The Role of the Teacher-practitioner in Integrating Pharmacy Education and Practice: a Pilot Project in Germany

A.M. STROHKIRCH and U. JAEHDE*

Institute of Pharmacy, University of Bonn, An der Immenburg 4, D-53121 Bonn, Germany

(Received 3 February 2003; In final form 13 March 2003)

Pharmacy teacher-practitioners are pharmacists who are employed half-time at the University and half-time in a pharmacy practice. They use actual patient cases and simulated practice situations to teach and facilitate active learning. Teacher-practitioners need to be effective teachers and communicators who maintain proper documentation of their practice activities. As professional role-models, they need to possess pharmacy practice knowledge, a good understanding of the social and economical forces of healthcare and a caring attitude.

In the fall of 2001, clinical pharmacy was integrated into the German pharmacy curriculum as a new core discipline. At the same time, further to develop clinical pharmacy education, a pilot project began at the University of Bonn. The purpose of the project was to assess the role of the teacher-practitioner in German pharmacy practice and education. In this project, the professor of clinical pharmacy and the teacher-practitioner worked closely together.

Keywords: Education; Learning; Teaching; Teacher-practitioner; Problem-based learning

INTRODUCTION

There are many different techniques and styles of teaching, learning and curricula in pharmacy. Integrating pharmacy education with practice is a permanent challenge in both fields. As has been shown, a separation of academia from practice has negative consequences for both (Cipolle et al., 1998).

On the one hand, constant input of new knowledge generated by research is required to maintain a high standard of practice. On the other hand, teaching without links to practice often leads to a situation where the students focus solely on the accumulation of knowledge. When the students enter pharmacy practice, they often have difficulties applying this knowledge and forget most of the fundamentals they have learned at the university.

The best situation occurs when all components of the educational experience (teaching, research and practice) are combined in a clearly defined and articulated manner for the overall purpose of educating well-prepared pharmacists (Kerr, 2000).

Figure 1 depicts the components of pharmacy. As is shown, the school of pharmacy provides pharmaceutical sciences, or the foundation of the triad, for pharmacy practice. The university and practice relationship not only adds practice relevance to the curriculum, but also the possibility for pharmacy practice research.

The teacher-practitioners, who work half-time at the university and half-time in practice, can play an important role in integrating these components (as seen in Fig. 1) and encourage a self-directed learning atmosphere for students. As teacher-practitioners work in both university and practice settings, they can teach by means of patient cases from both their current practice and directly at the bedside. In some countries, such as the UK, teacher-practitioners are well established in community and hospital settings and present in all schools of pharmacy (Walker, 1996). In other countries, such as Germany, they are practically unknown.

CHARACTERISTICS OF A TEACHER-PRACTITIONER

At the university, as well as in practice, the teacher-practitioner should represent a role model...
possessing the qualities expected of anyone who provides a personal health service (concern, attentiveness, empathy and compassion). This is largely manifested through the type of questions asked and the depth of interaction. Based on this attitude, the teacher-practitioner becomes a personal motivator for students while accommodating the learning needs of both the group and individual.

For example, when a student presents a patient case, the teacher-practitioner should listen and consider what is of practical relevance. The teacher-practitioner then poses questions to challenge the student by promoting creative and independent thinking. By encouraging the student to take issue with various points of view, the teacher-practitioner effectively stimulates group discussion while exposing all sides of an issue. This form of learning teaches them how to make decisions or support their views, as well as how to ask and answer questions within a group. This later helps them to interact in a team environment as well as learn their role. In the end, the teacher-practitioner’s larger knowledge base is used to direct learning, never to overpower the learners. As Brodie et al. (1977) further explain, by showing patience with the students and their questions, the teacher-practitioners lead them to reasonable conclusions and professional judgments. As effective teachers, they plan by defining objectives and designing a structure within which the students can apply their academic knowledge, whether in the classroom or in practice. By promoting the concept of teamwork and integrated systems of care, the students can build communication skills by effectively learning through the interactions with others.

When applied to a specific set of circumstances, these traits are used to make valid judgments regarding drug usage. As is the case with all pharmacists, teacher-practitioners must be committed to a lifelong, regular habit of reading current literature in order to maintain and update their knowledge base. Additionally, as providers as well as teachers, they must be aware of the societal need for pharmacy services, be able to adapt to the existing and changing role of pharmacy and, when necessary, explain the social and economical implications of drug use, pharmaceutical services and healthcare forces. In addition, these methods and traits may help accomplish an even greater goal of directing the philosophy of pharmacy practice toward a more patient-centered ethos.

SITUATION IN GERMANY

The License Ordinance for Pharmacists ("Approbationsordnung für Apotheker") defines the same curriculum for all German schools of pharmacy. Before October 2001, the Pharmacy curriculum consisted of four main disciplines: pharmaceutical chemistry, pharmaceutical biology, pharmaceutical technology and pharmacology and toxicology. Pharmacy education was focussed primarily on the drug, wherein the patient and his or her therapy played no role. In order to adapt pharmacy education to the changing healthcare system and to meet present and future requirements in pharmacy practice, the License Ordinance for Pharmacists was changed in October 2001. Clinical pharmacy was introduced as a fifth main discipline with an additional final examination. Figure 2 shows the contribution of the individual pharmaceutical disciplines before and after this curriculum change. Table I lists the subjects during the new oral examination. Without giving up the fundamental basis of pharmacy in natural sciences, all German students are now taught to apply their scientific

![Figure 1](image1.png) Integration of research, education and practice.

![Figure 2](image2.png) Required hours in the individual disciplines with respect to the changes of the pharmacy curriculum in Germany (A: Curriculum of 1989; B: Curriculum of 2001).
knowledge to patients and their specific needs. It is indeed a big challenge for all German schools of pharmacy to implement this new discipline on a level that is simultaneously science-based, practice-relevant and patient-centered. Not surprisingly, the level of integration amongst the disciplines is now extensively discussed.

In an endeavor to promote clinical pharmacy education in Germany and to help with the transition, a pilot project was created at the University of Bonn to design and establish the teacher-practitioner position. This project began in the fall of 2001 in order to identify and overcome the problems related to the establishment of the teacher-practitioner position in Germany. Currently, a teacher-practitioner works at the school of pharmacy in accordance to a functional model. This model considers the major responsibilities of university professors to perform high-quality research and teaching (Fig. 3). Within a student-centered learning model, a professor of clinical pharmacy and the teacher-practitioner have a close working relationship. Combining the professor’s connection to the scientific community and the teacher-practitioner’s connection in practice, a partnership and platform for exchanging ideas and contacts is created. This model also helps to illustrate how cooperation with scientific assistants and hospital and community pharmacists additionally enhances the learning development in the students.

TABLE 1 Clinical pharmacy as a new main discipline in Germany: catalogue of subjects for the second state examination (Gaudich, 2001)

<table>
<thead>
<tr>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Special pharmacotherapy; drug therapy in pregnancy and lactation, pediatrics, geriatrics, in patients with organ dysfunction, multi-morbidity; importance of formulation and mode of administration in drug therapy; dialysis procedures, special therapy regimen considerations in antibiotic therapy, oncology and supportive therapy, anticoagulation therapy, immune and gene therapy, as well as for intensive care patients; criteria for drug evaluation</td>
</tr>
<tr>
<td>• Medication history; evidence-based medicine; evaluation of clinical relevance of adverse effects, drug interactions and incompatibility, evaluation of combination therapies; causes of variability of therapeutic outcome; therapy recommendations with regards to defined patient cases; therapeutic drug monitoring, the handling of patient charts; medical devices for administration of drugs as well as enteral and parenteral nutrition</td>
</tr>
<tr>
<td>• Compliance/non-compliance; fundamentals and methods of pharmaceutical care</td>
</tr>
<tr>
<td>• Relationship between pharmacodynamics and pharmacokinetics; population pharmacokinetics; clinical pharmacogenetics</td>
</tr>
<tr>
<td>• Malnourishment; energy and nutritional requirements; enteral and parenteral nutrition</td>
</tr>
<tr>
<td>• Healthcare societal and economical influences, pharmacoeconomics, pharmacovigilance, quality of life issues, ethical aspects</td>
</tr>
</tbody>
</table>

![FIGURE 3 Role of the teacher-practitioner at the University.](image)

At the University of Bonn, the tasks of the teacher-practitioner involve under-graduate and post-graduate education as well as clinical pharmacy practice at the bedside.

**Undergraduate Education**

Since 1999, the University of Bonn has offered an optional course in clinical pharmacy and pharmacotherapy within which students apply their knowledge about medicines by using patient cases and participation in simulated practice setting activities. The relationship between education and practice is an integral part of this course. This relationship is strengthened through the invitation of speakers from different practice settings to lecture and conduct open discussions with the students. For example, the professor, together with assistants (the teacher-practitioner and a pharmacist from a local hospital) facilitates discussions and learning in a workshop on therapeutic drug monitoring. During this workshop, the students work in groups of three to four with computer software in a simulated practice setting and present their recommendations and outcomes. In this setting, the professor and scientific assistants primarily bring pharmacokinetic methodology into the discussion, while the practitioners focus on practical implications and significance.

Within the clinical pharmacy and pharmacotherapy course, it is now the task of the teacher-practitioner to explain to the students how to provide pharmaceutical care as well as how to organize data for documentation and effective working habits by using the Subjective and Objective Information and Assessment Plan (SOAP) approach. Within this workshop, small groups of students learn how to:

1. apply the patient care process focusing on patient interviewing through role playing,
2. ascertain where and how to find patient information,
3. identify potential and actual drug-related problems,
(4) analyze the information for possible alternatives,
(5) develop a patient care plan (whenever possible
together with the patient) involving goals,
monitoring strategies and a follow-up plan and
(6) documenting the consultation.

In addition, the teacher-practitioner works as a tutor
for the students during other simulated practice
activities and brings the students to the hospital for
learning at the bedside. This helps the students
understand how the newly-gained knowledge can
be applied.

Post-graduate Education

Due to the recent change of the pharmacy
curriculum and an increasing demand for personnel
qualified in patient-oriented services, there is a
significant need for post-graduate education, par-
ticularly among recent graduates who studied the
prior curriculum that excluded clinical pharmacy.
Therefore, the professor of clinical pharmacy in Bonn
and the teacher-practitioner developed a certificate
program for working pharmacists. It involves four
modules at the University over one year and practice
activities in their own working environment. The
latter involves online and direct support from
experts with practical experience. This design has
been selected in order to facilitate the practical
implementation of clinical pharmacy and pharma-
cutical care.

Clinical Pharmacy Practice

In the hospital, the teacher-practitioner works
together with the director of pharmacy services,
the hospital director and other healthcare pro-
fessionals. The individual activities are summarized
in Table II. Among these, there is an interdiscipli-
ary, quarterly patient case workshop for physicians
and pharmacists designed to improve the mutual
understanding and collaboration between both

professions. The academic staff from the university
also participate at these meetings and provides
academic input. Mutual collaboration is further
conducted through training pharmacy and medical
students together, on a small scale, during ward
rounds. Additionally, as in many countries, practice
pharmacy research is needed and is another
possible important task for the teacher-practitioner
after the development of the position, especially in
documenting the value of clinical pharmacy services
(Helling and Nelson, 2000).

CONCLUSION

In conclusion, exposure to pharmacy practice
provides students an opportunity to enhance their
abilities to apply the pharmaceutical sciences to
complex practice problems. This exposure also helps
the students build confidence, feel more comfortable
working as patient care providers and develop a
clearer understanding of the various roles of the
pharmacist. The recent addition of clinical pharmacy
as a core discipline into the German pharmacy
curriculum offers the possibility of the introduction
of the teacher-practitioner. By working together with
faculty and practitioners, the teacher-practitioner
draws on the expertise and strength of each
component for the promotion of a more comprehen-
sive, improved pharmacy education and practice.
As is evidenced in the Bonn pilot project, the
implementation of the teacher-practitioner position
begins with finding the right person, finding the
right organization for collaboration, drawing on
supportive connections and, most of all, learning
together.

Acknowledgements

The financial support by the Apothekerkammer
Nordrhein and the Dr August und Dr Anni
Lesmüller Stiftung is gratefully acknowledged.
References


Dear Author,

During the preparation of your manuscript for typesetting some questions have arisen. These are listed below. Please check your typeset proof carefully and mark any corrections in the margin of the proof or compile them as a separate list. This form should then be returned with your marked proof/list of corrections to Alden Multimedia.

**Disk use**

In some instances we may be unable to process the electronic file of your article and/or artwork. In that case we have, for efficiency reasons, proceeded by using the hard copy of your manuscript. If this is the case the reasons are indicated below:

- [ ] Disk damaged
- [ ] Incompatible file format
- [ ] LaTeX file for non-LaTeX journal
- [ ] Virus infected
- [ ] Discrepancies between electronic file and (peer-reviewed, therefore definitive) hard copy.
- [ ] Other: ..................................................................................................................

We have proceeded as follows:

- [ ] Manuscript scanned
- [ ] Manuscript keyed in
- [ ] Artwork scanned
- [ ] Files only partly used (parts processed differently:    )

**Bibliography**

If discrepancies were noted between the literature list and the text references, the following may apply:

- [ ] The references listed below were noted in the text but appear to be missing from your literature list. Please complete the list or remove the references from the text.

- [ ] *Uncited references*: This section comprises references which occur in the reference list but not in the body of the text. Please position each reference in the text or, alternatively, delete it. Any reference not dealt with will be retained in this section.

<table>
<thead>
<tr>
<th>Manuscript page/line</th>
<th>Details required</th>
<th>Author's Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No queries.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>