

# Advanced-practice pharmacists: Practice characteristics and reimbursement of pharmacists certified for collaborative clinical practice in New Mexico and North Carolina

MATTHEW MURAWSKI, KRISTIN R. VILLA, ERNEST J. DOLE, TIMOTHY J. IVES, DALE TINKER, VINCENT J. COLUCCI, AND JEFFREY PERDIEW

**Purpose.** The results of a survey assessing the practice settings, clinical activities, and reimbursement experiences of pharmacists with advanced-practice designations are reported.

**Methods.** A questionnaire was sent to all certified Pharmacist Clinicians in New Mexico and all Clinical Pharmacist Practitioners in North Carolina (a total of 189 pharmacists at the time of the survey in late 2008) to elicit information on practice settings, billing and reimbursement methods, collaborative drug therapy management (CDTM) protocols, and other issues.

**Results.** Of the 189 targeted pharmacists, 64 (34%) responded to the survey. On average, the reported interval from pharmacist

licensure to certification as an advanced practitioner was 11 years. The majority of survey participants were practicing in community or institutional settings, most often hospital clinics or physician offices. About two thirds of the respondents indicated that their employer handled the billing of their services using standard evaluation and management codes, with estimated total monthly billings averaging \$6500. At the time of the survey, about 80% of the respondents were engaged in a CDTM protocol. The survey results suggest that pharmacists with advanced-practice designations are perceived favorably by patients and physicians and their services are in high demand, but more than one third of respondents indicated a need to

justify their advanced-practice positions to administrators.

**Conclusion.** Pharmacists with advanced-practice designations are providing clinical services in various settings under collaborative practice arrangements that include prescribing privileges. Despite growing patient and physician acceptance, reimbursement challenges continue to be a barrier to wider use of CDTM programs.

**Index terms:** Billing; Certification; Clinical pharmacists; Collaborative drug therapy management; Data collection; New Mexico; North Carolina; Pharmaceutical services; Pharmacy, clinical; Prescribing; Reimbursement

**Am J Health-Syst Pharm.** 2011; 68:2341-50

Collaborative drug therapy management (CDTM) entails an agreement between a physician and a pharmacist wherein a pharmacist may initiate, modify, and continue medication regimens, order related laboratory tests, and perform patient assessments under a defined protocol.<sup>1</sup> Such physician



MATTHEW MURAWSKI, PH.D., is Associate Professor of Pharmacy Administration, and KRISTIN R. VILLA, PHARM.D., is Graduate Teaching Assistant, Department of Pharmacy Practice, College of Pharmacy and Pharmaceutical Sciences, Purdue University, West Lafayette, IN. ERNEST J. DOLE, PHARM.D., PHC, BCPS, FASHP, CDE, is Staff Pharmacist III, Department of Clinical Pharmacy, University of New Mexico Hospitals, Albuquerque, and Associate Clinical Professor, College of Pharmacy, University of New Mexico Health Sciences Center, Albuquerque. TIMOTHY J. IVES, PHARM.D., M.P.H., BCPS, FCCP, CPP, is Professor of Pharmacy and Adjunct Professor of Medicine, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill. DALE TINKER is Executive Director, New Mexico Pharmacists Association, Albuquerque. VINCENT J. COLUCCI, PHARM.D., BCPS (AQ-CARD), CPP, is Associate Professor, Department of Pharmacy

Practice, Skaggs School of Pharmacy, College of Health Professions and Biomedical Sciences, University of Montana, Missoula. JEFFREY PERDIEW, PHARM.D., is Staff Pharmacist, Good Samaritan Hospital, Vincennes, IN; at the time of writing, he was a student at the College of Pharmacy and Pharmaceutical Sciences, Purdue University.

Address correspondence to Dr. Murawski at the Department of Pharmacy Practice, College of Pharmacy and Pharmaceutical Sciences, Purdue University, 575 Stadium Mall Drive, R. Heine Pharmacy Building, Room 502, West Lafayette, IN 47907 (murawski@purdue.edu).

The authors have declared no potential conflicts of interest.

Copyright © 2011, American Society of Health-System Pharmacists, Inc. All rights reserved. 1079-2082/11/1202-2341\$06.00. DOI 10.2146/ajhp110351

An audio interview with one of the authors, which supplements the information in this article, is available on *AJHP's* website at [www.ajhp.org/site/misc/podcasts.xhtml](http://www.ajhp.org/site/misc/podcasts.xhtml).

and pharmacist collaboration was first introduced by the Indian Health Service in the 1960s. Originally limited to federal facilities, CDTM now occurs in many settings, including private hospitals, clinics, and physician offices<sup>1,2</sup>; state legislation and attendant regulations authorizing pharmacists to engage in some form of CDTM have facilitated that expansion. Washington, in 1979, was the first state to allow pharmacists to prescribe under a protocol agreement.<sup>2</sup> In 2002, when the American College of Clinical Pharmacy created its position statement on CDTM, 38 states permitted pharmacists some form of CDTM authority within their scope of practice.<sup>1</sup> In most states, the privileges granted to pharmacists under the governing pharmacy practice acts were and continue to be distinctly limited. However, in two states, New Mexico and North Carolina, legislators extended much broader privileges to pharmacists.

In 1993, the New Mexico legislature passed the Pharmacist Prescriptive Authority Act (PPAA), allowing pharmacists to enter into collaborative practice agreements with physicians.<sup>3</sup> A new designation, Pharmacist Clinician, was created to describe licensed pharmacists who had completed additional training requirements, including training in diagnosis and physical assessment equivalent to that of physician assistants.<sup>2,4</sup> Under the PPAA, certified Pharmacist Clinicians may register for a personal Drug Enforcement Administration (DEA) number and apply for prescriptive authority under the supervision of a physician according to a collaborative practice protocol.<sup>5,6</sup>

In 2000, North Carolina extended similar prescriptive authority to

pharmacists via the enactment of the Clinical Pharmacist Practitioner Act (CPPA), under which a licensed pharmacist approved by the state's board of pharmacy and board of medicine may enter into a CDTM agreement with a physician under a written agreement. As in New Mexico, pharmacists in North Carolina who hold the Clinical Pharmacist Practitioner designation have prescriptive authority and may register for a DEA number.<sup>2,7</sup> More recently, in 2010, Montana enacted legislation modeled after the legislation enacted in New Mexico and North Carolina. In addition, five other states (California, Massachusetts, Minnesota, North Dakota, and Washington) allow pharmacists to obtain a DEA number.<sup>2</sup>

Similar initiatives have occurred outside the United States. In 2003, the United Kingdom expanded pharmacist-prescribing powers. Pharmacists may obtain prescribing privileges after the completion of a training program recognized by the National Health Service (NHS) and are designated as Pharmacist Supplementary Prescribers.<sup>8</sup> As of 2005, less than 2% of the 44,951 registered U.K. pharmacists had obtained prescriber status.<sup>9</sup> In a study published in 2010, Baqir and Smith<sup>10</sup> found that Pharmacist Supplementary Prescribers lacked a defined prescribing role, were unable to independently prescribe controlled medications, and had difficulty showing financial benefits to their organizations. In a related study, Baqir et al.<sup>11</sup> noted that the skill set of pharmacist prescribers was not being used to the fullest degree despite the fact that they are legally recognized as "midlevel" providers throughout NHS and receive reimbursement as such.<sup>8,9</sup>

Unfortunately, while U.S. pharmacists with advanced-practice designations have more prescriptive privileges than "traditional" pharmacists (i.e., those without such designations), they do not enjoy

the official provider status extended to their counterparts in the United Kingdom. Moreover, in both countries, advanced-practice pharmacists often find that obtaining reimbursement for their nondispensing services is every bit as difficult as it is for traditional pharmacists.

In the United States, the reality is that pharmacists of any level of training are still not recognized as midlevel providers (for most services) by the majority of insurance companies and federal programs, including Medicare Part B.<sup>12</sup> In 2004, a congressional bill (H.R. 4724) that would have implemented payments for clinical pharmacy services provided by Pharmacist Clinicians or Clinical Pharmacist Practitioners was introduced<sup>13</sup>; the bill was reintroduced in 2008 as H.R. 5780.<sup>14</sup> In 2010, another bill (H.R. 5389) that proposed a framework for pharmacists to receive payments for clinically oriented services was introduced<sup>12,15</sup>; if enacted, the Medicare Clinical Pharmacist Practitioner Services Coverage Act of 2010 would have permitted pharmacists with advanced-practice designations to bill Medicare Part B as midlevel providers at 85% of the physician reimbursement rate in a manner similar to the mechanism for payment of Pharmacist Supplementary Prescribers in the United Kingdom. All three bills were introduced in Congress and referred to the House Ways and Means Subcommittee on Health, but all versions failed to progress and died in committee.<sup>13-15</sup>

Currently there is a small population of pharmacy practitioners who have pursued the appropriate training, obtained the Pharmacist Clinician or Clinical Pharmacist Practitioner designation, and enjoy prescribing privileges comparable to those held by U.K. pharmacist prescribers—but they have not been granted status as providers as a mechanism of reimbursement. The purposes of the study described

here were to investigate the practice characteristics and reimbursement methods of pharmacists certified as Pharmacist Clinicians or Clinical Pharmacist Practitioners, their opinions regarding the benefits of those designations, and the barriers to wider implementation of the advanced-practice model; and to explore their knowledge and opinions of the potential impact of H.R. 5780, the bill under consideration at the time the study was completed.

## Methods

**Description of questionnaire.** A questionnaire was created in order to gather information on the practice environment of Clinical Pharmacist Practitioners and Pharmacist Clinicians. The questionnaire consisted of 61 items (27 multiple-choice items and 34 free-response items). Free-response items were used extensively in an attempt to avoid constraining responses.

The multiple-choice items addressed four major categories: site characteristics, practitioner characteristics, practitioner perceptions, and knowledge of H.R. 5780. Questionnaire items about pharmacists' practice sites elicited information on the duration of current collaborative practice protocols, disease states managed, billing procedures, and site responsibilities. The practitioner characteristics assessed included the dates of licensure and advanced-practice certification, education and training, and type of practice site. The evaluated practitioner perceptions included the respondents' views on the requirements for justification of their advanced-practice position, the satisfaction of clinicians and administrators with the care and services provided, the benefits of their services to patients and organizations, and the demand for their services and the need for additional advanced-practice clinicians in their area. Finally, participants were asked if they were aware of H.R. 5780, if

they would write their representative in support of it, and how the bill might affect them if passed.

The free-response items addressed similar issues and concerns but allowed respondents to elaborate, therefore eliciting more information than the multiple-choice items. For example, the respondents could estimate how much money they helped a patient save in one month, the approximate revenue generated through reimbursement of their services, specific information on collaborative practice protocols, the costs of obtaining and maintaining an advanced-practice designation, and the effectiveness and acceptance of their services. Free-response questions elicited information on barriers to implementation of their services, as well as advice regarding pitfalls to avoid when implementing advanced-practice programs and ways to make such programs effective.

**Respondent and data collection.** In September and October 2008, the New Mexico and North Carolina boards of pharmacy were contacted and asked to provide the names and addresses of all certified advanced practitioners; 189 names and addresses were obtained.

The questionnaire was administered via direct mail using a modified Dillman method.<sup>16</sup> In November 2008, the 189 prospective respondents were notified by postcard that they would soon receive a survey. A few weeks later the questionnaire was sent via first-class mail to the targeted pharmacists along with a hand-signed cover letter explaining the purpose of the study and a pre-addressed, postage-paid envelope to use in returning the completed questionnaire. Four weeks after the initial mailing, nonresponders were sent a reminder mailing.

**Data analysis.** Information collected through the survey was entered into Microsoft Excel (Microsoft Corporation, Redmond, WA), with quantitative responses numerically

coded and free-text responses transcribed. Descriptive statistics for each quantitative item were calculated using Stata version 11 (StataCorp LP, College Station, TX). For quantitative questions with an "other" response option, all responses were reviewed by the investigators in order to ensure the response was conceptually unique. Responses regarding practice settings and disease state management were consolidated on a functional basis. For instance, with regard to practice sites, the responses "family medicine clinic" and "ambulatory care clinic" were consolidated because those types of practice site were considered to be functionally equivalent despite differences in funding. A similar approach was taken in grouping responses to questionnaire items about practice activities; for example, a response of "medication management" was considered to be functionally equivalent to a response of "helping patients secure medication assistance and benefits."

Thematic content analysis of free-text responses was performed. For example, one survey item asked, "In what ways do you see yourself as being different from a registered (non-Pharmacist Clinician/Clinical Pharmacist Practitioner) pharmacist?"; responses such as "more direct patient care," "more respect from nonpharmacy colleagues," and "more up to date on areas of practice" were dually categorized under the theme of direct patient care and the theme of functional confidence and competence. Thus, individual responses could include more than one theme. The study investigators reviewed all responses and themes for agreement, and any discrepancies were resolved via discussion. The response count for each theme was then used to determine which ideas were the most prevalent among all the responses.

## Results

**Respondent characteristics.** Sur-

veys were mailed to 122 practitioners in New Mexico and 67 practitioners in North Carolina. There were 64 respondents, a response rate of 34%; by state, the response rate was 23.8% ( $n = 29$ ) in New Mexico and 52.2% ( $n = 35$ ) in North Carolina. The respondents' year of licensure ranged from 1971 to 2008, and the year in which they earned an advanced-practice designation ranged from 1994 to 2008 (one response indicating 1978 was not included in the data analysis, as neither state recognized such a designation at that time). On average, the responding practitioners received a pharmacy license 11 years before obtaining an advanced-practitioner designation.

Of the 64 respondents, 13 (20.3%) had obtained only a bachelor of science degree in pharmacy, 20 (31.3%) had obtained only a doctor of pharmacy (Pharm.D.) degree, and 31 (48.4%) had obtained both degrees (Table 1). Twenty-three respondents (35.9%) reported the completion of a one-year residency, while 2 respondents indicated another form of postgraduate education (respectively, a master of science degree in pharmacy and a fellowship). When asked about the initial education and training requirements needed to obtain an advanced-practice designation in their state, only 15

respondents (23.4%) gave answers in keeping with the requirements listed in the North Carolina or New Mexico pharmacy regulations (appendix).<sup>17,18</sup> Responses that were not fully consistent with the applicable pharmacy board requirements often did not give details of how the required number of preceptorship hours were obtained or stated that such training was included in the Pharm.D. curriculum completed. When asked about the number of continuing-education (CE) hours per year needed to maintain their status as advanced practitioners, 34 respondents (37.5%) gave responses consistent with applicable state requirements (35 CE hours in North Carolina and 10 CE hours in New Mexico, in addition to the CE hours required for pharmacist licensure). Responses that were not consistent with known current requirements often contained errors regarding the hours required for pharmacy licensure and for earning an advanced-practice designation.

**Practice sites.** When asked to select a practice-site category, 21 respondents (32.8%) indicated community practice, 23 (35.9%) indicated institutional practice, and 19 (29.7%) indicated that their practice site fell outside of the traditional community or institutional practice.

"Other" sites included ambulatory care clinic ( $n = 8$ , 12.5%), outpatient clinic ( $n = 5$ , 7.8%), government clinic ( $n = 3$ , 4.7%), "mixed" community and institutional practice ( $n = 1$ , 1.6%), and health plan ( $n = 1$ , 1.6%); one respondent indicated "other" but did not specify a practice site. When asked to classify their practice sites more specifically (more than one choice was allowed), the responding pharmacists most often indicated practicing in hospital clinics ( $n = 15$ , 23.4%) and physician offices ( $n = 15$ , 23.4%), followed by freestanding clinics ( $n = 9$ , 14.1%), "other" ( $n = 8$ , 12.5%), hospitals ( $n = 7$ , 10.9%), "community" ( $n = 5$ , 7.8%), Veterans Affairs hospitals ( $n = 3$ , 4.7%), and managed care organizations ( $n = 2$ , 3.1%); "other" responses included federal facilities ( $n = 2$ , 3.1%) and health centers ( $n = 2$ , 3.1%).

**Practice activities.** As part of the survey, respondents were given a list of activities commonly performed by advanced practitioners and asked to estimate the percentage of time (from 0% to 100%) they spent engaged in those activities during a typical workday. On average, respondents indicated spending 35.0% of their time in patient consultation, 16.4% in teaching, 14.2% in administration or management, 14.2% in medication review, 10.0% in note dictation, 9.6% in diagnosis, 9.0% in laboratory testing activities, 8.4% in chart review, 7.8% in research, 6.6% in providing drug information, 4.1% in pharmacy and therapeutics committee duties, and 3.1% in activities pertaining to prior authorization.

**Reimbursement methods.** Sixty-four percent ( $n = 41$ ) of the respondents indicated that their organization bills for the services they provide; when asked to indicate which entities were billed for their services, "insurance companies" was the most common response ( $n = 34$ ), followed by Medicare ( $n = 24$ ), self-pay patients ( $n = 24$ ), Medicaid ( $n = 22$ ), internal billing departments ( $n = 16$ ),

Table 1.  
Education, Postgraduate Training, and Certifications of Survey Respondents ( $n = 64$ )<sup>a</sup>

Education or Designation	No. (%)
Doctor of pharmacy degree	51 (79.7)
Bachelor of science degree in pharmacy	44 (68.8)
Residency	23 (35.9)
Board certification	15 (23.4)
Certified Diabetes Educator	14 (21.9)
Certified Geriatric Pharmacist	2 (3.1)
Board-Certified Pharmacotherapy Specialist	2 (3.1)
Certified Anticoagulation Care Provider	2 (3.1)
National Clinical Pharmacy Specialist (IHS training)	2 (3.1)
Master of science degree in pharmacy	1 (1.6)
Fellowship	1 (1.6)

<sup>a</sup>IHS = Indian Health Service.

and state health plans ( $n = 1$ ). The most commonly reported method of billing for procedures was the use of Common Procedural Terminology evaluation and management (E&M) codes 99211, 99212, 99213, and 99214 ( $n = 37$ ); other reported methods were billing for “incident-to” fees ( $n = 13$ ), immunization fees ( $n = 6$ ), facility fees ( $n = 4$ ), pharmacy consultation fees ( $n = 1$ ), fees for patient visits based on time and effort ( $n = 1$ ), and fees relating to medication therapy management E&M codes 99605, 99606, and 99607 ( $n = 1$ ). Sixteen respondents estimated the total amount of money billed for their services each month; their estimates ranged from \$120 to \$24,000, with an average of \$6,500 per month.

Six respondents estimated the amount of money billed to Medicaid each month, and the estimates ranged from \$74 to \$6,700, with an average of \$2,712 per month. Forty-three respondents indicated that they or someone else within their organization tracked the revenue generated from their services. Seven respondents estimated the amount of revenue generated from their services; their estimates ranged from \$1,500 to \$18,400 per month, with an average of \$7,379 per month.

**Protocol characteristics.** Fifty-one respondents (79.7%) indicated that their organization had a program in place that made use of their status as an advanced practitioner. Respondents indicated that one or more protocols allowing collaborative practice had been in place at their practice site for periods ranging from 6 to 204 months (average, 60 months). When asked about specific aspects of protocols, 21 respondents (32.8%) indicated that they had prescribing authority, 14 (23.3%) indicated that the supervising physician was required to review a percentage of their charts and meet with them on a regular basis, and 8 (12.5%) indicated that countersigning of

their notes and prescriptions by the supervising physician was required. Eight respondents (12.5%) indicated that they could order laboratory tests and other procedures to help manage patients, 8 (12.5%) indicated that they were required to involve the physician in complicated cases and cases outside their scope, 4 (6.3%) indicated that the governing protocol was specific to a particular disease state, 3 (5.5%) indicated that protocol-specified guidelines followed the North Carolina Board of Pharmacy guidelines (the respondents did not provide specific details), and 1 (1.6%) indicated that the protocol required the documentation of all patient encounters.

The survey respondents reported involvement in managing a wide variety of disease states: diabetes ( $n = 37$ , 57.8%), coagulation or lipid disorders ( $n = 35$ , 54.7%), hypertension ( $n = 30$ , 46.9%), asthma or chronic obstructive pulmonary disease (COPD) ( $n = 15$ , 23.4%),

pain ( $n = 13$ , 20.3%), and heart failure ( $n = 11$ , 17.2%). Eighteen respondents (28.1%) indicated involvement in smoking cessation, and a number of respondents indicated involvement in managing “other” disease states and clinical situations. Respondents reported a total of 21 disease states or clinical situations that they managed in their practice (Table 2).

**Patient and physician perceptions.** Respondents were asked to rate the extent to which patients and the physicians they worked with might view pharmacists with an advanced-practice designation as different from traditional pharmacists on a five-point scale (not at all, a little, not sure, somewhat, a great deal). With regard to patient perceptions, 23.4% ( $n = 15$ ) of respondents indicated their view that patients see them as somewhat different from traditional pharmacists, while 59.4% ( $n = 38$ ) indicated that patients see a great deal of difference. When rating the perceptions of physicians, 20.3%

Table 2.  
“Other” Disease States and Clinical Situations Managed by Survey Respondents

Disease State or Clinical Situation	No. (%)
Polypharmacy	4 (6.3)
Medication assistance (including benefits)	4 (6.3)
All diseases (open protocol)	3 (4.7)
Family practice–primary care	3 (4.7)
Migraine	2 (3.1)
Mental health	2 (3.1)
Oncology	2 (3.1)
Immunizations	2 (3.1)
Hematology–anemia	2 (3.1)
Thyroid	2 (3.1)
Obesity–wellness	2 (3.1)
Intensive care unit	1 (1.6)
Inpatient	1 (1.6)
Osteoporosis	1 (1.6)
Metabolic syndrome	1 (1.6)
Aminoglycosides	1 (1.6)
Internal medicine	1 (1.6)
Cardiology	1 (1.6)
Upper respiratory infections	1 (1.6)
Urinary tract infections	1 (1.6)
Hospice	1 (1.6)

( $n = 13$ ) of respondents were of the opinion that physicians see them as somewhat different from traditional pharmacists, and 70.3% ( $n = 45$ ) indicated that physicians see a great deal of difference.

The survey respondents were also asked about their own perceptions of differences between advanced-practice and traditional pharmacists, and their responses were consolidated into seven thematic categories. The pharmacists indicated their view that there were differences in autonomy ( $n = 33$ , 51.6%), direct patient care ( $n = 14$ , 21.9%), functional competence and confidence ( $n = 13$ , 20.3%), lack of medication dispensing ( $n = 6$ , 9.4%), collaborative practice ( $n = 5$ , 7.8%), certifications and licensure ( $n = 4$ , 6.3%), and documentation requirements ( $n = 2$ , 3.1%). Two respondents indicated that they saw no differences between their practice and that of a traditional pharmacist.

The survey also included a question about how respondents believed their relationships with physicians might differ from those of traditional pharmacists. The response categories, and the number and proportion of respondents indicating agreement, were as follows: pharmacist viewed as colleague ( $n = 18$ , 28.1%), physician confidence in abilities ( $n = 11$ , 17.2%), physician recognition of additional training ( $n = 9$ , 14.1%), use for knowledge other than drug information and medication management ( $n = 6$ , 9.4%), more face-to-face interaction with physician ( $n = 4$ , 6.3%), skills used more frequently to resolve patient-care issues ( $n = 3$ , 4.7%), physician willingness to collaborate ( $n = 2$ , 3.1%), and pharmacists viewed as problem solvers ( $n = 2$ , 3.1%). Six respondents indicated that there was no difference between their own relationships with physicians and those of a traditional pharmacist.

Asked to rate the level of satisfaction with their services among

different groups, 90.6% ( $n = 58$ ) of respondents indicated that patients were “a great deal” satisfied with services provided by advanced-practice pharmacists and 84.4% ( $n = 54$ ) indicated that physicians were “a great deal” satisfied with their services. Half of the respondents ( $n = 32$ ) were of the opinion that their organization’s administration was “a great deal” satisfied with their services, and 28.1% ( $n = 18$ ) felt their organization’s administration was “somewhat” satisfied.

**Impact on costs and outcomes.** When asked about their views on the benefits of the services they provided, 53 respondents (82.8%) indicated that their services were saving money for patients, and 59 respondents (92.2%) indicated that their services were decreasing costs for the U.S. health care system. Twenty-four respondents (37.5%) estimated how much money they saved patients in a typical month. Approximately half estimated a total of \$1,189 for all patients seen in a month; the remaining respondents indicated that they saved approximately \$249 per patient seen during the month but did not give an estimate of the number of patients seen.

Ten respondents estimated the monthly cost-saving impact of their activities for the U.S. health care system, with an average estimate of \$37,200. Although few respondents gave an exact estimate of the amount of money saved to the health care system, 61 respondents answered if they felt it was less than, about equal, or greater than their salary with 7, 12, and 42 agreements, respectively. Respondents also estimated that their services, if provided by a physician, would cost on average 69% more than when provided by an advanced-practitioner pharmacists (range, 0–500%). When asked if their functions improve patient outcomes, 85.9% ( $n = 55$ ) of respondents felt their services were improving outcomes “a great deal.”

**Demand for services.** Respondents were asked to rate the demand for their services on the previously mentioned five-point scale; 54.7% ( $n = 35$ ) felt there was “a great deal” of demand; 25% ( $n = 16$ ) felt their services were “somewhat” in demand, 4.7% ( $n = 3$ ) indicated they were “unsure,” 3.1% ( $n = 2$ ) indicated there was “a little” demand, and 9.4% ( $n = 6$ ) felt there was no demand. In response to a related question, respondents indicated that the demand for advanced-practice pharmacists’ services in their area required additional advanced practitioners. Thirty-seven respondents (57.8%) felt the need for more was great, 13 (20.3%) felt the current number was just right, and 11 (17.2%) felt there was no need for more advanced practitioners in their area.

**Program justification.** Despite the generally expressed view that the services of advanced-practice pharmacists are cost-effective, improve patient outcomes, and are in demand, some respondents ( $n = 24$ , 37.5%) indicated a need to justify their position in order to continue their collaborative practice activities. Methods of justification cited by survey respondents included reporting cash-flow metrics ( $n = 11$ , 45.8%), providing cost-avoidance estimates ( $n = 17$ , 70.8%), and the use of other metrics ( $n = 4$ , 16.7%) such as clinical outcomes and benefits to the organization in the areas of research and administration. When asked to rank the importance of a number of factors, or “arguments,” for the continuation of advanced-practice activities, the improvement of patient outcomes was ranked first by the majority of responding survey participants ( $n = 15$ , 62.5%), followed by clinical impact ( $n = 8$ , 33.3%), revenue generation ( $n = 6$ , 25.0%), and cost avoidance ( $n = 5$ , 20.8%).

**Program discontinuation.** The survey participants were asked if their institution formerly had a program in place to capitalize on

their status as an advanced practitioner that had been discontinued; 10 respondents answered in the affirmative. When the pharmacists were asked about the reasons for program discontinuation, their responses were in four main thematic categories: inadequate promotion of the clinic's services ( $n = 2$ ), financial reasons ( $n = 4$ ), personal issues ( $n = 2$ ), and organizational downsizing ( $n = 3$ ); one respondent cited multiple factors. Eight respondents indicated that they had not made full use of their advanced-practice designation for periods ranging from 1 to 108 months, generally due to "personal preference" or "employer reasons."

**Challenges and barriers.** The survey included questions regarding challenges in the implementation of programs structured around the capabilities of advanced-practice pharmacists, as well as factors in successful program implementation, at their institutions. Regarding implementation barriers, the respondents cited a wide range of factors, which were grouped into nine thematic categories: issues with acceptance ( $n = 15$ , 23.4%), reimbursement challenges ( $n = 12$ , 18.8%), administrative issues ( $n = 6$ , 9.4%), patient acceptance and awareness ( $n = 3$ , 4.7%), lack of previous program experience ( $n = 2$ , 3.1%), legislation or regulations ( $n = 2$ , 3.1%), cost issues ( $n = 2$ , 3.1%), space issues ( $n = 1$ , 1.6%), and time constraints ( $n = 1$ , 1.6%).

In response to a question regarding problems they had encountered in the development or implementation of new clinically oriented programs, the surveyed pharmacists cited various pitfalls to avoid in eight broad categories: inadequate planning ( $n = 10$ , 15.6%), poorly chosen disease concentration ( $n = 5$ , 7.8%), "turf disputes" ( $n = 5$ , 7.8%), improper billing methods ( $n = 3$ , 4.7%), performance of extra duties as a part of normal pharmacy practice ( $n = 3$ , 4.7%), supervisors' lack of clinical experience ( $n = 3$ , 4.7%), financial

problems ( $n = 1$ , 1.6%), and failure to use the facility's electronic medical record ( $n = 1$ , 1.6%).

Key factors in program success cited by survey participants included provider support and "buy-in" ( $n = 26$ , 40.6%), the reporting of health outcomes data ( $n = 11$ , 17.2%), the reporting of financial metrics ( $n = 9$ , 14.1%), patient acceptance and buy-in ( $n = 9$ , 14.1%), administrative support ( $n = 6$ , 9.4%), proper workload balance ( $n = 4$ , 6.3%), a demonstrated need for services ( $n = 4$ , 6.3%), the personal drive of the pharmacist ( $n = 4$ , 6.3%), cost neutrality for the institution ( $n = 2$ , 3.1%), training and certification ( $n = 2$ , 3.1%), a manageable number of targeted disease states ( $n = 2$ , 3.1%), and a balanced patient caseload ( $n = 1$ , 1.6%).

**Program recommendations.** Respondents were also asked to offer ideas on setting up a program that would help make it as effective as possible. Recommendations offered by survey participants (grouped into 11 thematic categories) included adequate financial planning and revenue generation ( $n = 10$ , 15.6%); relationship building with physicians, administrators, and other health care professionals ( $n = 10$ , 15.6%); proper planning for implementation ( $n = 9$ , 14.1%); monitoring of program outcomes ( $n = 5$ , 7.8%); proper documentation ( $n = 3$ , 4.7%); staff training ( $n = 3$ , 4.7%); marketing and promotion of services ( $n = 2$ , 3.1%); judicious selection of chronic disease states to treat ( $n = 1$ , 1.6%); continuous quality improvement ( $n = 1$ , 1.6%); involvement in the education of pharmacy school students ( $n = 1$ , 1.6%); and the pharmacist's communication skills ( $n = 1$ , 1.6%).

**Knowledge of legislation.** Asked if they were aware of H.R. 5780, which was under congressional consideration at the time of the survey, 75% ( $n = 48$ ) of the respondents indicated awareness of the bill. When asked if they would have advised their legislators to vote for the bill if they had

been prompted to do so before the bill died in committee, 93.8% ( $n = 60$ ) of the respondents indicated that they would have urged their lawmakers to support the bill. Respondents were also asked to predict the likely impact of possible future passage of such a bill on their practice using a 13-point scale, with scores ranging from -6 (strong negative impact) to +6 (strong positive impact); 46.9% ( $n = 30$ ) of the respondents predicted a strong positive impact (+6) on their practice. None of the respondents felt the bill would have no impact on their practice, and 1 respondent felt it would have a strong negative impact.

## Discussion

The overall response rate for this survey was 34%, but there was a substantial difference in the response rates of pharmacists in New Mexico (23.8%) and pharmacists in North Carolina (52.2%). One possible explanation for the widely divergent response rates relates to the manner in which the survey participants earned an advanced-practice designation. Pharmacists in North Carolina who hold the Clinical Pharmacist Practitioner designation have, in effect, elected to obtain additional training to become advanced practitioners. In contrast, at the time the survey was conducted, all new graduates of the sole college of pharmacy in New Mexico could obtain the training required for the Pharmacist Clinician designation by completing their Pharm.D. coursework; consequently, there may be a large number of pharmacists in the state who possess but do not actively use their advanced-practice designation to engage in collaborative practice arrangements, and such pharmacists might have been less likely to participate in the survey. Another possible factor underlying the relatively low survey response rate among New Mexico pharmacists might have been the inability of some Pharmacist Clinicians to arrange a collaboration enabling

them to use their advanced-practice skills.

Currently, the number of New Mexico Pharmacist Clinicians with protocols in place is less than 75 (New Mexico Pharmacists Association, personal communication, 2011 Aug 15). It may be that, in the absence of provider status, some as yet unknown factor is limiting the number of collaborative practice sites available in each state; thus, the lower survey response rate among New Mexico pharmacists might have reflected a large number of advanced-practice pharmacists pursuing a small number of physicians willing to engage in collaborations. That there are roughly twice as many advanced-practice pharmacists in New Mexico as there are in North Carolina even though New Mexico's population is only about one fifth of North Carolina's population would support that hypothesis.

In the survey described here, the reported year of pharmacist licensure ranged from 1971 to 2008, and advanced-practice designations were obtained from 1994 to 2008. Assuming a traditional graduation age of 23–24 years, it is clear that many pharmacists obtained an advanced-practice designation years after becoming licensed. The age distribution of the surveyed pharmacists suggested that those designations attract a certain type rather than a certain generation of pharmacist. The survey results indicated that the average interval between licensure and obtaining an advanced-practice designation was 11 years, which suggests that many of the pharmacists obtaining the designations are seasoned practitioners who have evaluated the pharmacy practice environment and have made an educated choice to obtain the designations based on a desire to further their practices. Additionally, based on information supplied by respondents, less than 40% chose to complete some form of postgraduate educa-

tion; this illustrates that a residency or other postgraduate training is not a necessity for obtaining an advanced-practice designation and furthering a pharmacy practice through that designation.

The examination of pharmacist-provided estimates of time spent performing certain functions led to one common finding: that the primary practice function of the survey participants involved direct patient contact.

The unexpected distribution of practice-setting classifications may also be attributed to pharmacists gravitating toward settings that increase the differentiation between themselves and traditional pharmacists, as well as settings in which they are more likely to experience increased patient and physician satisfaction with their services. The majority of respondents clearly expressed the view that physicians and patients perceived them as fulfilling a different role than that of traditional pharmacists; furthermore, they perceived themselves as relating to physicians at a more collegial level and as having different training and considerably more autonomy than traditional pharmacists.

The respondents also indicated that their services were in high demand and that patients and physicians were generally satisfied with the services they provided. However, the perceived level of satisfaction of institutional or organizational administrators was substantially lower. This discrepancy may relate to the issue of billable status, arguably a matter of far larger concern to administrators than to advanced-practice pharmacists' other constituencies.

Judging by the survey results, most advanced-practice pharmacists (79.7%) were operating under protocol, with the degree of autonomy ranging from full prescribing authority to a requirement that the pharmacist's notes and orders be cosigned by the attending physician. Overall, approximately one half of all respon-

dents indicated that they had considerable prescribing authority. Disease states covered by CDTM protocols ranged broadly but included common disorders (e.g., diabetes, hyperlipidemia, hypertension, COPD) that involve "high-intensity" patient populations requiring substantial interaction time and relatively low levels of billable claims. It can be inferred from the survey results that advanced-practice pharmacists may be allowing physicians to reduce the amount of time allocated to such high-input, low-billing populations, thereby reducing overall costs to the health care system while enabling physicians to spend more time on more intensive patient cases.

Though survey participants indicated that the disease states covered by CDTM protocols generally offered limited billing opportunities, the majority of respondents (64%) were attempting to generate revenue for their organizations by billing for the services they provided, typically by using E&M codes or by billing "incident-to" fees; however, it is clear that organizations were using a variety of reimbursement mechanisms. Respondents estimated that, on average, they were billing for fees of \$6500 per month for their services. This mean billing amount was less than the average monthly salary of a pharmacist, suggesting that the advanced-practice pharmacists were operating at a loss. The implication is that these pharmacists add value to the organization outside of revenue.

The survey findings indicated a strong sense among advanced-practice pharmacists that their activities save money for patients and the health care system. According to the estimates given by respondents, the activities of advanced-practice pharmacists save the health care system an amount of money two to three times greater than their annual salary, in part because their services were estimated (by some survey respondents) to cost the health care system or

patient an average of 69% less when provided by a pharmacist rather than a physician. However, more than one third of respondents indicated a need to justify their position in order to continue in that position. The majority of those who indicated a need to justify their position reported doing so using cash-flow or cost-avoidance metrics; this suggested that the continuation of pharmacists' advanced-practice activities may often be a fiscal issue and not an issue of clinical impact or demand. Some respondents expressed the view that a larger number of advanced-practice pharmacists are needed in their community or organization.

Despite evidence of improved patient outcomes and demand for their services, several respondents indicated that programs structured around pharmacists' advanced-practice capabilities had been discontinued, and approximately 10% of the respondents indicated that they were not using their advanced-practice designation to advance their practice at the time of the survey. Not surprisingly, the barriers to program success most often cited by the survey participants were acceptance, administrative, and reimbursement issues.

The survey respondents acknowledged both benefits of and barriers to their advanced-practice activities. The cited benefits included increased autonomy and increased interaction with providers and patients; cited barriers related to lack of acceptance by other providers and the inability to bill for services and receive adequate reimbursement. In addition, billing methods were found to be different across organizations, with varying levels of reimbursement success. Difficulties with billing and the respondents' desire for more uniform billing procedures were apparent in their knowledge of H.R. 5780, which called for implementation of a uniform billing procedure under Medicare Part B. Respondents were both highly aware of and highly in fa-

vor of H.R. 5780, which proposed the creation of a federal mechanism by which advanced practitioners would be recognized as midlevel providers and thus be positioned to develop a dependable new revenue stream.

Overall, the most important issue identified in the survey results was reimbursement for services. The respondents indicated that they were primarily involved in managing disease states associated with limited billing opportunities; therefore, it follows that any opportunity to bill for pharmacist-provided services is important to the continuation of their advanced-practice collaboration. Respondents indicated there were numerous methods for billing, which led to a wide variation in estimates of amounts billed for services and the reported revenue generated. Many of the advanced-practice pharmacists apparently were not generating revenue sufficient to cover their own salary and were therefore operating at a loss. Respondents indicated that the inability to bill and receive adequate reimbursement for their services was a major issue and should be considered before the initiation of advanced-practice protocols.

Among several important limitations of this project, the survey response rate was only 34%; while that is comparable to the response rates in other surveys of pharmacists, it is questionable whether the results can be viewed as representative of the characteristics and experiences of the entire population of advanced-practice pharmacists. In addition, the wide variation in the response rates of New Mexico and North Carolina pharmacists may have introduced sampling bias.

Another limitation of this project was that the survey participants often added additional (i.e., unrequested) information to responses in order to help explain their answer or to promote their practice. While this added insight into the respondents' practice characteristics, it often necessitated

the creation of additional categories of responses and complicated the in-depth interpretation of the results.

We found that Clinical Pharmacist Practitioners and Pharmacist Clinicians were well regarded, in high demand, and providing important services; this suggests that under certain circumstances, they can provide patient care comparable to that of physicians and at a lower cost to the health care system. Unfortunately, the survey results suggest that these practitioners were often struggling to generate a revenue stream adequate to justify their employment. Unless some form of reimbursement through governmental channels is enacted, the model of advanced-practice pharmacy is not likely to succeed; this echoes the circumstances faced by practitioners in the United Kingdom.<sup>19-21</sup> Nevertheless, creating a new designation for U.S. pharmacists who want to practice under a collaborative protocol is a growing legislative trend in the states.<sup>22</sup> In our opinion, the best chance for further development of the advanced-practice model will arise if and when a state decides to use its administrative control to enact, for the purposes of the state's Medicaid program, legislation that recognizes pharmacists with advanced-practice designations as midlevel providers eligible for reimbursement at some fraction of the current physician rate. This scenario will provide the opportunity to demonstrate the large-scale fiscal impact of this model of practice, which may then lead to widespread adoption of the model in other states and, eventually, across the country at the federal level.

## Conclusion

Pharmacists with advanced-practice designations are providing clinical services in various settings under collaborative practice arrangements that include prescribing privileges. Despite growing patient and physician acceptance, reim-

bursement challenges continue to be a barrier to wider use of CDTM programs.

**References**

1. Hammond RW, Schwartz AH, Campbell MJ et al. Collaborative drug therapy management by pharmacists—2003. *Pharmacotherapy*. 2003; 23:1210-25.
2. Koch KE. Pharmaceutical care trends in collaborative drug therapy management. *Drug Benefit Trends*. 2000; 12:45-54.
3. Dole EJ. Profession of second lieutenants. *Am J Health-Syst Pharm*. 2002; 59:558-60.
4. Pradel FG, Palumbo FB, Flowers L et al. White paper: value of specialty certification in pharmacy. *J Am Pharm Assoc*. 2004; 44:612-20.
5. Dole EJ, Murawski MM, Adolphe AB et al. Provision of pain management by a pharmacist with prescribing authority. *Am J Health-Syst Pharm*. 2007; 64:85-9.
6. Hammond RW, Dole EJ. The pharmacist clinician: prescriptive authority in New Mexico. [www.amcp.org/data/jmcp/Campus\\_v2\\_594-596.pdf](http://www.amcp.org/data/jmcp/Campus_v2_594-596.pdf) (accessed 2011 Aug 25).
7. Dennis BH, for the North Carolina Association of Pharmacists. An overview of the clinical pharmacist practitioner in NC. [www.ncpharmacists.org/display.cfm?an=1&subarticlenbr=98](http://www.ncpharmacists.org/display.cfm?an=1&subarticlenbr=98) (accessed 2011 Aug 17).
8. Department of Health. Supplementary prescribing by nurses, pharmacists, chiropractists/podiatrists, physiotherapists and radiographers within the NHS in England: a guide for implementation. [www.somed.org/members/ITstudentinfo/ITinfo12.pdf](http://www.somed.org/members/ITstudentinfo/ITinfo12.pdf) (accessed 2011 Aug 25).
9. Hobson RJ, Sewell GJ. Supplementary prescribing by pharmacists in England.

*Am J Health-Syst Pharm*. 2006; 63:244-53.

10. Baqir W, Smith J. Why pharmacist prescribing appears to be floundering. *Br J Clin Pharm*. 2010; 2:150-1.
11. Baqir W, Clemerson J, Smith J. Evaluating pharmacist prescribing across the north east of England. *Br J Clin Pharm*. 2010; 2:147-9.
12. Stubbings J, Nutescu E, Durley SF et al. Payment for clinical pharmacy services revisited. *Pharmacotherapy*. 2011; 31:1-8.
13. Govtrack.us. H.R. 4724: Medicare Clinical Pharmacist Practitioner Services Coverage Act of 2004. [www.govtrack.us/congress/bill.xpd?bill=h108-4724](http://www.govtrack.us/congress/bill.xpd?bill=h108-4724) (accessed 2011 Aug 17).
14. Govtrack.us. H.R. 5780: Medicare Clinical Pharmacist Practitioner Services Coverage Act of 2008. [www.govtrack.us/congress/bill.xpd?bill=h110-5780](http://www.govtrack.us/congress/bill.xpd?bill=h110-5780) (accessed 2011 Aug 17).
15. Govtrack.us. H.R. 5389: Medicare Clinical Pharmacist Practitioner Services Coverage Act of 2010. [www.govtrack.us/congress/bill.xpd?bill=h111-5389](http://www.govtrack.us/congress/bill.xpd?bill=h111-5389) (accessed 2011 Aug 17).
16. Dillman DA. Mail and telephone surveys: the total design method. New York: Wiley-Interscience; 1978:1-33, 160-98.
17. 21 NCAC 46.3101. Clinical Pharmacist Practitioner.
18. 16.19.4.17 NMAC. Pharmacist Clinician.
19. George J, McCaig DJ, Bond CM et al. Supplementary prescribing: early experiences of pharmacists in Great Britain. *Ann Pharmacother*. 2006; 40:1843-50.
20. Cooper RJ, Lymn J, Anderson C et al. Learning to prescribe—pharmacists' experiences of supplementary prescribing training in England. *BMC Med Educ*. 2008; 57:1-8.
21. Tully MP, Latif S, Cantrill JA et al. Phar-

macists' changing views of their supplementary prescribing authority. *Pharm World Sci*. 2007; 29:628-34.

22. Paolini N, Rouse MJ. Scope of contemporary pharmacy practice: roles, responsibilities, and functions of pharmacists and pharmacy technicians. *Am J Health-Syst Pharm*. 2010; 67:1030-1.

**Appendix—Requirements for obtaining advanced-practice designation, by state<sup>17,18</sup>**

**New Mexico**

1. Completion of a 60-hour physical assessment course
2. 150-hour, 300-patient-contact preceptorship supervised by a physician or other practitioner with prescriptive authority, with hours counted only during direct patient interactions
  - a. log of patient encounters submitted with application
  - b. patient encounters completed within two years of application

**North Carolina**

1. Has a certification from the Board of Pharmaceutical Specialties, is a Certified Geriatric Pharmacist, or has completed an American Society of Health-System Pharmacists (ASHP) accredited residency program.
2. Has a Doctor of Pharmacy degree, has three years of clinical experience, and has completed a certificate program in the area(s) covered by the protocol
3. Has a Bachelor of Science in Pharmacy, has five years of clinical experience, and has completed two certificate programs with at least one program in the area(s) covered by the protocol