KU LEUVEN

FACULTY OF PHARMACEUTICAL SCIENCES

MASTER OF DRUG DEVELOPMENT

Implementation of the protocol-based pharmaceutical care program COPD

Experiences and future prospects of pharmacists on professional pharmacy services

THESIS

submitted by

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LIST OF ABBREVIATIONS

APB	*Algemene Pharmaceutische Bond*
BAF	*Brabants Apothekers Forum*
BUM	*Bon Usage des Médicaments*
CAT	COPD Assessment Test
COPD	Chronic Obstructive Pulmonary Disease
COVID-19	Coronavirus Disease 2019
CP	Community pharmacist
GOLD	Global Initiative for Chronic Obstructive Lung Disease
GGG	*Goed Gebruik Geneesmiddelen*
GP	General practitioner
IC	Integrated care
ICS	Inhaled corticosteroids
LABA	Long-acting beta-agonist
LAMA	Long-acting muscarinic antagonist
mMRC	modified Medical Research Council
MPC	Medical-Pharmaceutical Concertation
PR	Pulmonary rehabilitation

QUAGOL	The Qualitative Analysis Guide of Leuven
SAD	Small Airway Disease
SNRI	Selective Serotonin and Noradrenalin Reuptake Inhibitor
TCA	Tricyclic antidepressant
VAN	*Vlaams Apothekers Netwerk*
WHO	World Health Organization

SUMMARY

Background: Chronic Obstructive Pulmonary Disease (COPD) is responsible for 6% of total deaths. Prevention and appropriate follow-up are crucial in order to improve the quality of life of COPD patients and reduce associated healthcare costs. Given their expertise and accessible and widespread position in primary care, community pharmacists are well-placed to monitor COPD patients and to detect deviations from treatment. The protocol-based pharmaceutical care program COPD addresses all (non)-pharmacological aspects of the disease and involves a personal conversation tailored to the patient. It has been shown that this intervention significantly improves therapy adherence and inhalation technique and reduces exacerbation rates and associated hospitalizations. Based on these results, an implementation project 'ADEM' was set up in Flemish-Brabant, including the integrated care region 'Zorgzaam Leuven'. The ADEM project facilitated population management through a query to identify COPD patients, and further entailed an e-learning for pharmacists, local interdisciplinary meetings (MPC) and materials to support conversations with COPD patients.

Objectives: The aim of this master's thesis was to investigate the implementation of the protocol-based pharmaceutical care program COPD as part of the ADEM project, to identify facilitating and limiting factors and to make recommendations for future widespread implementation.

Methods: Semi-structured interviews were conducted with eight participating pharmacists, both involved and not involved in the integrated care project. Thematic analysis was performed on the interview transcripts in order to identify recurring themes and concepts.

Results: The ADEM project took place in the fourth wave of the coronavirus pandemic. Despite this timing, half of the pharmacists managed to carry out the protocol-based intervention for their COPD patients. The supportive materials were experienced as of great added value. The e-learning provided a broad basis so that pharmacists felt sufficiently prepared to carry out the intervention. Identification of suitable patients proved to be a hurdle, as there is often no communication about the diagnosis. The COPD query which allowed the pharmacist to engage in population management, was indicated by all pharmacists as being very relevant in this regard and useful for making pharmaceutical care more feasible to plan. Six out of eight pharmacists participated to the MPC organised in the framework of the ADEM project. The majority (5/8) was positive about the future of MPCs, provided that more GPs would participate. COVID-19, lack of personnel, lack of reimbursement and lack of time were identified as limiting factors for the implementation of the protocol-based COPD intervention. Cooperation with the GP was indicated by the majority (6/8) as minimal and insufficient. According to the participating pharmacists, brief communication on the initiation of an intervention and feedback on this would be useful in the future.

Discussion: The findings of our study are in line with the available evidence on the implementation of new services in pharmacies. Many pharmacists have the intrinsic motivation to offer extended pharmaceutical care, but current practices often do not allow this. Population management appeared to be a major factor that can be used to facilitate the implementation. By taking into account the needs of the local population, pharmacists can work in a more targeted way and prioritise the services they offer. Given the group of chronically ill people in Belgium is expected to grow in the coming years due to the increasing ageing of the population, there will be an increasing demand for specialised interventions and advice from the pharmacist. It is therefore necessary to provide a sufficient framework for these services, bearing in mind the needs of the local population and requiring a pragmatic approach in the pharmacy. The sustainable implementation of this service in daily practice requires the involvement of various external stakeholders.

SAMENVATTING

Achtergrond: Chronic Obstructive Pulmonary Disease (COPD) is verantwoordelijk voor 6% van het totale aantal sterfgevallen. Preventie en adequate follow-up zijn van cruciaal belang om de levenskwaliteit van COPD-patiënten te verbeteren en de daarmee gepaard gaande gezondheidszorgkosten te verminderen. Door hun expertise en toegankelijke, wijdverspreide positie in de eerstelijnszorg, zijn officina-apothekers de ideale zorgverleners om COPD-patiënten op te volgen en afwijkingen van de behandeling op te sporen. Het Goed Gebruik Geneesmiddelen begeleidingsgesprek COPD betreft een persoonlijk, op de patiënt afgestemd gesprek dat alle (niet)-farmacologische aspecten van de ziekte omvat. Het is aangetoond dat het GGG de therapietrouw en inhalatietechniek significant verbetert en het aantal exacerbaties en daarmee gepaard gaande ziekenhuisopnames vermindert. Op basis van deze resultaten werd een implementatieproject 'ADEM' opgezet in Vlaams-Brabant, waaronder de geïntegreerde zorgregio 'Zorgzaam Leuven' valt. Het ADEM-project vergemakkelijkte populatiemanagement door middel van een query om COPD-patiënten te identificeren, en omvatte verder een e-learning voor apothekers, lokale interdisciplinaire bijeenkomsten (MFO's) en materialen ter ondersteuning van de GGG begeleidingsgesprekken.

Doelstellingen: Het doel van deze masterproef was om de implementatie van GGG COPD als onderdeel van het ADEM project te onderzoeken, faciliterende en limiterende factoren te identificeren en aanbevelingen te doen voor toekomstige wijdverspreide implementatie.

Methodologie: Er werden semigestructureerde interviews afgenomen bij acht deelnemende apothekers, zowel betrokken als niet betrokken bij het geïntegreerde zorgproject. Er werd een thematische analyse uitgevoerd op de interview transcripten om terugkerende thema's en concepten te identificeren.

Resultaten: Het ADEM project vond plaats in de vierde golf van de coronavirus pandemie. Ondanks deze timing slaagde de helft van de apothekers erin om enkele GGG gesprekken met hun COPD-patiënten uit te voeren. De e-learning zorgde voor een brede basis waardoor apothekers zich voldoende voorbereid voelden om het GGG uit te voeren. Het identificeren van geschikte patiënten bleek een struikelblok, omdat er vaak niet gecommuniceerd wordt over de diagnose. De COPD-query, die apothekers toeliet om aan populatiemanagement te doen, werd door alle apothekers als zeer nuttig ervaren om farmaceutische zorg beter planbaar te maken. Zes van de acht apothekers namen deel aan een MFO dat in het kader van het ADEM-project werd georganiseerd. De meerderheid (5/8) was positief over de toekomst van MFO’s, op voorwaarde dat er meer huisartsen zouden deelnemen. COVID-19, gebrek aan personeel, gebrek aan vergoeding en gebrek aan tijd werden genoemd als beperkende factoren voor de implementatie van het GGG COPD. Samenwerking met de huisarts werd door de meerderheid (6/8) als minimaal en onvoldoende ervaren. Volgens de deelnemende apothekers zou korte communicatie over het opstarten van een GGG en feedback hierover in de toekomst nuttig zijn.

Discussie: De bevindingen van deze studie zijn in lijn met de beschikbare literatuur over de implementatie van nieuwe diensten in apotheken. Veel apothekers hebben de intrinsieke motivatie om voortgezette farmaceutische zorg aan te bieden, maar de huidige praktijk laat dit vaak niet toe. Populatiemanagement blijkt een belangrijke factor te zijn die kan worden gebruikt om de implementatie te faciliteren. Door rekening te houden met de noden van de lokale bevolking, kunnen apothekers gerichter te werk gaan en prioriteiten stellen in de diensten die zij aanbieden. Aangezien de groep chronisch zieken in België de komende jaren naar verwachting zal groeien, zal er een toenemende vraag zijn naar gespecialiseerde interventies en adviezen van de apotheker. Het is dus noodzakelijk om deze dienstverlening voldoende te omkaderen, waarbij een pragmatische aanpak wordt gehanteerd. De duurzame implementatie van het GGG COPD in de dagelijkse praktijk vereist de betrokkenheid van verschillende externe partijen.

1 INTRODUCTION

1.1 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

1.1.1 Epidemiology

Chronic Obstructive Pulmonary Disease (COPD) is a chronic inflammatory lung disease which affects around 65 million people worldwide. In 2019, it was the third leading cause of death worldwide, which makes it responsible for 6% of total deaths and the cause of death that is increasing the most (1,2). The prevalence tends to be higher in men and smokers (3). Besides its high mortality rate, COPD is also responsible for a high disease burden. Patients suffering from severe COPD are often limited in their daily activities and experience a decline in the quality of life and overall health status (4). In people older than 50 years, COPD is part of the top 10 disorders leading to a decline in quality of life (5). COPD is preventable and treatable, yet not curable. In Belgium, it is estimated that 680 000 people suffer from COPD, of which less than half have been diagnosed (6). Furthermore, the rate of hospital admissions in Belgium for chronic diseases is higher than in other EU countries. This is also the case for COPD and asthma. For the latter, hospital admission rates lay with a number of 286 well above the EU average of 237 per 100 000 inhabitants, which points towards the necessity of improving treatment in primary care (7,8). Therefore, prevention, raising awareness around risk factors and early treatment initiation are crucial in order to reduce mortality and disease burden. Each year, The Global Initiative for Chronic Obstructive Lung Disease (GOLD) publishes the global strategy for diagnosis, management and prevention of COPD. These guidelines are used worldwide by healthcare providers to manage COPD in an evidence-based manner (9).

1.1.2 Risk factors to develop COPD

Long-term exposure to harmful particles is a main risk factor for the development of COPD. Especially tobacco smoking is stated as a major contributing factor. However, it is estimated that 25-45% of COPD patients have never smoked (3). This indicates the contribution of factors other than smoking to the development and

progression of COPD, meaning that smoking cannot be presented as being the main cause in all patients. Literature shows that a complex interaction between genes and environmental factors plays a role in the development and the progression of the disease (9). For example, occupational exposure to chemicals and dust and living in a polluted environment contribute to the increasing risk of developing COPD (10). Air pollution in particular has become ever more important in the increasing incidence of COPD. After smoking, air pollution is considered the largest contributing factor. Epidemiological studies have shown a strong relation between air pollution and the development and progression of COPD. The degree of air pollution in low- and middle-income countries has strongly increased over the past 25 years and has been associated with the increasing incidence of COPD. A cross-sectional analysis in the United Kingdom examined the possible association between particulate matter ($PM_{2.5}$), which are particles with a diameter smaller than 2.5 µm, and nitrogen dioxide (NO_2) concentrations with several lung parameters. Results were in favour of the hypothesis: higher polluant exposure was significantly associated with lower lung function. An increase of 5 µg/m³ $PM_{2.5}$ concentration was associated with a decrease in FEV1 of 83.13 mL. Furthermore, COPD prevalence was associated with higher $PM_{2.5}$ and NO_2 concentrations. These associations were stronger for men, lower income households and at-risk occupations (11). Furthermore, exacerbations and thus worsening of the prognosis can be caused by air pollution (12,13). Due to the increasing evidence of the role of air pollution in the development of respiratory diseases, the World Health Organization (WHO) has recommended new guidelines for air quality in order to decrease disease burden and deaths due to exposure to air pollution (14). It is important to raise awareness around risk factors at vulnerable populations and, simultaneously, increase general knowledge of COPD in the population (15).

1.1.3 Pathophysiology

The pathophysiology of COPD is a result of several contributing factors. Due to exposure to and inhalation of harmful particles, an inflammation reaction in the lungs takes places. In itself, this is a normal reaction, but long-term exposure may lead to chronic inflammation of the respiratory track (9). Chronic bronchitis and emphysema are the two main mechanisms leading to the persistent airflow limitation. Both disorders can occur in the same patient with their own relative contribution. Chronic inflammation causes structural changes and leads to excess mucus production and narrowing of the distal airways. Emphysema is referred to as the breakdown of the

parenchymal tissue surrounding the alveoli which causes them to collapse and leads to decreased elasticity of the lungs. Thus, the chronic inflammation reaction leads to airway obstruction and decreased ventilatory capacity. This airway obstruction is progressive in time and irreversible. Unfortunately, due to its irreversible nature, it is not possible to cure COPD. It is therefore all the more important to focus on an individual, chronic approach, so that the patient can lead a life in which his disease is optimally controlled. This underlines also the importance of prevention and early treatment initiation. Depending on the degree of airway obstruction, patients may experience worsening of symptoms over time. Furthermore, COPD is associated with several morbidities, such as cardiovascular diseases, osteoporosis, anxiety, depression and lung cancer, that may also lead to a decrease in the quality of life and life expectancy (9).

1.1.4 Symptoms

COPD is characterized by persistent airflow limitation, leading to dyspnoea, chronic cough and sputum production as the most prevalent symptoms. Symptoms may vary in frequency and severity, depending on the degree of airway obstruction. Various external factors may trigger worsening of symptoms, such as cold weather, dry air, dust and tobacco smoke (9).

An exacerbation is an acute flare-up of the respiratory symptoms, which leads to the need for corticosteroids, antibiotics and/or even hospital admission. Exacerbations are strongly associated with a high mortality risk and the chance of having more exacerbations in the future. Despite the clinical impact, exacerbations leading to hospital admission are also a major contributor to healthcare expenses (16). Therefore, it is crucial to treat each patient with appropriate maintenance therapy in order to keep the symptoms under control and subsequently avoid exacerbations.

1.1.5 Diagnosis and classification of COPD

The diagnosis of COPD is made based on symptoms, risk factor exposure (cf. 1.1.2 and 1.1.4) and clinical parameters. When a patient presents with symptoms associated with COPD and/or has a history of risk factor

exposure, a lung function measurement by means of spirometry will be performed in order to confirm or reject the diagnosis. Spirometry is used to measure lung function in terms of key parameters, namely forced expiratory value in one second (FEV1) and forced vital capacity (FVC). This technique is suitable to detect deviations in both small and large airways. Spirometry is performed before and after administration of salbutamol (a short acting β_2-agonist, i.e. SABA). If the Tiffeneau index, which is the ratio of FEV1 and FVC, is lower than 0.7, airway obstruction is confirmed. If the Tiffeneau index stays below 0.7 after the administration of salbutamol, the irreversibility of the airway obstruction is established meaning clinical confirmation of COPD. This irreversibility of airway obstruction is an important part of the diagnosis, as it allows for the differential diagnosis with for example asthma. Patients with asthma may have periods wherein their obstruction and thus symptoms are completely absent, whereas COPD patients may never have complete reversal of obstruction. Besides clinical characterization, an assessment of symptoms and impact on the quality of life is also done. The COPD Assessment Test (CAT) and the modified Medical Research Council dyspnea questionnaire (mMRC) are two questionnaires that can be used to estimate the degree of severity of symptoms and the impact on the quality of life. The CAT and mMRC can be found in Addendum 1 and 2, respectively. Based on the results of these tests and the history of exacerbations, patients are classified in GOLD categories A-D, presented in Figure 1 (17). This classification is at the basis of providing an appropriate treatment for each patient (9).

Moderate or Severe Exacerbation History		
≥ 2 or ≥ 1 leading to hospital admission	**C**	**D**
0 or 1 (not leading to hospital admission)	**A**	**B**
	mMRC 0-1 CAT < 10	mMRC ≥ 2 CAT ≥ 10
	Symptoms	

Figure 1: GOLD A-D classification.

1.1.6 Non-pharmacological approach

COPD is a multifactorial disease which requires a broad treatment approach. Important in this approach, is self-management. The aim of self-management is to coach and educate patients to enable them to manage their COPD on a daily basis. It is important that the patient has a sufficient amount of knowledge about his disease and feels empowered, so that he can act independently when experiencing an increase or decrease in symptoms. This self-management includes pharmacological, but even more important, non-pharmacological treatment. Non-pharmacological measurements are of great importance in order to improve the quality of life of patients.

Since smoking is one of the main contributing factors for the development and worsening of COPD, **smoking cessation** is the most important non-pharmacological measure that needs to be strongly recommended to patients (9). There are multiple options to support patients in smoking cessation. To initiate smoking cessation, psychological treatment is the most relevant non-pharmacological intervention. Individual behavioural therapy leads patients to abstinence and learns them to handle situations that trigger smoking behaviour (18). Pharmacotherapeutic options to support patients in this cessation process are nicotine replacement products such as patches, gum, inhalers and nasal spray. Varenicline, bupropion and nortriptyline are respectively a nicotine agonist, a serotonine noradrenaline reuptake inhibitor (SNRI) and a tricyclic antidepressant (TCA) that are introduced when the nicotine replacement products are not sufficient (19–21).

Another key non-pharmacological measure is **pulmonary rehabilitation** (PR). PR plays an increasingly important role in the treatment of COPD and is supported by evidence of the highest level. A PR programme consists of a series of physical sessions with a physiotherapist, often given in groups. Patients following a pulmonary rehabilitation programme showed significant and clinically relevant improvements in physical performance capacity, symptoms and quality of life. PR also significantly reduces the rate of being readmitted to the hospital (22).

In addition, some patients may benefit from additional **psychological support**, since the diagnosis of COPD often implicates that patients will have to make lifestyle adjustments. Anxiety and depression are comorbidities associated with COPD that require a personalised approach (23).

Lastly, the importance of a **healthy diet** may not be underestimated. COPD patients often must make extra efforts in order to get a sufficient amount of oxygen. Because this requires energy, there is a risk of malnutrition if the calorie intake is insufficient. On the other hand, the lack of physical activity due to decreased physical capacity, there is a risk that the patient will take in more nutrients than his body needs. Therefore, it is important to assess each patient's physical status and recommend an appropriate diet (24).

1.1.7 Pharmacological approach according to GOLD

Early diagnosis and treatment are essential to reduce disease burden and improve the quality of life of COPD patients. Decisions regarding (non)-pharmacological treatment are made based on GOLD guidelines. Important before implementing these treatment guidelines is a correct diagnosis and classification of the patient (cf. 1.1.5). The GOLD treatment guidelines consist of two parts, one for initial treatment and one for follow-up treatment, these are shown in Figure 2 and 3, respectively. As seen in Figure 2, therapy recommendations are made based on symptomatic assessment and exacerbation risk. Bronchodilators such as long-acting β2-agonists (LABA) and long-acting muscarinic antagonists (LAMA) are the cornerstone of COPD treatment. Depending on blood eosinophil count and exacerbation risk, corticosteroids for inhalation (ICS) can be added. Apart from medication specifically targeting the lung disease, other measures can be taken in order to avoid complications; e.g. it is recommended that every COPD patient receives a yearly flu vaccination and a five-yearly pneumococcal vaccination (9).

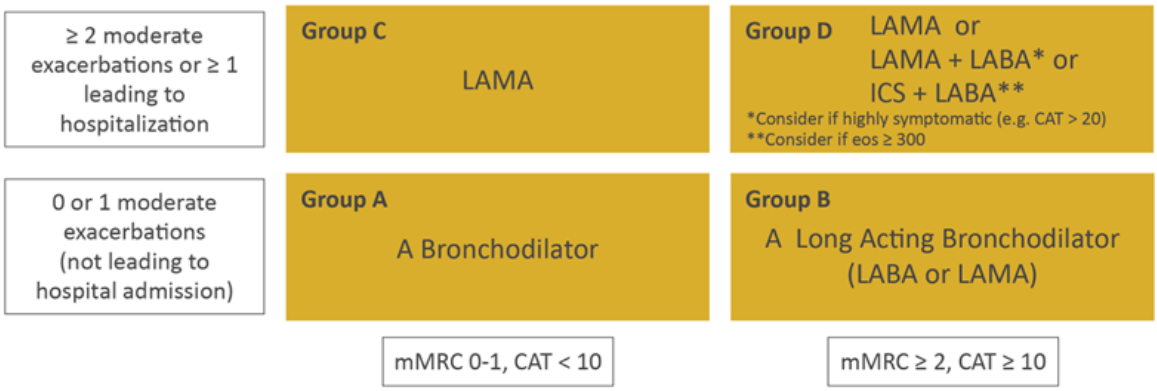

Figure 2: Initial pharmacological treatment (16).

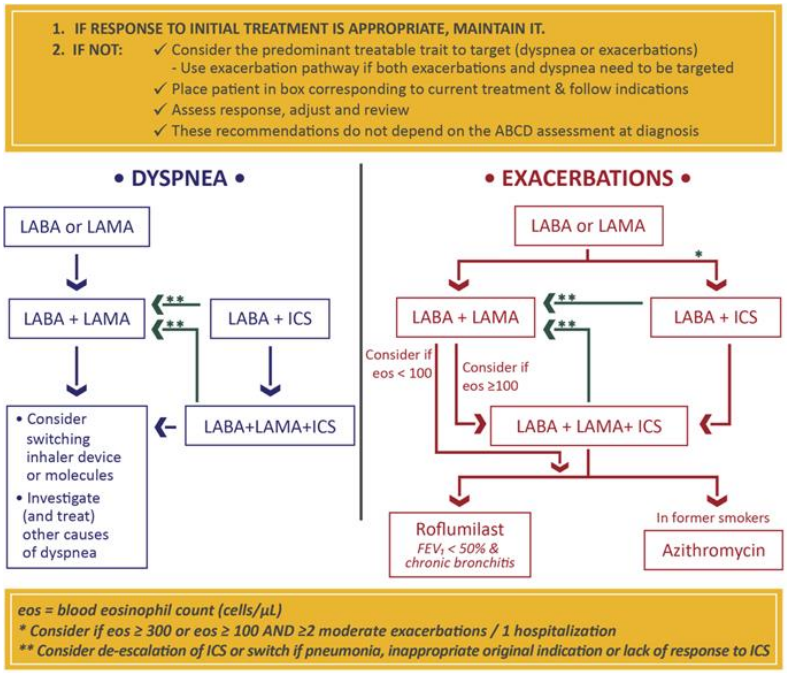

Figure 3: Follow-up pharmacological treatment (16).

1.2 CHRONIC CARE MANAGEMENT

1.2.1 Importance of chronic care management for COPD patients

Integrated care is a global aim in the health care reform. Due to the rising incidence of chronic diseases and the increasing ageing population, chronic patients need a coordinated form of health care that addresses all aspects of their condition and improves the patient experience (25).

Various definitions on integrated care have been published. According to the WHO, the main objective of integrated care is centrifying the patients' needs by aligning all health system functions (26). Multiple models of integrated care have been described. The individual care plan is a tool to concretise the integrated care approach patients with long-term conditions and comorbidities. The care plan maps the healthcare status, the ongoing and previous interventions and the role of each healthcare professional involved in the care of the individual patient. The care plan can be extended depending on the needs of the patient (25).

Regarding COPD patients, chronic care management has been proven advantage. In the study of Casas et al., 155 COPD patients from the hospitals of Leuven and Barcelona were included. These patients were assigned to a group receiving either usual care or receiving integrated care. The integrated care intervention consisted of an educational self-management programme, which covered knowledge about COPD, (non)-pharmacological treatment techniques, strategies to manage exacerbations and patient empowerment. Furthermore, an individual care plan was established via interaction with the primary care and hospital team and patients could also reach out to their specialised nurse via an ICT platform. The integrated care group was associated with a significantly lower rate of hospital readmission during follow up than the usual care group, with a hazard ratio (HR) of 0.55 (25). Chronic care management also showed positive results on quality of life (27). Different initiatives in Belgium will be discussed in the following paragraphs.

1.2.2 Belgian initiatives for chronic care management

In 2015, the health care initiative 'Integrated Care for Better Health' was approved by the ministers of public health. This plan aims to improve the health on a population level, by providing high quality care and support to all (chronic) patients. Within that plan, 12 pilot projects are currently going on in Belgium. These projects seek to

view care as a set of key services and care providers across the different disciplines. The patient is perceived as the central pillar and has the opportunity to direct his own care. A multidisciplinary network of healthcare providers supports and guides the patient in this. This network usually consists of the patient's general practitioner (GP), specialists, community pharmacists (CP) and nurses, and can be expanded to include social workers, dieticians and others, depending on the patient's needs. Several thematic projects framed by these pilot projects are ongoing in 2021-2022, for example: the post-COVID-19-care programme, the prenatal care programme, the smoking cessation project and food literacy. With more than 10 000 patients benefiting from these projects and the positive results achieved before 2020, it was decided to extend these pilot projects until 2022 (28).

One of the possible steps towards providing integrated care is the Medical-Pharmaceutical Concertation (MPC). The MPC is a well-known format to get general practitioners and community pharmacists in touch on a professional level and is one of the possible steps towards providing integrated care. Topics and focus points during these concertations may differ and depend on ongoing issues or patients, but overarching themes may be: polymedication, improvement of therapy adherence or risk management in specific patient populations (29). These meeting are held between GPs and CPs that are geographically proximate. It has been shown that both support from professional associations, e.g. *Brabants Apothekers Forum (BAF)* in Flanders, and interprofessional communication on local level is essential to achieve sustainable implementation of the MPC. It is important that participating healthcare professionals are aligned about the goal of these MPCs, namely providing better patient care by an optimised mutual communication. The setup of concrete agreements at local level is the first step towards an optimised interdisciplinary collaboration, and should be one of the results of the MPC. However, the objectives of these partners and participants may differ, which complicates the implementation on the longer term. The lack of structure wherein local GPs and CPs work together on a regular basis, also hindered implementation. This should remain a focus for future MPCs, since it has been shown that working together with geographically close healthcare professionals enhances implementation (30,31).

Specifically for COPD patients, there is also another public health initiative in Belgium: a resolution that was proposed in October 2021. This proposal for a resolution consists of recommendations made to the Flemish Parliament. Ultimately, this will be discussed in plenary and a vote will be taken on the proposal. The resolution aims to support initiatives towards an integrated approach for COPD in order to reduce the number of new

patients and provide an effective treatment for those already affected by COPD. Given the fact that many patients are either not diagnosed or are diagnosed at a late stage, patients are often tired and have high absenteeism rates – which again results in medical costs. The authors of the resolution believe there is an urgent need for more policy focus regarding this topic. The proposed actions are based on four pillars: awareness and prevention, screening and early detection, follow-up and treatment, and pulmonary revalidation. In the resolution, the added value of the protocol-based COPD intervention is described in detail under pillar three, namely follow-up and treatment. (32).

1.3 PROFESSIONAL PHARMACY SERVICES FOR COPD PATIENTS

Pharmaceutical care is defined as ''the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life'' (33). Pharmaceutical care is evolving and the position of the pharmacist as an important link in the healthcare system has been increasingly emphasised. Community pharmacists are often the first healthcare professional that patients contact when in need of health advice. Therefore, pharmacists are designated to provide services as medication management, health promotion and screening and management for chronic diseases (34). Even clinical interventions at community pharmacy level, for example COVID-19 vaccination, are emerging (35). Overall, these community pharmacy services have been proven to have a positive effect on patient outcomes (36). This type of healthcare, provided at community pharmacy level, has brought a shift in the pharmacy profession from a focus on the product to a focus on patient care (37).

The role of the community pharmacists in the care for COPD patients has been researched and often emphasised. As a first-line healthcare professional with easy access for the patient, the pharmacist is the obvious person to detect deviations from the therapy and to motivate and support the patient in the use of chronic medicines. In the following paragraphs, various aspects of their role are discussed.

Primary prevention and creating awareness among patients are important tasks of the pharmacist, with **vaccination** being a crucial aspect. Both sensibilisation around the importance of vaccination and, newly in Belgium, administration of COVID-19 vaccinations are part of this (35). A Canadian systematic review that

assessed the effect of pharmacist involvement on vaccine coverage, revealed that vaccine coverage increased when the pharmacist was involved in the process, compared to traditional provision. The pharmacist could either be involved as an educator who provides information regarding vaccination, as a facilitator by hosting a traditional vaccination provider - such as a nurse - in the pharmacy or as an administrator. Important factors for vaccination acceptance by patients related to the pharmacist are convenience and accessibility (38). Increase in vaccination rates was also seen in a United States study where pharmacists act as a vaccine administrator (39).

Due to their extensive distribution throughout the healthcare system, pharmacists can help to improve vaccination rates in hard-to-reach populations. This expansion of their role may therefore have great benefits in preventing serious diseases through vaccination (38). Specifically for COPD, the pharmacist has an important supporting role in disease management. Prevention, early detection, support and follow-up are key steps in the patient pathway where the pharmacist is best placed to facilitate diagnosis and contribute to improved disease management. This includes advice on medication, inhalation technique and therapy adherence. An important note here is that it is necessary to provide appropriate training for the pharmacist, to create awareness of his role and to strengthen the cooperation between GP and pharmacist (40).

Another example of their role in prevention is **smoking cessation**, where the pharmacist can anticipate immediately due to the wide range of nicotine replacement products. Furthermore, **early detection** of COPD can also take place in community pharmacies. Patients who demand for cough suppressants or complain about shortness of breath, can be referred at an early stage to the GP. However, these measures are too late for the majority of the patients and pharmacists should be committed to support and follow-up (40).

A protocol-based pharmaceutical care program (in Belgium, e.g. *Goed Gebruik Geneesmiddelen begeleidingsgesprek, GGG; Bon Usage des Médicaments, BUM*) is one of the components of pharmaceutical care that is evolving and focuses on **educating the patient** about his condition, treatment and non-pharmacological approach (41,42). Currently, two GGG services (i.e. one for asthma and one for pre-diabetes patients) are implemented and remunerated in Belgium . These services are completely free of charge for the patient and are remunerated for the pharmacist at a fee of €21.89 per counselling session (43). The GGG asthma may be performed on demand of the treating physician by prescription or on initiative of the pharmacist himself. For diabetes, a prescription of the treating physician is mandatory. This type of counselling is based on validated

protocols and is ideally performed in a separate room in the pharmacy, in order to ensure privacy and convenience for the patient (44).

The protocol-based pharmaceutical care program COPD could consist of following subjects: education about the pathology, symptoms, classification and diagnosis of COPD, the pharmacological treatment, which involves inhalation technique, and the importance of therapy adherence; and subsequently the non-pharmacological treatment which includes smoking cessation, the importance of physical activity and a healthy diet (45).

In 2010, 170 Belgian community pharmacies participated in a randomized controlled trial performed by Tommelein et al. In this trial the effectiveness of a protocol-based pharmaceutical care program for COPD was examined. This trial demonstrated a significant improvement of the inhalation technique and medication adherence and a lower hospitalization rate in the group of patients (n = 371/734) receiving this pharmaceutical care service (46). In addition, an international meta-analysis including 12 studies also demonstrated the significant improvement of inhalation technique and medication adherence after a pharmacist-led intervention on patients with COPD (47).

Both correct inhalation technique and medication adherence are associated with a decreased risk of hospital admission due to exacerbations, and mortality. Since both elements are addressed during a protocol-based COPD intervention, the importance of the pharmacist's role cannot be denied (48). Currently, the majority of the pharmacists already explain inhalation technique and side effects during the first delivery of a new medicine. However, addressing smoking cessation, discussing the importance of therapy adherence and self management is not yet widespread (49).

In addition, a positive association has been described between influenza and pneumococcal vaccination and a decrease in COPD exacerbations leading to hospital admission (50,51). However, the overall prevalence of influenza and pneumococcal vaccination in the study of Fekete et al. was low with 23,6% and 10,8%, respectively (51). Since the protocol-based pharmaceutical care program COPD, that has previously been tested, includes the addressing of these elements, this underlines again the importance of the ability of pharmacists to perform this program and the possibility of improving the healthcare of COPD patients.

Given the positive impact of protocol-based COPD interventions, and the convincing data from a Belgian study, already in 2010, implementation of the service in community pharmacies seems evident. Unfortunately, full implementation is awaiting.

1.4 STRATEGIES TO IMPLEMENT SERVICES IN THE COMMUNITY PHARMACY

1.4.1 Stages of the implementation process

Implementation is defined as the act of starting to use a plan or system (52). It is essential to think through the implementation strategy when one wants to start using a new service, since efficient implementation can reduce the gap between evidence and use in practice from 17 to three years (53).

Implementation strategies in community pharmacies have often been researched and described (54,55). Unfortunately, there is no single strategy that works for every type of pharmaceutical care intervention. The success of implementation depends on various factors and influences, that may vary from pharmacy to pharmacy. Undoubtedly, it is necessary to optimize implementation strategies for community pharmacies in order to shorten the time between new evidence and the use thereof in routine practice. Especially in primary care, efficient implementation is of high importance given the rapidly evolving growth in evidence and the large number of patients daily (56).

The general implementation process can be divided into four stages, namely exploration, preparation, operation and sustainability. More specific research about implementation processes in community pharmacies revealed that the process in this setting can be further extended with two additional stages, namely a pre-implementation/discovery and a testing stage. The above-mentioned steps will be discussed more in detail below (54).

Discovery

The discovery or pre-implementation stage can be described as the stage where the pharmacist is informed about the new service and what this service involves. In this early stage, clear and repeated communication about the service is crucial in order to trigger the pharmacists with the new service and motivate them to take the next steps. A shift in the vision of the pharmacists – seeing the added value of the service – should take place in order to make implementation successful (55,56).

Exploration

The exploration stage is rather informal and takes place at level of the team of the community pharmacy. In this stage, pharmacists assess the new service and their own capacity. They check whether their staff is capable of carrying out this service, whether they have sufficient manpower, whether the service is logistically feasible and which possible benefits will arise for their patients and themselves. After the exploration stage, the pharmacy team will choose to whether adopt or reject the service (54).

Preparation

Once the pharmacy team has decided to adopt the new service, the preparation stage starts. All arrangements regarding logistics, organisation, staff and training will be discussed during this stage. Often, a leader per service is assigned that will delegate tasks regarding this service. Logistical changes include for example providing a separate room to ensure private conversations with patients. Organisation of staff members must be assessed since a new service often requires a redistribution of tasks (54,55).

Testing

The testing stage involves trialling the new service with a limited number of patients, often defined in advance. However, the testing and operation stage often interfere since operation is a logical result of a successful testing stage (54).

Operation

In the operation phase, pharmacists will start to recruit and enrol patients in the new service. Obviously, this stage is the most crucial in order to make implementation of the new service happen. Goal setting is a factor that pharmacists describe as being necessary for the implementation to be successful. For example, Key Performance Indicators (KPI's) about the number of patients to be enrolled in the new service can be defined. Unfortunately, this is also the stage where most difficulties emerge. Pharmacists often experience difficulties with staffing, it proved to be difficult to rearrange tasks in practice. Furthermore, maintaining patient demand seems to be an ongoing issue since this requires continuous efforts from the team to actively inform and recruit patients for the new service (34,54).

Sustainability

The sustainability phase is reached when the provision of the new service becomes part of the routine practice of the pharmacy team. Important is that any supportive conditions provided in the previous phases (e.g. training, supportive material, coaching sessions) are maintained. However, sustainability seems difficult to reach for the majority of the pharmacists. Only pharmacy teams that were able to make adjustments to the service in order to overcome above mentioned hurdles, succeeded in maintaining the service. Furthermore, financial compensation is an important factor for the continued provision of a service (34,54).

1.4.2 Factors influencing the implementation process

Factors influencing the implementation process may vary widely and differ from one pharmacy to another. However, six overarching themes can be identified from literature, namely pharmacist characteristics, an enabling practice framework, pharmacy direction, internal communication, community fit and support, and staffing (34,54).

Pharmacist characteristics

Evidently, mindset and characteristics of the pharmacists have a major influence on the success of the implementation process. The pharmacist must be open minded and willing to go along with the changes brought

by the advances in healthcare. Furthermore, remuneration often lacks for a new service. The pharmacist must be willing to accept this in the first stages of the implementation of the new service and rather focus on the added value of the service for their patients (57).

An enabling practice framework

It has appeared that a framework that enables the practice of the new service is key for successful implementation. This framework can be very extensive and consists of various elements. Being part of a healthcare team that emphasises each other's role, has mutual medical notes and consults on a regular basis facilitates the implementation of new services. Also, the perception of patients seeing the community pharmacy as a part of the healthcare resources promotes uptake of new services. External support from professional associations, other healthcare professionals and third parties e.g. pharmaceutical companies, strengthens the framework and acts as a facilitator. Remuneration and the lack thereof raised as being a major issue in the sustainability of the service and should be thoroughly considered by stakeholders (57).

Pharmacy direction

It works facilitating for implementation if the new service is in line with the vision of the pharmacist and the direction of the pharmacy, as well on management as on team level. However, a pharmacist may see the added value of a service, but if there are other responsibilities that are prioritised by the pharmacist, the implementation will not happen in practice. Therefore, it is crucial to align with the team of the community pharmacy on short-term priorities and long-term goals (53).

Internal communication

Team input and teamwork are important to make implementation successful. Communication within the team throughout the process will allow quick intervention in case of disagreements and makes it possible to make adjustments in (staff) organisation if it proves necessary (54).

Community fit and support

The service to be implemented needs to align with an ongoing issue and the needs of the target population and the pharmacists. For example, in a community consisting of a remarkable elderly population, a prenatal medication counselling may be less of a priority than an osteoporosis screening (54,57).

Staffing

It must be verified whether resources and capabilities of the pharmacy itself and the staff are suitable for the service aimed to be implemented. Lack of staffing or issues with staffing rearrangements often occur as a factor limiting the implementation process (54,57).

1.4.3 Implementation of the protocol-based COPD intervention

As already mentioned above (cf. 1.3), a randomized controlled trial has been performed in 2010 in which 170 Belgian community pharmacies participated and that showed the effectiveness of a protocol-based pharmaceutical care program COPD. After demonstration of effectiveness, views on protocol implementation were also researched. Multiple possible facilitating factors emerged: remuneration, more background information and complete integration in the pharmacy software would all make implementation more successful. Lack of time, too much administrative burden and no integration in the pharmacy software appeared to be limiting factors. Ninety-four percent (n=75) of the questioned pharmacists stated that they are willing to fully implement this pharmacy service, on condition that further education would be foreseen in order to become specialised about the service. Furthermore, the majority was convinced that this service would lead to an increased satisfaction of the COPD patient population (49).

2 OBJECTIVES

The aim of this master's thesis was to further investigate the implementation of the protocol-based pharmaceutical care program COPD. Facilitating and limiting factors in addition to literature were explored, together with perceptions of pharmacists on the future of this professional pharmacy service. These findings were linked to their current experience. Furthermore, we aimed to obtain insights in the differences in experience and perceptions about the protocol-based pharmaceutical care program COPD across regions involved and not involved in an integrated care project. Based on these findings, recommendations for future widespread implementation were made.

3 METHODOLOGY

3.1 METHODS

3.1.1 ADEM project

This master's thesis is framed in the ADEM project, carried out by Vlaams Apothekers Netwerk, Zorgzaam Leuven, Chiesi and KU Leuven. ADEM refers to *apotheker, dialoog, engagement* and *medicatie.* The overall aim of the ADEM project is to strengthen the role of pharmacists in the care for COPD patients and facilitate interdisciplinary collaboration in order to obtain sustainable cooperation between primary care healthcare professionals. This is sought to be achieved by implementing the protocol-based pharmaceutical care program COPD.

A pilot project for implementation was already set up two years ago in the region of Leuven. Hereby, it was shown that the protocol-based pharmaceutical care program leads to increased therapy adherence, optimisation of the inhalation technique and better symptom control (58). Therefore, the ADEM project was set up in order to roll out the protocol-based pharmaceutical care program COPD in a broader region.

In a first phase, the region of Flemish Brabant was targeted. In parallel, the pilot project in the region of Leuven was further optimised and deepened. This deepening in the region of Leuven was framed within Zorgzaam Leuven, one of the 12 chronic care projects in Belgium (cf. 1.2). Zorgzaam Leuven aims to make Leuven a chronic care region in function of the needs of its population. Leuven counts eight community teams where motivated healthcare professionals may join. A community team is a team of healthcare professionals in a geographic region that makes an extra commitment in order to provide integrated care. These teams consist of a large variety of healthcare professionals: pharmacists, general practitioners, physiotherapists, dietitians etc. They meet on a monthly basis to discuss ongoing projects and align on the approach of the community team.

The methodology for both regions differed in part, as the project was more in-depth in Leuven. However, there was methodological similarity to a large extent. All participating pharmacies received a supporting package consisting of a three-part online training regarding COPD, a visual COPD atlas and a list of their COPD patients if they were member of the professional association *Brabants Apothekers Forum (BAF).* Furthermore, all of them were invited to participate in a local MPC.

The e-learnings consisted of three parts applicable to the intervention. The first part focused on the scientific background of COPD, then the role of the pharmacist was discussed and the last part focused on the practical aspect of the intervention.

The visual COPD atlas is an illustrative material that can be used during the protocol-based COPD counselling. It contains information adapted to the knowledge of the pharmacist on one side and for the patient on the other side. In this way pharmacists can refer to illustrations and information about the respiratory track, COPD itself, the therapeutic options and non-pharmacological measures in the atlas. Pharmacists can decide per individual patient which sections they will discuss.

The list of COPD patients was set up based on a query that BAF performed on pharmacy data. This query selected COPD patients based on medication history and defined a risk factor per patient. For example, a patient to whom oral corticosteroids, azithromycin (an antibiotic used for exacerbations) or an excessive amount of rescue medication was delivered in the past year, was assigned a higher risk factor compared to patient to whom only maintenance medication was delivered. In that way, pharmacies received a (non-exhaustive) overview of COPD patients that could help them to select patients that were in high need of a protocol-based COPD intervention. In the region of Leuven, six out of eight pharmacies received the list, where this was four out of nine in the remaining region of Flemish-Brabant.

Lastly, part of the supportive package provided for the implementation of the protocol-based COPD intervention were **medical-pharmaceutical concertations** (MPC). There were different aims to organise these concertations. The first aim was to create awareness and support among GPs for this service provided by pharmacists. Furthermore, an important aim was strengthening the interdisciplinary collaboration on a local level regarding the initiation and follow-up of the protocol-based COPD intervention. By focussing on cooperation between pharmacists and GP's, the implementation of the protocol-based COPD intervention would hopefully be facilitated.

Because the Leuven region is already committed to integrated care through the Zorgzaam Leuven project, this region is already further advanced than the rest of Flemish Brabant. That is why an additional support package was provided for this chronic care region, in order to further deepen the project. This was done by offering an

individual care plan for each concerned patient and an individual coaching session for the participating pharmacist.

The individual care plan, provided in Addendum 3, is a paper-based document that provides an overview of the healthcare status per individual patient. The purpose of this plan is to ensure smooth and structured multidisciplinary cooperation and to give the patient an overview on his healthcare team. In this plan the involved healthcare professionals (GP, pharmacist, physiotherapist, tobaccologist, dietician, …) can list their current interventions and status of the patient. If the pharmacist noticed that a particular patient was in need of an additional conversation regarding the planning of his care, he could refer him to a healthcare coach. This healthcare coach is a healthcare professional, often a nurse, who tries to optimise the holistic approach per individual patient. This could be psychological help, help with nutrition or help with smoking cessation. In short, all the help that would be of added value for the patient in order to reach optimal disease control.

Furthermore, **an individual coaching session** was foreseen for the pharmacists, provided by Zorgzaam Leuven. The session took place halfway the inclusion period (after around four weeks). The aim of this session was to identify and address practical factors that limited pharmacists in their ability to initiate or perform a protocol-based pharmaceutical care program.

ADEM project participants

In the region of Leuven, three community teams that were already engaging themselves for COPD were preselected by the staff of Zorgzaam Leuven. The pharmacists of these community teams were invited to participate in the ADEM project. In total, 12 pharmacies were eligible for participation and eight of them agreed. Pharmacies in the remaining region of Flemish Brabant were invited by *BAF* to participate in the ADEM project. In total, nine pharmacies have agreed to participate. All participating pharmacists were asked to perform five protocol-based COPD interventions in an inclusion period of eight weeks.

3.2 DESIGN AND PARTICIPANTS

To collect experiences and insights of the pharmacists on the implementation of the protocol-based pharmaceutical care program, focus groups were organised. The community team meetings that were already taking place monthly in the region of Leuven, were partially set up as a focus group. As there were three community teams taking part in the ADEM project, this made a total of three focus groups within the region of Leuven. In the remaining region of Flemish Brabant, one focus group was set up.

However, due to COVID and internal difficulties regarding the organisation of these community meetings, it was decided to move to semi-structured interviews rather than focus groups with the participating pharmacists, whereby the same objectives and focus were maintained. This change was implemented both in the Leuven region and in the remaining region of Flemish Brabant. The semi-structured interviews explored the participants' experiences on the ADEM project and the interdisciplinary cooperation with the general practitioners, the facilitating and limiting factors for carrying out a protocol-based COPD intervention in addition to the literature, their views on the future of these services and the interpretation of their profession. Since the semi-structured interviews leave room for the participants to share their detailed individual experiences and insights, this could possibly give more detailed information compared to the initially planned focus groups.

3.3 DATA ANALYSIS

All qualitative data obtained by the semi-structured interviews were analysed according to The Qualitative Analysis Guide of Leuven (QUAGOL). First, the audio recorded interviews were meticulously transcribed. Then, the coding process was prepared by going through five steps. The first step involved thoroughly reading the transcribed interviews. Key phrases that made an impression were underlined. Secondly, it was aimed to articulate the essence of the interviews in order to identify essential characteristics that could provide an answer to the research questions. Thirdly, a conceptual scheme was set up in order to get an overview of relevant concepts concerning the research topic. In step four, the accuracy of the conceptual scheme was verified to check whether this scheme did reflect the most important concepts of the interviews. The last stage of the preparation was characterized by constantly comparing concepts in and between cases, which facilitated the finalisation of

the conceptual scheme. At the end of the preparation stage, there was overview on all the data, while retaining the uniqueness of each individual case.

The actual coding process was performed using qualitative software. Preliminary coding was done by drawing up a list of concepts. Then, relevant fragments of the interviews were linked to the appropriate codes. Lastly, the essential findings were described in the results. The coding process was done using NVivo® release 1.6.1. The coding tree can be found in Addendum 4. Quotes mentioned in the results' section were translated by forward-backward translation from Dutch to English by a certified translation agency.

3.4 ETHICAL CONSIDERATION

This study (MP018449) was approved by the Educational-Support Committee on 20/01/2022, to which it was submitted by the Research Ethics Committee UZ/KU Leuven.

4 RESULTS

In total, eight pharmacists were interviewed, covering 10 out of 17 participating pharmacies of the ADEM project. Demographics of the participants are shown in Table 1.

Table 1: Overview of interviewees.

Interviewee number	**Gender**	**Region concerning ADEM project**	**Number of interventions during inclusion period**	**Years of experience**	**Participation to MPC**
1	Female	Non-IC	0	0-5	No
2	Female	Non-IC	3	5-10	Yes
3	Male	Non-IC	0	5-10	Yes
4	Female	IC	0	5-10	No
5	Female	Non-IC	3	15-25	Yes
6	Female	IC	2	> 25	Yes
7	Female	IC	> 5*	10-15	Yes
8	Female	IC	0	10-15	Yes

IC = Integrated care region

Non-IC = Non-integrated care region

MPC = Medical-pharmaceutical concertation

* = This pharmacist was already experienced in carrying out the intervention.

4.1 EXPERIENCES REGARDING THE ADEM PROJECT

Identification of and reaching out to patients

The first step in effectively performing the protocol-based COPD intervention was identifying and addressing eligible patients. Since there is limited communication from the general practitioner about diagnoses, identification of patients appeared to be a hurdle. Therefore, most pharmacists had developed their own way of identifying patients with COPD. Often, this was done based on the type of inhaler the patients use or by the patient stating his diagnosis. However, most patients do not recognise the term COPD or are unaware that they are diagnosed with it. Therefore, pharmacists often check medication history to verify whether these patients have ever had a specific type of inhaler, antibiotics and/or corticosteroids for the treatment of exacerbations delivered.

Six out of eight interviewed pharmacists received a list of their COPD patients based on medication history data. They all stated that this was a major aid in order to get an overview of their patient population and to identify patients in need of a protocol-based COPD intervention. This allowed them to prioritise patients who were in high need of an intervention. For example, they added a note to the pharmaceutical file of patients to whom a high risk factor had been assigned, in order to be alerted during the next medication dispensing

> *"That query, that's actually maybe something we can use to help our patients better, for sure."* (Interviewee 3, non-IC region)

> *"I had some patients in my thoughts anyway, and there were a few among them. So, I really did use it and I made sure that when they came in, I would try to start a conversation right away."* (Interviewee 2, non-IC region)

A helpful tool for identification that only one pharmacist mentioned, is the pharmacy computer software (ViaNova®) that preselected possible COPD patients. Based on the medication history, the system shows a pop-up mentioning that this patient could possibly have COPD, which the pharmacist then has to confirm or reject. In case of confirmation, the different subjects of the protocol-based COPD intervention are subsequently shown on the screen, where the pharmacist can supplement information. Finally, an automatically generated report can be printed. A reminder for a follow-up intervention is shown after approximately six months.

"For example, if he sees Spiriva® or some kind of medication that he thinks, that patient may have asthma or COPD, then he gives us one. Yeah, how should I put it? I get to see such an orange box where if I click on it, that gives me the pop-up, 'Does this patient have asthma or COPD, or does this not apply?'."
(Interviewee 7, IC region)

One of the difficulties encountered by six out of eight pharmacists in recruiting patients was the fact that COPD patients proved to be a difficult population to reach. The patients with whom they were willing to perform an intervention, often suffer from ailments e.g. have difficulties to go to the pharmacy by themselves, difficulties walking or have bad hearing. It was also common that not the patient himself, but the partner or caregiver collected the medication for the patient. The latter was reinforced by COVID. Out of fear for getting infected with the coronavirus, patients did not come to the pharmacy by themselves or were in a hurry to get outside as quickly as possible. Furthermore, denial and excuse-seeking were also mentioned. Patients were in denial of their condition or wanted to avoid a substantive discussion.

"That's also a difficult target audience, they soon say, 'Yes, but...', or, 'It's asthma, not COPD' or 'Yes, but, it's better since I've been doing this or that', so they leave or don't want to be confronted with it. That is very typical of this type of patient."
(Interviewee 6, IC region)

Medical-Pharmaceutical Concertation

Six out of eight interviewed pharmacists participated in the MPC organised in the framework of the ADEM project. Pharmacists who did not participate stated that this was because of time constraints or other priorities at the time of the concertations.

Opinions regarding the MPCs were divided. The majority (5/8) was positive about the future of it, provided that more GP's would participate. Pharmacists who perceived the MPC as an added value stated that this was because they could hear the opinions of other healthcare providers, including general practitioners, nurses and pulmonologists, and take their views into account in the further operation of the protocol-based COPD

intervention. There was also a demand for organising a follow-up MPC. Some concrete agreements were made during the MPCs, which was of great value to the pharmacists. For example, it was discussed that doctors can mention on the prescription that the patient is in need for a COPD intervention. In this way, the diagnosis is confirmed for the pharmacist and the patient is aware that his/her healthcare team is working together to improve his care.

At one consultation, the presence of GPs lacked. Only pharmacists and nurses were present. This was felt to be a serious limitation by the three pharmacists who participated to this MPC and were interviewed. Given that the goal of a MPC is cooperation between GP's and pharmacists, this primary goal was already not met.

> *"Oh, I have to say that I had mixed feelings about that. There was simply no doctor, so that actually does not work. There were other pharmacists, of course, but there is little consultation then."*
> (Interviewee 8, IC region)

One pharmacist mentioned that the MPC was not of added value for the project and cooperation, since the focus was on the protocol-based COPD intervention rather than a general approach regarding COPD. According to him, the present GPs expectations were not met. The fact that the MPCs took place online, was also mentioned as a limitation in regions where cooperation between GPs and pharmacists was yet in its infancy.

> *"Also depends a little on the situation. In our situation, we do not know each other yet, doctors and pharmacists, and then I think that is all the more important. In a region where everyone already knows each other and meetings happen regularly, working digitally once may be not so bad. But in this case."*
> (Interviewee 3, non-IC region)

Interdisciplinary cooperation between pharmacists and GPs

Current cooperation and its hurdles

Currently, cooperation between pharmacists and GPs is perceived as minimal by 6 out of 8 pharmacists, both in general and specifically for this project. Communication mainly takes place by telephone in case of urgent problems, such as when the pharmacist notices that the patient is not able to use his inhaler correctly or is so badly controlled that a switch in type of medication has to be made. It was mentioned several times that this communication is mainly one-sided, namely from pharmacist to GP. Regarding the protocol-based COPD intervention, pharmacists sent out feedback via email, however no response was given.

> *"I think it's more like if we notice something that we might call the doctor ourselves and say for example, yes, we notice that. It's more, I think, more of our direction, so from the pharmacist to the doctor it's the reverse."*
> (Interviewee 2, non-IC region)

E-mail and Siilo[1] are channels of communication that pharmacists prefer for non-urgent communication. These channels make contact more accessible, as the GP is not obliged to answer immediately. A perceived disadvantage of this was that Siilo is not yet commonly used in every region, and that contact is not structured (per patient) via none of these channels. A pharmacist involved in the integrated care project mentioned that cooperation went smoother since the establishment of the community teams. Because they have a better connection, the threshold for contacting each other is lower. However, regular cooperation does not yet take place in every community team.

During the interviews, several factors were mentioned that affected contacting GPs according to the pharmacists. **Age** appeared to be a limiting factor, as older GPs would be less open to communication. The **lack of recognition of the added value** of their profession was also an additional barrier for some pharmacists to make contact. It is often perceived as being delicate to make suggestions about adjustments to the therapy. The fact that

[1] Siilo is an app that allows healthcare professionals to communicate and share information in a secure and encrypted environment (78).

communication was mainly **one-sided** strongly limited cooperation. According to one pharmacist, this shows a lack of basic politeness, which reduces her motivation to contact a GP.

> *"It's always a bit delicate when a pharmacist starts asking certain questions about the treatment or makes suggestions for improving a patient's treatment, so to me that's like, 'Oh, how is that going to be received by those doctors?'."*
> (Interviewee 5, non-IC region)

> *"You organise a meeting, and you actually get zero response, so I also don't know who will be present or not. Yes, I think that is a basic courtesy. That's exactly the same with that project."*
> (Interviewee 6, IC region)

Future vision on cooperation

Multiple suggestions for more successful future cooperation were given. One pharmacist referred to the way cooperation went in her internship pharmacy, namely monthly meetings with the local healthcare professionals to discuss specific patients and current problems. MPCs could also provide a basis for future cooperation. It was considered very important that future MPCs would take place live rather than virtual. Subsequently, live meetings could be alternated with virtual meetings, once the basis of cooperation has been formed. Pharmacists would find it desirable to give brief feedback after an intervention, or at least to indicate that it has been carried out, so that the GP can contact them with any questions. This would ensure that they are aware of each other's interventions.

> *"In my internship, they did that once a month that they met with the pharmacists and the GPs. To discuss difficulties, to discuss certain patients and to inform them, for example, that you should do a GGG like this. In an ideal scenario, I can see that."*
> (Interviewee 1, non-IC region)

4.2 HURDLES FOR IMPLEMENTATION IN DAILY PRACTICE

Difficulties with implementation that emerged from this research can be divided into four major themes: COVID-19, staff shortage, lack of time and lack of remuneration.

COVID-19

The project was rolled out in December 2021 - January 2022, during the fourth wave of the coronavirus. Each interviewed pharmacist mentioned limitations for implementation that were linked to COVID-19. **Engagement in vaccination centres** proved to be a first factor. Pharmacists were employed as pharmaceutical experts in the vaccination centres and could therefore spent less time on being involved in the daily operation of the pharmacy. Furthermore, pharmacists were appointed to carry out **rapid COVID-19 antigen tests** which called for a reorganisation of their team and priorities. Also partly linked to COVID was the **difficulty of reaching patients** (cf. 4.1).

It was mentioned by 7 out of 8 pharmacists that the lack of integration of the protocol-based COPD intervention in **the pharmacy software** was a major limitation. The paper report sheets turned out to be yet another paper document that pharmacists had to fill in, which made them lose track. The individual care plan proved unsuccessful for the same reason. Only one pharmacist initiated this for one patient, who never took the document back.

> *"If we have to then enter that we have done that into the computer again, that also takes some effort. Especially if that would be a form to be completed that takes some time, then the registration is doomed to fail."*
> (Interviewee 5, non-IC region)

An opposite result came from a pharmacist involved in the integrated care region. In her community pharmacy, the protocol-based COPD intervention was already integrated into the pharmacy software. For patients who possibly suffered from COPD, the software gave a pop-up that the pharmacist had to confirm. Next, small pop-

ups with checklists were displayed that the pharmacist had to go through for this patient, specifically regarding the purpose and effect of the medicine, therapy adherence and the CAT.

Staff shortage

Staff shortage, often linked to financial reasons, appeared to be a hurdle for the implementation in daily practice. Partly linked to COVID, but also for financial reasons. Because loans still need to be paid off, some pharmacies operate with minimal staffing levels. The pharmacist in question would like to hire an additional staff member for this purpose, but sees a temporary solution in training an intern who can focus on this part of the profession.

> *"If we had an extra employee, I would do it for sure. Yes, we can't afford that. We first have to pay off our loan."*
> (Interviewee 4, IC region)

Staff shortage was also linked to COVID. Due to staff members infected with COVID and not being able to work, participants stated that they were forced to restrict their activities to what was strictly necessary.

Lack of time

Lack of time, like COVID, was a factor cited by every pharmacist and was often the common thread throughout the interview. This can be linked to several factors mentioned above. Both the deployment of pharmacists during the COVID crisis, loss of staff due to infections and the performance of COVID tests (which is time-consuming) play a major role in this. As well as offering various new services, it sometimes proves difficult to prioritise, which leads to time constraints.

Remuneration

The lack of remuneration was cited by every pharmacist as a limiting factor. Several remarks regarding this topic were made. First of all, the current economic model of pharmacy leads to pharmacists tending to focus on reimbursed products rather than carrying out these interventions. Furthermore, it was also reported that the way in which remuneration is arranged for asthma and diabetes is not necessarily the best way to apply it to COPD. According to one pharmacist, this intervention should not be linked to the delivery of a new product, as is now the case with asthma. Because COPD patients would benefit from regular follow-up regarding their (non)-pharmacological treatment. All interviewed pharmacists stated that they would like to focus on the delivery of pharmaceutical care, however this is not yet embedded in the current structure and functioning of the pharmacy.

> *"Yes, budget, right. If the money is not there... then it is not, you can do that out of the kindness of your heart, but that is not an economic model and no pharmacy can last like that."*
> (Interviewee 3, non-IC region)

> *"But that's why the financing has to be better in place, and I think everyone is asking for this among pharmacists, in general for our explanation. That does so much more, then we can really spend more time on that."*
> (Interviewee 7, IC region)

4.3 FUTURE PROSPECTS ON PROFESSIONAL PHARMACY SERVICES

Pharmacists see the future of their profession evolving and changing. They stated that change is necessary in order to continue to demonstrate their added value. Just as patients regularly consult the GP, it should become a habit to go to the pharmacist with the same intention, i.e. to obtain information that can improve their health. Currently, one is still in an intermediate phase of testing the capability and possibility of the pharmacist offering all different kinds of services. Pharmacists are amongst others conducting COVID tests, training themselves as vaccinators and performing protocol-based interventions. If this is to be maintained in the future, it is seen as

necessary to evolve towards larger pharmacies employing pharmacists with a variety of specialisations. It was also indicated that it is not useful for every pharmacist to offer every type of service.

> *"Erm, I think we're all just kind of checking it out. But I think if you take a test, want to perform COVID tests, want to do vaccination and carry on those conversations, then that is not the same as in the model, me being in a pharmacy with one or two people. Then you are already working with larger centres and our profession is probably evolving towards that, but that is very good, and they certainly have to continue working on that pharmaceutical care and the significance of that."*
> (Interviewee 6, IC region)

> *"Then it is very difficult to say, 'Does your husband want to come to the pharmacy for that conversation?' that's has not been ingrained enough yet, like when they need to go to the doctor."*
> (Interviewee 2, non-IC region)

> *"In itself, that does not seem that insurmountable to make something of that if that is structurally addressed, and if that were to happen in all pharmacies. Then those patients would also go along with that."*
> (Interviewee 5, non-IC region)

5 DISCUSSION

This work aimed to obtain insights in the experiences and perceptions of pharmacists regarding the implementation of the protocol-based pharmaceutical care program COPD. By this, recommendations for future national implementation can be made and hopefully, COPD patients can benefit from this intervention which significantly improves their disease control and subsequently their quality of life (46).

5.1 IMPLEMENTATION IN DAILY PRACTICE

As shown in the literature and confirmed in this study, it is clear that several steps have to be taken before an intervention can be successfully implemented (54). First of all, it is important that the pharmacist is sufficiently informed about the content and practical functioning of the intervention. The supportive material provided during the preparation phase appeared to be of sufficient quality in this project. Pharmacists repeatedly mentioned the usefulness of the e-learning, which refreshed their knowledge and made them feel sufficiently capable of carrying out the intervention. However, during the exploration and preparation phase, insufficient attention was often paid to the concrete approach in the pharmacy. This points to the importance of adequate preparation on the part of both the project developer and the pharmacist, making the preparation as concrete and applicable as possible. Secondly, identification of patients proved to be very smooth among pharmacists who received the list of patients in their pharmacies. Without this list, it was mentioned to be often difficult for pharmacists to gain insight into who their COPD patients are, regarding that diagnoses are not shared and patients are often unaware of this. By engaging in population management in this way, pharmacists gain insight into the population of COPD patients in their pharmacies and can also determine much more efficiently who is most in need of more extensive pharmaceutical care. This makes the care more plannable and subsequently also more feasible. In the future, the pharmacy profession is geared to more providing extensive pharmaceutical care, population management is a very useful tool in making this more feasible in practice. The pharmacist should be aware of the population that his pharmacy serves, then specific services can be implemented selectively with the needs of the local population in mind (59).

Once patients who could benefit from an intervention have been successfully identified, the pharmacist should subsequently speak to them and motivate them to participate. This proved to be a difficult step for the majority of pharmacists. It was indicated that patients are difficult to reach, due to numerous factors. Because they are often old patients, they suffer from various inconveniences such as hard of hearing or immobility and therefore do not always come to the pharmacy themselves. This population is also sometimes not very open to help, as they are so used to their health condition that they do not see the point of this intervention. This confirms what is seen in literature, namely the importance of creating awareness about COPD among both patients and the general population. If those around them are aware of the impact of COPD on quality of life, patients will also feel more comfortable asking for help or talking about their symptoms (15). Hard-to-reach populations require a tailor-made approach. It is important that the pharmacist has an insight into who exactly these patients are in his pharmacy, so that he can then start targeting them, as described above. Many factors should be taken into account that can make contact difficult, such as reduced mobility, embarrassment, difficulties with disease acceptance and lack of motivation (60). Low health literacy is also common among the elderly. Up to 50 percent of people aged 75 and older, have limited health literacy. This has a negative impact on the use of health care services and adherence to treatment (61). Concrete initiatives to improve health literacy include books aimed at educating and raising awareness among healthcare professionals and, websites as *gezondheidenwetenschap.be* and *mijnthuisdoktermijngezondheid.be* where evidence-based guidelines can be found at patient level.(62)

It is notable that after completing the training and identifying suitable patients, only four pharmacists effectively reached the stage of implementing an intervention. As seen in literature, that step was confirmed to be the most difficult to make (54). Pharmacists gave various reasons for not proceeding to this step. COVID was a theme that permeated throughout and was used as an explanation both for not implementing an intervention due to lack of time and for difficulty in reaching patients. This was a result that was to be expected, given the period in which the project was taking place. During this fourth wave of the pandemic, pharmacists were used extensively as pharmaceutical experts in vaccination centres and carried out rapid antigen tests in their pharmacies. Nevertheless, this result should be viewed critically since the amount of literature that cites numerous other limiting factors (49,56,63). Only one pharmacist reached the stage of sustainability. Here the intervention was already integrated into the computer system, which indicates the important added value of digitalisation. Unfortunately, despite these positive results, there is still minimal use of digital applications in pharmacies. Both the lack of digital literacy and the usability of service may contribute to this limited implementation of digital

initiatives (64). Staff training and optimisation of software packages are necessary if implementation is desired. The failure of the sustainable implementation of the individual care plan can also be linked to this. Both patients and other involved healthcare professionals do not handle this paper document with care, so it remains the one-time initiation.

Unfortunately, cooperation with the treating GP is still considered a difficulty. Some pharmacists are even reluctant to make contact, given their past experiences. It is notable that some pharmacists from the integrated care framework have better experience since the establishment of the community teams. Through their regular contact, the threshold for an at times sensitive discussion is reduced. These barriers are confirmed by literature, where lack of clarity regarding responsibilities, feelings of hierarchy and respect are also mentioned. Obvious factors that emerge both in this study and in the literature are lack of interaction and of communication between CP and GP, causing major limitations to cooperation (65). This points to the importance of creating sustainable, regular cooperation between pharmacists and GPs for both themselves as the patients. Given the growing number of chronic patients with multifactorial diseases, interdisciplinary working will become increasingly important in the future. This is enriching for both patient and healthcare professional, given that the patient will perceive his healthcare professionals as a team, rather than separate individuals. But, one must be careful that the different groups do not lose their identity since it has been shown that poor understanding of each other's responsibilities can lead to conflict and suboptimal collaboration (66).

The financial aspect emerges strongly both from literature and this study, i.e. the lack of remuneration was cited by every pharmacist as a strong limiting factor (49). Pharmacists indicated that they would like to focus on providing more continuing pharmaceutical care, but that they are not able to do so in the current reimbursement model. Inadequate remuneration also appeared to be one of the main reasons for pharmacists leaving the profession or intending to leave (67).

Furthermore, regarding the financial aspect, a cost-effectiveness analysis conducted on the study of Tommelein et al. showed that along with the significant improvement in treatment adherence, symptoms and inhalation technique, there are also robust cost savings associated with the protocol-based COPD intervention. This analysis included several direct healthcare costs, namely primary care, hospital care and medication. The outcome was an average saving of €227 per patient in the intervention group. The initial higher costs for the intervention and the higher therapy adherence were more than compensated by the saving of €388 per avoided exacerbation. It

was also estimated that these cost savings would be maintained when the intervention was considered over the longer term (46,68). This positive outcome, in addition to significant improvements for patients, also points to the benefits for the healthcare system if this intervention is to be widely implemented.

5.2 FUTURE PROSPECTS ON THE PHARMACY PROFESSION

Pharmacists see their profession strongly evolving in the future. They want to distinguish themselves and be seen as a healthcare professional by the patient, more than only the dispenser of medication. Their low-threshold role in primary care makes them the ideal person to have a brief overview of a large part of the population. Their social role should certainly not be underestimated either. In order to continue demonstrating the added value of their role compared to online pharmacies, pharmacists are doing their best to innovate with services. The new generation of pharmacists is being extensively trained to become a patient-centred healthcare professional who is an expert in the field of medication and management of chronic conditions. Unfortunately, these opportunities are not sufficiently exploited in practice. Despite the proven added value, the profession of pharmacist is under threat today, although they play a very important role in guiding patients in the correct use of medication, the follow-up of chronic patients and reducing adverse drug events which can help to reduce hospitalisations (69).

Pharmacists realise that it is necessary to focus on pharmaceutical care in order to continue to differentiate themselves from the rapidly growing chains and online pharmacies. Given the group of chronically ill people in Belgium is expected to grow in the coming years due to the increasing ageing of the population, there will always be a demand for specialised interventions and advice from the pharmacist (70). Patients with chronic conditions often encounter problems related to adherence and could benefit from consultations with the pharmacist to address these issues (71). Since the introduction of the reference pharmacist (*huisapotheker)* in 2017, the pharmacist has had an even greater opportunity to take on a central role in the management of chronic patients. They can become the reference pharmacist of a particular patient, if he or she meets certain conditions, and are then responsible for the individualised follow-up of the pharmaceutical care of this patient. The pharmacist always provides an up-to-date medication schedule and has access to the patient's health data to ensure continuous patient monitoring (72). Given that COPD is a chronic disease that is often paired with polymedication, the protocol-based COPD intervention fits perfectly within this framework.

5.3 RECOMMENDATIONS FOR FUTURE IMPLEMENTATION

If the protocol-based pharmaceutical care program COPD is to be offered on a widespread basis, i.e. to move from the project stages to a generally offered intervention by the pharmacist, the influence and involvement of various parties is necessary. Pharmacists cannot implement this service in a sustainable way in practice without external support and a well-designed framework. Regarding this service, a comprehensive supportive implementation package is available. Pharmacists have shown their intrinsic motivation and efforts should be made to ensure that this motivation is recognised and utilised.

A very pragmatic approach to the implementation of interventions is needed, so that they become anchored in daily practice and are not perceived as something supplementary to regular activities. Possibly, the approach for the implementation of this type of services in the near future could be to appoint a coach who, together with the pharmacist, would look at how a certain project could be approached pragmatically in the practice of the pharmacy. It is necessary to look critically at which pharmacist will implement which projects, based on the needs of the population. Designated stakeholders will be discussed in the following paragraphs.

First of all, **professional associations**, both overarching and regional, as *Algemene Pharmaceutische Bond (APB)* and *Vlaams Apothekers Netwerk (VAN)* have an important role given their close contact with pharmacists and their in-house expertise. This is already done by, amongst others, organising individual coaching sessions and training evenings. For implementation on local level and practical support, local professional associations as *BAF* should not be missed either. Organising medical-pharmaceutical concertations, which are seen as increasingly important in the future for cooperation between first-line healthcare professionals, is also one of their strengths. If integration of the protocol-based COPD intervention into pharmacy software will eventually take place, professional associations would be the ideal organisation to provide training and support to pharmacists. They also have the important task to communicate the interests of the pharmacy profession to policy makers, while taking into account the realities and feelings of pharmacists in the field.

The pharmaceutical industry has already shown in the past that they are an ideal partner for raising awareness around chronic diseases. Through their cooperation with professional and patient associations, the needs of both healthcare providers and patients can be addressed. Their ability to set up large-scale actions and campaigns makes them an ideal player for reaching the general public and policy makers and in that way, hopefully, breaking

the stigma surrounding COPD (73). Furthermore, their role can also be to support projects in terms of content. Through their extensive in-house knowledge of their own product categories, education for pharmacists on the correct use of these medicines may be provided. Hereby there is certainly a place for cooperation with professional associations. On top of that, financial support for the start-up of new projects may also be part of their role.

Furthermore, sustainable implementation of the protocol-based COPD intervention and other services will never be achieved if no substantial changes are made to the current structure and content of the profession. This requires attention of **policy makers**. Remuneration for the intervention would already be a major step in the right direction. However, this change is not an isolated one. If pharmacists want to focus more and more on pharmaceutical care in the future, it seems obvious that it is not feasible or even useful for every pharmacist to offer every type of service. Choices about whether or not to implement certain interventions can be made based on the needs of the local population, as described above. It may also be feasible for pharmacies to evolve to larger pharmacies rather than the current one-man pharmacies. In larger pharmacies, pharmacists can each focus on different specialties, such as interventions, specific therapeutic areas, home delivery of medication or delivery to residential care centres. In this way, the patient will see the pharmacist even more as a specialised care provider to whom he can turn with his health-related problems. It will also become more normal for patients to consult a pharmacist, in a similar way as they visit their GP. Models such as pharmacists working in general practices can also be explored, analogous to other countries (74,75). For this, too, an appropriate interpretation and remuneration from the government must be provided.

5.4 STRENGTHS AND ADDED VALUE OF THIS RESEARCH

The aim of this master's paper was to further investigate the implementation framework for the protocol-based pharmaceutical care intervention COPD and to get an idea of the perceptions of pharmacists on the future of this type of service. This research was conducted in the context of a project that offered a comprehensive support package for pharmacists, which aimed to facilitate implementation. Considering previous pilot projects in the

region of Leuven, the region in this project was extended to Flemish Brabant. Pharmacists who were both involved and not involved in an integrated care project were interviewed. It also described for the first time the effect of the COVID pandemic on the implementation of this intervention. Because qualitative interviews were conducted, there was room for extensive sharing of personal findings and, depending on these findings, certain aspects could be discussed in more detail.

5.5 LIMITATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Due to the relatively limited number of participants in the project, only a limited number of pharmacists could be interviewed. This may have caused a bias, as the participating pharmacists already indicated that they were extra motivated by their participation in the project. A limitation in the project (and therefore for this study) was the fact that it took place during the fourth wave of the covid pandemic. As a result, the MPCs were forced to take place online, although it was assumed that live MPCs could provide significant added value to the project. Unfortunately, we did not collect data on the implementation of the intervention itself. It would be of added value for future research to quantify certain indicators in a clear manner. Examples of this could be: number of interventions carried out, number of follow-up interventions, whether training was followed, or the number of times the GP was contacted. Further recommendations for future research could be an in-depth study of how pharmacists see their profession developing in the future. In addition, research in a representative sample, for example by means of a survey, would be of added value for the creation of a feasible implementation plan. It may also be useful to ascertain the perceptions of the various stakeholders described with regard to the national implementation of this service.

5.6 CONCLUDING REMARKS

In this work, previous literature was confirmed and supplemented. COVID was a major stumbling block during the period of this project, although numerous other factors also need to be addressed in order to achieve sustainable implementation. Facilitating and limiting factors for conducting a protocol-based COPD intervention were also found to be universal in this study. Pharmacists are motivated to engage themselves and realise the

importance of providing extended pharmaceutical care for the future of their profession and in the management of chronic patients. It is important to take a critical look at which services are to be implemented in which pharmacies. At the basis of this is the great added value and increasing importance of population management. If sustainable implementation is desired, it is necessary to prioritise based on the needs of the local population. In the long term, it seems advantageous to partially evolve towards group pharmacies, in which the training of pharmacists in certain therapeutic areas can be deployed so that a diverse range of specialised services can be offered within one pharmacy. Crucial here is the provision of appropriate remuneration. Furthermore, substantial preparation and training of the pharmacist are necessary. Coaching on the floor also seems advantageous to effectively implement the service in daily practice. A step-by-step, pragmatic approach is appropriate here. Also, the perception of the pharmacist as an expert healthcare professional in the general population still needs to evolve, in order for patients to become inclined towards consult their pharmacist for all kinds of questions related to medication or chronic conditions. The involvement of different parties is necessary to make these evolutions feasible and structured.

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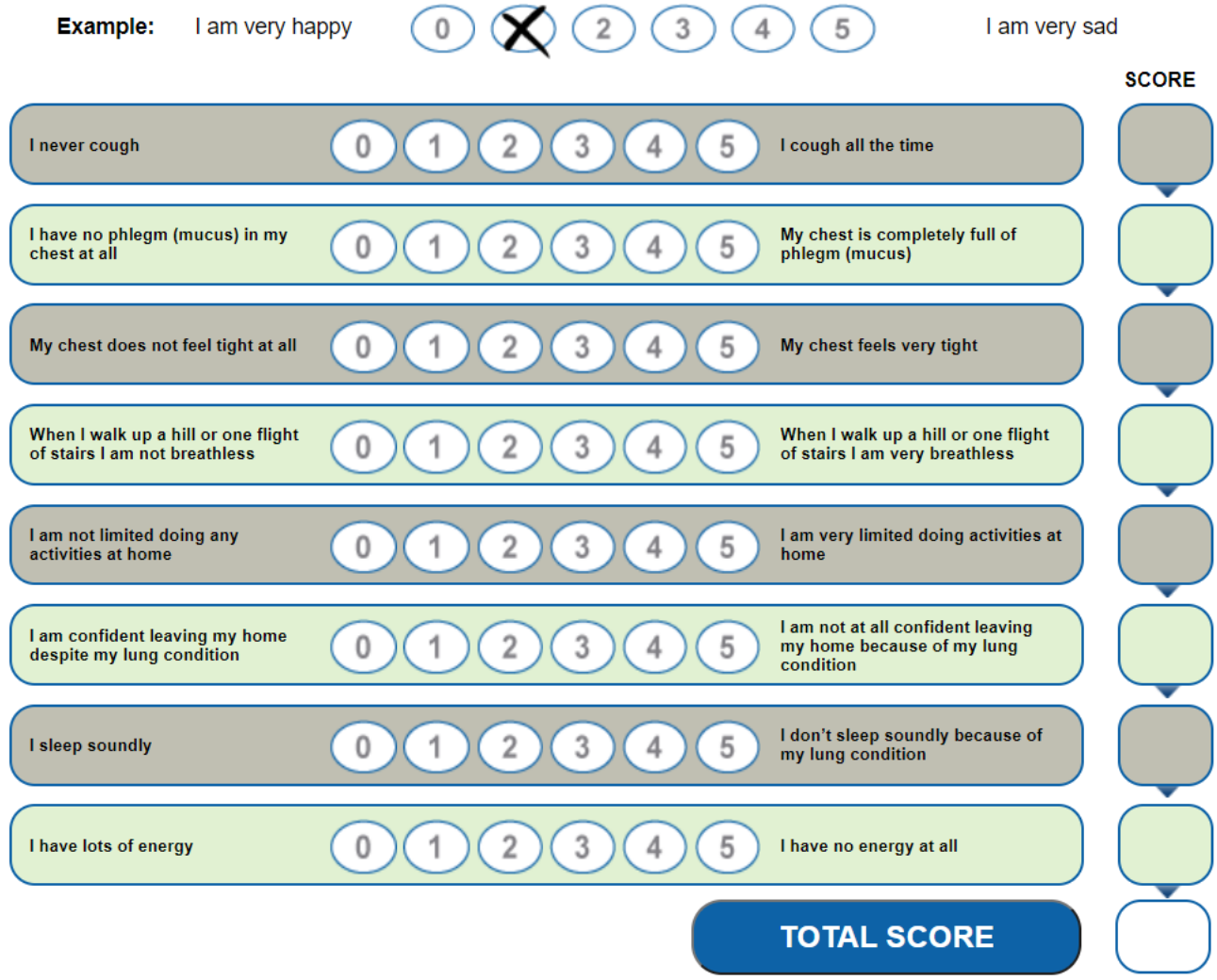
7 ADDENDA

7.1 COPD ASSESSMENT TEST



Addendum 2: COPD Assessment Test (CAT) (76).

7.2 MODIFIED MEDICAL RESEARCH COUNSIL QUESTIONNARE

Effect	Grade
• Not troubled by shortness of breath except with strenuous exercise	0
• Troubled by shortness of breath when hurrying on the level or walking up a slight hill	1
• Walks slower than people of the same age on the level because of shortness of breath	2
• Has to stop because of shortness of breath when walking at own pace on the level	3
• Stops for breath after walking about 100 m or after a few minutes on the level	4

Addendum 3: Modified Medical Research Council Questionnaire (mMRC) (77).

7.3 INDIVIDUAL CARE PLAN

Zorgzaam Leuven

Beste Vul hier de naam van de patiënt in.

Jij komt in aanmerking voor het zorgprogramma COPD van Zorgzaam Leuven. Dit zorgprogramma biedt jou de unieke kans om met verschillende zorgverleners samen te werken met als doel jouw ziekte COPD zo goed mogelijk op te volgen.

Stappenplan

- Er wordt een consultatie met uitleg gepland in de vorm van een zorgplanningsgesprek.
- Dit zorgplan wordt gedeeld met de zorgverleners uit jouw zorgteam.
- Je kan deelnemen aan een aanbod educatieve sessies die voor jou van toepassing zijn.

Wat wordt van jou verwacht?

- Neem dit zorgplan mee bij elk zorgcontact en volg de aanbevelingen samen op met jouw zorgteam.

Dit is een pilootproject. Indien het succes boekt, kan het op grote schaal gebruikt worden.

ZORGZAAM LEUVEN CONTACT
www.zorgzaamleuven.be
zorgzaamleuven@gmail.com
Zorgzaam Leuven

Mijn zorgteam

Functie	Naam + contactgegevens
Huisarts	…
Huisapotheker	…
Kinesitherapeut	…
Thuisverpleegkundige /Thuiszorgdienst	…
Diëtist	…
Psycholoog	…
Longarts en ziekenhuis	…
Andere	…

Mijn zorgprogramma

Kennis van mijn aandoening

COPD is een chronische longziekte waarbij de kleine luchtwegen langdurig ontstoken en dus vernauwd zijn. Het komt meestal voor bij rokers.
Hoest met slijmen of kortademigheid komen bij deze ziekte voor.
De **diagnose** wordt meestal gesteld via een longfunctiemeting (een blaastest), waarbij we ook de ernst kunnen bepalen.
Rookstop is cruciaal om de vooruitgang van de ziekte tegen te gaan. Ook **beweging** en **gezonde voeding** zijn belangrijk. Hiervoor kan ook de hulp van een tabakoloog, kinesist of diëtist ingeschakeld worden.
Daarnaast gaan we de ziekte behandelen met **medicatie** of **puffers** om een opstoot van de ziekte in de toekomst te voorkomen. Deze behandeling hangt af van de ernst, de klachten en de kans op een opstoot. De huisarts en de apotheker kunnen jou steeds uitleg geven over hoe je je puffer moet gebruiken.
Ook zal je huisarts bespreken welke **vaccinaties** nuttig kunnen zijn.

Als je graag wat extra informatie leest, kan dit steeds via de website van Gezondheid en Wetenschap:
https://www.gezondheidenwetenschap.be/richtlijnen/chronisch-obstructieve-longziekte-copd

Addendum 3.1: Individual care plan front side.

Checklist zorgplan

Jouw zorgverlener zal samen met jou deze lijst overlopen en invullen. Je kan zelf verder aanvullen en vragen of onduidelijkheden noteren op dit zorgplan.

Geneesmiddelen COPD

Ik gebruik onderstaande puffers:

Puffer 1: ……	… keer/dag
Puffer 2: ……	… keer/dag
Puffer 3: ……	… keer/dag

☐ Ik heb nog vragen over het gebruik van mijn puffers:
- ☐ Correct aantal keer per dag
- ☐ Correcte inhalatietechniek
- ☐ Andere

☐ Samen met mijn huisapotheker bespreek ik het juiste gebruik en schema van mijn medicatie.
Datum eerste afspraak: …./…./…., Volgende afspraak: …./…./….

Opmerkingen/vragen:
……
……
……

Vaccinaties

Datum laatste griepvaccinatie: …./…./….
Datum laatste pneumokokken: …./…./….
Datum laatste vaccinatie COVID-19: …./…./….

Opmerkingen/vragen:
……
……
……

Rookstop

Mijn rookstatus?
☐ Ex-Roker ☐ Roker ☐ Nooit-Roker
☐ Ik heb met mijn …… een gesprek gehad over rookstop.
☐ Ik heb nog vragen over rookstop en/of heb ondersteuning nodig i.v.m. rookstop.
☐ Ik heb samen met mijn …… beslist dat ik een afspraak maak bij de tabakoloog of deelneem aan een rookstopcursus.
Datum afspraak: …./…./….

Opmerkingen/vragen:
……
……
……

Mentale zorg

Kruis aan: "Ik ervaar…"
Depressieve klachten:
☐ Nooit ☐ Soms ☐ Vaak ☐ Altijd
Angst: ☐ Nooit ☐ Soms ☐ Vaak ☐ Altijd
Een verminderde kwaliteit van leven (owv fysieke beperkingen, verminderde sociale contacten, …).
☐ Nooit ☐ Soms ☐ Vaak ☐ Altijd
Last met therapietrouw:
☐ Nooit ☐ Soms ☐ Vaak ☐ Altijd
☐ Ik heb samen met mijn …… beslist dat ik een afspraak maak bij de pycholoog.
Datum eerste afspraak: …./…./….
Datum volgende afspraak: …./…./….

Opmerkingen/vragen:
……
……

Voeding

☐ Ik eet voldoende gevarieerd.
☐ Ik wil meer gevarieerd eten.
☐ Ik wens begeleiding bij het kiezen of aanpassen van de juiste voeding.
☐ Ik heb samen met mijn …… beslist dat ik een afspraak maak bij de diëtist.
Datum eerste afspraak: …./…./….
Datum volgende afspraak: …./…./…..

Opmerkingen/vragen:
……
……
……

Lichaamsbeweging

☐ Ik beweeg voldoende.
☐ Ik wil meer bewegen.
☐ Ik wens begeleiding om te komen tot voldoende of de juiste lichaamsbeweging.
☐ Ik heb samen met mijn …… beslist dat ik een afspraak maak bij de kinesitherapeut:
Datum eerste afspraak: …./…./….
Datum volgende afspraak: …./…./….

Opmerkingen/vragen:
……
……
……

Mijn onderzoeken

Mijn arts voerde een longfunctietest/ spirometrie uit op volgende data:
…./…./…. , …./…./…. , …./…./…. , …./…./…. , …./…./…. , …./…./…. , …./…./….

Addendum 3.2: Individual care plan back side.

7.4 CODING TREE

Patiënten	Identificatie		
	Bereiken		
Medisch-farmaceutisch overleg	Meerwaarde		
	Neutraal		
	Positieve toekomstvisie	Mits veranderingen	
	Negatieve toekomstvisie		
Samenwerking huisarts	Momenteel	Eenzijdig/moeizaam	Leeftijd Gevoel ongelijkheid
		GGG COPD	
	Toekomstvisie		
Ondersteunend implementatiepakket	Meerwaarde		
	Geen meerwaarde		
	Ontbrekend		
Implementatie GGG in de praktijk	COVID		
	Software		
	Personeelstekort		
	Tijdsgebrek		
Structuur en invulling beroep	Vergoeding		
	Perceptie bij bevolking		

LID VAN ASSOCIATIE KU LEUVEN