Management of chronic obstructive pulmonary disease in Swiss primary care: room for improvement

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ABSTRACT

Background Information on the quality of care for patients with chronic obstructive pulmonary disease (COPD) in Swiss primary care is limited.

Aim To identify gaps and quality improvement potential in COPD primary care in Switzerland.

Methods Pooled analysis of selected published data. Six international COPD guidelines (German, Swiss, United Kingdom, Canadian, Australian and New Zealand, and the global initiative on obstructive lung disease [GOLD] guidelines) were reviewed for care elements with a level of evidence rated II and higher in at least three of the six guidelines. We compared published data on COPD management in Swiss primary care with these recommendations and with published international benchmarks.

Results Nine elements fulfilled the criteria for evidence level II or higher in at least three of six COPD guidelines. These were summarised in six key domains: diagnosis, smoking cessation counselling, influenza vaccination, pharmacological treatment, patient education and pulmonary rehabilitation (long-term oxygen and palliative care are not the focus of COPD primary care in Switzerland and outpatient exacerbation management was subordinated to pharmacological treatment and education). Swiss primary care data revealed spirometric confirmation of diagnosis in 55% of patients, smoking cessation counselling in 50% and influenza vaccination in 66%. Inadequate prescription of inhaled corticosteroids (ICS) was high at 38% in mild COPD and 43% in moderate COPD. Referral for pulmonary rehabilitation, even for patients with severe COPD, was low at 19% and data on patient education were rare. Diagnosis, patient education and referral for pulmonary rehabilitation revealed the highest, and influenza vaccination the lowest performance gap.

Conclusion Gaps between current care and recommended best practice exist in Swiss primary care COPD management. Promoting and implementing evidence-based frameworks for developing high quality care for patients with COPD are necessary.

Keywords: best practice, care quality, chronic care model, COPD, primary care
Introduction

Chronic obstructive pulmonary disease (COPD) is a major worldwide health problem associated with high morbidity and mortality and enormous economic costs. The prevalence of approximately 10% in Switzerland is similar to other European countries. From the perspective of care quality, the variation that causes the greatest concern is that between actual practice and evidence-based ‘best practice’. The lack of optimal care is associated with increased morbidity as well as excessive use of healthcare resources, leading to a significant economic burden. Assessment of care quality and efforts for closing gaps are of paramount importance for patients and the healthcare systems.

Several international and Swiss national guidelines exist for COPD with the aim of supporting health professionals to deliver evidence-based and high-quality care. In Switzerland, care for COPD is provided by generalists and specialists. Information on quality of care, particularly for patients with COPD treated in primary care, is limited. Quality indicators are not defined, and not measured or inadequately assessed. To identify gaps and the potential for improving COPD care in Switzerland, we reviewed published data on COPD primary care in Switzerland for adherence with key management elements recommended by guidelines and compared performance in Swiss primary care with international examples for best practice for these elements.

With respect to the identified gaps, we refer to published international examples and relate this to the chronic care model (CCM) for improving quality of care for chronic illnesses (Figure 1). The CCM serves as an accepted and evidence-based framework for developing and implementing effective activities to improve care for chronically ill people. The model integrates six aspects designed to facilitate interactions between practice teams and patients with the aim of improving processes and outcomes in chronic illnesses. These aspects are a health system with the availability of decision support and clinical information systems; delivery system design; support in self-management; and the use of community resources. A systematic review demonstrated that patients with COPD who received interventions with two or more CCM components had significantly lower rates of hospitalisation and emergency visits compared with patients who did not.

![Figure 1 The chronic care model](image-url)
Methods

A pooled analysis of selected published data was conducted. Six COPD guidelines (German, Swiss, UK, Canadian, Australian and New Zealand and the USA National Heart, Lung, and Blood Institute, National Institutes of Health and the World Health Organisation GOLD COPD guideline) were reviewed.\textsuperscript{3–10} COPD treatment elements with a level of evidence I or II or a recommendation level grade A or B according to the Report of the US Preventive Services Task Force\textsuperscript{13} were considered as priority elements for good clinical practice if mentioned in at least three of the six guidelines. A category A recommendation is from endpoints of well-designed randomised controlled trials (RCTs) that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants. Category B evidence is from endpoints of intervention studies that include only a limited number of patients, post hoc or subgroup analysis of RCTs, or a meta-analysis of RCTs. In general, category B pertains when few randomised trials exist, they are small in size, they were undertaken in a population that differs from the target population of the recommendation or the results are somewhat inconsistent.

Evaluation of the adherence of Swiss general practitioners (GPs) to the selected treatment elements was based on results published in the literature. The literature search was performed in the electronic databases MEDLINE (Ovid), and EMBASE (Elsevier). MEDLINE search terms are shown in Appendix 1.

In addition, we performed hand searches using reference lists of included studies and review articles. The same search was performed to identify publications on the adherence to the treatment elements in other countries. The search was restricted to European countries, USA, Canada and Australia.

To obtain insight into barriers, enablers, incentives and options we also interviewed national and international experts on adherence with and implementation of the recommended guideline elements. The interviews were outlined to assess experience and opinions about flaws, needs and possible solutions regarding better COPD care. We did interviews with pulmonologists from secondary and tertiary care, as well as with primary care physicians and GPs with a special interest in respiratory medicine, to get more insight into what is reality and problematic in COPD care in Switzerland. These national ‘experts’ operate as delegates of the Swiss Society of pulmonologist, the Swiss Societies of Internal and General Medicine and the Swiss College of Primary Care Medicine. The foreign experts from Canada, Netherlands and Spain have been leaders of quality improvement initiatives in COPD in their countries and have published in this field.

We also asked them which elements they judge to be of particular importance for better quality in COPD primary care and which key areas they prioritise and emphasise in quality improvement initiatives.

Results

Thirty-one elements for COPD management were identified from the guideline review. Of the 31 identified COPD treatment elements, the following six key elements for primary care were selected, based on a level of evidence II and higher or a recommendation grade B or higher: correct diagnosis, smoking cessation counselling, influenza vaccination, drug treatment of stable COPD and exacerbation management, patient education and pulmonary rehabilitation. Long-term oxygen assessment and prescription is not primary care based in Switzerland therefore we did not consider it as a key element for COPD primary care. Outpatient exacerbation management and exacerbation treatment was subordinated to pharmacological treatment and education.

We identified four papers, one published in 2004 and three in 2010, containing data on quality of care in Swiss primary care,\textsuperscript{14–16} and 23 international papers. The most comprehensive assessment of quality of COPD primary care in Switzerland was performed by Jochmann et al.\textsuperscript{15} In this study, 139 GPs caring for 615 patients with COPD completed questionnaire details about treatment/management for each patient.

We identified gaps in Swiss primary care COPD management for all of the recommended best practice elements, which can be summarised in six domains with impact on the process and quality of care (Figure 2).

- Underdiagnosis and/or inadequate quality of diagnosis; patients classified by their physician as COPD patients fulfilled the GOLD criteria for COPD in 56% of cases;\textsuperscript{15} confirmation of COPD by spirometry was reported in 55% of patients.\textsuperscript{14} Of the tests performed to establish the diagnosis of COPD, 60% were of acceptable quality according to existing criteria.\textsuperscript{16}
- Inadequate smoking cessation counselling; only 50% of smokers who mentioned their smoking habits to their physician were actually counselled to quit smoking.\textsuperscript{17}
- Non-adherence of physicians with pharmacological treatment recommendations; 69% of patients with mild COPD (GOLD I), 82% of patients with moderate COPD (GOLD II), 35% of patients with severe COPD (GOLD III) and 34% with very severe COPD (GOLD IV) were not treated according to...
GOLD recommendations. Notably, 38% of GOLD stage I patients and 57% of GOLD stage II patients were prescribed inhaled corticosteroids (ICS) indicating over-treatment.15

- Vaccination; influenza vaccination was reported in 66% of Swiss COPD patients.15
- Under-use of pulmonary rehabilitation.
- Self-management education.

Referral for pulmonary rehabilitation was very uncommon in patients with mild COPD (5%), and only slightly higher (9%) in patients with moderate and severe COPD (19%).15 Referral for pulmonary rehabilitation showed the greatest potential for improvement compared with data reported from other countries.15,18 We could not find reliable data on the implementation of COPD self-management programmes in Switzerland.

In the interviews, correct diagnosis, counselling for smoking cessation, patient self-management inclusive of exacerbation management, as well as a higher awareness of ambulatory pulmonary rehabilitation programmes in doctors and patients were emphasised as important areas where effort and support for closing the evidence-performance gaps is most needed to improve the quality of COPD care.

### Discussion

Our comparison between recommended and current care for patients with COPD in Swiss primary care reveals discrepancies between best practice and the treatment patients receive in daily practice. According to the published data, only about half of COPD patients are diagnosed correctly with spirometry or receive smoking cessation counselling. Over-treatment with ICS in patients with mild and moderate COPD, and under-use of proven and recommended non-pharmacological interventions, in particular patient education for better self-management and referral to pulmonary rehabilitation, were identified. The smallest gap was seen for influenza immunisation.

Underdiagnosis of COPD is a problem also frequently reported from other countries.19 Known reasons for the under-use of spirometry in primary care are insufficient skills and knowledge, time and resource constraints, as well as inadequate reimbursement.14,20 To raise awareness of the importance and use of spirometry in primary care and to boost the rate of detection of COPD, several options have been discussed.21 For example, data from Denmark, Australia and Spain showed that training programmes for GPs and practice assistants, discussion of the results with specialists, and spirometry workshops or new spirometry delivery models with specially trained health professionals, improve the diagnosis rate and the quality of spirometry testing.22–25 Soler et al25 showed
### Table 1 COPD care based on the Chronic Care Model (CCM): the six CCM elements and recommendations for implementation activities

<table>
<thead>
<tr>
<th>Community resources</th>
<th>Health system organisation of care</th>
<th>Self-management support</th>
<th>Delivery system design</th>
<th>Decision support</th>
<th>Clinical information systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify key partners to start collaboration process</td>
<td>Obtain executive management support for the model</td>
<td>Develop and implement COPD evidence-based self-management programme that includes behavioural change, and proactive follow-up</td>
<td>In collaboration with key partners develop and implement COPD registry and proactive care plan</td>
<td>In collaboration with key partners develop, implement and integrate local evidence-based guidelines for health professionals with timely reminders, feedback</td>
<td>In collaboration with key partners develop and implement electronic system for access to key data on COPD registry</td>
</tr>
<tr>
<td>Form COPD work groups with key partners</td>
<td>Embed in strategic plans of health policy</td>
<td>COPD evidence-based self-management programme that includes behavioural change, and proactive follow-up</td>
<td>COPD-registry and proactive care plan</td>
<td>local evidence-based guidelines for health professionals with timely reminders, feedback</td>
<td>for access to key data on COPD registry</td>
</tr>
<tr>
<td>Develop a COPD community resource list</td>
<td>Identify key political leaders</td>
<td>Adequate human and system resources to implement COPD self-management programme</td>
<td>Electronic tracking and data assessment form</td>
<td>Share evidence-based guidelines and information with patients to encourage their participation</td>
<td>to share information between providers and patients</td>
</tr>
<tr>
<td>Develop strategies to use existing COPD education and coaching</td>
<td>Develop methods to measure success of interventions</td>
<td>Incentives that rewards members for COPD programme participation</td>
<td>Trained and prepared care teams and case management to assure continuity and regular follow-up</td>
<td>Provider education with proven methods</td>
<td>to plan, track and coordinate care</td>
</tr>
<tr>
<td>Develop resources for group education</td>
<td>Definition of relevant outcomes</td>
<td>Tools for members to document goals and track progress</td>
<td>Integrated services and active care coordination between primary, secondary and tertiary care</td>
<td>Ongoing training of providers and patients</td>
<td>for timely reminders of providers and patients</td>
</tr>
<tr>
<td>Increase awareness for COPD in population</td>
<td>Evidence-based tools and action plan to assist practitioners in implementing and counselling</td>
<td></td>
<td></td>
<td>Specialist expertise</td>
<td>to facilitate performance monitoring of practice team and care system</td>
</tr>
</tbody>
</table>
that training GPs in spirometry can improve the rate of correct diagnosis from 56 to 89%.

Smoking cessation is the single most effective intervention to reduce the risk of developing COPD and the only intervention that has been shown to slow the rate of decline in lung function. It improves symptoms and survival in COPD patients. Minimal interventions lasting 3–5 minutes are effective and should systematically be offered to every smoker. For smokers motivated to quit, a more intensive counselling with pharmacotherapy should be offered whenever possible and has been shown to result in higher quit rates. The reported smoking cessation counselling rate of <50% in Swiss primary care is very low. Studies and experience from other countries demonstrate that reimbursement of nicotine replacement therapy (NRT), incentives for the GPs or counselling by trained nurses or practice assistants improve implementation and cessation rates.

Influenza vaccination prevents acute exacerbations of COPD, which are the most frequent complications seen in patients. Individuals with COPD and influenza are at significant risk of requiring hospitalisation. Annual influenza vaccination reduces mortality by as much as 30% in elderly patients, and reduces the incidence of hospitalisation by about 40% in all patients. Patient reminder systems have been shown to improve influenza vaccination rates in different countries and could be applied in Swiss primary care as well.

Over-treatment with ICS in mild-to-moderate COPD is frequent in Switzerland, similar to other countries. Contrary to asthma, ICS and combination treatment with ICS and long-acting beta-agonists (LABA), are not first line therapy in COPD patients. Benefits from ICS (fewer symptoms, fewer exacerbations and less healthcare use) have been shown for advanced COPD (FEV1 <50% predicted) and for patients with frequent exacerbations. The increased risks of bone density loss, muscle dystrophy and pneumonia in patients with long-term inhaled corticosteroid therapy outweigh the benefits in patients with mild COPD.

Underuse of non-pharmacological interventions is also a problem. Pulmonary rehabilitation and self-management support are highly recommended as an integral part of COPD management. They have been shown to reduce exacerbation rates and healthcare utilisation and to improve quality of life. Whereas rehabilitation and education is offered to the majority of patients with heart disease, it is widely underused in the management of COPD. Awareness of rehabilitation and self-management education as ways to lessen the impact of the disease on both patients and the healthcare system by preventing exacerbations, and unnecessary hospital admissions resulting from exacerbations, seems to be much lower in COPD than in patients with heart disease. In a recent editorial, Mark Fitzgerald stated that ‘the term lung attack like heart attack may resonate more with patients, communities and providers than exacerbations and could optimise current management strategies with emphasis on rehabilitation and self-management education, integrating a written action plan for exacerbation management’.

What will it take to do better?

Many of our findings reflect the current approach to primary care in Switzerland with a lack of planned care, insufficient care coordination and patients who are inadequately trained in managing their chronic illness. With respect to the identified gaps in COPD, primary care practices could elaborate CCM-based relevant actions (Table 1) addressing delivery of care by trained and prepared proactive teams who offer spirometric diagnosis of good quality, guideline-based treatment and self-management support. However, such quality improvement strategies require a policy environment supportive of incentives for care coordination, self-management support and adoption of information technology.

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REFERENCES

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AUTHORS’ CONTRIBUTION
TR and CSS were the initiators and devised the conceptual framework of the paper. CSS and KDL drafted the report on which the paper is based. All authors contributed in writing and revising the manuscript. All authors read and approved the final manuscript.

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Appendix 1 Search terms used for MEDLINE search

Search terms
COPD
Emphysema
Chronic bronchitis
Chronic airflow obstruction
Obstructive lung disease
Management
Guideline
Recommendation
Quality improvement
Primary care
Implementation
Adherence
Best practice
Quality of care
General practitioner
GP
Spirometry
living well with COPD
Smoking cessation
Counselling
Pulmonary rehabilitation
Self-management
Education