Part V

Appendices
To assist the pharmacists in performing a drug use evaluation for the patients, a protocol was provided, based upon the drug use profile (DUP). The protocol was published in the Dutch independent drug bulletin Pharma Selecta.

**A1.1 The Drug Use Profile (DUP)**

The Drug Use Profile is a chronological reproduction of the drug use of a specific patient over a limited amount of time (usually 12 months). In the Netherlands Prof. Dr. A. Porsius of the Pharmacy Department of the University of Utrecht in his series of ‘farmacocasus’ first used this kind of outline. Usually a DUP is made

Fig. A 1.1 Example of a drug use profile
retrospectively, but a certain amount of prospective perspective can be obtained by incorporating the drugs that are still going to be in use, according to the medication history.

A Drug Use Profile can of course be made manually, but some Dutch pharmacy computer systems like Pharmacom® and Euroned® can automatically produce these profiles in print. The following picture shows an example of a DUP.

**A1.2 Use of the Structured Approach to Medication Analysis**

The pharmacists had not used Drug Use Profiles for drug use evaluation previously to the projects. The participating pharmacists accepted the technique very well. Especially in the OMA-(Elderly) project after 6 months the method was very useful as can be seen in table A1-2.

<table>
<thead>
<tr>
<th></th>
<th>6 months (%)</th>
<th>12 months (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Useful</td>
<td>Not useful</td>
</tr>
<tr>
<td>OMA-pharmacies</td>
<td>63</td>
<td>0</td>
</tr>
<tr>
<td>TOM-pharmacies</td>
<td>39</td>
<td>0</td>
</tr>
</tbody>
</table>

**A1.3 Protocol for Drug Use Analysis**

A drug use analysis should preferably be protocolled, as to guarantee the quality of the work. An example of a possible protocol which has been used in both the OMA as the TOM study, using the DUP, is following:

1. Select the group of patients you want to perform the medication analysis on.
2. Contact the local GPs in case you want to suggest medication-changes, and inform them of your activities.
3. Make a drug-use profile (DUP) per patient, in which you group the drugs in ATC or indication-order.
4. Interpret the DUP:
   - Check dosage-appropriateness of drugs
   - Check compliance/adherence (lines crossing or gaps)
   - Check for non-active or hardly active drugs
   - Check for (pseudo) double-medication
   - Check for relevant interactions.
   - Check for contra-indicated drugs, if the disease-states are known
   - Check for drugs possibly being used to suppress the side-effects of other drugs
   - Check for drugs contra-indicated in pregnancy or breast-feeding, if appropriate
5. Discuss the results with the patient and the GP, if necessary. Propose necessary changes in the medication or laboratory tests.

In the Dutch system, medication surveillance on dosage, incompatibilities etc. is usually performed when the prescription is being filled. Nevertheless, in the retrospective medication analysis often some new critical items can be found which the pharmacist neglected at the first time of evaluating. Making DUPs and performing DUEs should therefore be a continuous process.

**A1-2 Reference to Appendix A1**

1 van Mil JWF, Melgert B, Moolenaar F. Medicatie analyse, tijd om te starten. Pharm Selecta 1995:120-123
A coding system for use in Pharmaceutical Care consultations

TO THE POTENTIAL USERS OF THE PAS®-SYSTEM

The PAS system has been developed to code the problems, analyses and solutions with medicines, which become clear during a pharmaceutical care consultation, between patient and pharmacist. The system has been partially validated, but proved to be not very reliable in a test-retest validation procedure. However, this could be due to the procedure used. We welcome any remarks about the PAS®-system.

You cannot use the PAS®-system without prior consent of the head of the Department Social Pharmacy and pharmacoepidemiology of the Rijksuniversiteit Groningen. If you plan to use the PAS®-system then we will ask you to contribute to its validation.

Acknowledgements:
Our special thanks to Prof. Dr. J. McElnay, Belfast and Mr. J. Max, Liverpool for their help in translating the PAS®-system into English.

The system can be referred to as follows:
The PAS® System, a Coding System for Pharmaceutical Care Consultations
J.W.F. van Mil, B. Melgert, Th.F.J. Tromp, L.T.W. de Jong van den Berg
Working Group Social Pharmacy and Pharmaco-Epidemiology
Rijksuniversiteit Groningen, February 1995

All correspondence about the PAS®-system may be sent to:
J.W.F. van Mil, Pharm D., Dept. Social Pharmacy en Pharmacoepidemiology, Ant. Deusinglaan 2, 9713 AW Groningen, The Netherlands
Telephone: +31 50 633291 Email: foppe@farm.rug.nl Fax: +31 50 633311 Version 1.2

PAS®-Coding system
The PAS®-system has been developed for use during pharmaceutical care consultations, to code drug related questions or complaints of patients, their analysis and the solutions offered by the pharmacist. Please code and AFTER the consultation.

Problems
During the consultation between pharmacist and patient certain problems will be mentioned. They can be coded with a P-code. Usually only one P-code is needed for the problem.

Analysis
During the analysis phase, the problem will be translated into the pharmacists’ terminology and coded with the A-codes. Several A-codes are possible because there may be more reasons for a problem.

Solutions
The solutions offered can be coded with a S-code. Several solutions are possible, even at the same time. Solutions also depend on individual pharmacists, and are therefore not very reproducible between different pharmacists.

The category ‘Otherwise’ is an escape code in all three code. Please use it as little as possible.

An extensive evaluation and validation of this system has been described in: Jiben G, van Mil JWF, Tromp ThFJ, van den Berg LTW. Het Pas systeem, een codeersysteem voor farmaceutische patiëntenzorg gesprekken. Evaluatierapport. Rijksuniversiteit Groningen, juni 1997
PROBLEMS/COMPLAINTS AS MENTIONED BY THE PATIENT AND THEIR CODES

Difficulties with ....
P1  Difficulties handling the packaging of the drug
P2  Difficulties applying the drug properly
P3  Difficulties with stopping the drug
P4  Difficulties with the change of the appearance of the drug
P5  Difficulties taking or using the drug
P6  Difficulties understanding the package insert
P7  Difficulties in adherence with the precautions (e.g. avoiding sunlight)
P8  Difficulties performing the instructions for use
P9  Difficulties with changes in the instructions for use

Real trouble with ....
P11  Trouble with the action of a drug
P12  Trouble with the side-effects of a drug
P13  Trouble with the combination food/alcohol and a drug
P14  Trouble with the effect of combining drugs
P15  Trouble when stopping a drug (addiction?)

Fear of ....
P21  Fear of the action of a drug
P22  Fear of the combination food/liquor and a drug
P23  Fear of the effect of combining drugs
P24  Fear of side-effects
P25  Fear of stopping a drug
P26  Fear of other people’s reactions on taking a drug

Dissatisfied with ...
P31  Dissatisfied with the information of the doctor
P32  Dissatisfied with the information of the pharmacy
P33  Dissatisfied with the treatment of the condition
P34  Dissatisfied with the action of a drug

Otherwise
P91  Forgets sometimes to take the drug by accident
P92  Problems with the pricing of the drugs
P93  Confused by different advises of different professionals
P100  Others e.g.  .......................................................

N.B. Problem according to patient! No interpretation yet. Clarification with patient allowed.
Analysing is next step.
**ANALYSIS OF THE PATIENTS PROBLEMS/COMPLAINTS AND THEIR CODES**

**Choice of treatment**
- **A1** Drug prescribed but seems not to be indicated
- **A2** No prescribed drug, but indication seems to exist
- **A3** Poor or wrong combination of drugs
- **A4** Other drug is drug of choice for indication

**Patient**
- **A11** (Diffuse) fear of drugs
- **A12** Limited knowledge of drugs effects and/or side effects
- **A13** Limited knowledge of his/her drug-use
- **A14** Limited knowledge of prices/costs
- **A15** Not satisfied with current treatment
- **A16** Patient uses more of the drug then prescribed or meant/recommended
- **A17** Patient uses less of the drug then prescribed or meant/recommended
- **A18** Patient deliberately does not use or take the prescribed drug

**Use**
- **A21** Wrong technique in using/applying the drug
- **A22** Wrong time of taking the drug
- **A23** Correct drug but wrong form of administration or generic equivalent
- **A24** Other forms of poor drug-use

**Pharmacotherapeutic**
- **A31** Occurrence of interactions
- **A32** Occurrence of side-effects/ADRs
- **A33** Insufficient effect of the drug

**Communication**
- **A41** Change in appearance of the drug not mentioned
- **A42** Text of the package-insert too difficult
- **A43** Too much information on package-insert
- **A44** Apparent contradictory information on package-insert
- **A45** Patient insufficient/wrongly informed by the doctor
- **A46** Patient insufficient/wrongly informed by the pharmacy
- **A47** Good information misunderstood
- **A48** Fear of troubling doctor with questions

**Miscellaneous**
- **A91** Error on the label (dosage, drug-name)
- **A92** Error in doctors prescription
- **A93** Wrong drug dispensed

- **A100** Others, e.g.: ...........................................................

---

Perform analysis when the problem/complaint is clear.  
Analysis = professional interpretation of the problem.
### SOLUTIONS TO THE PROBLEMS/COMPLAINTS OF PATIENTS AND THEIR CODES

#### Directly with patient
- **S1** Information provided
- **S2** Motivated patient
- **S3** Patient shown how to use the drug
- **S4** Offered apologies to patient for pharmacy's error
- **S5** Reassured or offered support to patient
- **S6** Made patient stop medication involved
- **S7** Changed form of administration

#### Referral
- **S11** Referred patient to GP
- **S12** Referred patient to specialist
- **S13** Referred patient to self-help group/consumer-organisation
- **S14** Referred patient to district nurse

#### Contacted other professional
- **S21** Got in touch with GP
- **S22** Got in touch with specialist
- **S23** Got in touch with district nurse
- **S24** Got in touch with colleague (another pharmacist)
- **S25** Got in touch with university

#### Information
- **S31** Information on action of drug
- **S32** Information on side-effects of drugs
- **S33** Information on drug-drug interaction
- **S34** Information on drug-disease interaction
- **S35** Information on use of medical aids
- **S36** Information on drug-pricing
- **S37** Other information given

#### Otherwise
- **S91** Presented conflict with GP/specialist to the patient
- **S92** Got in touch with family
- **S100** Otherwise e.g.: ........................................................

---

N.B. Do not forget to discuss the solution with the patient first!
# A4 Defining the Roles of GPs and Pharmacists for Pharmaceutical Care

This is an overview of the results of an exercise to define the roles of GPs and pharmacists during a GP-Pharmacist discussion in the context of the CARA Check program in 1998 at the ‘Anjer Apotheek’. 11 GPs and 3 pharmacists participated.

<table>
<thead>
<tr>
<th>Subject</th>
<th>GP*</th>
<th>C**</th>
<th>Ph***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosing asthma or COPD</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice of medication</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice of inhaler type</td>
<td>9</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Giving extensive inhaler instruction</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Inhaler check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 2 weeks</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>After 3 months</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>After 1 year</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Providing instruction material for inhaler systems</td>
<td>2</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Searching indicators for possible wrong use of medicines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suitable inhaler type</td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Different inhalator types</td>
<td>3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Use of oral antimycotic agents</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Overuse beta-mimetics in asthma</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Under-use cromoglicate/corticosteroids in asthma</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Overuse beta-mimetics/ipratropium in COPD</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>No inhaler therapy with oral beta-mimetic</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>No corticosteroid with beta-mimetic in asthma cases</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Use of depotropine for children &gt;1.5</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Use of cromones by children &lt;5</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Use of theophylline in asthma</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Improving compliance</td>
<td>9</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Use peak-flow meter</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correcting treatment plan</td>
<td>9</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

* Role of the GP  
** Role of GP and pharmacist in co-operation  
*** Role of pharmacist
Appendix

A4 THE RUG/FIP QUESTIONNAIRE

QUESTIONNAIRE INTERNATIONAL PHARMACY PRACTICE
Version 16 September 1997

Questionnaire number: ………

N . B. For pharmaceuticals, medicaments or medicines we use the A merican term ‘D rugs’, meaning substances to heal or prevent disease, or to linger symptoms.
If we mention pharmacist or pharmacy, we always mean community pharmacist or community pharmacy, unless otherwise specified.

General Questions

1. What is the actual population of your country (number of inhabitants) …………………

2. How many community pharmacies are there in your country (number) ………

3. Are there other shops or traders selling OTC or prescription drugs to the public in your country?  Yes / No

3.1 If yes, what is their financial share in the selling of drugs on national scale? (Outside a pharmacy) ……….%

4. Are there other professionals selling drugs in your country?  Yes / No

4.1 If yes, what is their financial share in the selling of drugs on national scale

Doctors ……… %
Nurses ……… %
Veterinarians ……… %
Others ……… %

The Pharmacies

1. What is the average size of a community pharmacy (in square meters)? (or, in case of large stores, of the dispensing area including waiting facilities) ………. (m²)

1.1 If there is a large variety, please indicate the percentage of the indicated size:

<table>
<thead>
<tr>
<th>Size</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20 m²</td>
<td>……… %</td>
</tr>
<tr>
<td>20-50 m²</td>
<td>……… %</td>
</tr>
<tr>
<td>50-100 m²</td>
<td>……… %</td>
</tr>
<tr>
<td>100-200 m²</td>
<td>……… %</td>
</tr>
<tr>
<td>200-300 m²</td>
<td>……… %</td>
</tr>
<tr>
<td>over 300 m²</td>
<td>……… %</td>
</tr>
</tbody>
</table>

2. How many pharmacists work on average in one community pharmacy? (number) ………

3. How many other staff work on average in one community pharmacy under the responsibility of the pharmacist?

Licensed staff (not pharmacists but licensed to prepare and dispense) ………
Non licensed staff (e.g. shop assistants) ………

Business matters

1. What is the average annual turnover per community pharmacy in US $ ………
2. What is the proportion of turnover on average per community pharmacy in the following product-groups:

<table>
<thead>
<tr>
<th>Product-Groups</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs on prescription</td>
<td>.....</td>
</tr>
<tr>
<td>Drugs without prescription</td>
<td>.....</td>
</tr>
<tr>
<td>Medical aids</td>
<td>.....</td>
</tr>
<tr>
<td>Cosmetics and other beauty related products</td>
<td>.....</td>
</tr>
<tr>
<td>Food</td>
<td>.....</td>
</tr>
<tr>
<td>Dietary supplements (non registered vitamins or minerals)</td>
<td>.....</td>
</tr>
<tr>
<td>Non-food (except for the mentioned items)</td>
<td>.....</td>
</tr>
<tr>
<td>Others:</td>
<td>.....</td>
</tr>
</tbody>
</table>

### Pharmacy Practice

1. Are pharmacists in your country allowed to open a package and only dispense part of the contents?
   - O Always
   - O Sometimes
   - O In exceptional cases
   - O No

2. Do pharmacies/pharmacists prepare (compound) oral drugs in your country? (please tick a box)
   - O All pharmacies
   - O Most pharmacies
   - O Some pharmacies
   - O A few, special pharmacies
   - O No

3. Do pharmacies/pharmacists prepare (compound) sterile drugs in your country? (please tick a box)
   - O All pharmacies
   - O Most pharmacies
   - O Some pharmacies
   - O A few, special pharmacies
   - O No

4. Do pharmacies/pharmacists in your country perform urine tests (pregnancy, glucose)? (please tick a box)
   - O All pharmacies
   - O Most pharmacies
   - O Some Pharmacies
   - O A few, special pharmacies
   - O No

5. Do pharmacies/pharmacists in your country perform blood pressure tests? (please tick a box)
   - O All pharmacies
   - O Most pharmacies
   - O Some pharmacies
   - O A few, special pharmacies
   - O No

6. Do pharmacies/pharmacists in your country perform cholesterol tests? (please tick a box)
   - O All pharmacies
   - O Most pharmacies
   - O Some pharmacies
   - O A few, special pharmacies
   - O No
7. Do pharmacies/pharmacists in your country perform blood glucose tests? (please tick a box)
   O All pharmacies
   O Most pharmacies
   O Some pharmacies
   O A few, special pharmacies
   O No

8. Do pharmacies/pharmacists in your country perform general invasive tests (like blood tests)? (please tick a box)
   O All pharmacies
   O Most pharmacies
   O Some pharmacies
   O A few, special pharmacies
   O No

9. Is the presence of a pharmacist on the premises obligatory in your country, to be able to dispense drugs? Yes / No

10. What approximate proportion of the population in general visits usually the same pharmacy (provided they do not move)? \( \ldots \ldots \% \)

Dispensing in the community pharmacy

1. Are all drugs dispensed on prescription labelled with at least the name of the patient and the dosage? Yes / No

2. Are all drugs dispensed on prescription dispensed with a drug information leaflet? Yes / No

3. Do pharmacies keep computerised, patient medication records? (please tick one box)
   O All pharmacies
   O Most pharmacies
   O Some pharmacies
   O A few, special pharmacies
   O No

3.1 If yes, do these records also contain information on non-prescription drugs? (please tick one box)
   O Always
   O Most cases
   O Some cases
   O No

4. Do pharmacies routinely perform computerised interaction checks on Adverse Drug Reactions (drug-drug interactions, drug-disease interactions, contra-indications)?
   O All pharmacies
   O Most pharmacies
   O Some pharmacies
   O A few, special pharmacies
   O No

5. How many prescription items per day are dispensed per average pharmacy (number) \( \ldots \ldots \)

6. How many people a day are being helped (prescription, advice and/or OTC) on average by one community pharmacy? (number) \( \ldots \ldots \)

Over The Counter (OTC) in community pharmacies

1. Is it possible in your country to buy OTC (Over The Counter drugs, without prescription) in other places than community pharmacies? Yes / No
1.1. If yes, tick a box of the kind of places, indicate roughly what financial proportion in money and if they need a special licence.

<table>
<thead>
<tr>
<th>Place</th>
<th>Proportion</th>
<th>Special Licence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital pharmacies</td>
<td>...........%</td>
<td>yes / no</td>
</tr>
<tr>
<td>Drug store</td>
<td>...........%</td>
<td>yes / no</td>
</tr>
<tr>
<td>Gas station</td>
<td>...........%</td>
<td>yes / no</td>
</tr>
<tr>
<td>Supermarkets</td>
<td>...........%</td>
<td>yes / no</td>
</tr>
<tr>
<td>Bars/Restaurants</td>
<td>...........%</td>
<td>yes / no</td>
</tr>
<tr>
<td>Other places</td>
<td>...........%</td>
<td>yes / no</td>
</tr>
</tbody>
</table>

2. Is it possible in your country to obtain a prescription only-drug without prescription in a pharmacy (please answer this question in practical sense)?

Yes / No

2.1 If yes, please indicate how easy that would be

- Very easy
- Easy
- Not easy
- Exceptional

3. Is it possible in your country to obtain a prescription only-drug without prescription outside a pharmacy?

Yes / No

3.1 If yes, please indicate how easy that would be

- Very easy
- Easy
- Not easy
- Exceptional

---

Pharmacists in community pharmacies

1. How long is the university-educational program for pharmacists in your country after the secondary level (highschool, college) in years

- ........... Years

2. By what age does a pharmacist on average completes his/her university study

- ........... year

3. Is there a compulsory post-university (post masters) training for a pharmacist to licence as community pharmacist, after the completion of the university study?

Yes / No

3.1 If yes, how long is this extra education to obtain the licence?

- ........... years

4. Is there a compulsory post-graduate education for community pharmacists in your country, to be able to keep their licence to practice?

Yes / No

5. Is there an optional post-graduate education for community pharmacists in your country?

Yes / No

5.1 If yes, please indicate the rough proportion of participating pharmacists following such training

- All pharmacists
- Most pharmacists
- Some pharmacists
- Very few pharmacists
- None

6. Who pays this post graduate education (please tick the appropriate box(es))

- The individual pharmacists
- The pharmacist organisation
- Third parties (industry?)
7. Do community pharmacists in your country in general have regular consultation meetings with local general practitioners?
   - All pharmacists
   - Most pharmacists
   - Some pharmacists
   - A few, special pharmacists
   - No

8. How are the relations between community pharmacists and medical doctors in your country?
   (please tick one box)
   - Very good
   - Good
   - So so
   - Tense
   - Very tense

9. Do community pharmacists in your country in general have the right to prescribe medication?
   Yes / No

Are there any other items, specific and relevant for pharmacy in your country, which we did not mention in this questionnaire? If yes, Please note below.

If possible could you give us your national definition or description of what you consider Pharmaceutical Care to be (in English of course).
Appendix

A5 SELECTION OF ONGOING PHARMACEUTICAL CARE RESEARCH AND IMPLEMENTATION PROJECTS

A5.1 UNITED STATES
The nation-wide American Pharmaceutical Association has created the AphA foundation, which strongly co-operates with the pharmaceutical industry and helps the profession to re-engineer itself for the future by advancing the proliferation of pharmaceutical care integration and research into the practice setting. Advanced skills training is provided by the Advance Practice Institute, which is hosted by different universities each year. The foundation projects are called ImPACT (Improve Persistence and Compliance with Therapy). The hyperlipidemia project includes 32 pharmacy practice sites and is conducted in co-operation with Merck & Co. Results recently have been described in an series of posters at the 1998 AphA conference. Also in co-operation with Merck & Co, the AphA instituted practice research chapters at different Schools of Pharmacy throughout the USA. These chapters sometimes address pharmaceutical care issues, but especially in the field of student education.

In general comprehensive pharmaceutical care is rarely provided through community pharmacies, nevertheless pharmaceutical care is often provided through specialised clinics.

10.4.1 A5.1.1 California
The AphA-Merck chapters at the Pacific School of Pharmacy in Stockton is currently carrying out an implementation and value analysis of pharmaceutical care in a high volume prescription practice setting. Initially designed for a more comprehensive approach, the project now concentrates on program development for diabetes, hypertension, asthma, smoking cessation and general drug use review.

10.4.2 A5.1.2 Florida
In the birthplace of Pharmaceutical Care it is not surprising that the University of Florida is very active. Therapeutic outcome monitoring (TOM) programs have been developed for asthma, diabetes, angina, hypertension and hyperlipidaemia. These programs, however, seem to be being exported to other countries rather than being used in the state itself. A TOM-asthma study has been completed and the mixed results have been published. Currently the key pharmaceutical care researcher, Prof. Hepler, is involved in the assessment of preventable drug related morbidity, and the (economic) impact of DRPs through focus groups. At the same institute, Segal is concentrating on behavioural aspects of the implementation of pharmaceutical care.

One older published study by Kimberlin et al. described a project in the elderly dealing with the effects of an education program for community pharmacists on detecting drug-related problems in elderly patients. During the project patients were also telephoned for an interview, but no differences in patients’ knowledge of medication, medication use or the odds of having various potential problems with drugs could be found. The documentation system used in this study is described in another article.

Through the Internet, details of a practice project were obtained. In 1997 an office based, non dispensing pharmaceutical care practice was set up in Seminole Fl. with a grant from the American Pharmaceutical Association. Customers are billed for the services. No results from this project are available yet. The project (or firm) is called ‘Pharmaceutical Care of Florida Inc.’

According to some messages on the Internet, there now exists a possibility for pharmacists in Florida to prescribe a limited number of drugs from a formulary, but only in a pharmacy where the drug is dispensed. A prescribing pharmacist certainly could provide comprehensive pharmaceutical care if additional follow up is provided.

10.4.3 A5.1.3 Iowa
The Iowa Centre for Pharmaceutical Care has instructed 100 Iowa pharmacies to date and over 200 pharmacists and 100 technicians on the principles of pharmaceutical care practice and the required skills. The program is based upon the Minnesota model and therapeutic outcome monitoring and has been described. There is a

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1 Personal information Dr. C.D. Hepler, Dubow Centre for Pharmaceutical Care, Gainesvill, Florida, USA
supportive process of visiting and peer counselling for pharmacists in the implementation phase. To date results from the pharmaceutical care practice in those pharmacies are not known.

**10.4.4 A5.1.4 Maryland**
The University of Maryland is preparing a community based research study into the effects of an intervention in diabetes patients, to prevent the development of nephropathy by screening patients for microalbuminuria and stimulating the use of ACE-inhibitors. Another research project at the same university aims at enhancing and studying patient compliance with hormone replacement therapy.

**10.4.5 A5.1.5 Michigan**
The Department of Pharmacy of the Wayne State University has carried out research into the effects of pharmaceutical care in diabetes and hypertension, on the basis of a model, which seems slightly like Therapeutic Outcome Monitoring. Although the diabetes study had a very high rate of patients drop-out (because of lack of interest), the method and the results are interesting. The final glycated hemoglobin and fasting plasma glucose concentrations in the intervention group were significantly changed, indicating a better degree of glycemic control. No change in Quality of Life was demonstrated, using a derived SF-36 measure, the Health Status Questionnaire.

In the hypertension study over a period of 5 months, a significant decrease in mean blood pressure were noted from baseline to final assessment. In the reference group no significant change could be found. No change in Quality of life could be demonstrated. At the University of Michigan a Pharmaceutical Care Research & Education project is active, but apart from an intake form, no other information could be found.

**10.4.6 A5.1.6 Minnesota**
A major project that has just been concluded by Strand, Cipolle and Morley, involved the implementation of the comprehensive pharmaceutical care philosophy into practice. The results have not yet been published in a peer reviewed journal, but are currently occasionally being distributed in presentations and can be found in Chapter 6 of the book Pharmaceutical Care Practice. Some results of the project can also be found in an interview conducted by the editor of the Pharmaceutical Journal. The practicalities of the project were described in American Pharmacy.

Many drug therapy problems have been identified and solved during the two-year research period. There was an average of 0.8 drug problems per patient and 43% of the patients had problems, according to the pharmacists. Remarkable is the fact that the most frequent indications for patients receiving pharmaceutical care were sinusitis, bronchitis, otitis media, hypertension and pain. None of the diseases for which disease oriented models are being developed elsewhere, appear in this list, apart from hypertension. Amazingly the most frequent problem was that patients needed additional medicines (23%) and adverse drug reactions accounted for 21% of the problems. Most of the problems were solved because of the care provided.

**10.4.7 A5.1.7 Ohio**
The Ohio State University College of Pharmacy has implemented a cholesterol management program in two community pharmacies and has recently started a pharmaceutical care pharmacy attached to a medical clinic in a homeless shelter. The college also supports a certified pharmaceutical care network of 10 independent pharmacies.

Another group within the same university has studied the perceptions of patients and pharmacists during pharmaceutical care in hypertension.

**10.4.8 A5.1.8 Texas**
In a study by the University of Texas College of Pharmacy into the effects of pharmaceutical care for asthma patients it was found that in a small group of patients (22 intervention and 22 reference patients) the mean health care payments and utilisation were lower after the provision of pharmaceutical care. However those results did not reach statistical significance. The quality of life improved significantly in the study group. A larger study is planned.

Texas is also the state where Stasny developed PharmCare, a commercial organisation, which focussed on structural design. This programme was used in the APhA training program, which is currently undergoing revision.

**10.4.9 A5.1.9 Virginia**
The Department of Pharmacy and Pharmacuetics of the Virginia Commonwealth University has published the results of a study into the effects of pharmaceutical care in hyperlipidaemia. It was a very small study involving only 2 pharmacies and 25 patients. However, they used some validated instruments and could conclude that the care provided improved the lipid values, the quality of life (2 domains of the SF-36) and the satisfaction of the patients with the services.
Another larger non-academic study in Virginia has been published by Munroe et al. They evaluated the economic effects of the pharmacists' contribution to disease management programs in the field of asthma, diabetes, hypertension and hypercholesterolaemia. The pharmacy based interventions were in fact pharmaceutical care-like, although they were dictated by disease management protocols. The interventions were proven to be cost effective in spite of the fact that the prescription costs in the intervention group were higher than those in the reference group.

10.4.10 A5.1.10 Washington

In Washington the emphasis of the work in pharmaceutical care seems to be on the epidemiological aspects. An asthma study by Sterchas is ongoing, but publications that study could not be identified. Recently a number of articles appeared in the Journal of the American Pharmaceutical Association, which indicated that a project in Medicaid patients (CARE) was conducted in the state of Washington. Christensen et al. (the researchers come mainly from North Carolina) researched the implementation of pharmaceutical care, which they call cognitive services. They implemented successfully a system for documentation and payment. The performance of the pharmacists was strongly influenced by payment and e.g. practice setting and volume of prescriptions dispensed. The study showed a potential saving effect of the cognitive services unless the intervention resulted in addition of drug therapy.

A5.2 Australia and New Zealand

10.4.11 A5.2.1 Australia

At the Victoria College of Pharmacy in Parkville a new project, based upon asthma management is still in its infancy. The content of the project reflects the European TOM-asthma studies and a number of quantitative measures are being studied. A cost-benefit analysis is going to be part of this project as well. A pilot was started in the first half of 1998. The project is called 'The use of asthma as a model to evaluate the implementation of pharmaceutical care in the community pharmacy'.

In 1997 Gilbert concluded a study into the effects of comprehensive pharmaceutical care at the University of South Australia, where a beneficial effect of the care was proven. Benrimoj at the University of Sydney also is continuously involved in projects to prove the value of pharmaceutical care to society, from a clinical pharmacy perspective. The new commercialised practice model of 'Forward Pharmacy', which has a number of pharmaceutical care aspects like medication review and counselling, also has been initiated by this group.

A5.2.2 New Zealand

An asthma intervention study is being performed in the Southland Region, to demonstrate the impact of providing comprehensive pharmaceutical care on the health outcomes of asthmatic patients (clinical outcomes and quality of life). There will be 5 pharmacists providing care. Preliminary results were presented in 1999.

A5.3 Canada

10.4.13 A5.3.1 Quebec

In this province certain elements of pharmaceutical care have been implemented in community pharmacy practice for some time now. Because managed care might interfere with the locally provided pharmaceutical care, the Ordre de Pharmaciens du Québec has issued a position paper. In this position paper the Ordre states that all managed care programs in the province should be endorsed by the Ordre and a number of conditions for approval are formulated.

Canada, especially the Quebec region, has been one of the first to pay for the extra pharmaceutical care activities by pharmacists in the field of concurrent drug use evaluation. These payments are result based. A fee of $15.45 CND rewards the documented delivery of a 'opinion pharmaceutique'. The possible components of this 'opinion' are stated in the table A5.1.

Even if, through any documented pharmacist intervention (see table A5- 2 for a list of combined codes for recommendation and reason) a certain drug is not delivered, the pharmacist gets a financial compensation for the invested time i.e. $7,00 CND.

The Quebec system ensures the documentation of some medication-surveillance activities, which since 1997 also are being demanded by law. Additional payments are being made when the pharmacist reports his findings to the prescribers. All special fees are paid from a fund, which has been created, with 1% of the total of normal pharmacist fees in 1992. This fund has not yet been exhausted. In spite of the payment only 70% of the Quebec

pharmacy teams have charged the fund for these special fees, which means that apparently 30% of the
pharmacies do not yet perform medication surveillance or at least do not bother to document their
interventions and seek payment. The number of claims per pharmacy is still very low^34.

<table>
<thead>
<tr>
<th>Code</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>999383</td>
<td>Prior intolerance</td>
</tr>
<tr>
<td>999407</td>
<td>Falsified prescription</td>
</tr>
<tr>
<td>999415</td>
<td>Prior allergy</td>
</tr>
<tr>
<td>999423</td>
<td>Prior failure or non response to treatment</td>
</tr>
<tr>
<td>999431</td>
<td>Significant interaction</td>
</tr>
<tr>
<td>999458</td>
<td>Irrational choice of product</td>
</tr>
<tr>
<td>999466</td>
<td>Dangerously high dosage</td>
</tr>
<tr>
<td>999474</td>
<td>Sub-therapeutic dosage</td>
</tr>
<tr>
<td>999482</td>
<td>Irrational duration of treatment</td>
</tr>
<tr>
<td>999490</td>
<td>Product not working for indication</td>
</tr>
<tr>
<td>999504</td>
<td>Irrational quantity</td>
</tr>
<tr>
<td>999512</td>
<td>Overuse</td>
</tr>
<tr>
<td>999520</td>
<td>Therapeutic duplication</td>
</tr>
</tbody>
</table>

Table A5-1

<table>
<thead>
<tr>
<th>Code</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>999539</td>
<td>Interruption of a drug. Re: allergy</td>
</tr>
<tr>
<td>999547</td>
<td>Interruption of a drug. Re: Side effect</td>
</tr>
<tr>
<td>999555</td>
<td>Interruption of a drug. Re: Interaction</td>
</tr>
<tr>
<td>999563</td>
<td>Interruption of a drug. Re: Pregnancy or breast feeding</td>
</tr>
<tr>
<td>999571</td>
<td>Modifying dosage. Re: Side effect</td>
</tr>
<tr>
<td>999585</td>
<td>Modifying dosage. Re: Efficacy</td>
</tr>
<tr>
<td>999598</td>
<td>Therapeutic substitution. Re: Side effect or intolerance</td>
</tr>
<tr>
<td>999601</td>
<td>Therapeutic substitution. Re: Interaction</td>
</tr>
<tr>
<td>999695</td>
<td>Therapeutic substitution. Re: Efficacy</td>
</tr>
<tr>
<td>999628</td>
<td>Therapeutic substitution. Re: Pregnancy or breast feeding</td>
</tr>
<tr>
<td>999636</td>
<td>Adding required complimentary medication</td>
</tr>
<tr>
<td>999644</td>
<td>Reporting non-compliance. Overuse &gt; 20%</td>
</tr>
<tr>
<td>999652</td>
<td>Reporting non-compliance. Underuse &gt;20%</td>
</tr>
</tbody>
</table>

The system, which now also has been introduced in British Columbia, appears to be the only structured
approach to remuneration of pharmaceutical care activities on an individual pharmacy-level, apart from the
payment provided in Australia and New Zealand for performing drug use evaluations.

10.4.14 A5.3.2 Ontario
The Faculty of Pharmacy of the University of Toronto also is active in the field of pharmaceutical care. They
started with analysing the practice functions necessary for the delivery of pharmaceutical care^35. They then
developed an education and practice model based upon the philosophy of pharmaceutical care. Six hospital
pharmacists and one community pharmacist developed a tool for teaching and providing pharmaceutical care,
called the 'Pharmacist's Management of Drug-Related Problems', which has been published^36.

10.4.15 A5.3.3 Alberta
The University of Alberta runs a practice research project based upon a systematic approach in identifying drug
related problems. Retaining actual patient information and documentation is part of the project^37. The principal
researchers, Karen Farris and Rosemin Kassam are leading a research project on the effects of Pharmaceutical
Care, which is somewhat similar to the Dutch OMA-project (See chapter 4), but on a more general level with a
lesser defined patient group. The objectives are:
- to implement a model of pharmaceutical care to elderly patients in community based pharmacy
- to monitor the behaviour of all participants
- to compare health related quality of life and satisfaction with pharmacy services in an intervention and
  reference group
- to compare health utilisation and costs including prescription medications, physician office visits and
  hospitalisation
- monitor the behaviour of all participants including patients, pharmacists and prescribers
The actual project, called the Pharmaceutical Care Research and Education Project (PREP) took shape around August 1996 and is funded by professional organisations as well as the pharmaceutical industry. The participating intervention pharmacists in 5 participating pharmacies have adapted their sites to the requirements and have received training48. Five other pharmacies have been assigned to be control pharmacies. Patients were recruited in the fall of 199749.

Some results of the pilot study are now available. The number of medicines utilised by the treatment group was significantly lowered from 6.9±2.6 to 5.3±2.0 \( (p=0.02) \). Changes in most other parameters had a trend in favour of pharmaceutical care, but were neither statistically nor clinically significant in the pilot49. The same study group have also developed and validated an instrument to assess patient satisfaction with pharmacists providing pharmaceutical care50 and is soon to publish information and results on the training program for the pharmacist.

A5.4 South America

In May 1997 a project to address seven of the most common barriers for pharmaceutical care was completed in Halifax, Nova Scotia51. The project was carried out in one pharmacy only and included the role of technicians, the development of outcomes management tools and an appointment-based care program was implemented in 50 patients. Results from this project have been described52,53. The title of the project was ‘Dalhousie’s pharmaceutical care project’. Some work has also been done on assessing and documenting pharmacotherapeutic outcomes54 and on describing patient-specific drug-related problems55.

A5.5 Asia

A5.5.1 Japan

The Japanese Ministry of Health and Welfare has established a payment structure for all Japanese health care providers, including pharmacists, that is based upon a point system. Table A6-3 sums up the possible services that are paid for, and the points earned. Each point yields approximately US $ 0.10 (= 0.10 Yen).

<table>
<thead>
<tr>
<th>Service</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtaining drug histories and counselling</td>
<td>21 per prescription</td>
</tr>
<tr>
<td>Suppl. Medication counselling + written info</td>
<td>5 or 20 per prescription</td>
</tr>
<tr>
<td>Detection of drug interactions resulting in changed prescription</td>
<td>25</td>
</tr>
<tr>
<td>Detection of drug duplications resulting in changed prescription</td>
<td>25</td>
</tr>
<tr>
<td>PhC services at home, prescribed by physician</td>
<td>550/month/patient</td>
</tr>
<tr>
<td>Preparing sterile home care IV-products</td>
<td>30</td>
</tr>
<tr>
<td>Clinical pharmacy fee</td>
<td>600/months/patient</td>
</tr>
<tr>
<td>Hospital pharmacokinetic fee</td>
<td>650-3350/month/drug</td>
</tr>
</tbody>
</table>

1) Fee depends on prescription duration
2) Fee depends on drug type and clinical setting

Apart from these fees, which certainly will stimulate Japanese pharmacists to enter into the field of pharmaceutical care, a project is underway to evaluate an integrated circuit card (‘smart card’) containing disease and medication histories. Because physicians dispense most medications in Japan, the involvement of pharmacists with IC cards has so far been limited, but pharmacy specific software is now under development56.
A 5.6 Europe

10.4.18 A 5.6.1 Denmark

Although the structure of Danish pharmacy (large, well equipped pharmacies, highly developed social pharmacy) is ideal for the provision of pharmaceutical care, the strict privacy laws of that country prevent pharmacists from keeping medication data in their pharmacies without individual informed consent from each patient. Computerised drug use evaluation has not yet been implemented and this strongly hinders the national development of pharmaceutical care as well as the fact that the pharmacy owners await the development of a payment structure for additional services. Additionally the attention of the Danish pharmacists for the time being is focussed on Good Pharmacy Practice and quality-management. In hospital there is a low level of the development of the clinical role of pharmacy but that is improving.

However, in co-operation between the Danish College of Pharmacy Practice, the Danish Pharmaceutical Association and the University of Florida, a Therapeutic Outcome Monitoring project for asthma patients was initiated in 1993. The results have not yet been fully published, but can partially be studied in the proceedings of the section for community pharmacists of the 1996 FIP conference. All participants in the study, patients, doctors and pharmacists, perceived the Danish TOM program as being effective in changing medication use and in improving clinical and psychosocial outcomes.

Apart from the Biomed elderly study, other Danish projects are currently a TOM diabetes project, a project in the field of angina pectoris, and a model development for pharmaceutical care at the counter. The driving force behind pharmaceutical care (research and continuing education) in Denmark seems to be the Research and Development Division at the Pharmakon, The Danish College of Pharmacy Practice in Hillerød. This department also provides the co-ordinator for the PCNE Asthma collaboration, and furthermore has programs on outcome assessment and counselling.

10.4.19 A 5.6.2 Finland

When the European TOM-asthma project was propelled in 1995, Finland was an enthusiastic partner in the PCNE co-operation. However, a large-scale study was stopped when asthma counselling became obligatory for all Finnish pharmacies in 1997. Nevertheless, the first results of the small asthma-TOM project in Finland (only 28 patients) have recently been published as a poster. The clearest change was in the severity of the asthma symptoms. Other results are pending.

10.4.20 A 5.6.3 France

In France the concept of pharmaceutical care is not yet fully known to the community pharmacists. In spite of this barrier the ‘Ordre National des Pharmaciens’ is trying to establish implementation projects for pharmaceutical care in the French community pharmacies. Currently (1998-1999) some standards exist and are being piloted for the ‘suivi pharmaceutique’ in asthma. This implementation project is partially based upon the different TOM-asthma projects in Europe. Implementation of projects in French pharmacy is difficult, because there is an unwritten understanding that a pharmacy should not distinguish itself from its colleagues. The basis for the implementation of future pharmaceutical care is currently being laid through the development of a system of ‘opinion pharmaceutique’, which basically is the implementation of a system to document potential drug related problems and their solutions in community and hospital pharmacy.

10.4.21 A 5.6.4 Germany

The German pharmacists until recently have concentrated their attention on the logistics of their pharmacies and over the counter sales. The education of pharmacists is still rather traditional and usually does not include pharmacotherapy or social pharmacy (except for Berlin, Greifswald and Halle). Only in 1989 pharmacology became part of the curriculum and recently clinical pharmacy. However, in the former East Germany these topics were well developed within the educational system. In Berlin and soon in Marburg pharmaceutical care is introduced for students into the last semester at the universities.

In 1994 the German Pharmacist Association (ABDA) introduced the concept of pharmaceutical care (or ‘Pharmazeutische Betreuung’) in Germany at a symposium in Frankfurt, where Hepler was also present. At the same time Schaefer described the new paradigm in the pharmacist journal. Schaefer also described the German status of pharmaceutical care in 1996 and indicated that in Germany there was, and still is, some scepticism with the concept in practice. The relationships with medical practitioners have only just been receiving some attention, but overall it seems that in Germany is quite fast developing in the direction of pharmaceutical care practice. Currently there are two major co-operating research centres for pharmaceutical care in Germany and some activity has also started on a local scale.

One centre is the Department of Pharmacoepidemiology and Social Pharmacy of the Humboldt University in Berlin. They are performing one study into pharmaceutical care in the elderly in close co-operation with the PCNE. A similar study in Berlin has been concluded, and results will be available in November 1999 in the dissertation of Winterstein. The co-operation with the Netherlands has resulted in the publication of an article on the comparison of the role of education and pharmacy practice in pharmaceutical care between the two...
countries. In 1999 in Berlin the centre also started recruiting pharmacists and physicians for a joint effort to
decrease elevated blood pressure. The other centre is the information and documentation centre of the ABDA. They have been co-ordinating one study, a TOM asthma study. This study has been concluded in 1999 and publications are under way.

Both centres offer workshops on pharmaceutical care for pharmacists and now also co-operate in further studies like a study into the effects of pharmaceutical care in congestive heart failure (Lipopharm). This start of this project is delayed while awaiting the approval of the regional association of physicians.

There also have been some developments in the field of pharmacy software. A description of a basis-module by Prof. Schaefer (Berlin) is supported by the (ABDA) and seven software houses have now implemented such modules.

Apart from these major studies there is an active group of community pharmacists in Augsburg, which has been applying pharmaceutical care in asthma and COPD, and evaluated its effects. Furthermore there are active groups in Hessen focussing on OTC counselling in dyspepsia, one in Brandenburg focussing on pharmaceutical care in hypertension and one in Baden Würtemberg which is focussing on type II diabetes. These last three studies are being carried out under the supervision of the social pharmacy workgroup from the Humboldt University in Berlin.

Finally there is some activity at the University of Halle. One project on patient counselling concluded in 1995 and dealt with the practical problems of patients taking drugs. Currently the university is trying to start a working group on Pharmaceutical care and Pharmacoconomics.

New projects are ongoing in the field of metabolic syndrome (Saarland), detecting drug related problems and pharmaceutical care in rural areas (Bavaria), pain (Dresden) and neurodermitis.

10.4.22 A5.6.5 Great Britain

The development of pharmaceutical care in Great Britain suffers from three major characteristics of their health system. The British pharmacies operate under the National Health System (NHS) and this implies that remuneration for dispensing, including the costs of the drugs, has to be in line with the available limited budget. Secondly computerised medication surveillance is not customary, although most community pharmacies hold computerised medication records. Thirdly British pharmacies are relatively small and therefore their pharmacists do not have a large staff and the available time for providing care is limited. On the other hand, because most pharmacies are small, there are good relations between the pharmacists and clients.

The British pharmacists, headed by the Royal Pharmaceutical Society of Great Britain, also have pharmaceutical care as a central theme for future development. In 1992, when the report of the joint working party on the future role of the community pharmaceutical services appeared, the concept of pharmaceutical care was limited and more oriented towards providing services than towards providing care. In October 1995 the council of the society published a discussion paper for their members on ‘Pharmacy in the new age’ with 3 different scenarios for the future of pharmacy in Great Britain. The nation-wide discussion (over 5000 participants) resulted in the consultation paper ‘The New Horizons’ from which a strategy for the future was derived. This strategy was published as ‘Building the Future’ in 1997 and contains many elements of pharmaceutical care, including the focus on the patient and counselling. However, there still is little emphasis on the continuity and documentation of care.

The role of the client is being studied separately from the provision of care, as is best illustrated by Morrow et al. (in N. Ireland) or more recently by Tully et al.

To date no literature on pharmaceutical care projects in Great Britain has been found but the country is one of the leaders in pharmacy practice research.

10.4.23 A5.6.6 Ireland

Since 1997 Irish community pharmacies have been obliged to perform a medication review and some form of individual patient care for all patients. This is provided for in a Contract between the Pharmacy and the Health Board, the agent of the Department of Health. The number of contracts is limited on the basis of ‘public health need’ and entitles pharmacies to supply medicines to all patients whose medicines costs are partly or wholly reimbursed by the State, which is nowadays most patients. This legislation recognises explicitly the role and expertise of the pharmacist in primary care. The contract also initiated a patient-care fee instead of a dispensing fee for the pharmacy for certain medicines that were previously dispensed from a hospital e.g. interferons. Also a provision has been installed for the pharmacist who refuses to dispense a prescribed medicine based upon the professional judgement, and the fee will still being paid.

Apart from the PCNE elderly project, Dr. Henman of Trinity College in Dublin is involved in the Unicare project. This is an implementation project of pharmaceutical care in 32 pharmacies. Attached to the implementation is also a research programme to study the effectiveness of the provided care and the procedures that need to be adopted to implement pharmaceutical care in the Irish healthcare system. The same Unicare project is the driving force behind three smaller programs, one to re-engineer the pharmacy environment, one to implement suitable information systems, and one to promote pharmaceutical care to the patients and others.
such as GPs. Especially the last program is interesting because the promotion of pharmaceutical care seems to be a forgotten topic in many countries. The long term aim of the project is to change the basis of community pharmacy practice in Ireland.

10.4.24 A5.6.7 The Netherlands

Research projects
From 1992 onwards a number of studies has started into pharmaceutical care in community pharmacy practice. Smaller projects, both at the University of Groningen and the University of Utrecht deal with elements of pharmaceutical care in community pharmacy practice.

- Barriers for Pharmaceutical Care
Co-operation of the Department of Social Pharmacy and Pharmacoepidemiology of the Groningen University with the Pharmaceutical Care Network Europe (PCNE Foundation) has led to a study into the barriers for the provision of pharmaceutical care in a European context of which the report can be found in this dissertation (Chapter 8).

- Effects of the pharmaceutical care in asthma and the elderly (TOM and OMA)
From 1995 to 1997 two studies into the effects of intensive pharmaceutical care have been performed in the elderly and asthma patients, named OMA and TOM respectively. Both projects are conducted with international co-operation under the auspices of PCNE and the co-operation for the elderly project is funded by Biomed. The studies are both co-ordinated at the Department of Social Pharmacy and Pharmacoepidemiology of the Groningen University and the results of are presented in this dissertation.

- Protocols and diabetes care
At the same department a research project into the structure and effect of pharmaceutical care in diabetes is being performed. This study concentrates on drawing up and implementing protocols for providing care, to help the pharmacist and to stimulate the co-operation between pharmacists, GPs and specialists.

- Effects of pharmacists on inhaler medication in asthma
A group of pharmacists started a project in 1998 under the supervision of the University of Maastricht. During the project a number of asthma patients will receive pharmaceutical care, whereas the reference patients will not receive special care. The project should result in a cost-benefit analysis of the provided care.

- Master-classes of the Stevenshof Institute for Research (SIR)
The Stevenshof Institute in Leiden, which is related to the University of Utrecht, organises yearly master-classes in pharmacy practice research for community pharmacists. Many of the research projects in this institute deal with the development and implementation of pharmaceutical care. Examples from 1996-1997 are cardiovascular diseases, asthma/COPD, rheumatic diseases and postmenopausal hormone substitution.

Protocol development on a national scale
Apart from the development of protocols within research projects and courses, national organisations also became active, especially since 1995.

The Health Base Foundation, a subsidiary of the software company Pharmapartners, was one of the first organisations to start developing care protocols which could also be implemented in community pharmacies. However, their FPZ protocols are incorporated in a care-concept (‘Zorgconcept’) that leans strongly on good co-operation with the GP, because Pharmapartners also develops software for the medical profession.

The WINAp (a division of the KNMP) and the Health Base Foundation now co-operate to develop protocols and care standards for community pharmacists, based upon the Dutch quality standards for pharmacy (NAN = Dutch Good Pharmacy Practice Standards). The protocols and care standards, which have already been developed by the KNMP/WINAp, served as a cornerstone for pharmaceutical care weeks in all Dutch pharmacies. During three consecutive years these weeks have been organised with different topics; in spring 1996 about the elderly, in 1997 about childhood diseases and in 1998 about hypertension. During the hypertension week, the newest WINAp FPZ standard was used. The standard on cancer will be used in 1999. WINAp also contributes to two implementation projects called Cara-check (in asthma) and Diabetes-Check.

10.4.25 A5.6.8 Northern Ireland

The strategy for community pharmacy of the Pharmaceutical Society of Northern Ireland does acknowledge pharmaceutical care as a primary objective of pharmacy in the future. Bell at al. studied the extend to which pharmacists in N. Ireland provided pharmaceutical care. From this study it appeared that community pharmacists scored well on patient record screening (an activity for which they are paid) but less well on direct patient related activities. In another publication the qualitative investigations of the attitudes and opinion of community pharmacists to pharmaceutical care has been described.

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‡ Personal information from Dr. M. Henman, Trinity College, Dublin, Ireland
Although not much has been published apart from an asthma project conducted in the early nineties\(^7\), the School of Pharmacy of Queens University in Belfast is also carrying out a number of projects. They are the coordinating centre for the European PCNE project in the elderly, have carried out a TOM-asthma study in Malta and have piloted studies in angina pectoris, the eradication of Helicobacter Pylori, and smoking cessation. Work is ongoing on OTC drug misuse and on the provision of domiciliary pharmaceutical care to elderly patients. The results of most studies appear in PhD theses or are presented at the British Pharmaceutical Conferences. Especially the theses are difficult to access for outsiders.

Additionally the Queens School of Pharmacy is involved in some pharmaceutical care research on Malta.

### 10.4.26 A5.6.9 Norway
Like in other Scandinavian countries, Norwegian pharmacy practice resembles the Dutch structure. However, since automation of pharmacies has not yet come to the point where medication surveillance is an automatic part of drug-delivery, the opportunity for the implementation of comprehensive pharmaceutical care fully is still somewhat limited.

Currently there are only two pharmaceutical care projects. The Norwegian Association of Proprietor Pharmacists has conducted a pilot TOM-asthma study that was concluded in August 1998 and reported in the spring of 1999. The collection of data from the main study will finish during the autumn 1999. The Nordstjernen pharmacy in Bergen started an individual drug-counselling service also in 1997. This service concentrates on detecting and correcting drug-related problems and on providing information to the patient, especially in the elderly. An interesting aspect of this project is that the local patient organisations have accepted that the pharmacy will charge the patients for this service (about the same amount as for a doctor's consultation)\(^8\).

### 10.4.27 A5.6.10 Spain
Although the interest for pharmaceutical care in Spain, which is called 'Atencion Farmacéutica', is increasing, there is also increasing pressure on pharmacy of managed care plans, diminishing reimbursement, pressure on deregulation of pharmacy law and pressure of consumer organisations\(^8\). Efforts to implement pharmaceutical care have met with a number of barriers from pharmacists, doctors, patients and the healthcare system\(^8\).

In co-operation with Hepler the TOMCOR program started in 105 pharmacies in different cities in Spain by the end of 1997. The project comprises pharmaceutical care for patients with coronary heart disease. The project is organised by REAP, a Spanish primary care network. Because of a lack of social pharmacy education sites, academic support is obtained from the Department of Preventive Medicine at the Medical School of Oviedo\(^8\). Results are not available yet, but the researchers had to deal with a 25% drop-out initially due to co-operation problems with pharmacists and physicians\(^8\).

Another 'Atencion Farmacéutica' project is being co-ordinated by the Pharmaceutical College in Valencia. The aim of that project is to give information to the patients and help them control the interaction with their pharmaceutical treatment, if necessary in co-operation with their doctor. From the data available it is unclear whether the activities in this project could be called pharmaceutical care. The core fields seem to be atherosclerosis and the distribution of medicaments in minor diseases\(^8\).

During the FIP conference in 1999 the results of a pharmaceutical care project in hypertension was presented, conducted by 7 pharmacists in Sevilla, under supervision of the University of Granada and the local college of pharmacy\(^8\). The methodology of another hypertension project in the Barcelona region was presented as a poster\(^8\). Another project dealt with inflammatory bowel diseases\(^8\). These Spanish projects seem to concentrate on identifying and solving drug related problems according to the methodology of Strand\(^13\), but for the time being not on final outcomes.

A pharmaceutical care project on migraine is soon to be started in several provinces. But because projects have not been published in accessible literature, it is difficult to get better descriptions of the research and implementation projects in Spain.

### 10.4.28 A5.6.11 Sweden
Sweden is the country where the concept of Good Pharmacy Practice (GPP) has originated, and taken up much time and energy of the professional organisation. Currently the only identifiable project in the field of pharmaceutical care is the Swedish OMA project, part of the PCNE Biomed study.

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\(^8\) Personal information from participating pharmacists, Nordstjernen Pharmacy, Bergen, Norway
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### A6 Questionnaires Used in the TOM (And OMA) Project

This appendix gives an overview of the questionnaires used in the TOM. The sets of questionnaires for the OMA project were similar. Minor differences can be found for questions about asthma, which were replaced by questions about e.g. benzodiazepine use in the OMA project or omitted. If appropriate, reference patients did not receive all questions. For them, questions specifically about pharmaceutical care were omitted.

These translations into English have **not** been validated, and cannot be used as such. The layout has also been changed to fit the format of the thesis.

**A6.1 Final patient questionnaire TOM project**

This questionnaire has been used for the final evaluation of the TOM project, and was sent directly to the intervention patients. Reference patients also received a similar questionnaire. Questions not posed to the reference patients are marked with an asterix (*).

**Patient no: ..................**

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. What date are you completing this questionnaire?</td>
<td>.....-.......-.............</td>
</tr>
<tr>
<td>1. How often do you get the pharmacy to collect your medicines</td>
<td>..... times per months or ..... times per year</td>
</tr>
<tr>
<td>or do you receive your medicines from the pharmacy?</td>
<td></td>
</tr>
<tr>
<td>2. Do you always get information leaflets with your medicines?</td>
<td>O No, never</td>
</tr>
<tr>
<td>(Please tick one answer)</td>
<td>O Usually not</td>
</tr>
<tr>
<td></td>
<td>O Occasionally</td>
</tr>
<tr>
<td></td>
<td>O Usually</td>
</tr>
<tr>
<td></td>
<td>O Always</td>
</tr>
<tr>
<td>3. If yes, do you understand these leaflets</td>
<td></td>
</tr>
<tr>
<td>(Please tick one answer)</td>
<td></td>
</tr>
<tr>
<td>4. Do you sometimes have one of the following problems with your medicines?</td>
<td></td>
</tr>
<tr>
<td>(Please tick one answer per topic)</td>
<td></td>
</tr>
<tr>
<td>- Swallowing medicines</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Opening containers etc.</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Using strips</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Dirty taste of medicines</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Forgetting to use medicines</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Reading labels on containers</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Reading information leaflets</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>- Occurrence of side-effects</td>
<td>O Yes O No</td>
</tr>
<tr>
<td>5. Have you been admitted to hospital since 1 January 1995</td>
<td></td>
</tr>
<tr>
<td>(Please tick one answer)</td>
<td>O Yes</td>
</tr>
<tr>
<td></td>
<td>O No (go to Question 6)</td>
</tr>
<tr>
<td>5.1 If yes, how often?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>..... times</td>
</tr>
<tr>
<td>5.2 How often have you been admitted because of your asthma?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>..... times</td>
</tr>
</tbody>
</table>
6. Did you have a personal contact with your GP during the last 6 months?  
(Please tick one answer)  
[ ] Yes  
[ ] No

6.1 If yes, how often?  
[ ] ....... times

7. Has the GP or specialist diagnosed any new diseases in your case during the past year?  
(Please tick one answer)  
[ ] Yes  
[ ] No

7.1 If yes, what disease(s)?  
[ ] ............... 
[ ] ............... 
[ ] ............... 
[ ] ............... 

The next questions deal with the pharmacist of the pharmacy where you normally get your medicines.

8. Do you personally know the pharmacist of your pharmacy?  
(Please tick one answer)  
[ ] Yes  
[ ] No  
[ ] Don't know

9. According to your experience, does your pharmacist have contact with your GP?  
(Please tick one answer)  
[ ] Yes  
[ ] No  
[ ] Don't know

10. Do you think the pharmacist is an expert in the field of medicines?  
(Please tick one answer)  
[ ] Not at all  
[ ] Somewhat  
[ ] Reasonably expert  
[ ] Expert  
[ ] Very expert  
[ ] Don't know

11. Did you talk with the pharmacist personally during the last year?  
(Please tick one answer)  
[ ] Yes  
[ ] No (go to question 19)

11.1 If yes, how often?  
[ ] ....... times

11.2 How long did those talks last on average?  
[ ] ....... minutes

12. Where did you speak with the pharmacist?  
(Please tick one answer)  
[ ] In the pharmacy  
[ ] At home  
[ ] Both at home and in the pharmacy  
[ ] By phone  
[ ] Other: ..............

13. How often during the last year have you initiated the contact with the pharmacists, to discuss problems with your medicines?  
(by phone or in the pharmacy)  
[ ] ....... times

14. What did you talk about with your pharmacist?  
(please tick one box per topic)  

<table>
<thead>
<tr>
<th>Topic</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The action of your medicines</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The side effects of your medicines</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The correct use of your medicines</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The use of over the counter medication</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The pharmacy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Home delivery of medicines</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Your diseases and complaints</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
- You lifestyle habits (smoking, drinking, exercise)
- Your hobby’s
- Your home situation
- Your relationships with physicians
- Health and disease in general
- Other topics, e.g.

15. What did you think about those consultations in general (please tick one box per topic)

- Clarifying
- Pleasant
- Useful
- Professional
- Too short
- Personal
- Friendly
- Too long
- Annoying
- Meaningful
- Unstructured
- Informative

16. Did your medicine use change as a result of your contact with the pharmacist during the last year?

- Yes
- Sometimes
- No

16.1 If yes, what has changed? (Please tick one box per item)

- The number of medicines to be used (more or less)
- The time of use
- The frequency of use per day
- The way of use
- The use of OTC medication
- Something else, e.g. ........................................

17. Did your pharmacist during the last 12 months discuss the directions for use, effect and/or side effects of your medicines with you?

- Yes
- No
- I don’t know

18. How incorrect or correct do you find following statements? Please indicate per statement by ticking the appropriate box.

<table>
<thead>
<tr>
<th>Absolutely correct</th>
<th>Mainly correct</th>
<th>I don’t know</th>
<th>Mainly incorrect</th>
<th>Absolutely not correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. My pharmacist is interested in my wellbeing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. When I speak with the pharmacist, there is enough privacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. When I speak with the pharmacist, there is sufficient time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. I am satisfied about the way the pharmacist talked with me about my medicines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You may skip question 18, if you have not spoken with the pharmacist during the last 12 months.
19. Do you know the pharmacy assistants of your pharmacy?  
(Please tick one answer)
- Yes
- No
- Some

20. Did an assistant-pharmacist during the last 12 months discuss the directions for use, effect and/or side effects of your medicines?  
(Please tick one answer)
- Yes
- No
- Don't know

21. Do you find the assistant pharmacist an expert in the field of medicines?  
(Please tick one answer)
- Not at all
- Somewhat
- Reasonably expert
- Expert
- Very expert
- Don't know

You may skip question 22, if you have not spoken with the assistant-pharmacist during the last 12 months

22. How incorrect or correct do you find following statements?  Please indicate per statement by ticking the appropriate box.

<table>
<thead>
<tr>
<th>Absolutely correct</th>
<th>Mainly correct</th>
<th>I don't know</th>
<th>Mainly incorrect</th>
<th>Absolutely not correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The assistant-pharmacist is interested in my wellbeing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. When I speak with the assistant-pharmacist, there is enough privacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. When I speak with the assistant-pharmacist, there is sufficient time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. I am satisfied about the way the assistant-pharmacist talked with me about my medicines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following questions deal with the GP

23. Did your GP during the last 12 months discuss the directions for use, effect and/or side effects of your medicines?  
(Please tick one answer)
- Yes
- No
- Don't know

24. Do you find your GP an expert in the field of medicines?  
(Please tick one answer)
- Not at all
- Somewhat
- Reasonably expert
- Expert
- Very expert
- Don't know

You may skip question 25, if you have not spoken with your GP during the last 12 months

25. How incorrect or correct do you find following statements?  Please indicate per statement by ticking the appropriate box.

<table>
<thead>
<tr>
<th>Absolutely correct</th>
<th>Mainly correct</th>
<th>I don't know</th>
<th>Mainly incorrect</th>
<th>Absolutely not correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. My GP is interested in my wellbeing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. When I speak with my GP, there is enough privacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. When I speak with the GP, there is sufficient time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. I am satisfied about the way my GP talked with me about my medicines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The next questions deal with your NEW medicines

26. Have you been prescribed new medicines during the last 12 months?
   (Please tick one answer)
   ो Yes ो No (to question 29)

27. Did the physician provide you with information about that new medicine?
   (Please tick one answer)
   ो Yes ो No (to question 28)

27.1 What did the physician inform you about? (Please tick one answer per topic)
   - How the medicine works
     ो Yes ो No
   - The side effects of the medicine
     ो Yes ो No
   - The way the medicine should be used
     ो Yes ो No

27.2 Do you appreciate the information given by the physician?
   (Please tick one answer)
   ो Yes ो No

28. Did your pharmacist provide you with information about that new medicine?
   (Please tick one answer)
   ो Yes ो No (to question 29)

28.1 What did the pharmacist inform you about? (Please tick one answer per topic)
   - How the medicine works
     ो Yes ो No
   - The side effects of the medicine
     ो Yes ो No
   - The way the medicine should be used
     ो Yes ो No

28.2 Do you appreciate the information given by the pharmacist?
   (Please tick one answer)
   ो Yes ो No

On the label of a medicine it is written when and how often you should take your medicine. Some people sometimes take more or less of the medicine than marked on the label.

29. Do you sometimes use less of a medicine than indicated on the label?
   (Please tick one answer)
   ो Yes ो No (go to question 30)

29.1 If yes, please indicate:
   (Please, one answer per drug)
   - What medicine?
   - How often it happens?
   - Why it happens?

<table>
<thead>
<tr>
<th>Medicine</th>
<th>How often?</th>
<th>And why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>... times per months</td>
<td>ो Forgot to take it ो The disease for which I should take it, did not bother me ो I dislike the side effects ो Other, e.g.:....................</td>
</tr>
<tr>
<td>2</td>
<td>... times per months</td>
<td>ो Forgot to take it ो The disease for which I should take it, did not bother me ो I dislike the side effects ो Other, e.g.:....................</td>
</tr>
<tr>
<td>3</td>
<td>... times per months</td>
<td>ो Forgot to take it ो The disease for which I should take it, did not bother me ो I dislike the side effects ो Other, e.g.:....................</td>
</tr>
</tbody>
</table>

30. Do you sometimes use more of a medicine than marked on the label?
   (Please tick one answer)
   ो Yes ो No (go to question 31)
30.1 If yes, please indicate:
(Please, one answer per drug)
- What medicine?
- How often it happens?
- Why it happens?

<table>
<thead>
<tr>
<th>Medicine</th>
<th>How often?</th>
<th>And why?</th>
</tr>
</thead>
</table>
| 1        | ... times per months | 0 The disease for which I should take it, bothered me much  
|          |            | 0 I thought I had forgotten to take the medicine  
|          |            | 0 Other, e.g.:.................... |
| 2        | ... times per months | 0 The disease for which I should take it, bothered me much  
|          |            | 0 I thought I had forgotten to take the medicine  
|          |            | 0 Other, e.g.:.................... |
| 3        | ... times per months | 0 The disease for which I should take it, bothered me much  
|          |            | 0 I thought I had forgotten to take the medicine  
|          |            | 0 Other, e.g.:.................... |

31. Please indicate to what degree you agree with the following statements.
(Please tick one box per statement)

a. I find I can communicate well with my GP.  

b. As for me, repeating prescriptions can be done directly by the pharmacy  
c. If I want to know things about my medicines, I first think of the pharmacist  
d. It is hard to contact the pharmacist if I want to speak to him/her  
e. It is easier now to contact the pharmacist with questions about my medication  
f. I think that they have all the information about my medicines in the pharmacy  
g. The GP keeps close watch on my medicine use  
h. The pharmacist does not know a thing about my diseases  
i. The pharmacist knows more about medicines than I used to think  
j. I think I can communicate well with my pharmacist.  
k. It is hard to contact the GP if I want to speak to him/her  
l. It is easier now to contact the pharmacist with questions about my diseases  
m. I don’t care if I speak to the pharmacist or an assistant-pharmacist  

**Now we would like to ask some questions about asthma and self-management.**

32.1 Does wheezing or tightness of the chest bother you at least once a week?  

32.2 Did you fail to attend school or work during the last year because of your asthma  

32.3 Do you wake up at least once a week because of wheezing or tightness of the chest?
33. Do you use a peak-flow meter? (please check one box)
   - Yes, almost daily
   - Yes, only when I am tight on my chest
   - Yes, when the pharmacist asks me
   - Yes, when the GP asks me
   - No
   - Other e.g..................................

34. Do you adapt your medicine use on the guidance of your peak-flow? (please check one box)
   - Yes, by myself
   - Yes, after consultation with pharmacist
   - Yes, after consultation with GP
   - Has not (yet) been necessary
   - No

35. Do you know what self-management is in asthma? (please check one box)
   - Yes exactly
   - Yes, approximately
   - No (go to question 39)

35.1 Do you apply self-management in your own case? (please check one box)
   - Yes
   - Sometimes
   - No

36. What is your opinion on asthma self-management? (please check one box)
   - Useful
   - Only useful when my asthma bothers me
   - Not useful

37. What is your opinion on the pharmacists’ support of your self management? (please check one box)
   - Fine
   - I prefer support by the GP
   - I do not need support

The following questions deal with the TOM project

38. What do you think now about the personal counselling you received in the TOM project, if you consider the whole project period (please check one box)
   - Positive
   - Negative
   - Neutral

39.1 When was the coaching the most useful to you? (please check one box)
   - The first 6 months
   - After the first 6 months
   - Especially the last 6 months
   - The whole period

40. Was there a part of the TOM project you especially liked? (please check one box)
   - Yes
   - No (go to question 41)

40.1 If yes, what part .................................

41. Was there a part of the TOM project you especially disliked? (please check one box)
   - Yes
   - No (go to question 42)

41.1 If yes, what part .................................

42. How could the pharmacy/pharmacist improve the provided care? .................................
43. Do you have the impression that you are better now than if you had not received the special care? (please check one box)

- Much better
- Better
- No difference
- Worse
- Much worse

The following questionnaires are the SF-36 and the AQLQ. You have both completed them before. If you have any questions, please phone the research team at 050 3633291

**A6.2 Final Patient Evaluation Questionnaire, TOM project**

This questionnaire was sent to the pharmacists, and completed by the pharmacist during the last consultation with the intervention patients in the TOM project. Pharmacists were instructed how to deal with those questionnaires. Text in bold is meant to be said almost literally by the pharmacist.

- **PATIENT-NUMBER:**
- **EVALUATION DATE:**
- **PHARMACIST NAME:**

**Good morning/Good afternoon**

'This consultation is meant to once again review your medicine use, and collect data for the TOM project. The consultation will last approximately 30 minutes. After we have answered the questions of the questionnaire, you can ask me other questions if you like. OK?

By the end of the consultation I would like to check the data we have about you in our computer, but first I have a number of questions.'

**Health and disease**

1-1 How would you say your health has been during the last 6 months? Above average, average or below average for someone of your age?

- Above average
- Average
- Below average

1-2 How often did you phone your GP last year with questions about your health?

- ....... times

1-3 How often did you visit a physician during the last year?

<table>
<thead>
<tr>
<th>The GP</th>
<th>....... a months</th>
<th>or</th>
<th>....... a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>specialist</td>
<td>....... a months</td>
<td>or</td>
<td>....... a week</td>
</tr>
</tbody>
</table>

1-3a How often because of your asthma?

<table>
<thead>
<tr>
<th>The GP</th>
<th>....... per months</th>
<th>or</th>
<th>....... a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>specialist</td>
<td>....... per months</td>
<td>or</td>
<td>....... a week</td>
</tr>
</tbody>
</table>

1-3b How often for other complaints?

**The GP**

- Complaint: ...................... ....... per months or ....... a week
- Complaint: ...................... ....... per months or ....... a week
- Complaint: ...................... ....... per months or ....... a week
The specialist
Complaint: ......................... ........ per months or ........ a week
Complaint: ......................... ........ per months or ........ a week
Complaint: ......................... ........ per months or ........ a week

1-4 Have you been admitted to hospital during the last year?  
0 Yes  
0 No (go to 1-5)

1-4a How often with complaints relating to your asthma?  

How often 4 days or less?  
How often more than 4 days?  

1-4b How often for other complaints? (if more than 2, just name the most important)

Complaint: ......................... ........ times

How often 4 days or less?  
How often more than 4 days?  

1-5 Did the GP or specialist discover a new disease during the last 6 months  
0 Yes  
0 No (go to 1-6)

1-5a If yes, what ailment or disease?  
1........................  
2........................  
3........................

1-6 Do you take care of your own medicines  
0 Yes  
0 No

1-7 Did you receive an influenza vaccination in 1996?  
0 Yes  
0 No

1-7a Would you like to have an influenza vaccination next year?  
0 Yes  
0 No

Asthma and behaviour
1-8 Do you smoke?  
0 Yes  
0 No (go to 1-9)

1-8a If yes, how many a day?  
...... cigarettes  
...... cigars  
...... times a pipe

Asthma and asthma status
1-9 Are you bothered by wheezing or tightness of the chest once a week?  
0 Yes  
0 No

1-9a Did you fail to attend school or work during the last year because of your asthma  
0 Yes  
0 No

1-9b Do you wake up at least once a week because of wheezing or tightness of the chest?  
0 Yes  
0 No
(In case of the following questions, it may happen that the patient does not recognise the terminology, in spite of the fact that you have previously discussed it. Then the answer should be NO, and you can explain after completing this whole form.)

1-10 Do you know what a peak-flow meter is?
   O Yes
   O No (go to 1-12)

1-10a Do you use the peak flow meter?
   O Yes
   O No (go to 1-12)

1-10b If yes, how often per months do you use the peak flow meter
   .......... per months
   O Without a clear reason
   O When my asthma bothers me
   O The doctor told me
   O The pharmacist told me
   O Other reason

1-10c When do you use the peak flow meter?
   O Without a clear reason
   O When my asthma bothers me
   O The doctor told me
   O The pharmacist told me
   O (Almost) daily

1-11 Have you been instructed in self-management of asthma
   O Yes
   O No (go to 1-12)

1-11a When do you perform self-management?
   O Never
   O When my asthma bothers me
   O When the doctor tells me
   O When the pharmacist tells me
   O (Almost) daily

1-12 In what sequence do you use the blue and brown inhaler, if you use them both?
   O First blue, brown next
   O First brown, blue next
   O I don’t pay attention
   O (N.A)

1-13 Has your house been sanitised from dust etc.
   O Yes
   O No (go to 1-14)

1-13a If yes, who advised you to do that
   O The pulmonologist
   O The GP
   O The district nurse
   O Other

1-14 If you know that you are going to visit a place where your asthma might bother you, do you take special precautions?
   O Yes
   O No (go to 2-1)

1-14a If yes, What precautions?
   O Extra inhalation blue
   O Extra inhalation brown
   O A tablet (antihistaminic)
   O Other, e.g.

1-15 Do you read the information leaflets with you medicines
   O Yes
   O Almost always
   O Never

1-16 Do you find reading information leaflets difficult?
   O Yes
   O No
2. KNOWLEDGE QUESTIONNAIRE

(In this section you check the knowledge of the patient. First put an open question and check the box if appropriate. If you do not get a satisfactory answer, then pose the question in a closed manner, using the mentioned knowledge items.)

'Now I would like to pose some questions about asthma and related diseases. Most people know very little about this, so you should not be ashamed if you don't know the correct answer.'

2-1 *What is asthma?*

<table>
<thead>
<tr>
<th>Item</th>
<th>Spontaneous</th>
<th>After reminding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortness of breath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheezing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coughing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irritation/inflammation of the lung</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reversible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constriction of airways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allergy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2-2 *Do you know what provokes an asthma attack in general?*

<table>
<thead>
<tr>
<th>Item</th>
<th>Spontaneous</th>
<th>After reminding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergic reaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hairs/dust-mites and other allergens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharp sunlight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke/smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving a car</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2-3 *Do you know what chronic bronchitis is?*

<table>
<thead>
<tr>
<th>Item</th>
<th>Spontaneous</th>
<th>After reminding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortness of breath/tightness of the chest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflammation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tearing eyes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High mucus-production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeating disease, several times a year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2-4 *Do you know what emphysema is?*

<table>
<thead>
<tr>
<th>Item</th>
<th>Spontaneous</th>
<th>After reminding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortness of breath/tightness of the chest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardly/not reversible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Lung cannot stretch anymore'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relation with smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ear ache</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You may get it when you are older</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.6 **Do you know the purpose of the differently coloured of asthma medication?**
(wait for spontaneous answers)

<table>
<thead>
<tr>
<th>Colour</th>
<th>Purpose</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Against shortness of breath/tightness of the chest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown</td>
<td>Preventive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>Longer term reliever</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.7 **What is self-management in asthma?**

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self management in asthma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principle: Feedback between PEV value and medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using peak flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-80-100% intervals in peakflow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapting medication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.8 **Can you tell me the drugs you are currently using, and what their purpose is?**
(Only mark spontaneous answers.)

2.9 **Are there specific medicines you cannot tolerate well, and what are the complaints**

<table>
<thead>
<tr>
<th>Medicine</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

2.10 **Now I like to check your actual drug use.**
(Check the medication details in the computer as follows: ‘Do you still use [name drug] and if yes, how often per day?’ for all active drugs in the medication history. Complete 0-1 or 0-2)

2.11 **Do you use other medicines, not mentioned on this list, chronic or occasionally, for example medicines you can obtain without a prescription, and the reason for taking them?** (Complete 0-3)

**SECTION 0, TO BE COMPLETED BY THE PHARMACIST BEFORE AND DURING THE CONSULTATION**

0-1 **What medication is used daily, and what dosage? (active medication only)**

<table>
<thead>
<tr>
<th>According to pharmacy computer</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine Use Medicine Use</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
0-2 What medicines are being used occasionally and what dosage? (active medication only)

<table>
<thead>
<tr>
<th>According to pharmacy computer</th>
<th>According to patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>Use</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

0-3 What medication is being used without prescription, and what dosage? (also non-regular use)

<table>
<thead>
<tr>
<th>According to pharmacy computer</th>
<th>According to patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>Use</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

3. DRUG RELATED PROBLEMS

3-1 Are you having problems with any of the medicines you are currently using?

- Yes
- No (go to 4-2)

3-1a If yes, what problems and with what medicines?

<table>
<thead>
<tr>
<th>Medicine</th>
<th>ATC</th>
<th>DDD</th>
<th>P code</th>
<th>A code</th>
<th>S code</th>
<th>Clarification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tbody>
</table>

(N.B. Please code the problems after the consultation, using the PAS® codes and ATC code. Document also for your own use)

3-2 Any other questions about the research project, your diseases or medicines?

Thank you for your patience. I will now (if applicable) have a further look at the problems you have mentioned.

(Try and suggest solutions. Make a new appointment if solving the problem is difficult. Keep the Hepler/Strand scheme in mind.)

CONCLUSION:

This is the end of the questionnaire and the research project. Thank you for your co-operation. Last but not least I would like to check upon your inhaler technique.

4. QUESTIONS FOR THE PHARMACIST

4-1 Could the patient hear, understand and answer your questions easily?

- Yes (go to 4-1b)
- No
4-1a **If not, what was the reason?**
- Difficulties hearing
- Difficulties understanding
- Difficulties to speak

4-1b **Please indicate the hearing of the patient**
- Normal
- Uses effective hearing aid
- Hard of hearing
- Deaf

4-2 **Please indicate the vision of the patient**
- Normal
- Uses reading glasses
- Always uses glasses
- Visually handicapped
- Blind

**A6.3 Intervention Pharmacist final questionnaire**

This questionnaire was sent to the pharmacists, at the end of the project.

**Pharmacy number: Date:**

**Current number of patients in project:**

The first questions deal with the amount of time you spent for this project. We like to know how you spent that time exactly.

How often (on average) did you speak to a project patient during the last year of the project?

(Please select one answer)
- not at all (go to question 7)
- 1 time
- 2 times
- 3 times
- 4 times
- 5 times
- more than 5 times

2. How much time did you invest during the last year in counselling all intervention patients, apart from the evaluation session? (Please select one answer)
- Less than 30 minutes per week
- per week ½ to 1 hour
- per week 1-2 hours
- per week 2-4 hours
- per week 4-8 hours
- more than 8 hours per week

3. What was the average duration of the evaluation sessions?
- 10-20 minutes
- 20-30 minutes
- 30-45 minutes
- 45-60 minutes
- more than 60 minutes
4. How long did the average other consultations with project patients last during the last year?
   - 0 5 minutes
   - 0 10 minutes
   - 0 15 minutes
   - 0 more than 15 minutes

4a. How much time did you spend during the last year on other activities concerning pharmaceutical care for the project patients (preparations, drug use review, travel etc.) \[\text{... ... ...} \text{minutes}\]

The following questions are about the communication during the last year of the project.

5. What did you think about the communication with the project patients? (Please tick one box per item)
   - Yes
   - Sometimes
   - No
   - Clarifying
   - Pleasant
   - Useful
   - Too long
   - Too short
   - Personal
   - Friendly
   - Professional
   - Annoying
   - Useless

6. What were the topics of conversation? (Please tick one box per item)
   - Always
   - Usually
   - Sometimes
   - No
   - The effects of medicines
   - The side effects of medicines
   - The correct use of medicines
   - The use of OTC medication
   - The importance of compliance
   - The diseases of the patient
   - The lifestyle (eating, drinking, smoking etc.)
   - The hobbies of the patient
   - The family of the patient
   - The relationships between the patient and physicians
   - Health and disease in general
   - The pharmacy
   - Home-delivery of medicines
   - Something else e.g.

7. Do you think that the use of medicines by the patient has changed because of your consultations during the last year of the project? (Please tick one box)
   - Yes
   - No, go to question 8
   - Don’t know, go to question 8

7a. If yes, what has changed? (Please tick one box per item)
   - The number of medicines in use
   - The way of use
   - The time of use
   - The frequency of use
   - The use of OTC medication
   - Compliance/adherence
8. Did you contact the GPs about the project during the last year? (More boxes can be ticked)

- O Yes, personally, face to face
- O Yes, personally by phone
- O Yes, during the pharmacotherapeutic consultation
- O No (go to question 9)

8a. If yes, what was usually the reason for the contact? (More boxes can be ticked)

- O Issues concerning a prescription for a project patient
- O Issues concerning the total medication of a project patient
- O A question initiated by the physician
- O Other e.g.: ..............................................

8b. How often have you spoken with GPs about project patients during the last year?

……… times

The next question deal with possible other structured and documented care activities in your pharmacy

9. Do you provide structured and documented pharmaceutical care as a project or routine, other than the TOM project?

- O Yes
- O No, go to question 10

9a. What group of patients do you provide with this care? (More boxes can be ticked)

- O All patients with lung disorders
- O Diabetes patients
- O Patients with gastro-intestinal disorders
- O Patients with incontinence
- O Other patient-groups, e.g. …………………

9b. Please describe this pharmaceutical care

……………………………………………………………………………………………………
……………………………………………………………………………………………………

9c. In what phase is the provision of pharmaceutical care (excl. TOM project)? (Please tick one box)

- O Starting projects
- O Initial phase of a project
- O Evaluation phase of a project
- O Routinely providing care to the target groups

9d. How much time do you and/or your staff invest in providing structured and documented pharmaceutical care (excl. TOM project)? (Please tick one box)

- O less than 1/2 hour per week
- O per week ½-1 hour
- O per week 1-2 hours
- O per week 2-4 hours
- O per week 4-8 hours
- O more than 8 hours per week

The following question is about the amount of time you have spent on talking to patients, unrelated to pharmaceutical care or the TOM project, during the last year. We only mean conversation in the consulting area, your office or at the home of the patient.
10. How much time have you invested in general during the last year in conversations with patients (excl. TOM project) in a consultation room, your office or at the patients’ home (Please tick one box.)

- less than 1/2 hour per week
- per week ½-1 hour
- per week 1-2 hours
- per week 2-4 hours
- per week 4-8 hours
- more than 8 hours per week

**Back to the TOM project**

11. What have you, as a pharmacist, noticed of the provision of pharmaceutical care in the TOM project, apart from the invested time? (please tick one box per item)

- noticed nothing
- noticed sometimes
- noticed often

a. More referrals of patients to physicians
b. Better contact between you and the GPs
c. More contact between you and the GP
d. Better control of the patients over their disease
e. Better contact between you and the patients
f. Disseminating effect of pharmaceutical care to other patients in your pharmacy
g. Increased awareness/assertiveness of the patients
h. Your increased understanding of diseases in general
i. Your increased understanding of the drug use of patients
j. Thwarting of prescribing policies of doctors
k. Thwarting of your policies in the pharmacy
l. Other e.g.: 

12. Which of the following aspects of pharmaceutical care are currently being performed by an assistant pharmacist in your pharmacy (please tick one box per item)

- Yes, by all assistant pharmacists
- By experienced assistant-pharmacists only
- No

a. The intake
b. Dispensing
c. Giving instructions for use
d. Drug use review
e. Discussing compliance
f. Discussing possible changes in therapy
g. Answering questions about drugs, side-effects and interactions
h. Responsible advising on OTC drugs
i. Answering questions about diseases
j. Conduction consultations
k. Coaching diabetes patients
l. Giving inhaler instructions
m. Coaching asthma self-management

13. Below we ask your opinion on a number of statements (please tick one box per item)

- Totally agree
- Agree
- Disagree
- Totally disagree

a. The intake is an essential part of pharmaceutical care
b. I can communicate well with my patients
c. The patients liked the better coaching of their medicine use
d. I really don’t know enough of the diseases of the patients to be able to counsel them properly
e. I don’t think it is necessary to inform the GP about my activities in the field of pharmaceutical care
f. Because I am part of the TOM project, I now also offer pharmaceutical care to other patients
g. When I provide pharmaceutical care, I damage the key-role of the GP in health care
h. The intensive counselling of patients is useful
i. I find that I should personally inform the GP when I provide pharmaceutical care
j. Project patients now ask more questions
k. I find it difficult to find time for providing pharmaceutical care
l. I noticed that the GPs find that I come on their territory when I provide pharmaceutical care
m. It is difficult to get access to specialists about medication
n. Because I provide pharmaceutical care I am also more active in my pharmacy
o. Because I provide pharmaceutical care I feel more committed to all my patients

Did you help any of your project-patients to start self-management during the last year?

14a. Did you help any project-patient to solve problems concerning self-management during the last year?

14b. Did you check the inhaler technique and peak-flow during the last evaluation?

15. What is your opinion on your activities in the field of pharmaceutical care during the last year of the TOM project? (Please tick one box)

15a. What do you feel about the duration of the TOM project, regarding the necessity to counsel the patients? (Please tick one box)

15b. What do you feel about the duration of the TOM project, with regard to the pressure from the university? (Please tick one box)

15c. What part of the project did you like most? .........................................................

15d. What part of the project you did not like at all? .....................................................

15e. Do you have suggestions for improvement, when the project framework is to be used in other pharmacies?

a. ................................................................................................................
b. ................................................................................................................
c. ................................................................................................................
15f. Do you think you contributed in a positive sense to the quality of life of the project-patients?

- O Yes
- O No

16. Now the TOM project stops, we would like to know if you continue to offer pharmaceutical care to asthma patients.

- O Yes
- O Yes, but I'll change the format
- O No

17. Providing structured and documented pharmaceutical care proves to be difficult in everyday practice. Could you give 3 reasons why?

- ……………………………………………
- ……………………………………………
- ……………………………………………

We also would like to know some details about your documentation on pharmaceutical care activities

18. Do you have a documenting system for keeping track of the pharmaceutical care data, apart from a system to keep medication records and address details? (Please tick one box)

- O Yes, a written card system
- O Yes, an electronic patient dossier from my software provider
- O Yes, an electronic patient dossier from another provider
- O No (go to question 19)

18a. Do you use this system in normal practice? (Please tick one box)

- O No
- O Yes, daily
- O Yes, weekly
- O Yes, monthly

18b. Who are authorised to update the dossiers? (Please tick one box)

- O All workers in the pharmacy
- O All pharmacists and assistant-pharmacists
- O Experience assistant pharmacists and the pharmacists only
- O Pharmacists only

18c. Who are authorised to consult the dossiers? (Please tick one box)

- O All workers in the pharmacy
- O All pharmacists and assistant-pharmacists
- O Experience assistant pharmacists and the pharmacists only
- O Pharmacists only

19. What pharmacy computer-system do you have?

- O Pharmacom
- O Pharmacom (/CB81)
- O Euronet
- O Microbias
- O Cendata

At the end of the project we would (again) like to have information on your pharmacy. These details will of course not be published

20. How many clients do you serve from your pharmacy …………

21. How many pharmacists work in your pharmacy? (Please calculate in full equivalents) ………… Equivalents

22. How many assistant-pharmacists work in your pharmacy?
Thank you again for your co-operation

A6.4 Final Questionnaire GPs, TOM project
This questionnaire was sent to all GPs of patients in the TOM project.

GP number: Date:

Name pharmacist (if known):

1. Have you been informed about the activities of the pharmacist in the field of pharmaceutical care?
(Please tick one box)

0 Yes, I was informed during the last 6 months (go to question 1.1)
0 Yes, But I was already informed more than a year ago (go to question 2)
0 No, please return this questionnaire

1.1 If Yes, how have you been informed
(Please tick one box)

0 The Pharmacist informed me
0 A patient informed me
0 Both the pharmacist and a patient informed me
0 A colleague informed me

2. Do you know which one of your patients participate in the TOM project?

0 Yes, one/some
0 No (go to question 3)

2.1 If yes, how many of your patients are participating, according to your information?

......... Patients

3. Did you notice anything of the activities of the pharmacist in the field of pharmaceutical care, during the last year?

0 Yes
0 No (go to question 7)

3.1 Did you help any of the project patients to install asthma self-management, during the last year?
(Please tick one box)

0 Yes
0 Yes, but not all project patients
0 No

4. What did you notice of the provision of pharmaceutical care in your patients during the last half year
(Please tick one box per item).

<table>
<thead>
<tr>
<th>noticed nothing</th>
<th>noticed sometimes</th>
<th>noticed often</th>
</tr>
</thead>
<tbody>
<tr>
<td>no.</td>
<td>no.</td>
<td>no.</td>
</tr>
</tbody>
</table>

4.1 More contact between me and the pharmacist
4.2 Better contact between me and the pharmacist
4.3 Increased awareness/assertiveness of the patients
4.4 Participating patients have a better control over their diseases
4.5 Increased compliance/adherence
4.6 More contact between me and my patients
4.7 More referrals from the pharmacy
4.8 Less bothersome patient during my consultations
4.9 Thwarting of formulary agreements
4.10 Thwarting of my treatment policies
5. Has the use of medicines by your TOM patients changed, as a result of the contact with the pharmacist, during the last year? (Please tick one box)

- Yes
- No, go to question 6
- Don’t know, go to question 6

5.1 If yes, what has changed? (Please tick one box per item)

- The number of medicines in use
- The way of use of the medicines
- The time of use of medicines
- The frequency of use of medicines
- The use of OTC medication
- Others e.g. ...........................................................................................................

6. Does the patient understand his disease better now than a year ago, because of the counselling by the pharmacist?

- Yes
- No

7. Do you find the pharmacist a competent professional for medication counselling?

- Yes
- No

7.1 Do you find the pharmacist a competent professional for counselling about asthma self-management?

- Yes
- No

8. Here we ask your opinion on a number of statements. Please tick one box per item

<table>
<thead>
<tr>
<th>Statement</th>
<th>Totally agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Totally disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 The pharmacist (partially) takes my chair when providing pharmaceutical care</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.2 I find the intensive counselling on the medication by the pharmacist useful</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.3 I think that the patient likes the counselling about medicine use by the pharmacist</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.4 As for me the pharmacist may expand his/her activities in the field of pharmaceutical care</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.5 I don’t think it is necessary that the pharmacist informs me about his/her activities in the field of pharmaceutical care</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.6 When the pharmacist provides pharmaceutical care, he/she damages my key-role in health care</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.7 The pharmacist does not know enough about diseases to be able to counsel the patients</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.8 I think I am in a better position to counsel patients on their drug use than pharmacists</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.9 I see project patients less in my office</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.10 I cannot always change medication according to the propositions of the pharmacist, because it has been initiated by a specialist</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.11 When the pharmacist counsels patients on drug use, I get more time for my core activities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

9. What is your opinion now on the activities of the pharmacist in the field of pharmaceutical care? (Please tick one box)

- Positive
- Negative
- Neutral