must be assessed in determining the quality of the care provided by nurse practitioners (NPs), physician assistants (PAs), and certified nurse-midwives (CNMs). Technical care comprises the

diagnostic and therapeutic components of care; the art of care refers to the environment in which care is provided and the provider's manner and behavior in caring for and communicating with the patient (146).

INDICATORS OF QUALITY

Current methods of evaluating the quality of care provided by NPs, PAs, and CNMs are inexact. Structure, process, and outcome of care are traditionally used to measure the quality of care provided by physicians (70).¹ The quality of care provided by NPs, PAs, and CNMs is often evaluated by comparing the process and outcome² of the care they provide with the process and outcome of the care physicians deliver. Other accepted indicators of the quality of care provided by NPs, PAs, and CNMs are patients' satisfaction and, to a lesser extent, physicians' acceptance.

Comparisons With Physicians

The quality of care provided by NPs, PAs, and CNMs can be compared to the quality of care provided by physicians with regard to only those functions that both physicians and NPs, PAs, and CNMs usually perform. Comparisons based on functions outside the scope of NPs', PAs', and CNMs' training and practice, or on functions that

physicians do not usually perform are unreasonable.

Comparison studies are biased against NPs, PAs, and CNMs because the studies assume the medical model as the standard—physician care is considered the standard for care. This standard may be appropriate for measuring the technical quality of the tasks that NPs, PAs, CNMs, and physicians perform. But the medical model may be less suitable for measuring the interpersonal quality or art of care, which is more characteristic of care provided by NPs, PAs, and CNMs than of that provided by physicians. Indeed, health promotion, teaching, and counseling are the essence of nursing education and are also stressed in the curricula for training NPs and CNMs. PAs also receive training in interpersonal skills, but to a lesser extent. Physicians can legally provide health education and counseling, but the training in these skills varies among medical specialties and medical schools. Among physicians, only family practitioners and psychiatrists receive extensive training in interpersonal skills, although some physicians in all specialties provide personal care.

Some other comparison studies are biased in favor of NPs, PAs, and CNMs. In studies where patients are not randomly assigned, patients assigned to NPs, PAs, and CNMs are, on the whole, healthier than patients who see physicians exclusively; and either the practitioners or patients can decide to consult physicians at any time. Of those patients who consult physicians, those who choose to remain exclusively under the physicians' care

¹ Structural measures evaluate descriptive characteristics of facilities and providers, e.g., the soundness of a building and the board certification of a physician. Process measures evaluate what a provider does to and for a patient, e.g., order a cardiogram for a patient with chest pain. Outcome measures evaluate the result of patient care, i.e., health status. Although outcome measures are the most accurate available measure of quality, they are difficult to obtain. (For a discussion of the problems associated with measuring the outcome of care, see OTA's 1986 report, *Payment for Physician Services: Strategies for Medicare* (246).)

² The structural measures applicable to NPs, PAs, and CNMs include their certification, and the accreditation of their training programs and of their continuing education programs.

³ Although acceptance and satisfaction are not synonymous, the literature uses the words interchangeably in describing positive responses to NPs, PAs, and CNMs and the care they provide.

most likely are less healthy than those who return to the NPs, PAs, or CNMs.

Patients' Satisfaction

Looking to patients' satisfaction as an indication of quality of care reflects an increasing sensitivity to patients' interests and concerns and a recognition that outcomes partly depend on patients' attitudes. Little evidence, however, suggests that patients' satisfaction positively correlates with favorable technical outcomes (70). Patients' judgments may be based less on the therapies' success than on the interpersonal aspects of care—for example, on how courteously patients felt they were treated, how they assessed the value of the advice they received, on how much time they spent with the providers, and on how their emotional states changed (267). Nonetheless, if patients are dissatisfied with the services they receive, part of the reason for their dissatisfaction may be that their expectations have not been fulfilled.

Malpractice insurance premium rates and malpractice claims can also be used to judge patients' satisfaction. The comparison between physicians and NPs, PAs, and CNMs is crude because the number and scope of services provided by physicians differ from those provided by NPs, PAs, and CNMs. The interpersonal aspects of care ap-

pear to influence malpractice cases: physicians who maintain good relations with their patients tend to be sued less frequently than physicians who lack rapport with their patients (185).

Physicians' Acceptance

Some authorities reject the notion that physicians' acceptance of NPs, PAs, and CNMs indicates that the care they provide is good. Other authorities believe that physicians' acceptance of such providers indicates good care to the extent that physicians evaluate the care given by the providers against the standard of physicians' care. Physicians' evaluations of the care provided by NPs, PAs, and CNMs in their employ, however, might be affected by the physicians' fiscal interests. Physicians pleased with the financial results of employing NPs, PAs, or CNMs might view these providers favorably, whereas physicians displeased with the financial results might show their displeasure in negative assessments of the work of these providers. Other subjective factors, such as gender or personal acquaintance, might influence the degree to which physicians accept NPs, PAs, and CNMs. Competition from NPs and CNMs in independent practice, for example, certainly influences physicians' acceptance of such practitioners.

METHODOLOGICAL PROBLEMS OF STUDIES

One or more common methodological problems affect most studies of the quality of care provided by NPs, PAs, and CNMs. The problems include using small samples, focusing on short-term outcomes, using nonrandomized study populations, applying single evaluation criteria, using incomplete and unstandardized medical records data, and choosing nonrepresentative samples or sites. Some studies, because they were conducted by educators and other proponents of NPs, PAs, and CNMs, might be biased in favor of the care given by these providers.⁴

Study designs contain other weaknesses. Some studies compare the processes and outcomes of care provided by NPs, PAs, and CNMs with the processes and outcomes of care provided by house staff rather than by experienced physicians. Study designs that compare only medical tasks as performed by physicians with tasks performed by NPs and CNMs are incomplete because they ignore the advanced nursing responsibilities that NPs and CNMs also fulfill.

There are a few well-conducted, randomized, controlled trials that are valid within their own designs. The conclusions of these trials, as well as other less rigorous studies, can be generalized—applied to other populations and settings—but

⁴No bias against NPs, PAs, and CNMs was apparent in the studies examined for this review.

only in a limited way. Many studies report on only a few NPs, PAs, or CNMs in only one setting, which limits the applicability of the findings for other providers and other settings.

Some of the studies of patients' satisfaction and physicians' acceptance are opinion surveys that, depending on the rigor of design and execution,

are more or less flawed. Problems include misinterpretation of questions by respondents, investigators' bias in framing questions, and reliance on the respondents' memories. Little attention has been given to the systematic development of the questionnaires or measuring scales used by investigators.

QUALITY OF NURSE PRACTITIONERS' CARE

Comparisons With Physicians

Reviews of comparison studies (230,242) and individual studies comparing NPs and physicians find that the quality of care provided by NPs functioning within their areas of training and expertise tends to be as good as or better than care provided by physicians (50,51,72,104, 186,199,231).

In some cases, the quality of NP care is equivalent to physician care (see table 2-1). For example, NPs generally resolve patients' acute problems as well as physicians (130,139), and the functional status of patients treated by NPs and physicians is equivalent (212). Spitzer (231) found no difference between NPs and physicians in the adequacy of their prescribing practices. Other researchers found that NPs prescribe and use medications less frequently than do physicians, and that NPs tend to prescribe only well-known and relatively simple drugs (29, 204, 225). The studies did not ascertain whether the differences in the prescribing habits of physicians and NPs stem from differences in patient mixes, prescribing philosophies, or other causes.

The quality of NPs' care differs from that of physicians' care in other instances (see table 2-2). NPs appear to have better communication, counseling, and interviewing skills than physicians have (84,104,178), a conclusion reinforced by one literature review citing a number of "variables for which nurse practitioners received higher scores than physicians." These variables include:

. . . amount/depth of discussion regarding child health care, preventive health, and wellness; amount of advice, therapeutic listening, and support offered to patients; completeness of history, including the recording of previous problems and fol-

lowup of problems and therapies; completeness of physical examinations and interviewing skills, and patient knowledge about the management plan given to them by the provider (187).

Table 2-2 also suggests that NPs are especially good at assisting ambulatory patients with chronic problems such as hypertension and obesity (189, 211). After clinic visits for chronic problems, NPs' patients are less likely than physicians' patients to report that their activities are limited or that they experience anxiety about their problems (139). Whether NPs' interpersonal skills contribute to their ability to care successfully for patients with chronic problems has not been determined. Physicians, however, appear to provide better care in managing problems that require technical solutions (104).

Patients' Satisfaction

Overall, patients are satisfied with the care they receive from NPs (25, 41, 80, 82, 139, 141, 145, 207, 231, 265). Moreover, patients appear to be more satisfied with the care they receive from NPs than with care from physicians, in regard to several factors: personal interest exhibited, reduction in the professional mystique of health-care delivery, amount of information conveyed, and cost of care (41, 145, 190),

A few studies, however, indicate patients' dissatisfaction with one or more aspects of NPs' care or show patient preference for physicians' care. Patients are concerned about long waits to see NPs (145),⁵ about how well NPs communicate with pa-

⁵This finding was consistent across 10 settings, including solo practices, university student-health centers, public health-department clinics, private-hospital outpatient clinics, and a health maintenance organization.

Table 2-1.—Equivalence in Quality of Care Provided by Nurse Practitioners (NPs) and Physicians (MDs)

Activity or measure	Setting	Study type	Source
Process measures:			
Adequacy of pediatric physical assessment	Health center, low-income neighborhood	Retrospective chart review	Duncan, et al., 1971
Adequacy of prescribing medication	Two MD family practice	Randomized controlled trial	Spitzer, et al., 1974
Adequacy of the management of episodes of care	HMO	Prospective; chart review, timing of segments of patient visits	Spitzer, et al., 1974; Salkever, et al., 1982
Management of hypertensive patients	Rural primary care center	Retrospective chart review	Watkins and Wagner, 1982
Similarity of treatment plans for pediatric patients	Military outpatient clinic	Retrospective evaluation of NPs' and MDs' treatment plans	DiGirol and Parry, 1983
Short- and long-term compliance by patients	Emergency room	Prospective study with data collection at emergency room visit, short-term followup, and long-term followup	Powers, et al., 1984
Outcome measures:			
Patient's physical, emotional, and social functional status	Two MD family practice	Randomized controlled trial	Sackett, et al., 1974
Resolution of acute problems	Hospital ambulatory care clinics	Record review	Komaroff, et al., 1976
Resolution of acute problems	Prepaid group practice	Survey of providers and patients with telephone followup of patients at 1 week	Levine, et al., 1976
Reductions in pain or discomfort among pediatric patients.	Prepaid group practice	Survey of providers and patients with telephone followup of patients at 1 week	Levine, et al., 1976

SOURCE Process measures: M.T. DiGirol and W.H. Parry, "Consultation to the Pediatric Automated Military Outpatient Systems Specialist (AMOSIST): A Comparison of Consultation by a Pediatric Clinical Nurse Specialist and by a Pediatrician," *Military Med.* 148(4):364-367, April 1963; B. Duncan, A.N. Smith, and H.K. Silver, "Comparison of the Physical Assessment of Children by Pediatric Nurse Practitioners and Pediatricians," *Am. J. Public Health* 60(6):1170-1176, June 1971; M.J. Powers, A. Jalowiec, and P.A. Reichert, "Nurse Practitioner and Physician Care Compared for Nonsurgery Emergency Room Patients," *Nurse Practitioner* 9(2):39-52, February 1984; W.O. Spitzer, D.L. Sackett, J.C. Sibley, et al., "The Burlington Randomized Trial of the Nurse Practitioner," *N. Engl. J. Med.* 290(5):251-256, Jan. 31, 1974; L.O. Watkins and E.H. Wagner, "Nurse Practitioner and Physician Adherence to Standing Orders Criteria for Consultation or Referral," *Am. J. Public Health* 72(1):22-29, January 1982. Outcome measures: D.M. Levine, L.L. Morlock, Al. Mushlin, et al., "The Role of New Health Practitioners in a Prepaid Group Practice: Provider Differences in Process and Outcomes of Medical Care," *Med. Care* 14(4):326-347, April 1976; A.L. Komaroff, K. Sawyer, M. Flatley, et al., "Nurse Practitioner Management of Common Respiratory and Genitourinary Infections, Using Protocols," *Nurs. Research* 25(2):64-89, March-April 1976; D.L. Sackett, "The Burlington Randomized Trial of the Nurse Practitioner: Health Outcomes of Patients," *Annals Int. Med.* 80(2):137-142, February 1974; D.S. Salkever, E.A. Skinner, D.M. Steinwachs, et al., "Episode-Based Efficiency Comparisons for Physicians and Nurse Practitioners," *Med Care* 20(2):143-153, February 1982.

tients (139), and about whether NPs can care for what patients perceive to be serious medical problems (131). Patients are dissatisfied with NPs who do not consult with physicians about diagnostic and treatment decisions (80,198). Some of these findings, particularly those having to do with waiting time and communication, contradict those of other studies (41,71,104,178,195), suggesting that some aspects of NPs' care may require further research.

Additional research on patients' satisfaction would be especially timely now, when the Nation's supply of physicians is growing, and more physicians seem to be locating in small towns (36, 39, 68, 174, 264), where a relatively large proportion of NPs have been providing health services. Any factors that might contribute to patients'

dissatisfaction with NPs' care are likely to limit the employment and use of NPs as the growing supply of physicians allows more consumers to choose between NPs and physicians.

Malpractice insurance premiums and the incidence of malpractice claims indicate that patients are satisfied with NP care. Although insurance premiums for NPs are increasing, successful malpractice suits against them remain extremely rare. Not surprisingly, most of the estimated \$1.4 billion in malpractice claims paid in the United States in 1984 (62) resulted from suits against physicians, particularly physicians in the surgical subspecialties. Physicians, however, far outnumber other types of providers, generally deal with the most complex cases, and have more financial resources than other providers.

Table 2-2.—Difference in Quality of Care Provided by Nurse Practitioners (NPs) and Physicians (MDs)

Activity or measure	Relative quality of care by NPs and MDs	Setting	Study type	Source
<i>Process measure:</i>				
Number of diagnostic tests	NP > MD	Hospital outpatient clinic	Random assignment of patients record review, time and motion studies, patient interviews	Flynn 1974
Number of diagnostic tests	NP > MD	HMO	Prospective, chart review timing of segments of patient visits	Salkever et al 1982
Thoroughness of documentation of diagnosis and treatment information	NP > MD	Preventive medicine department of a multispecialty clinic	Cross sectional Patient survey and chart review	Brown et al 1979
Adequacy of a telephone management of common pediatric problems	NP > MD	University pediatric clinic	Programed calls from a trained person about selected pediatric problems, calls recorded and analyzed	Perrin and Goodman 1978
Effectiveness of Interpersonal management skills (Interviewing, communicating)	NP > MD	University pediatric clinic	Programmed calls from a trained person about selected pediatric problems calls recorded and content analyzed	Perrin and Goodman, 1978 Hastings et al 1980
Management of problems requiring technical solutions	NP < MD	Jail health service	Record review and audit	Hastings et al 1980
<i>Outcome measures:</i>				
Rate of patient return to employment	NP > MD	University hospital medical clinic	Random patient assignment interviews, chart reviews	Lewis et al 1969
Reduction in number of symptoms in patients	NP > MD	University hospital medical clinic	Random patient assignment interviews, chart reviews	Lewis et al 1969
Level of patient awareness of provider orders	NP > MD	University hospital medical clinic	Random patient assignment interviews, chart reviews	Flynn 1974
Level of control of blood pressure in patients with hypertension	NP > MD	City hospital and health department clinics	Record review	Runyon 1975 Ramsay, et al 1982
Level of control of blood pressure in patients with hypertension	NP > MD	University hospital hypertension clinic	Prospective record review	Ramsay et al 1982
Level of activity limitation and anxiety in patients with chronic problems	NP < MD	Prepaid group practice	Survey of providers and patients with telephone followup of patients at 1 week	Levine, et al 1976
Amount of reduction in pain or discomfort in adult patients	NP > MD	Prepaid group practice	Survey of providers and patients with telephone followup of patients at 1 week	Levine et al 1976
Amount of weight reduction in obese patients	NP > MD	University hospital hypertension clinic	Prospective record review	Ramsay et al 1982

SOURCE Process measures: J D Brown, M I Brown, and F. Jones, "Evaluation of a Nurse Practitioner. Staffed Preventive Medicine Program in a Fee-for-Service Multispecialty Clinic." *Prev Med* 8(1) 53-64, January 1979, B C Flynn, "The Effectiveness of Nurse Clinicians' Service Delivery," *Am J Public Health* 64(6) 604-611, June 1974, G E Hastings, L Vick G Lee, et al "Nurse Practitioners in a Jailhouse Clinic," *Med Care* 18(7) 731-744, July 1980, E C Perrin and H C Goodman, "Telephone Management of Acute Pediatric Illnesses," *N Engl J Med* 298(3)130-135, Jan 19, 1978
 Outcome measures: B C Flynn, "The Effectiveness of Nurse Clinicians' Service Delivery," *Am J Public Health* 64(6)604.611, June 1974; D M Levine, L L Morlock, A I Mushlin, et al., "The Role of New Health Practitioners in a Prepaid Group Practice Provider Differences in Process and Outcomes of Medical Care," *Med Care* 14(4) 326-347 April 1976, C E Lewis, B A Resnick, G Schmidt, et al, "Activities, Events and Outcomes in Ambulatory Patient Care," *N Engl J Med* 280(12) 645-649 Mar 20, 1989, J A Ramsay, J K McKenzie, and D G Fish, "Physicians and Nurse Practitioners: Do They Provide Equivalent Health Care?" *Am J Public Health* 72(1) 55-57, January 1982, J W Runyon, "The Memphis Chronic Disease Program Comparisons in Outcome and the Nurse's Extended Roles," *JAMA* 231(3) 264-270, Jan 20, 1975 D S Salkever, E A Skinner, D M Steinwachs, et al, "Episode-Based Efficiency Comparisons for Physicians and Nurse Practitioners" *Med Care* 20(2) 143.153 February 1982

Physicians' Acceptance

A variety of factors affect physicians' opinions of NPs. For example, physicians are more inclined to approve NPs' performance of relatively simple tasks, such as history-taking, than to approve NPs' performance of more challenging clinical tasks (84,108). Another major factor influencing physicians' opinions of NPs is personal contact.

Physicians who work with NPs express more satisfaction with NPs' performance and more willingness to delegate higher level tasks than do physicians whose contact is indirect or nonexistent (21, 134, 223). This finding might indicate quality, but it might also reflect physicians' opinions about such non-quality-of-care factors as the relatively low cost of NP care or the freeing of time for physicians to see more patients or to spend in leisure.

Physicians in group practices and in institutional settings are more supportive of NPs than are solo practitioners. The level of physicians' satisfaction increases with the degree of their control over the activities of NPs (21).

Many physicians who approve of the concept of NPs have expressed only limited interest in actually employing them (134,223), although NPs and PAs were introduced and established in the United States largely because a minority of physicians chose to support, train, and hire them. About 65 percent of the NPs in the United States were employed as NPs in 1982, compared with 69 percent in 1974 (237).⁶ No documented reason

⁶More recent longitudinal, nationwide data on NP employment are not available.

is available for the decrease in the employment rate, although some observers have attributed the slight downward trend to lack of acceptance by physicians, restrictive State licensing, and unfavorable reimbursement practices (135).⁷ Furthermore, the validity of these statistics is questionable, because they are based on a very small number of NPs.

⁷Many other factors may also contribute to the lower employment rate. The number of Master's programs preparing nurse practitioners has grown substantially (from 74 in 1977 to 124 in 1981), and the number of certificate programs has decreased (from 124 to 84 during the same period) (262). The decrease in employment may also partly reflect the increased number of NPs removing themselves from the work force and seeking doctoral degrees.

QUALITY OF PHYSICIAN ASSISTANTS' CARE

Comparisons With Physicians

Within the limits of their expertise, PAs provide care that is equivalent in quality to the care provided by physicians (73,92,129,230,242). What little evidence is available about how the quality of PAs' care differs from the quality of physicians' care indicates that PAs provide more counseling of obese patients than physicians provide (129), that PAs spend more time educating patients than physicians spend (159), and that PAs' patients generally are better able to resume their usual level of functioning than are patients of physicians (226).

Patients' Satisfaction

The few available studies that directly address patients' satisfaction indicate that patients generally are as highly satisfied with the care they receive from PAs as with the care received from NPs (127,173,179,207). One study found that patients' satisfaction is tempered by the desire to see PAs perform routine functions rather than make independent diagnostic and treatment decisions (227).



Photo credit: American Academy of Physician Assistants

The care provided by PAs functioning within their areas of training and expertise tends to be equivalent in quality to the care provided by physicians for comparable services.

Physicians' Acceptance

Physicians initiated and developed the concept of PAs and serve as instructors in PA training programs. PAs function as their name implies—as assistants to physicians. Thus, it is not surprising that many physicians accept PAs and are satisfied with their work (125,129,179,208).

Physicians' confidence in PAs extends beyond routine care. One recent study found that although physicians generally delegate routine, uncomplicated cases to PAs, physicians also permit PAs to treat walk-in patients with urgent problems if the physicians cannot treat those patients

and honor previously scheduled appointments (57). Perry and Breitner (182) found that supervising physicians rate PAs higher than NPs on tasks involving educating, counseling, or instructing patients.

The high level of physicians' satisfaction with PAs may help account for their continued high employment rate. Employment rates provide the most consequential expression of physicians' acceptance, and nearly 86 percent of the Nation's PAs were employed as PAs in 1981 (45). By 1984, the employment rate had increased slightly to approximately 88 percent; only 8.4 percent had not been employed as PAs for more than a year (219).

QUALITY OF CERTIFIED NURSE-MIDWIVES' CARE

Comparisons With Physicians

CNMs can manage normal pregnancies safely and can manage them as well as, if not better than, physicians (65,148,190,193,226). Studies show that, in accordance with their training, CNMs recognize deviations from the norm and seek medical consultation promptly (65,210). The fact that CNMs provide standard care has been documented in a variety of settings, including hospital inpatient services, hospital clinics, migrant health centers, neighborhood health centers, and private practices (67).

As measured by such short-term indicators as Apgar scores (a numerical expression of the condition of a newborn infant) and birthweight, comparable outcomes of normal, low-risk pregnancies result from care by CNMs and care by physicians (65,196,226). CNMs' care and physicians' care also compare with regard to birth outcomes measured by fetal, perinatal, neonatal, and maternal mortality (65,181). A randomized clinical trial of uncomplicated deliveries showed no significant difference in the outcome of care whether provided by CNMs or by the obstetric house staff, except that CNMs kept more appointments and performed fewer forceps deliveries (226).

Data on birth outcomes reveal that proportionately fewer low-birth-weight infants result from deliveries managed by CNMs than from those

managed by physicians (253). Although this might seem to indicate that CNMs provide better care than physicians, it might reflect CNMs' referral of high-risk pregnancies to physicians. In one recent study, the low-birth-weight rate for CNM-managed deliveries was 28 percent less than the control group's rate; the CNMs had also provided prenatal care, whereas the control group received prenatal care from State-supported maternal and child-care clinics (184).

CNMs appear to differ from obstetricians in some processes of care. CNMs order medications less frequently than do obstetricians (65), low-risk patients of CNMs have shorter inpatient stays for labor and delivery than do low-risk patients of obstetricians (65), more obstetrical patients of CNMs are tested for urinary tract infections and diabetes than are patients of house staff physicians (226), and CNMs communicate and interact more with their clients than do physicians (66,181,190,265). The care given by CNMs differs from the usual care given by the physicians in the personal attention patients receive throughout labor and delivery. Most physicians' care is episodic, which may contribute to the fact that they rely more heavily than CNMs do on technology, such as fetal monitoring (265).

Although CNMs are trained to provide normal, low-risk maternity services, some of them collaborate with physicians to participate in the care

of high-risk women during labor and delivery. These CNMs perform such tasks as:

. . . applying internal uterine pressure monitoring devices or fetal scalp electrodes, obtaining fetal scalp blood samples, managing breech or multiple gestation deliveries, utilizing low or outlet forceps, or utilizing vacuum extractors (10).

Little evidence exists about CNMs' effectiveness in performing these tasks, although one researcher concluded that CNMs "can render safe, effective services to about one-third of the high-risk obstetric population" (210). Rooks and Fischman (203) found that most CNMs working in collaboration with physicians manage the care "of prenatal patients with some complications."

Patients' Satisfaction

Women served by CNMs are satisfied with the care they receive (65,181,190,209).⁸ Although obstetric patients from all socioeconomic strata are satisfied with CNMs' care, favorable feelings toward CNMs increase with patients' age, educational background, and number of births (59). Patients' satisfaction has been recorded for a wide range of family planning services and normal maternity care provided by CNMs in a variety of ambulatory care and hospital settings (209). CNMs also appear to be readily accepted by new patients—90 percent of the patients seeking obstetric services from a group practice of obstetricians accepted services from a CNM the practice had recently employed (190).

When comparing their satisfaction with services provided by CNMs and obstetricians, patients of CNMs express preferences for the greater ease of communicating with CNMs and the chance CNMs allow them to exercise more control during delivery (209). Perry found that none of the patients whose babies had been delivered by

⁸Perhaps the main problem with most studies of CNMs is the possible bias resulting from nonrandom assignment of patients to different types of providers. Self-selection suggests that those women who accept care from CNMs are inclined to be satisfied with CNMs' care (just as it suggests that those women who choose care from an obstetrician are inclined to be more satisfied with physicians' services). Nevertheless, studies consistently find patient acceptance of CNMs and some studies find that patients express relatively greater satisfaction with CNMs' care than with obstetrician's care.

CNMs would have preferred to have had them delivered by obstetricians, although some of the physicians' patients said that in retrospect they would rather have been cared for by CNMs (181). Patients in a large health maintenance organization expressed satisfaction with the care they received from both obstetricians and CNMs, but the CNMs' patients were significantly more likely to express great satisfaction with, and great confidence in, their providers (65). This study also found that patients of CNMs were more satisfied than those of physicians with the promptness with which they could obtain their first prenatal care visit and with the relatively short time they spent waiting in reception rooms (65).

CNMs differ markedly from obstetricians with respect to frequency of malpractice suits, a crude gauge of patients' acceptance. The number of CNMs who obtained malpractice insurance under the auspices of the American College of Nurse-Midwives (ACNM) grew from 625 in 1976 to 1,400 in 1983. Between 1977 and 1982, 20 claims (not all successful) were made against ACNM group policyholders (55). A 1982 national survey of CNMs found that 5.2 percent (55 of 1,065 respondents) had been named in malpractice suits during their careers (55). By contrast, of the 1,915 members of the American College of Obstetricians and Gynecologists responding to a recent survey, 31 percent said they had been sued once, 16 percent had been sued twice, and 20 percent had been sued at least three times (55). Interpreting these figures, however, is difficult, partly because they do not reflect case-mix differences. CNMs send patients with complicated or high-risk problems to physicians, especially in emergencies. That relatively more obstetricians than CNMs are sued may not reflect performance as much as the fact that obstetricians deliver many more babies than do CNMs and have higher incomes than CNMs.

Physicians' Acceptance

CNMs may practice administratively and physically apart from obstetricians and gynecologists, but by functioning "interdependently with" these physicians, the CNMs retain the formal support of the American College of Obstetricians and Gynecologists. The American College of Obstetri-

cians and Gynecologists has agreed with the American College of Nurse-Midwives that:

. . . the appropriate practice of the certified nurse-midwife includes the participation and involvement of the obstetrician/gynecologist as mutually agreed upon in written medical guideline/protocols (13).

The two colleges further agree that:

Quality of care is enhanced by the interdependent practice of the obstetrician/gynecologist and the certified nurse-midwife working in a relationship of mutual respect, trust and professional responsibility. This does not necessarily imply the physical presence of the physician when care is being delivered by the certified nurse-midwife (13).

Nonetheless, CNMs have had difficulty in obtaining acceptance by practicing physicians, medical societies, hospital departments of obstetrics and pediatrics, companies that provide malpractice insurance, State boards of health, and—not infrequently—nurses, themselves (196). Obstetricians and gynecologists are thought to find competition from CNMs threatening to physicians' position as the sole providers of a special type of medical care (43,190). Opposition may also reflect the tightening market conditions facing obstetricians and gynecologists in urban areas (196). In addition, other physicians, particularly general and family practitioners, have resisted CNMs (258).

SUMMARY

Within their defined areas of competence, NPs, PAs, and CNMs generally provide care that is equivalent in quality to the care provided by physicians for similar problems. Considerable evidence exists, particularly for NPs and CNMs, that they are more adept than many physicians at communicating effectively with patients and managing patients who require long-term and continuous care. Such patients include chronically ill patients and patients undergoing labor and delivery. Although the evidence is less voluminous concerning PAs' supportive-care and health-promoting activities, data indicate they overlap with NPs' activities of that nature.

Despite the reservations of many physicians as to whether CNMs are needed, their employment rate has been increasing in recent years. In 1976 and 1977, only about half of the Nation's CNMs were employed in clinical midwifery practice (9), but by 1982, approximately two-thirds (67.2 percent) of the CNMs in the United States were employed in nurse-midwifery practice (10). The CNMs' employment settings may better reflect the extent of physicians' acceptance. Although the percentage of CNMs employed in private practice with physicians increased from 13 percent in 1976 and 1977 to 20 percent in 1982, most CNMs in 1982 were employed in organizational settings or in private nurse-midwifery practice (see table 2-3).

Table 2-3.—Percentage of U.S. Resident Certified Nurse-Midwives by Type of Organization, 1976-77 and 1982

Type of organization	1976-77	1982
Hospital	45.6%	35.8%
Private practice with physicians	12.9	19.8
Private nurse-midwifery practice	2.4	14.4
Public health agency	13.8	8.6
Maternity service operated predominantly by nurse-midwives	7.6	7.7
Branch of the U.S. military	8.2	6.2
Prepaid health plan	3.4	6.0
University health service	5.0	1.8

SOURCES: American College of Nurse-Midwives, *Nurse+ Midwifery in the United States: 1976-77* (Washington, DC: 1978); and American College of Nurse-Midwives, *Nurse-&f idwifery in the United States: 1982* (Washington, DC: 1984)

The findings for NPs and PAs apply primarily to care provided in ambulatory settings, and the activities of CNMs have been documented in a variety of settings with favorable results. Although the findings are qualified by the methodological limitations of the techniques used to indicate quality, the weight of the evidence seems to show that the health-care services provided by these practitioners are equivalent in quality to comparable services provided by physicians.

Although patients are generally very accepting of care provided by NPs, PAs, and CNMs, patients are most satisfied with the services that re-

quire interpersonal skills. Patients seem to require what might be called technical reassurance for serious conditions and to prefer that NPs, PAs, and CNMs consult with physicians when technical care is required.

Patients' satisfaction with NP, PA, and CNM care is affected by factors external to the actual care provided. Satisfying a particular patient depends partly on the physician's conveying to the patient a sense of approval of the NP, PA, or CNM (113). Patients' judgments may also reflect their past experiences with medical care and their socioeconomic status. One study, for example, found that an upper-middle-class population accustomed to receiving care from fee-for-service physicians evaluated providers mainly on the basis of technical competence (35). Patients' age, sex, and race also affect their opinions. Middle-aged people, males, and blacks are more accepting of NPs (80); whites are more accepting of CNMs than are blacks, who are more likely to associate the word midwife with untrained lay midwives (201). The American Nurses' Association (21) concluded that trust in NPs and PAs varies with the options available to patients, and that satisfac-

tion with NPs and PAs tends to be highest when access to other sources of care, particularly physicians, is limited. Patients' satisfaction with CNMs, however, appears to be independent of access to other sources of obstetrical care (201).

Based on historical data, physicians accept the concept of NPs and PAs but remain concerned about their practicing independently. Physicians have been reluctant to accept CNMs, especially those practicing independently. Physicians' willingness to delegate tasks depends on the particular tasks. Most physicians who hire NPs, PAs, or CNMs are satisfied with their performance. Employment status, the most relevant indicator of whether physicians accept NPs, PAs, and CNMs, is satisfactory; PAs, in particular, apparently enjoy a high level of appreciation by physicians. Increasingly, CNMs' employment is independent of physicians. A growing supply of physicians and potentially heightened competition may decrease physicians' acceptance of these health practitioners. Indeed, the American Medical Association resolved in 1985 to "oppose new legislation extending medical practice to non-physician providers" (136).