Evolving practice standards and recent legislative mandates are moving pharmacists into a new practice paradigm of patient educator and drug therapy monitor. A survey was conducted to determine pharmacists’ perceived ability to perform the new roles expected of them. An expert panel developed a list of 165 criteria and standards for pharmacists in their roles of counselor and monitor. A total of 3,145 pharmacists in NABP District IV (Indiana, Illinois, Michigan, Ohio, and Wisconsin) were surveyed to determine their confidence in meeting these standards and criteria. Overall, pharmacists were confident in their abilities to perform the new counseling function but reported 35 nonconfidence items in the broad area of DUR. Demographically, younger pharmacists reported higher confidence than their more experienced peers. Survey results and a list of requested continuing education (CE) topics returned with the surveys are the basis of recommendations to providers of CE.

INTRODUCTION
Pharmacy practice is in a revolution brought about by technical, economic, and social forces which makes some practitioners uncomfortable and brings out a pioneering spirit in others(1,2). Consolidation of health care industry business units, strides in computer and data technology, and legislative mandates are forces challenging pharmacy. Pharmacists are struggling with issues of drug utilization review (DUR), case management, chronic disease monitoring, proper utilization of technicians, and the impact of managed care on practice(3). The profession will have to develop new practice paradigms and standards(4,5). Hepler believes pharmaceutical care is pharmacy’s future as health care evolves and pharmacy matures(6) with all pharmacists achieving the highest practice standard attainable(7). Pharmacists’ effectiveness will then be measured using indicators focused on treatment outcomes(8-10).

Kessler sees pharmacists as members of a health care team disseminating information to all patients to enhance the effectiveness of drug therapy through patient understanding and better compliance and to prevent adverse consequences(11). Pharmacists also will provide information for physicians and other health professionals(12). Hepler suggested that pharmacy must take advantage of the “information revolution” as it moves into the future(13). Other trends that will shape the practice of pharmacy in the coming years include: (i) cultural diversity; (ii) the aging population; (iii) information science; (iv) new drug technology; (v) managed care, and (vi) health care organization and the financing of drug therapy(14).

Coster suggested that the enactment of the Omnibus Budget Reconciliation Act of 1990 (OBRA 90) was a water-
shed event for pharmacy because Congress went on record as supporting the clinical role of pharmacists(15). Enacted to save taxpayer dollars, the law also mandated DUR and patient counseling for Medicaid patients(16). Whatever pharmacy evolves into, the profession must be more involved in managed care in the future. By cooperating in the design and implementation of a patient therapy plan to produce specific, optimal outcomes and monitoring the patient’s response to drug therapy, pharmacists can participate directly in managing patient care(17,18). For most community pharmacists, this is a significant change full of opportunities and responsibilities as embodied in pharmaceutical care(19). Do pharmacists believe they have the knowledge and skills needed?

Providing pharmaceutical care also will mean documenting the pharmacists’ activities(20) as well as patient outcomes. Standards of pharmacy practice are expected to be as dynamic as the new practice of pharmacy itself(21). New technologies must be mastered(22,23). Concerns about pharmacists’ competence and ability to implement patient-centered practices exist both within and outside pharmacy(24,25). To address the barriers to providing clinical services in community (retail) pharmacies, criteria and standards must be established through which pharmacists can demonstrate their knowledge and skills. Simply imposing regulatory requirements does not create availability of services(26). As pharmaceutical care becomes the standard of practice, pharmacists will be retrained to solve the problems they will encounter(27).

Certainly some practice standards have been suggested in OBRA 90(28). Also the National Association of Boards of Pharmacy (NABP) Model Practice Act was developed in response to OBRA 90 and provides additional direction(29). Prior to the enactment of OBRA 90, the American Association of Colleges of Pharmacy (AACP) and the American Pharmaceutical Association (APhA) jointly compiled standards of practice for the profession(30). It is unclear whether these standards were developed to meet all the aspects of the current understanding of patient-centered practice and the requirements for performing DUR and patient counseling.

The problem may be best described by the following questions. What are the criteria and standards (not just legislature mandated requirements) to which pharmacists should be held? Do pharmacists believe they are prepared to perform DUR and to counsel their patients? Do pharmacists believe they have the knowledge and skills required to fulfill their new role as manager of patient therapy? What needs will pharmacists identify which can be addressed by continuing education (CE)?

The objectives of this study were to:
1. identify criteria and standards for the performance of DUR and patient counseling to which pharmacists should be held;
2. assess the perceptions of pharmacists about their ability to meet these criteria and standards; and
3. identify needs of pharmacists to be addressed in continuing education programs for pharmacists.

ESTABLISHING STANDARDS AND CRITERIA

Current literature on DUR and counseling was examined to identify relevant issues and processes. In preparing to recruit an expert panel on these functions, a group of seven pharmacists from academe, industry, and practice was asked to identify:

1. arenas of expertise from which to draw panel members;
2. areas of expertise that would be required for pharmacists involved in DUR and patient counseling;
3. a listing of proposed disease states pharmacists would be expected to know and understand in sufficient detail to be able to perform DUR and counsel patients;
4. components of and uses for DUR; and
5. knowledge and abilities pharmacists must possess to perform DUR and patient counseling.

Examples drawn from the literature were provided to give direction to their work. The group also was asked to recommend individual experts in these various areas for inclusion on an expert panel.

A panel of experts was utilized to establish a consensus on the criteria and standards for performing DUR and patient counseling. The Delphi Method was chosen because it is easily modified to accommodate many scenarios and is useful as a tool in technological forecasting where decisions are being made based upon incomplete or unsatisfactory information(29,30). Generally rapid, inexpensive, easily understood, and versatile in its application(31), Delphi has become relatively common in educational research(32). Adelson, et al. suggested a modified Delphi procedure for data collection in an educational needs analysis(33). Advantages of the Delphi Method include: (i) membership is anonymous—there is no peer pressure; (ii) there is controlled feedback instead of arguments; and (iii) there is a reliable statistical “group response”(30). Reliability of the procedure is a function of group size. Analysts using expert opinion within a study consider reliability to be similar to reproducibility in experimental investigations(30). Dalkey demonstrated that increasing the group size reduced error and that reliability of the process was satisfactorily assured if at least 13 experts completed the process(30).

The recommendations of the seven pharmacists produced 85 items which became the basis for the initial survey iteration to the expert panel. The areas of focus were: (i) patient profiles; (ii) other profile data required for new prescription processing (iii) counseling content and methods (iv) DUR components and uses; and (v) knowledge and abilities for DUR and counseling.

The recommended expert names from the seven pharmacists were combined with authors identified through a literature review on the following related topics: DUR, patient counseling, health care policy, and the evolution of pharmacy. Thirty-eight potential Delphi expert panel members were identified representing industry, academe, practice, and government.

The 38 individuals identified as candidates for the panel were solicited by telephone using a script to ensure that vital details about the project would not be overlooked and that all potential panel members would be recruited on the basis of identical information. The solicitation resulted in a 30 member panel. Twenty-seven of 30 panel members returned the first iteration. Four panel members withdrew...


The Delphi Process

The 85 items identified by the seven pharmacists as potential criteria and standards were used to construct the instrument for the first Delphi iteration. Panelists were provided space for comments and additional recommended items. The instrument had been pre-tested by a group of eight pharmacists from academic and practice for clarity of instructions, face validity, and the time required to complete (45 minutes). After minor changes in instructions and format, the instrument was sent to the Delphi panel by first class mail with pre-posted return envelopes. Enclosed was a personalized cover letter and a simple agreement to cooperate to be signed by the panel member and returned with the first iteration.

Responses from the panel expanded the initial list of potential criteria and standards to 221 items in five areas of interest (Table I). In this iteration, recommendation of an item by a single expert warranted inclusion of that item in the list.

For the second iteration, panel members were asked to express their agreement or disagreement with including each of the 221 items in the list of criteria and standards by using a seven-point Likert-type scale ranging from absolute agreement [7] to absolute disagreement [1]. The panel also rated their confidence in each response on a four-point Likert-type scale ranging from very confident [4] to not confident [1]. Both scales were included as part of the directions to the panel members. The confidence rating was gathered as a guide for discarding individual responses of experts who may lack specific knowledge in one particular area but whose overall expertise was desired for the project as a whole. Including or excluding items was not based on the responses of experts who lacked confidence in their responses.

The mean and standard deviation of each item was calculated using Microsoft Works software. The mean score on the seven-point scale was used to determine which items would be used for the pharmacists survey in Phase II of the study. The standard deviation was used as a guide to the investigator in determining which items with marginal means would be returned to the experts for further review. Data evaluation was conducted adopting the following investigator-devised definitions or criteria of the seven point scale: Consensus was achieved when all panel members responded with either positive or negative agreement to an individual item after evaluation of outliers.

<table>
<thead>
<tr>
<th>Strong agreement</th>
<th>mean &gt; 6.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreement</td>
<td>mean = 5.0 to 5.99</td>
</tr>
<tr>
<td>Neutral opinion</td>
<td>mean = 3.0 to 4.99</td>
</tr>
<tr>
<td>Disagreement</td>
<td>mean = 2.0 to 2.99</td>
</tr>
<tr>
<td>Strong disagreement</td>
<td>mean &lt; 2.0</td>
</tr>
</tbody>
</table>

Outlier: the only positive or negative response for an item. This was determined by converting the uncertain (4) responses to zero with agreement responses becoming positive and nonagreement responses negative.

Consensus: if the mean was positive, no negative responses were allowed, and if the mean was negative, no positive responses were allowed.

Useable Item: Items with a negative mean (<4.0) or items lacking strong support (4<mean<4.99) were not used in the second phase of this study.

There was consensus initially on 117 of 221 items. Seven of these items, however, had either a marginally useable mean or a relatively high standard deviation and were returned to the panel for further consideration. Of the remaining 52 items that consensus was not likely to be reached.

Results of the Delphi Panel

Results of the Delphi panel were reviewed based on the groupings from the third iteration (Table II). The summary was based on the strength of agreement and consensus status. Overall, consensus was reached by the Delphi panel on 169 of 221 items. Discarding four neutral or negative items resulted in 165 useable items (agreement or strong disagreement).

The results of the Delphi panel were compared to existing lists (Table III) of criteria and standards available in the existent pharmacy literature from: (i) National Association of Boards of Pharmacy Model State Pharmacy Practice Act; (ii) Omnibus Budget Reconciliation Act of 1990; and (iii) Standards of Practice for the Profession of Pharmacy. In general, the Delphi list was more detailed and inclusive than existing lists where direct comparisons were possible. The Delphi panel tended to break broad concepts into their component parts.

Summary of the Delphi Panel

The panel results firmly endorsed patient profiles, oral counseling, prospective DUR, and an array of knowledge and skills as necessary requirements for the practice of pharmacy. The 165 useable items identified by consensus became the basis for the next phase of the project, assessing the opinion of community pharmacists about their ability to perform DUR and counseling and assessing their perceived knowledge and skills deficits based on the items suggested by the expert panel.
Table II. Results of the rating of items of the Delphi panel iterations

<table>
<thead>
<tr>
<th>Consensus of items</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Nonconsensus items</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>17</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>39</td>
</tr>
<tr>
<td>3</td>
<td>28</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>49</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>20</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>105</td>
<td>60</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>52</td>
<td>221</td>
</tr>
</tbody>
</table>

Table III. Comparisons of Delphi with existing documents

<table>
<thead>
<tr>
<th>Section title</th>
<th>Delphi panel</th>
<th>APhA/ AACP standards</th>
<th>OBRA 90 legislation</th>
<th>NABP model act</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Patient Profiles</td>
<td>39</td>
<td>10</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>2 New Rx Data</td>
<td>28</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Counseling</td>
<td>38</td>
<td>10</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>4 DUR</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DETERMINING PHARMACISTS’ OPINIONS

Do pharmacists, as adult learners, feel capable or competent to meet the proposed criteria and standards? Because all pharmacists are not equally competent to meet the proposed criteria and standards of practice, continuing education opportunities should be provided to enable them to become competent. It is important to determine what perceived needs pharmacists would identify based on the proposed criteria and standards so continuing education can be accurately focused for pharmacists.

A written survey was developed to assess pharmacists’ needs. The mailed questionnaire method was selected as the most practical option to gather the information because pharmacists are familiar with the method, and it was the most cost efficient of available options(34). Pharmacists in the AACP-NABP District IV (Illinois, Indiana, Ohio, Michigan, and Wisconsin) served as the population for the survey because of convenience and because Purdue University is active in providing continuing education programs to the pharmacists of the region. The physical size of this geographic area and limited financial resources made it impractical to attempt personal interviews or telephone interviews of pharmacists(35).

A sample size exceeding 1,000 pharmacists was desired to ensure that at least 100 responses would be received per state. Advice from a statistician indicated that fewer than 100 responses per state would make separate analysis of state data less reliable. Extrapolation of assumptions suggested that 3000 pharmacists needed to be contacted.

The 165 useable items from the expert panel were combined and grouped to construct a 141 item readable instrument to send to practicing community pharmacists35. The item groupings reflected themes within the responses returned by the expert panel: (i) elements and associated data for patient profiles; (ii) suggested content of patient counseling; and (iii) characteristics of DUR. In addition, information on 17 demographic items that might influence pharmacists’ responses created a fourth section to the survey. The four sections of the survey had several parts with a varying number of items per section (Table IV). The pharmacists were asked: “Do you believe you have the necessary skills and knowledge to satisfy each of the proposed items listed...?”

A commercially available list of pharmacists’ names was purchased as a random sample of pharmacists in ambulatory care practice in the five states of District IV in zip code order on computer disk. Return postage was provided for the respondents; their only investment was the time taken to fill out and mail the survey.

A pilot survey had been used to test the effects of survey size and type of return on response rate and to determine if aberrant responses occurred. A random sample of 105 pharmacists from the commercial list including all five states received the same personalized introductory letter and a survey. The pharmacists were randomly assigned to one of three groups and received by first class mail either a whole or a half survey and/or first class return postage or business reply envelopes. Responses per state reflected the population size of the states. There were no differences in response rate based on either survey size or return mail postage option and no aberrant responses were found.

Based on the results of the pilot survey, minor modifications were made to the survey instrument and cover letter including changing to a five-point scale. Appropriate instructions for completing and returning the survey were included in a letter personally addressed to the surveyed pharmacists and individually signed by the investigators. Business reply return postage was provided. Using a systematic random process, 3,145 names of pharmacists were se-

5Readers may obtain full copies of all surveys or other relevant documents from the primary author.
More respondents were working as staff pharmacists (40.4 percent) than other employment options, and most (76.5 percent) were licensed in only one state. Although each state in the survey has large or very large cities, the distribution of pharmacists in the sample did not show undue influence by these large metropolitan areas.

**Data Organization**

The 165 items from the Delphi panel, reduced by combining to 141 items for the survey, were divided into nine groups of items related by subject. The reliability of this instrument with its groupings was evaluated. Cronbach Alpha values were found for each of the nine groups and the overall instrument (Table VI). Reliability results for all items was good to excellent, and the over-all alpha was exceptionally high. Responses to the individual items were evaluated using a conservative interpretation of the five-point Likert type scale (Figure 1).

Pharmacists were expected to demonstrate a level of confidence on the broad concepts of DUR and patient counseling. Their weaknesses, and therefore their needs, were expected to be at the individual item level. Responses of the pharmacists to all the individual dependent variables in the survey are available from the authors.

Needs were evident in survey Section I, Patient Profiles. Confidence was expressed in 28 (60.9 percent) items and a lack of confidence in 18 items (39 percent). Nine of the non-confidence items were in the “I can record...” section. The other nine were in the “Maintain a record of...” section.

In Section II, Patient Counseling, all 35 items had a confidence mean value. In fact, 95.5 percent of respondents had mean responses of agree or strongly agree for the “I can counsel on...” part of Section II, and 94.6 percent had similar responses for the “Effective counseling components...” part.

In Section III, characteristics of DUR, the pharmacists expressed confidence in their abilities to perform 43 (71.7 percent) of the items related to DUR, but they lacked confidence in 17 (28.3 percent) items. Needs were identified in the areas of “Record outside of normal values...”(1), “I am able to use DUR as a tool for...”(3), and “I have appropriate knowledge of or skills in...”(13). Clearly many

**Table V. Survey returns by state compared to number sent**

<table>
<thead>
<tr>
<th>State</th>
<th>Mailed (%total)</th>
<th>Returned (%total)</th>
<th>Percent return rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin</td>
<td>371 (12.0)</td>
<td>147 (14.0)</td>
<td>39.6</td>
</tr>
<tr>
<td>Indiana</td>
<td>428 (13.5)</td>
<td>176 (16.5)</td>
<td>41.1</td>
</tr>
<tr>
<td>Michigan</td>
<td>671 (21.0)</td>
<td>234 (22.0)</td>
<td>34.9</td>
</tr>
<tr>
<td>Ohio</td>
<td>783 (25.0)</td>
<td>250 (23.5)</td>
<td>31.9</td>
</tr>
<tr>
<td>Illinois</td>
<td>892 (28.5)</td>
<td>258 (24.0)</td>
<td>28.9</td>
</tr>
</tbody>
</table>

**Table VI. Reliability of nine survey groups**

<table>
<thead>
<tr>
<th>Item group</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Record (I can record)</td>
<td>0.9248</td>
</tr>
<tr>
<td>Maintain (I can maintain)</td>
<td>0.9318</td>
</tr>
<tr>
<td>Essential (Essential profile elements)</td>
<td>0.7960</td>
</tr>
<tr>
<td>Counsel (I can counsel)</td>
<td>0.9592</td>
</tr>
<tr>
<td>Effective (Effective counseling components)</td>
<td>0.8606</td>
</tr>
<tr>
<td>Screen (I can use DUR to screen for)</td>
<td>0.9162</td>
</tr>
<tr>
<td>Agree (I agree that DUR is)</td>
<td>0.8179</td>
</tr>
<tr>
<td>Tool (I can use DUR to)</td>
<td>0.9159</td>
</tr>
<tr>
<td>Knowledge (I have appropriate knowledge in)</td>
<td>0.9729</td>
</tr>
<tr>
<td>Overall survey (all items)</td>
<td>0.9818</td>
</tr>
</tbody>
</table>

Fig. 1. Evaluation scale for item responses.
pharmacists lacked confidence in the knowledge they possessed on a number of the items identified as necessary for pharmacists to perform DUR. Seven demographic variables (years of licensure, gender, practice type, practice function, prescription volume, number of pharmacists employed, and location size) were used to analyze the responses to the survey. The 35 nonconfidence items were examined against the seven demographic variables to determine relationships that may be useful to identify and target needs of pharmacists for program planning. The continuous demographic variables were collapsed into groups when necessary to create response categories large enough to produce meaningful analysis. The ANOVA procedure was performed for each of the 35 nonconfidence dependent variables with combinations of the seven demographic variables to identify individual relationships and interactions between more than one of the demographic variables. Four demographic variables (practice function, number of pharmacists employed, prescription volume, and population size of area located) show no significant influence on the 35 items identifying needs.

Practice type was a main effect for only one ANOVA procedure, but it was significant in nine one-way ANOVAs, eight of which identified significant differences among the types of practice. However, practice type also was part of 12 two-way interactions and two three-way interactions. The interactions indicate that by themselves demographic variables which might be otherwise identified as significant may not be due to the influence of an interacting characteristic.

The pharmacists’ gender and years of licensure (an indicator of age as well as years of experience) accounted for most of the significant differences found in the examination of the 35 dependent items receiving “not confident” ratings from the survey results. The pharmacists’ gender was significant for 23 of the 35 items. Female pharmacists expressed higher mean confidence than male pharmacists in every case. Gender also was a main effect in seven ANOVAS and was part of 30 two-way interactions and six three-way interactions with the other demographic variables. Although significant differences between female and male pharmacists were indicated for many of the nonconfidence ratings, the interactions indicate that gender alone may not be significant.

Pharmacists’ year of licensure was significant in a One-way ANOVA examination for 25 of the 35 nonconfidence items with 23 of the 25 identifying differences based on the length of practice experience. Pharmacists with less practice experience were more confident of their skills and knowledge than the more experienced pharmacists. The year of licensure also was significant as a main effect in the ANOVA procedure for 20 of the 35 items of need further demonstrating its significance as an independent variable. Year of licensure also was part of two two-way interactions and eight three-way interactions.

The inter-relationships between gender, year of licensure, and practice type were examined with cross-classification analysis. For each type of practice site, the percent of pharmacists that are male increased with increasing years of experience, and the percent of pharmacists that are female decreased with increasing years of experience (Table VII). The examination of each of the 35 nonconfidence items individually shows year of licensure (reflecting years of experience and age) influenced the pharmacists responses. Pharmacists in practice longer (older pharmacists) were less confident of their skills and knowledge.

Topics for continuing education programs suggested by the respondents (they were asked to submit up to three) were pooled to reflect the subject of the particular item. For example; the item reported as “Counseling Methods” was a compilation of all pharmacist requests broadly describing counseling methods. Knowledge areas in which pharmacists expressed nonconfidence were among requested topics (Table VIII) including diseases and disease therapy.

Table VII. Relationship of gender with year of licensure for practice site

<table>
<thead>
<tr>
<th>Experience</th>
<th>Chain&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Independent&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Other retail&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>More than 30</td>
<td>91.2&lt;sup&gt;d&lt;/sup&gt;</td>
<td>8.8</td>
<td>91.8</td>
</tr>
<tr>
<td>years</td>
<td>(83)</td>
<td></td>
<td>(101)</td>
</tr>
<tr>
<td>16 to 30 years</td>
<td>82.9</td>
<td>17.1</td>
<td>87.6</td>
</tr>
<tr>
<td></td>
<td>(120)</td>
<td></td>
<td>(120)</td>
</tr>
<tr>
<td>5 to 15 years</td>
<td>59.5</td>
<td>40.5</td>
<td>67.5</td>
</tr>
<tr>
<td></td>
<td>(56)</td>
<td></td>
<td>(27)</td>
</tr>
<tr>
<td>Less than 5 years</td>
<td>36.2</td>
<td>63.8</td>
<td>48.0</td>
</tr>
<tr>
<td></td>
<td>(47)</td>
<td></td>
<td>(13)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Pearson Chi Square = 106.402 (DF=3) Significance P=0.0000.
<sup>b</sup>Pearson Chi Square = 40.426 (DF=3) Significance P=0.0000.
<sup>c</sup>Tearson Chi Square = 11.047 (DF=3) Significance P=0.0115.
<sup>d</sup>Percent of pharmacists.
<sup>e</sup>Number of pharmacists.
also were requests for help in patient counseling methods, an area in which pharmacists expressed confidence. This may signal an interest to become better at a function they now believe they can do or interest in verifying their perceived confidence and skill in counseling.

DISCUSSION AND RECOMMENDATIONS

The pharmacist respondent sample from the five state region appears to be representative of the ambulatory pharmacists from the five states. The respondents met the goals of minimum number of responses per state and a total of at least 1,000 responses per region.

The 165 items from the Delphi panel, reduced by combination to 141 items and organized into nine groups in the survey had high reliability coefficients. The conservative approach to evaluation of the Likert-type responses minimized overconfidence of reports of pharmacists opinions or expressions of need.

Nineteen of the nonconfidence items seem to reflect lack of the proper system to record or maintain patient data bases. There are few hard copy systems in place which enable pharmacists to perform DUR efficiently. Many pharmacy computer systems are not yet capable of recording extensive patient history and medical data or recording pharmacists notes about interventions performed or progress notes. The data do not clearly identify a weakness on the part of pharmacists knowing how or what information to record. However, it would seem reasonable that pharmacists would not inherently have the knowledge and skills required if DUR were not required. Technologically computers are capable of recording the data, but the appropriate software and display capacity have not been applied at this date nationwide.

Pharmacists did agree they could counsel and agreed on the components of counseling suggested by the Delphi panel. It was not determined as part of the survey, however, whether pharmacists were reluctant to ask patients about information considered by some people more sensitive such as alcohol use, current weight, special diet restrictions, primary language, or about routinely used medical devices. Nor did the survey inquire if a time barrier to gathering and recording data was a perceived or a real lack of time.

The pharmacists expressed confidence in their abilities to accomplish 43 of the 60 items related to DUR. The 17 items in which nonconfidence was expressed, reflected an inability to record(1), or a lack of knowledge of or opportunity to use DUR(16). Overall this is surprising because DUR performance has not been a standard of practice in most ambulatory pharmacy arenas. While needs were identified, the pharmacists expressed confidence in their abilities to meet 71.7 percent of the criteria in this area. Most pharmacists agreed (84 percent) that DUR instruction should be part of continuing education programs.

Three items in the “I can record...” section require the pharmacist to ask questions. However, the patient may not be a good source for information about disease history, immunization history, and current diagnosis. In this case, the barrier may lie within the current division of “turf” between health care professionals and the confidentiality or freedom of patient information movement among health professionals. A total of 2.7 percent of all the pharmacists in the survey specifically requested CE help on communication with other health care providers.

Similarly, from the nonconfidence responses in the section describing activities to maintain a patient profile, four of nine (44.4 percent) responses required only that the pharmacist ask the patient about OTC drugs routinely used, non-drug therapies routinely used, the name of the person administering medications to the patient, and the patient’s personal knowledge of therapy rationale. Although the other five items involve asking questions, they also require the pharmacist to do something with the information. While the nonconfidence items may reflect an inability to record the information, the data may also suggest barriers of access and how to utilize the information once available.

The pharmacists were not confident that they could monitor a therapy plan, utilize current and prior therapy outcomes, maintain a record of therapeutic objectives, track the patient’s lab values, and maintain a problem list for the patient’s therapies. The collective need appears as a lack of knowledge and skills on how to perform these tasks, not that the pharmacist is unable to do them. However, another interpretation might be that the collective reflection suggests that pharmacists are not willing or would not be capable of utilizing the information.

A total of 467 (43.8 percent) pharmacists responded with at least one and in many cases several suggestions for specific topics for continuing education. The tabulated responses were grouped into three categories based on topic subjects. As expected, many pharmacists requested continuing education programs on topics that might be broadly described as courses (pharmacology, therapeutics, and pharmacokinetics) they may have taken as undergraduates (or would have taken if offered them). A second category of topics revolves around disease states and includes symptoms, diagnosis, laboratory tests, and drug treatment rationales. The third category reflects needs in the area of case management. Help with DUR [60], counseling [85], monitoring plans [60], interactions [119], adverse reactions [58], and risk-benefit analysis [22] was requested.

The focus of this study was on identifying criteria and standards for performance of DUR and patient counseling and identifying needs of practicing pharmacists. Most practicing pharmacists have acquired basic communication skills during their practice careers. However, purposeful communication to enable delivery of pharmaceutical care may be new. Many pharmacists have not been educated in soliciting the type of information that will be needed from patients or health care providers to monitor therapy and perform DUR or DUE. Eight percent [85] of the pharmacists surveyed requested more information on counseling. Communication needs expressed by the pharmacists in the sample are an educational need to be satisfied. Pharmacists will not only need knowledge and skill they need to be able to apply the knowledge and skills to practice effectively.

Few pharmacists have been educated to be sensitive to non-medical issues that will influence the patient’s decisions about compliance with or adherence to therapy. Few have been educated in the rationale and methods for delivering pharmaceutical care. Pharmacists claim to counsel their patients, but the quality of this counseling may be suspect in light of the need to incorporate enlarged patient and disease databases and therapy assessments into their counseling considerations.

Recommendation 1. Curricular based CE programs on topics like therapeutics should remain available to pharmacists.
Perhaps focused programs which include the pathophysiology and therapeutics of major diseases accompanied by a distinct focus on pharmaceutical care delivery would be key alternatives. It would include the attention to communications and data acquisition and use indicated as needs by the pharmacists.

**Recommendation 2.** Providers of continuing education should identify those disease states pharmacists encounter most often and provide the opportunity to acquire the knowledge and skills necessary to manage patient care. The pharmacist must then apply the knowledge and skills in practice and assess the results.

**Recommendation 3.** Programs which help pharmacists learn how to provide pharmaceutical care and possibly to develop niches in the market will help refocus pharmacists. Nearly three percent of all respondents gave an “all of the above” type answer to the solicitation of CE topics in the survey. Some of these responses bordered on desperation. The pharmacist who gets “passed by” may not warrant sympathy, but the one who gets “run over” does.

**Recommendation 4.** Many pharmacists expressed a lack of confidence in their ability to manage a patient profile. Programs should be developed to demonstrate patient data monitoring in a drug therapy management system. Pharmacists must learn to acquire, record, and use efficiently the data integrated in a patient record to effectively monitor drug therapy. Many barriers exist to the collection of relevant profile data. Pharmacists must learn to overcome these barriers.

**Recommendation 5.** Program planners may well use the agreement and confidence of pharmacists with the majority of items in the survey as a positive base on which to build programs. CE providers should develop programs for the pharmacists Houle would describe as the majority adopters with the hope that the laggards would also participate. Planners would use the positive base to help address pharmacists’ identified needs to help them address new strategies emerging in practice.

**Limitations**

The results of this study are generalizable to the regional population from which the sample was drawn. Although demographic comparisons with pharmacists on the national level look favorable, attempts to link these results with other data to create a nationwide assessment should be done with caution. The results do, however, offer guidance for CE providers on a national scale. Needs of pharmacists in District 4 probably are not radically different from needs of pharmacists nationwide.

**References**