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Ambulatory care sensitive conditions in Germany

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Abstract

In the context of a multicountry study on ambulatory care sensitive conditions (ACSCs) in the WHO European Region, this study seeks to contribute to strengthening health services delivery by identifying possible improvements to effectively prevent, diagnose and treat ACSCs in primary health care settings, and by deriving contextualized and actionable policy recommendations for health services delivery transformation.

This report contains the results of desk research, data analysis and a country stakeholder meeting aimed at identifying potential opportunities that enable ACSCs to be effectively prevented, diagnosed and treated in a primary health care setting in Germany.

Keywords

AMBULATORY CARE
PRIMARY HEALTHCARE
DELIVERY OF HEALTH CARE
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Abbreviations

ACSCs	ambulatory care sensitive conditions
ACSH	ambulatory care sensitive hospitalizations
COPD	chronic obstructive pulmonary disease
CVDs	cardiovascular diseases
DMP	disease management programme
EU	European Union
FFS	fee-for-service (system)
G-BA	Federal Joint Committee [Gemeinsamer Bundesausschuss]
G-DRG	German diagnosis-related groups
GP	general practitioner
ICD	International Statistical Classification of Diseases and Related Health Problems
IGeL	individual health service [Individuelle Gesundheitsleistung]
LTC	long-term care
NASHIP	National Association of Statutory Health Insurance Physicians
NCDs	noncommunicable diseases
OECD	Organisation for Economic Co-operation and Development
P4P	pay for performance
PHC	primary health care
PHI	private health insurance
RASHIPs	regional associations of statutory health insurance physicians
SHC	secondary health care
SHI	statutory health insurance
SVR	German Advisory Council on the Assessment of Developments in the Health System [Sachverständigenrat]
UVS	uniform value scale

Executive summary

The aim of this study is to identify which elements of primary health care (PHC) need strengthening to successfully avoid unnecessary hospitalizations of patients with ambulatory care sensitive conditions (ACSCs) in Germany. ACSCs are health conditions for which hospitalization or emergency care can be avoided by addressing them effectively in PHC. How the strengthening of PHC can be achieved is captured in a set of actionable policy recommendations. This assessment is part of a multicountry study on ACSCs in the WHO European Region.

The study involved an extensive literature review focusing on the current health care setting in Germany in relation to ACSC management. A stakeholder workshop with representatives from the corporatist bodies of the German health system was held to discuss the role of ACSCs in PHC and potential strategies to reduce hospitalization rates for ACSCs in Germany. Based on a comprehensive analysis of hospitalization data for selected ACSCs in Germany, compilation of a catalogue of ACSCs and triangulation of information from various sources, several major ACSCs with key relevance for the country were selected: ischaemic heart disease and heart failure, chronic obstructive pulmonary disease (COPD) and bronchitis, diabetes mellitus and hypertension.

Over 5 million of the 18.6 million hospitalizations registered in Germany in 2012 were attributable to ACSCs. Medical experts assessed 75% of this number to be preventable. This means that around 20% of hospitalizations in Germany in 2012 were preventable: in other words, the hospitalization of every fifth patient could have been avoided through timely and effective provision of ambulatory care. The number of preventable hospitalizations for selected priority

ACSCs in 2012 ranged from 160 000 diabetes to 260 000 (ischaemic heart disease). Estimates of preventable ACSC hospitalizations were high for all selected ACSCs, particularly diabetes and hypertension, and were either comparable or higher than estimates made for several other countries of the European Region.

Analysis of data on regional variation has shown that when disaggregated at district level, ACSC hospitalization rates were higher in predominantly rural areas in eastern parts of the country, such as in North Rhine-Westfalia, Saarland and eastern areas of Bavaria. Low hospitalization rates were often present in districts of Baden-Wuerttemberg and predominantly urban areas. Sex-specific disaggregation has shown similar patterns for men and women.

International comparisons show that Germany's health system provides a high standard of care and covers nearly the entire population. Resources are substantial; the overall numbers of physicians and hospital beds per population are significantly above the European Union (EU) average. Due to the absence of gatekeeping, patients generally have free choice of general practitioners (GPs), medical specialists and hospitals for their care.

Traditionally, however, the system has been fragmented across levels of care. Vertical integration is complicated by a multiplicity of structural factors. These include the differing provider remuneration schemes between PHC and secondary health care (SHC), which can give rise to competition instead of cooperation across the care continuum, and a further division between private and statutory health insurance, with remuneration-related implications for patient waiting times and care delivery. The fragmented nature of the system specifically affects optimal management of multimorbid patients with chronic diseases like the selected

ACSCs, for whom optimal care would require well coordinated and integrated health service delivery structures encompassing providers across the care trajectory. A key policy recommendation is therefore the sustainable fostering of patient-centred models of integrated care in Germany.

Several actions have been identified to support implementation of this recommendation. First, it will be important to strengthen continuous quality measurement in general, and monitoring and analysis of ACSC data in particular. Routine collection of ACSC data at national and regional levels will inform policies and enable their timely adjustment. Collecting, analysing and disseminating ACSC data at provider network and provider levels will facilitate adjustments of current models of care in various contexts. Peer-review and internal quality management should be expanded through inclusion of ACSC-specific discussion rounds. Provision of specific training on ACSCs to medical professionals at under- and postgraduate levels will enable better management of ACSCs in ambulatory settings.

Second, models of care that foster population-based integrated care should be promoted. Selective contracts consisting of regional pilot projects have yielded successful results over recent years. Provision for continuous evaluation of integrated care models should therefore be put in place to identify best practices and implement a performance-based reward system to support expansion of successful projects. Physician assistants, whose role in ambulatory care provision is limited in Germany, should be involved more prominently. The German health system still lacks a comprehensive IT infrastructure across levels of care, mostly due to privacy and data-safety issues and structural incompatibility of current systems. Emphasis should be placed on implementing an electronic communication infrastructure that ensures mutual exchange of up-to-date

medical information between PHC providers and hospital-based specialists in real time. This measure is of the utmost importance for achieving better vertical integration and quality of care. ACSC hospitalization rates can be decreased through improved patient discharge management, less treatment redundancy in GP and specialist care, and more informed care providers and patients.

Last, improvement of health services delivery in rural areas, where ACSC-related hospitalization rates appear to be highest, is essential for maintaining sustainable nationwide access to PHC and ensuring adequate ACSC management. The newly enacted 2015 Care Provision Strengthening Act will counteract foreseeable GP shortages in rural areas through incentivizing a more needs-based regional allocation of GPs in private practice, increasing provision of ambulatory care by hospitals and accelerating the establishment of medical care centres that offer multidisciplinary ambulatory care services. Current financial and educational incentives to attract future physicians to the GP profession need to be reinforced. Telemedicine solutions have the potential to reduce hospitalization risks for several ACSCs through improving timely access to care, so should be used comprehensively in undersupplied rural areas. Evidence from the evaluation of pilot projects is crucial for the acceptance of telemedicine services by health insurance companies, which is a key prerequisite for scaling-up projects to national level.

1. Introduction

This study discusses findings and presents policy recommendations on health conditions that could be effectively prevented, diagnosed and treated in primary health care (PHC) settings in Germany. Ambulatory care is a cornerstone of health care; measurement of its quality can help to ensure that the system works effectively for the benefit of patients (1). Hospitalization rates for ambulatory care sensitive conditions¹ (ACSCs) are a proxy for assessment of quality of care and people-centred models of care.

This report focuses on several major ACSCs, including heart failure, ischaemic heart disease, hypertension, diabetes mellitus, and chronic obstructive pulmonary disease (COPD) and bronchitis. Almost all of these conditions are noncommunicable diseases (NCDs) that together comprise a considerable proportion of ACSC-related hospitalizations in Germany. They can serve as tracers to identify opportunities for, and challenges to, strengthening PHC, given the current provision of services in the German health care system.

The assessment is part of the multicountry study of ACSCs in the WHO European Region. Other countries included in the initiative are Kazakhstan, Latvia, Portugal and the Republic of Moldova. The study's purpose is to contribute to strengthening PHC by identifying opportunities and challenges to effectively preventing, diagnosing and treating selected ACSCs, and deriving contextualized and actionable policy recommendations for health service delivery transformation. A summary of the analytical framework for the study is presented in Annex 1.

International comparisons show that Germany's health system provides a high standard of care

and covers nearly the entire population (2). Traditionally, however, the system has been fragmented across levels of care, with few structural provisions and financial incentives to achieve better coordination through vertical integration of primary and secondary health care (SHC) levels (3).

Germany had the third highest number of hospital discharges in 2012, with 251 per 1000 population compared to an average of 173 per 1000 across the 28 countries of the European Union (EU). Patients aged 65 and over accounted for more than 40% of hospital discharges in 2011 (4). Of the 18.6 million hospitalizations in Germany in 2012, 5.04 million (or 27%) were sensitive to ambulatory care, with an estimated preventability of up to 75% (1). These figures suggest a need, and an opportunity, for improvement in prevention, early diagnosis and treatment of ACSCs in the PHC setting. This is particularly relevant in the context of increasing demand for integrated chronic disease management and long-term care (LTC) for older people, as estimates show that by 2050, one third of the population of Germany will be over 65 years (5). The ever increasing shortage of general practitioners (GPs), especially in rural areas (6–8), presents another projected challenge that may exacerbate existing inequalities in service coverage and care quality for patients, including those with ACSCs.

In the context of ongoing reforms and emerging innovative approaches to care of selected ACSCs, this study aims to analyse ACSC data through the prism of German health care settings, in turn informing policy recommendations for service delivery transformation.

¹ Sundmacher et al. (1) use the term “ambulatory care sensitive hospitalizations (ACSH)”, which is equivalent to hospitalizations for ACSCs.

The report is structured with a section on methodology (Section 2), results of data analysis and stakeholder consultation that led to the selection of the ACSCs (Section 3), elements of health services delivery that require strengthening to successfully address selected ACSCs (Section 4), and policy recommendations to move towards effectively addressing the selected ACSCs in PHC in Germany (Section 5).

2. Methods

In the context of the analytical framework of the study (see Annex 1), the main steps consisted of desk research, analysis of hospital admission data, a stakeholder consultation (through surveys and workshops) and validation of findings by experts. These steps are further described below.

2.1 Health services desk research

A structured search strategy was developed to retrieve the most recent and additional information available in the public domain that related to ACSCs in Germany. First, the WHO Regional Office for Europe, in collaboration with the Division of Health Services Management at the Munich School of Management, Ludwig Maximilians University, provided relevant background documentation on the German health system. The most recent academic literature was gathered from index databases (PubMed, Google Scholar) and grey literature was collected using search terms based on elements of the analytical framework. Second, reports of the European Observatory on

Health Systems and Policies (such as the 2014 health system in transition report and relevant articles in *Eurohealth*) and the 2013 and 2014 Organisation for Economic Co-operation and Development (OECD) health-at-a-glance reports were gathered.

All searches were restricted to studies and reports published in English and/or German. Although no formal restriction on the year of publication was applied, effort was made to include only the most recent and updated information whenever possible.

2.2 Hospital admission data

Data from the German Federal Statistics Office were used to select ACSCs, based on aggregated data of primary diagnoses coded for all hospital patients in all age groups (from the age of 1 year). The data included International Statistical Classification of Diseases and Related Health Problems, 9th revision (ICD-9) coded diagnoses for 2012, which were subsequently converted into ICD-10 (10th revision) coded data. These data were further analysed to inform the selection of a list of ACSCs most relevant to the German

Table 1. Stakeholder meeting participants

Level	Affiliation	Number
National	National Association of Statutory Health Insurance Funds	2
	German Hospital Association	1
	National Association of Statutory Health Insurance Physicians	1
	National Association of Statutory Health Insurance Dentists	1
	Large Statutory Health Insurances	3
Federal	Patient representatives of the Federal Joint Committee (G-BA)	2
	Federal Association of Managed Care	1
Regional	Regional Association of Statutory Health Insurance Physicians	1
Total		12

context, which was then used to calculate the number of hospitalizations for each ACSC and serve as the basis for stakeholder consultation.

2.3 Stakeholder consultation

A stakeholder workshop with 12 representatives from the corporatist bodies of the German health system was held in April 2014. The corporatist bodies of purchasers and providers assemble in the Federal Joint Committee [Gemeinsamer Bundesausschuss, G-BA], which has far-reaching powers to regulate health care delivery and quality issues. Table 1 lists the stakeholders who participated in the workshop (see Annex 2 for further information on the role of G-BA in the health system and Annex 3 for a list of participants and results of the stakeholder consultation).

The aim was to bring together key stakeholders of the German health system to exchange opinions on the applicability of ACSC data as a proxy for assessment of quality and people-centred models of care in PHC. Participants were asked to rate the importance of ACSC data as a quality-of-care indicator on a scale from 1 (representing full disagreement) to 6 (full agreement). This facilitated discussions on existing barriers and opportunities for reducing the number of avoidable hospitalizations for ACSCs.

2.4 Selection of ACSCs

While stakeholders in the workshop embraced the concept of hospitalization rates for ACSCs as a proxy for assessing the quality of care and level of health services delivery in PHC, no country-specific ACSCs were selected. Relevant reports and publications collected during desk research were therefore further analysed to identify a shortlist of ACSCs for further focus in the context of the study. Selection of the ACSCs shortlist was guided by methodologies described in three sources:

- the 2012 German Advisory Council on the Assessment of Developments in the Health system [Sachverständigenrat (SVR)] report (3);
- the 2014 OECD Health at a glance: Europe report on avoidable hospital admissions (4);
- the newly proposed German catalogue of country-specific ACSCs developed by Sundmacher et al. (1).

2.5 Limitations of the study

Regional variation analysis shows how the proportion of hospitalized patients differs per region, but understanding the causes would require in-depth and ad hoc analysis of hospital admission rates. It would also be necessary to investigate how regions differ in the way they register patients in databases, as differences in hospital admission rates might actually represent differences in registration practices.

3. Building the case for focusing on ACSCs

3.1 Findings of the desk review and stakeholder consultation

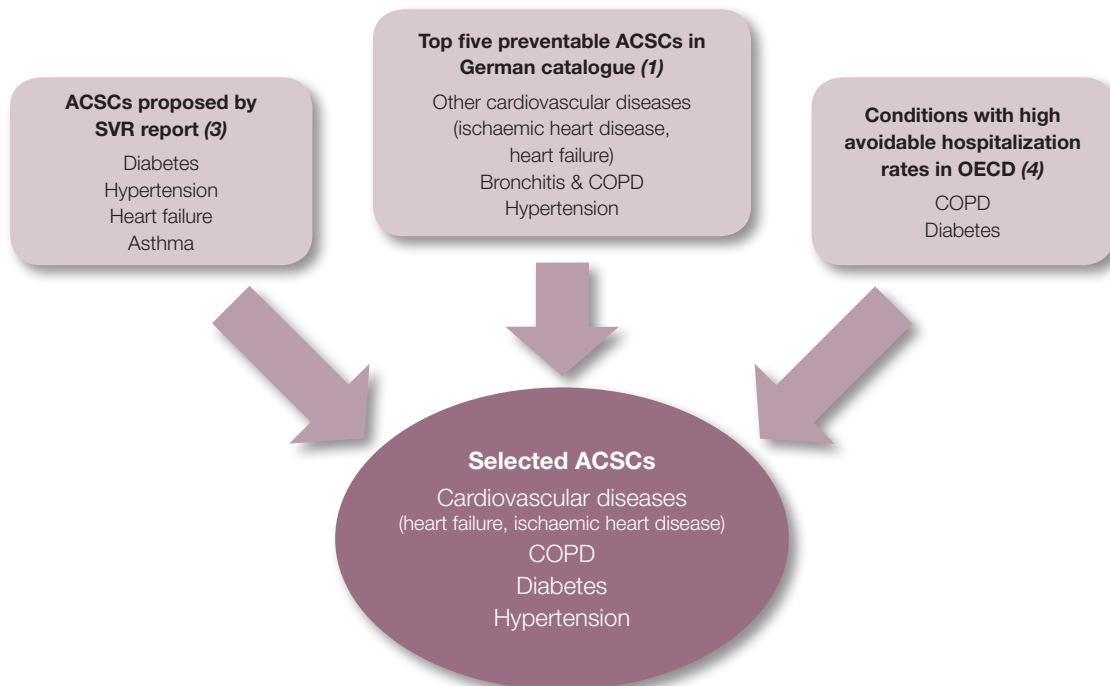
Several studies have investigated the impact of ambulatory care on ACSC hospitalization rates in Germany. According to a Europe-wide OECD comparative assessment on avoidable adult hospitalizations for specific ACSCs, German rates for COPD and diabetes remain above the EU average, with no large changes observed between 2006 and 2011 (4). In a 2012 report advocating quality competition among PHC and SHC providers, the SVR proposed four conditions for which risk-adjusted hospitalization rates could potentially be avoided (diabetes, hypertension, heart failure

and asthma) and which may consequently serve as a proxy for quality of care (3).

Most participants embraced the concept of ACSCs when asked to evaluate the applicability of ACSC hospitalization rates as an indicator for the quality of ambulatory care. They rated it at 4.92 on the six-point scale as a quality indicator. ACSC hospitalization rates were acknowledged to provide important information about accessibility and quality of ambulatory care, and some suggestions on risk adjustment (such as age of population, gender and measures of morbidity) and subnational disaggregation of ACSC rates were discussed. Most participants advocated for monitoring of ACSC data disaggregated at district level.²

² The Federal Statistical Office provides data at district level: there are 402 Kreise [districts] and kreisfreie Städte [district boroughs] in Germany.

Fig. 1. Flow diagram outlining the three main pillars and their proposed ACSCs used to inform the ACSC selection process for Germany



Sundmacher & Busse (9) found that physician³ density was associated with ACSC hospitalization rates (Fig. 1). Burgdorf & Sundmacher (10) found a negative association between ambulatory physician specialist density and ACSC hospitalization rates for ACSCs such as congestive heart failure, angina pectoris, arterial hypertension and diabetes. Providing additional medical services for ACSCs can reduce the rate of hospitalizations for ACSCs: this correlation depends on the absolute level of ambulatory medical services in a district, with districts with a very low level of services benefiting most (11). These studies highlight that German ACSC hospitalization rates can be reduced by improving elements of health services delivery in PHC.

3.2 Overview of ACSCs relevant for Germany

Faisst & Sundmacher (12) highlighted the need for a comprehensive catalogue of ACSCs tailored to the German health care system, which was subsequently compiled by Sundmacher et al. in 2015 (1). Relevant ACSCs were selected using five criteria developed by Caminal et al. (13), Solberg (14) and Weissman et al. (15) and supported by an empirical study of regional variation in German hospitalization rates. The criteria are:

- i. evidence in the literature that the condition is ambulatory care-sensitive;
- ii. the relevance of the diagnosis for public health;
- iii. consensus among experts and clinicians that the hospitalization is potentially avoidable by the effective and timely provision of ambulatory care;

- iv. clarity regarding the definition and coding of the diagnosis, and;
- v. the necessity of hospital treatment should the health problem related to the condition occur.

The requirement of expert consensus that the diagnosis is potentially avoidable by timely and effective ambulatory care (Criterion iii), the validity of the coding (Criterion iv) and the necessity of hospitalization (Criterion v) were evaluated by a panel of 40 physicians using Delphi techniques between September 2013 and January 2014. This work has resulted in a newly developed German catalogue of 22 country-specific ACSCs (1).

The catalogue illustrates corresponding rates of ACSC hospitalizations (Table 2), which are calculated based on 2012 ICD-10 coded primary hospital admission data for Germany. Based on data collected by the German Federal Statistics Office, 5.04 million hospital cases (27%) of all 18.6 million hospitalizations registered in Germany in 2012 were ambulatory care-sensitive.

3.3 Selected priority ACSCs and estimates of their preventability

Other conceptual studies have evaluated, from a medical perspective, how German GPs and medical specialists rate the average degree of preventability of hospitalizations across all ACSCs. Results range from 41% (16) to 75% (1) of hospitalizations for ACSCs rated as preventable, suggesting that most can be avoided through effective prevention, diagnosis and treatment of ACSCs in PHC settings. In the context of this multicountry study a limited number of ACSCs – so-called priority ACSCs – should be selected and analysed. The final selection of priority ACSCs was based on analysis of hospitalization rates from the newly

³ The term physician in this context refers to both GPs and specialists in outpatient care.

developed German catalogue and SVR and OECD reports.

The final selected major ACSCs with key relevance for Germany were ischaemic heart disease and heart failure, COPD and bronchitis, diabetes and hypertension (Fig. 1). Based on data from the OECD (4), the SVR report (3) and the German ACSC catalogue (1), selected priority ACSCs accounted for a high proportion of preventable hospitalizations in 2012: ischaemic heart disease was 260 000 cases, heart failure 246 000, COPD and bronchitis 245 000, diabetes 160 000 and hypertension 231 000. In addition to its endorsement as an ACSC by the SVR (3), hypertension was considered an important ACSC based on the high number of hospital admissions (279 000 in 2012), high preventability (83%) (1) and clear pathophysiological and clinical links with other selected ACSCs. Importantly, all selected conditions have previously been identified as ACSCs in several international works, as summarized by Bardsley et al. in 2013 (17). All five ACSCs were therefore considered important proxies for assessing the quality of ambulatory care and health services delivery in Germany.

Asthma was in the group of ACSCs put forward by SVR (3), but Germany had the third lowest hospitalization rate for asthma in Europe in 2011 according to OECD (4), and the rate has been decreasing steadily (18). This is in line with Freund et al. (18), who analysed the time trend in hospitalization rates for asthma, diabetes, hypertension and chronic heart failure and showed that only hospitalizations following asthma decreased between 2000 and 2010. On the basis of these findings and the fact that asthma was not included in the core list of 22 ACSCs in the German catalogue, the condition was considered to have less impact as a proxy for health services delivery analysis and reforms than other more relevant ACSCs.

The conditions “Back pain (dorsopathies)” and “Other diseases of the circulatory system” were among the top five highest rates of preventable hospitalizations for ACSCs in the German catalogue (Table 2) but were not selected for various reasons. Back pain was rejected based on an expert evaluation that it may not fully meet the criterion of the necessity of hospitalization (1). Further NCDs with relatively high hospitalizations rates such as “Depressive disorders” and “Mental and behavioural disorders related to alcohol or opioid abuse” were not considered for similar reasons (1). The diagnostic group “Other diseases of the circulatory system”, although having the highest rate of preventable hospitalizations (282 000) (Table 2) and in many ways related to other chosen cardiovascular diseases (CVDs), was not selected as an ACSC as it consisted of 19 individual ICD-10 coded cardiovascular conditions with a broad scope. These ranged from, for example, cardiac arrhythmias and rheumatic mitral valve disease to atherosclerosis and thrombophlebitis.

3.3.1 Estimates of preventability

Participants in the study by Sundmacher et al. (1) were informed that not all hospitalizations for ACSC can be prevented by effective ambulatory care as patient-level factors also play an important role. Physicians were therefore asked to estimate the percentage of hospitalizations for ACSC that could actually be prevented by an effective ambulatory care sector, considering potential exogenous factors and based on their professional experience (1).

The average degree of preventability of hospitalization for ACSC as rated by German GPs and medical specialists ranged from 41%⁴

⁴ Based on semistructured interviews with 12 primary care physicians assessing 104 cases of hospitalizations for ACSCs and their rates of preventability (16).

Table 2. Overview of 22 most common ACSCs in Germany and corresponding number of hospitalizations, 2012

Diagnostic group	Number of hospitalizations in thousands	Estimated preventability	Number of preventable hospitalizations ^a	Most frequently mentioned medical action to reduce hospitalizations for ACSCs ^b	Most frequently mentioned system to reduce hospitalizations for ACSCs ^c
1. Ischaemic heart diseases	426	61%	260	MoCD	ICT
2. Heart failure	381	64%	246	MoCD	ICT
3. Other diseases of the circulatory system	370	76%	282	MoCD	ICT
4. Bronchitis & COPD	320	76%	245	MoCD	ICT
5. Mental and behavioural disorders due to use of alcohol or opioids	315	66%	209	OPP	ICT
6. Back pain [dorsopathies] ^d	284	81%	231	OPP	ICT
7. Hypertension	279	83%	231	OPP	ICT
8. Gastroenteritis and other diseases of intestines	263	77%	202	MoCD	ICT
9. Intestinal infectious diseases	259	75%	195	OPP	ICT
10. Influenza and pneumonia	256	68%	175	ETaD	ICT
11. Ear nose throat infections	252	85%	214	ETaD	ICT
12. Depressive disorders ^d	251	70%	175	MoCD	ICT
13. Diabetes mellitus	196	81%	160	MoCD	ICT
14. Gonarthrosis [arthrosis of knee]	190	58%	110	MoCD	ICT
15. Soft tissue disorders	183	73%	134	ETaD	ICT
16. Other avoidable mental and behavioural disorders	175	74%	129	MoCD	ICT
17. Diseases of the eye	153	81%	124	MoCD	ICT
18. Diseases of urinary system	146	86%	126	ETaD	ICT
19. Sleep disorders ^d	127	83%	105	MoCD	ICT
20. Diseases of the skin and subcutaneous tissue	125	77%	96	ETaD	ICT
21. Malnutrition & nutritional deficiencies	49	85%	42	OPP	ICT
22. Dental diseases	36	94%	33	OPP	ICT

^a Calculated as total number of hospitalizations *% of preventability/100.

^b MoCD – management of chronic diseases; OPP – other primary prevention; EtaD – effective treatment of acute disease.

^c ICT – improvement of continuous treatment.

^d May not fully fulfil Criterion v (the necessity of hospitalization).

Source: adapted from Sundmacher et al. (1).

Table 3. Total number of ACSC-related hospitalizations, percentage of estimated preventability and corresponding estimated preventable hospitalizations in Germany, 2012

Diagnostic group	ACSC hospitalization rate in thousands	Estimated preventability	Estimated preventable hospitalizations in thousands ^a
Ischaemic heart diseases	426	61%	260
Heart failure	381	64%	246
Bronchitis & COPD	320	76%	245
Diabetes	196	81%	160
Hypertension	279	83%	231

^a Calculated as number of ACSH * percentage of estimated preventability/100.

Source: adapted from Sundmacher et al. (1).

to 75%.⁵ According to the core list of 22 ACSCs from the German catalogue, 5.04 million of 18.6 million total hospitalizations registered in Germany in 2012 were hospitalizations attributable to ACSCs, but the findings of Sundmacher et al. show that 3.78 million (75%) were estimated by a panel of 40 physicians to be preventable (1). The total number of attributable ACSCs in 2012 and estimated number of preventable hospitalizations for the selected ACSCs are summarized in Table 3.

Panellists were also asked which changes at health-system level (better access to ambulatory care; reduction of medical uncertainty; improving continuing care; other financial incentives; and others) could significantly reduce hospitalization for ACSC. Medical experts agreed that the most important medical action was better management of chronic diseases; improvement of continuous treatment was the most relevant action identified at systems level (Table 2).

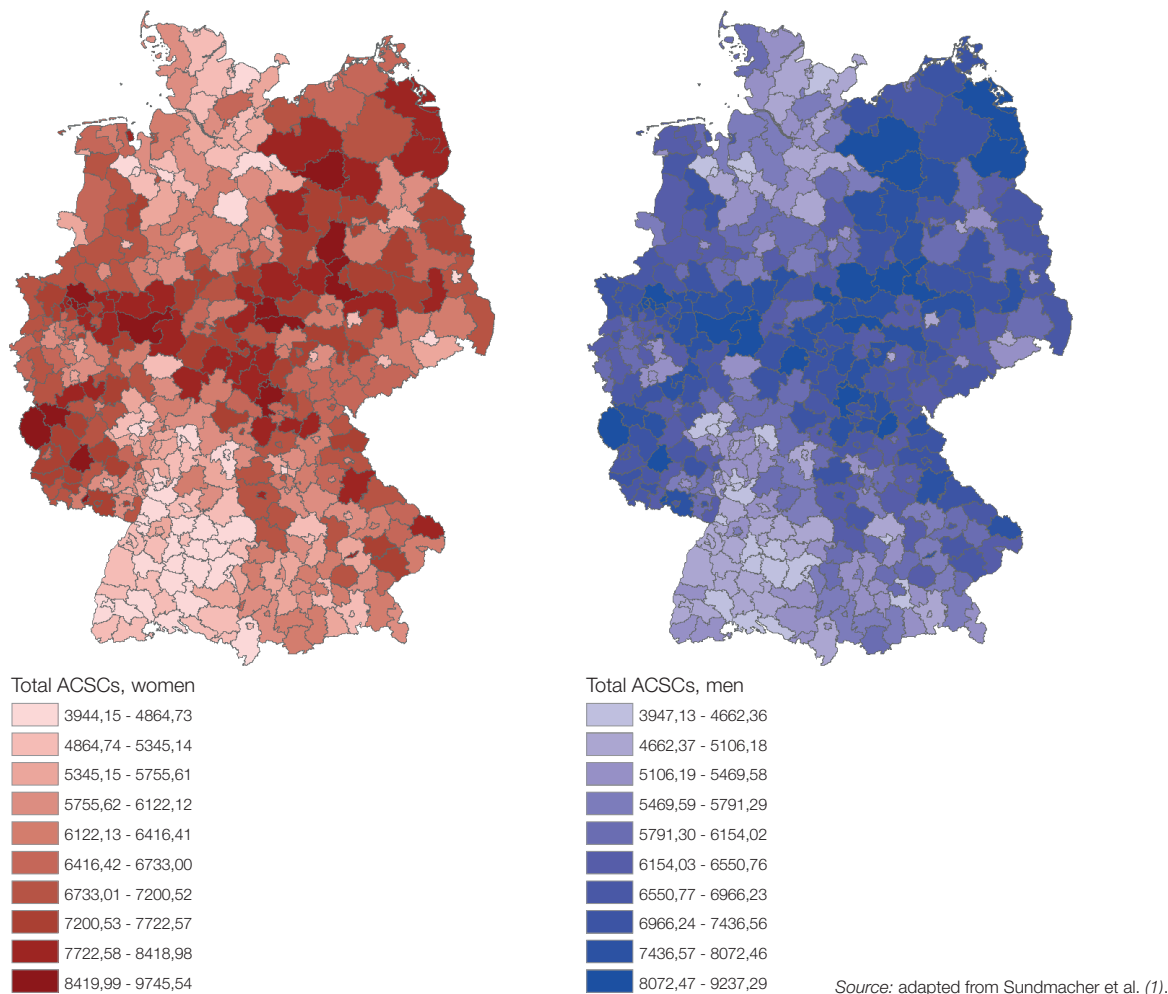
Estimates of preventability for selected ACSCs for Germany were comparable overall to

findings of other similar studies. The degree of preventability of ACSC-attributable hospitalizations in Germany for diabetes (81%) were higher than estimated for Latvia (39%) and the Republic of Moldova (40%) (19,20). Hospitalization for hypertension had 83% estimated preventability, which was slightly above estimates for the Republic of Moldova (60–70%) (20). Estimates of preventable hospitalizations for the diagnostic group “Bronchitis & COPD” in Germany (76%) were high compared to 2010 estimates from the National Health Service in the United Kingdom (10–30%) for the condition (21). For heart failure, German preventability rates (64%) were comparable to United Kingdom estimates (30–60%) (21).

Generally, preventability estimates for ACSC hospitalization in Germany were high for all selected ACSCs, particularly diabetes and hypertension. Differences of estimates observed between countries might, on the one hand, be related to variations in grouping of ICD-10 coded diseases and/or methodological differences; on the other, they may indicate an emerging need for service delivery transformation in ambulatory settings for adequate ACSC management.

⁵ Based on several Delphi rounds with 40 GPs and medical specialists from both in- and outpatient sectors assessing 258 ICD-10 diagnoses for degree of ACSC hospitalization preventability (1).

Fig 2. Geographic distribution of average ACSC hospitalization rates at district level in Germany, disaggregated by sex, age-standardized, 2011



3.4 Regional variation of hospitalizations for ACSCs

Fig. 2 shows the age-standardized ACSC hospitalization rates at district level⁶ based on the German catalogue for 2011 (1). Similar to earlier studies (18,22), the maps in Fig. 2 show high rates of hospitalization in rural areas such as in Eastern Germany, North Rhine, Saarland and Eastern Bavaria regions. The distribution of ACSC hospitalization rates is similar for men and women. Hospitalization rates are

calculated based on the ICD codes presented in Sundmacher et al (1).

It is difficult to establish which ambulatory care provider or network of providers would be accountable for a hospitalization following an ACSC. The SVR therefore recommended grouping the risk-adjusted hospitalization rates for ACSCs into larger area units to enable evaluation of regional differences (3). Following this suggestion, three studies investigated geographic patterns and time trends of hospitalizations for ACSCs in Germany.

⁶ Administrative division of Germany in the context of this publication is following: 16 federal states [Länder], that are further subdivided into 402 administrative districts [Kreise].

Naumann et al. (22) depicted cartographic trends of ACSC-related hospitalizations in Germany

from 2006 to 2009, the conditions of which were selected based on a literature review by Purdy et al. (23). Districts with high hospitalization rates for men and women were identified in the federal states of Mecklenburg-Western Pomerania, Saxony-Anhalt and Thuringia and, to a lesser degree, in Brandenburg, Saarland, Rhineland Palatinate and North Rhine-Westphalia. Low hospitalization rates were often present in districts in Baden-Wuerttemberg. Some regional clusters for specific ACSCs were identified, with high hospitalization rates for heart failure and diabetes-related infections in eastern parts of Germany. Regionally disaggregated data for each of the selected priority ACSC can be found in Annex 4.

Differences in hospitalization rates for specific ACSCs were also identified between rural and urban regions.⁷ Hospitalizations for dehydration and gastroenteritis, for example, occurred more often in rural districts, while those due to schizophrenia were more frequent in urban regions.

3.5 Outcomes of the stakeholder workshop

Based on the outcomes of the literature review and findings of the data analysis, participants at the stakeholder workshop were asked to rate the relevance of following strategies for improving ACSC management: ensuring better provision of ambulatory care emergency services at hospitals; increasing physician networks and interdisciplinary work; strengthening of on-call duties in ambulatory care; implementing electronic patient records; scaling up DMPs; and expanding physician assistant models. Participants rated all preliminary identified strategies as relevant for the reduction of ACSC

hospitalization with average rating 4.64 out of 7 (1- not relevant to 7- very relevant) (Annex 3).

In a similar survey carried out with German physicians (1), most opted for improvements in the continuity of ambulatory treatment followed by improvements in availability, reduction in medical uncertainty and changes in the remuneration system as key strategies in the reduction of ACSC hospitalization rates (Annex 5). Another study with German physicians placed the causes of hospitalization in five principal categories: system-related (such as unavailability of ambulatory services), physician-related (suboptimal monitoring), medical-related (medication side-effects), patient-related (delayed help-seeking) and social-related (lack of social support) (16).

3.6 ACSCs in brief

Experts rated three quarters of the over 5 million hospitalizations for ACSCs in 2012 as preventable. This means that around 20% of all 18.6 million hospitalizations in Germany in 2012 – every fifth patient hospitalized – could have been avoided through adequate provision of ambulatory care.

This not only points to a substantial weakness in care delivery for ACSCs in Germany, but also identifies a great opportunity to achieve optimal ACSC management through tackling the current delivery of ambulatory services from a health-systems perspective. Based on triangulation of information through various methods and sources, the chronic ACSCs of heart failure, ischaemic heart disease, hypertension, COPD and diabetes were identified as of particular importance in Germany. These conditions, along with their current ambulatory management, shall serve as markers to identify challenges and opportunities for strengthening service delivery for ACSCs in Germany.

⁷ Defined by the Federal Institute for Research on Building, Urban Affairs and Spatial Development.

4. A health services delivery perspective to ACSCs

The previous section showed that the conditions identified as ACSCs with the highest rates of hospitalization also have relatively high rates of preventability in ambulatory settings. This section analyses opportunities and challenges in tackling high hospitalization rates for ACSCs from the perspective of provision of health services, focusing on planning of services, organizing providers, managing service delivery and improving performance that affects the rate of hospitalizations for selected ACSCs.

4.1 Governance and management of health services

4.1.1 Health insurance and coverage of services

The vast majority of the population of Germany (85%) is covered by statutory health insurance (SHI), while the remainder (civil servants, self-employed citizens and employees above an income threshold) are covered by private health insurance (PHI), leaving nearly no citizens uninsured (2,24). SHI includes all services except for LTC insurance, which requires a separate application for benefits (24).

While almost the entire population of Germany is covered by health insurance (2), several challenges in accessing health services exist. Patients have free choice of providers⁸ and hospitals for their treatment, but there is unequal distribution of health providers across the country (2). The issue of accessibility of ambulatory care is particularly relevant in rural areas, where young people move to urban

centres, accelerating demographic change and depopulation in these areas. As a consequence, social infrastructure, including health services, is likely to deteriorate most in places where it is most needed (25). Older patients with limited mobility are sometimes required to travel long distances (40–50 km) to see a GP (8). Suboptimal PHC access in rural areas may negatively affect ACSC management, as hospitalization rates for ACSCs are particularly high in rural areas of eastern Germany and eastern Bavaria, and federal states of North Rhine-Westfalia, Saarland (see Fig. A5.1, Annex 5).

4.1.2 Availability of after-hours ambulatory services

According to the 2011 Care Structures Act, after-hour services should be provided by the regional associations of SHI physicians (RASHIPs) [Kassenärztliche Vereinigungen, KVs] but most patients still choose to visit hospital emergency wards or walk-in clinics, contributing to unnecessary ACSC hospitalizations. A reform that requires PHC and SHC providers to share on-call duties is planned to improve after-hours availability (26).

4.1.3 Paying for ambulatory care

Remuneration for SHI-accredited providers, at both PHC and SHC levels, is a two-step procedure. Sickness funds initially pay an annual fixed budget to the RASHIPs, who then distribute remuneration to their physician members according to a uniform value scale (UVS). The UVS system assigns a defined number of points to each type of service, which represent its relative value (in terms of resource utilization, not necessarily in terms of medical value to a patient) compared to other services.

The total revenue an SHI-contracted provider obtains depends on a number of factors (2). First, the more UVS points a provider documents,

⁸ Ambulatory care is provided by GPs [Hausärzte] and specialists [Fachärzte]

the higher (in principle) is the reimbursement. It is not a traditional fee-for-service (FFS) system, however, as the monetary value that corresponds to a UVS point is not fixed. It depends on the total number of UVS points billed by all SHI physicians within the area of an individual RASHIP. As a result of the annual fixed budget at RASHIP level, the more UVS points are billed, the lower the fee assigned to a single UVS point.

Second, each SHI-contracted practice is subject to an individual budget of UVS points. After the capped budget is exceeded, providers' reimbursement fees are reduced. An exception is made for specific extrabudgetary services, such as those within disease management programmes (DMPs). Finally, providers can offer additional services to SHI patients that they have to pay out-of-pocket – so-called IGeL services (individual health service [Individuelle Gesundheitsleistung = IGeL]), which provide direct extra income for providers. With the exception of extrabudgetary reimbursement for patients enrolled in DMPs, few incentives exist for physicians to motivate their patients to engage in disease prevention and management (27). The current remuneration system therefore does not encourage adequate management of the selected ACSCs, for which primary, secondary and tertiary prevention in PHC is of the utmost importance. The reimbursement schemes traditionally do not reward collaboration among physicians and across levels of care. Instead, lack of financial incentives for vertical integration of care may cultivate competition for patients between PHC and SHC providers.

4.1.4 Paying for hospital care

Reimbursement of inpatient hospital care is based on the German diagnosis-related groups (G-DRG) except for psychiatric care, which is reimbursed per diem. Due to the fixed nature of the G-DRG pricing for hospital services,

competition between hospitals is limited to attracting patients with high-quality services (28) and obtaining referrals from office-based GPs and specialists (24).

Responsibility for capital investments in hospital facilities, such as provision of medical technologies/equipment and construction of buildings, lies with federal state governments (2). Maintenance expenditures of hospitals infrastructures are borne by sickness funds and private health insurers. Since federal states do not bear the follow-up costs of their investments, this increases the risk of oversupply with costly medical equipment, buildings and bed capacities (2).

4.1.5 Availability and distribution of the health workforce

GP density differs significantly across regions of Germany. For instance, there are 73.2 GPs per 100 000 inhabitants in the federal state of Baden-Wuerttemberg and 60.8 per 100 000 in Saxony. Urban–rural differences in GP density are vast, favouring the oversupplied urban areas (6,7). The Eurobarometer survey in 2007 recorded that 94% of the German population found it easy to access a GP (7,29).

In 1993, 60% of ambulatory care providers were GPs, while in 2014 the proportion was less than 50% due to an increase in the number of specialists [Fachärzte] (8). This development is further accelerated by the fact that only 10% of young practitioners are accredited as GPs, while 90% focus on a specialization. Similarly, fewer than 10% of medical graduates chose to pursue training in family medicine in 2009 (7,30). Experts estimate a lack of 15 000 GPs by 2020 (31).

The lack of physicians in rural areas in Germany has been addressed through the 2011 Care Structures Act [Versorgungsstrukturgesetz] and the newly

enacted 2015 Care Provision Strengthening Act [Versorgungsstärkungsgesetz]. The resulting revision of the capacity-planning directive in 2011 was a first step to acknowledging the need for a regionally differentiated approach in ensuring access to care. The directive allows for more flexible planning to reflect local needs at regional association level. Some of the regional associations of SHI physicians have offered incentives (premiums, investment supplements, volume guarantees) to physicians for providing services in undersupplied areas but the total amount spent on such projects has been relatively small.

In addition to incentivizing GPs to move to undersupplied areas, some additional measures to improve patients' access to PHC have been implemented. The 2011 Care Structures Act has facilitated the establishment of so-called branch practices [Filialpraxen] in rural areas with low population densities, such as those in the federal state of Saxony-Anhalt⁹ (32). Branch practices have been established to enable GPs to treat patients in offices outside their main practice. The requirement to be a resident in the district of a GP's practice has been waived, increasing the attractiveness for GPs to work in rural branch practices. Branch practices are usually operated by RASHIPs or district authorities, which recruit GPs.

The newly enacted 2015 Care Provision Strengthening Act will ensure easy access to health services nationwide through incentivizing a more needs-based regional allocation of GPs in private practice, increasing provision of ambulatory care by hospitals and accelerating the establishment of medical care centres [Medizinische Versorgungszentren, MVZ] that

offer multidisciplinary ambulatory care services (26).

4.1.6 Infrastructure for information management

The communication infrastructure necessary to convey information across providers and store and analyse information in the German health system faces several challenges, given the wealth of different and mutually incompatible systems (33). Reluctance to implement a comprehensive solution stems from various factors, including concerns about privacy and safety of patient data and questions regarding the cost–benefit of such a major structural undertaking (3).

Initial steps to tackle information-infrastructure challenges in the health system were taken more than 10 years ago (3). Based on a law (anchored in Social Code Book V) that defined the establishment and objectives of a body to build a telematic infrastructure, the Society for Telematics [Gematik] was founded under the supervision of purchasers and providers¹⁰. Currently, new German legislation on e-health [eHealth-Gesetz] is undergoing parliamentary consultation: it is anticipated that the new law will come into force by the end of 2015 (34).

4.2 Models of care

4.2.1 DMPs

German DMPs are standardized nationwide programmes for patients with chronic conditions that were introduced based on a regulatory top-down framework in 2002 (35,36). The Federal Insurance Office [Bundesversicherungsamt] defines them as “the coordinated treatment and care of patients during the entire duration of a

⁹ To maintain a medical infrastructure, the association of SHI physicians in Saxony-Anhalt has established seven practice offices in which local physicians, those who are already retired or who are already employed elsewhere care for the local population. The practice offices are run and managed by the association but adapted to the needs of the physicians who work there. Qualified practice assistants work in each of the offices to provide continuity.

¹⁰ The council of experts for Germany's health system provides a discussion of challenges related to the conception and realization of the project (3)

(chronic) disease across boundaries between providers and on the basis of scientific and up-to-date evidence” (35). DMPs were devised to foster principles of best evidence-based treatment, promotion of service delivery across levels of care, patient self-management and the introduction of new quality assurance mechanisms (37). Importantly, they have been implemented in the context of existing health service delivery structures in Germany (35).

While enrolment in DMPs for patients and providers occurs on a voluntary basis, enrolled patients are expected to play an active role in formulating and adhering to treatment goals based on shared decision-making and are obliged to participate in disease-specific education and self-management programmes. Participating providers (GPs and specialists) must meet defined training and infrastructure requirements (37). The patient’s GP usually serves as the care coordinator ensuring that treatment and patient pathways are consistent with evidence-based DMP guidelines. Participation in DMP means that providers actively participate in quality circles and regularly attend continuous medical education trainings. DMPs have enhanced the role of GPs in chronic care and contributed to clear definition of provider roles across the continuum of care (37). DMPs also encompass IT-supported documentation and patient information, shared-decision making and patient education (27).

Providers receive financial compensation for conducting disease-specific education programmes and a quarterly fee for filling the DMP-specific documentation; they also qualify for an additional fee when registering a new patient into a DMP (37). Patients receive several incentives for participating in DMPs, such as waived or reduced cost-sharing for services, eligibility to receive a further reduction in copayments if compliant with chronic disease management protocols, and access to additional

services beyond standard treatment (37,38). Incentives rapidly increased the number of DMPs offered by sickness funds and the corresponding patient volumes enrolled (37,38). About 6.3 million patients participated in German DMPs in 2013, which currently include those for ACSCs such as diabetes (type 1 and 2), coronary heart disease (including a module on chronic heart failure), asthma and COPD, and breast cancer. These conditions are largely in line with the ACSCs selected in this report, highlighting their significance in the spectrum of chronic diseases in Germany. Investigations into the potential of introducing DMPs focusing on chronic heart failure, rheumatoid arthritis, osteoporosis and chronic back pain are ongoing (39). Participants of the stakeholder consultation considered DMPs to be important programmes in reducing preventable hospitalization rates for selected ACSCs (4.67 points of a maximum 7).

According to Social Code Book V, DMP quality is assured through targets based on patient treatment documentation and subsequent formulation of regional quality reports published by the contracted SHI funds every three years. This is a precondition for reaccreditation of the DMP by the Federal Insurance Office (37,39). Providers also receive feedback on performance for benchmarking (35). Empirical studies show that patients enrolled in German DMPs encounter fewer complications than those receiving standard care (40). While DMP-related financial incentives, particularly for SHI funds, have driven rapid nationwide implementation, they were focused largely on rewarding patient enrolment rather than incentivizing quality of care (37). It has also been suggested (35,37) that DMPs are still chiefly focused on GPs, while functions carried out by non-physician medical professionals (such as practice assistants) remain insufficiently incorporated. Efforts will consequently focus on shifting the DMP approach from its current disease-specific model of care to one that is more centred on patients,

their individual risk profiles and associated specific needs. Previous concerns relate to the initially very time-consuming effort of completing DMP documentation by providers, which has since been facilitated (35), and the issue of finding more appropriate proxies to measure levels of active patient participation within DMPs (37).

4.2.2 Integrated care management

Fragmentation of services and the traditional focus on the provision of acute care in the German health system pose major barriers to optimal management of patients with the selected chronic ACSCs (41).

Starting in 1993, health care reforms have introduced structural frameworks to enable the development of integrated care in Germany (2,35). The first comprehensive effort to implement a programme of integrated care to address fragmentation of care and lack of coordination across levels in the German health system was the introduction of DMPs in 2002, with a specific focus on chronic NCDs. Following the 2004 introduction of selective contracts of integrated care between SHI funds, single providers and networks of providers as an addition to the traditional collective contracting, more than 6400 such contracts had been registered by SHI funds by the end of 2008, potentially including over 4 million patients (2). More than 50%, however, did not include services across levels of care and were often tailored to specific indications only (41–43) or were limited to rehabilitative or ambulatory care following surgery (44). While over 90% of total provider remuneration in ambulatory care still occurs as traditional SHI-contracting, selective integrated care contracts offer the opportunity to assess innovative pilot models of integrated care and performance-based remuneration schemes (24). In 2014 they accounted for less

than 1% of total health expenditure in Germany (45).

Several pilot models of integrated care have been successfully implemented in Germany at regional level. Projects such as the Prosper-network of the Knappschaftskasse (46), the *Gesundes Kinzigtal* project (44,47) and *Polikum Friedenau* (41) represent good examples of integrated care models: opportunities for scaling-up should be explored (see Annex 6 for more detail on the projects). Addressing the concept of integrated care at system level, these approaches are potentially more efficacious in optimizing chronic care for multimorbid patients than the disease-specific DMPs, but their potentially positive impact remains unclear due to a lack of systematic and long-term evaluation (35,45). First results from the *Gesundes Kinzigtal* initiative are promising and suggest that innovative models of integrated care deserve further attention: they may pave the way for reducing hospitalization rates for selected ACSCs in the long run (44).

4.2.3 LTC

Older patients living with selected ACSCs may require LTC services as physical and cognitive abilities decrease with progress of the disease and occurrence of multimorbidities. Statutory LTC insurance (LTCI) was introduced in Germany in 1994 as a branch of social care insurance and was made mandatory for all SHI- and PHI-covered citizens in 2009 (2). There were around 2.7 million recipients of LTC benefits in 2015 (48), a figure that is estimated to rise to 4.36 million by 2050 for SHI-covered patients alone (2).

Patients wishing to receive LTC services must submit an application and, if care is granted, will be assigned to one out of the three graded categories by the Medical Review Board (2). A prerequisite for eligibility for LTCI benefits is

the requirement for care of at least six months (2). Beneficiaries can then choose to receive either monetary benefits, nursing care services at home, or services in nursing homes (2). Around two thirds in 2011 received monetary benefits only, based on which home care was either provided by relatives (47% of all care recipients) or supplied by purchased ambulatory services. The remaining third received inpatient care in nursing homes (2). LTCI benefits alone are usually insufficient to cover overall care needs. A considerable proportion is intended to be paid for privately and/or is provided by families, which has been criticised for cultivating income-related inequalities of care provision (49). There is also gender inequality associated with care provision, with more than 90% of informal caregivers in 2011 being women (2). These inequities in coverage with LTC programs mostly affect vulnerable patient groups increasing the risk of hospitalization from selected ACSCs.

The 2013 LTC Realignment Act [Pfleger-Neuausrichtungsgesetz] strengthened LTC provision by promoting the so-called rehabilitation-before-care principle, strengthening of ambulatory care within LTC, increased support for informal care providers and better intersectoral coordination between physicians and nursing homes (2). Building upon the LTC Realignment Act, the newly passed 2015 First Act to Strengthen LTC [Erstes Pflegestärkungsgesetz] has increased LTCI benefits by 4% (50,51). The Second Act to Strengthen LTC [Zweites Pflegestärkungsgesetz], planned for implementation in 2016, is envisioned to promote greater equity by introducing a more holistic and patient-centred approaches (52). Together, these laws will increase the budget for LTC by almost €5 billion by 2017, estimated to boost overall benefits of LTCI services by 20% (50).

4.2.4 Medical homes

Germany ranks number nine out of 11 western countries in relation to availability of medical homes for adults who require complex care. A comparative study (53) across countries that offer medical home-based care, including Germany, showed that patients enrolled in these care plans had better coordination of care and better health outcomes. Innovative integrated care models, such as the *Gesundes Kinzigtal* initiative, have incorporated the concept of a medical home as patients choose a “doctor of trust” for coordination of their follow-up care (44).

4.2.5 Patient self-management

Self-management of chronically ill patients does not have a longstanding tradition in Germany (27). The introduction of DMPs in 2002 placed more emphasis on patient education and self-management as enrolled patients assume a participatory role through inclusion in therapeutic goal-setting and the requirement to participate in specific education programmes (37). Participants of the stakeholder workshop highlighted deficits in the education of physicians regarding effective physician-to-patient communication and their ability to train patients in self-management.

4.2.6 Clinical guidelines

In Germany, clinical guidelines are produced for comprehensive spectrum of diseases, including selected ACSCs. The primary role for coordinating the development of clinical guidelines belongs to the Association of the Scientific Medical Societies, which together with other stakeholders have established national standards for guideline production and implementation (54). The process of development can be centralized and decentralized: most of national guidelines for DMPs are developed

centrally, while decentralized guideline production is coordinated by medical societies. There is no definitive requirement for the utilization of guidelines, however DMPs and P4P schemes are increasingly using adherence to clinical guidelines as quality and performance indicators.

4.3 Organization of providers

4.3.1 Organization of ambulatory services

Around half of the ambulatory care providers contracted by the SHI sector work in PHC (2). Patients have free choice of GP and can also choose to be treated by office-based medical specialists without referral as no gatekeeping is in place.

Ambulatory care providers include GPs, specialists, physician assistants, dentists, pharmacists, physiotherapists, speech and language therapists, occupational therapists, podologists and technical professionals (2). Acute and LTC providers include nurses, assistant nurses, carers for older people, social workers and administrative staff (2). Ambulatory care is predominantly delivered in solo practices. Multidisciplinary practices with 2–3 physicians and mixed practices with GPs and specialists are increasingly common, a phenomenon driven by the group-related reduction of individual economic risk (7). Interdisciplinary medical care centres, which were reintroduced in 2004, have significantly increased in volume (2) and are envisioned to help solve the looming problem of rural undersupply of ambulatory services (26).

4.3.2 Absence of gatekeeping

While many patients decide to regularly visit the same GP, there is no obligation to do so in

Germany. No gatekeeping exists in the German health care system but health care reforms in past decades have provided the regulatory framework to strengthen GP-centred models of care (2). The 2004 SHI Modernisation Act obliged all SHI organizations to offer patients enrolment into a GP-centred care schemes [hausarztzentrierte Versorgung] (2,55). Patients can voluntarily choose to enrol to these schemes to access special benefits from their health funds such as shorter waiting times, out-of-office hour visits, reduced physicians' fees (waived entirely in 2012) and exemption from copayments for several pharmaceuticals (2). By 2007, about 24.6 million SHI-covered patients had the option to enrol into a GP-centred care models, out of which around 4.6 million actually enrolled (2). A 2008 survey conducted by the National Association of Statutory Health Insurance Physicians (NASHIP) showed that 95% of SHI patients reported visiting their usual GP for ambulatory health problems, suggesting a predominantly favourable patient care-seeking pattern despite a formal gatekeeping system not being in place (7,56).

4.3.3 Cooperation between primary and secondary levels of care

There is no systematic coordination across the care trajectory between ambulatory care and hospitals, rehabilitation and LTC in Germany. GPs are not automatically informed of their patients' discharge from hospital. Patients who are discharged receive a physician's letter describing their diagnosis and treatment, which they should take to the GP (regulated by Social Code Book V). In some cases, letters are mailed directly to physicians but hospitals often issue such letters long time after the patient's discharge.¹¹

¹¹ Amendments to the discharge process are being introduced following recent reforms.

Currently, patients are responsible for ensuring that all follow ups are scheduled and performed, which is likely to pose a challenge for vulnerable patient groups. In the face of a trend towards quicker discharges from hospital following the G-DRG reform in 2004, discharge management has become a major issue (3), requiring urgent solutions through implementation of electronic patient discharge letters [Elektronischer Entlassungsbrief] (34).

4.3.4 The role of physician assistant

A recent strategy to improve continuity of care in ambulatory settings was through strengthening the role of physician assistants. As participants in the stakeholder workshop concluded, innovative physician assistant models can help to reduce ACSC hospitalization rates through, for instance, greater incorporation of these professions into DMPs. On a scale from 1 (not relevant) to 7 (very relevant), participants rated these models on average at 5 (highly relevant).

The role of non-physician medical professions in ambulatory care in Germany has traditionally been limited due to strictly defined distinction between activities of medical doctors and other professional groups, including nurses (57). Recent pilots aimed to establish a supporting system for ambulatory care providers in their day-to-day work by employing specifically trained assistants and building telemedicine solutions (57). With concepts like AGnES¹² assistants, delegation became a structural part of ambulatory care (57). Further initiatives, such as VERah,¹³ MOPRA,¹⁴ EVA¹⁵ and HELVER¹⁶, were developed to qualify assistants to perform

defined physician-substituting tasks. Results of a study evaluating the pilots in ambulatory care show that assistants like AGnES were highly rated by patients (58). Most of the physicians involved reported that the services performed by AGnES assistants were on at least the same level of quality as their own work and most GPs welcomed the work of AGnES practice assistants as a means of reducing their own workload. By 2013, 5000 practice assistants had received advanced training in AGnES, VERah, EVA and HELVER (59).

While the focus has been on relieving physician stress, the full potential of qualified physician assistant personnel in relation to more holistic management of chronic disease has not yet been fully exploited (60). Earmarked funding of €264 million incentivized GPs to employ qualified practice assistants in 2015 (61). GP practices will receive quarterly funding depending on the number of treated cases and functions of the assistants.

Recently, the wider concept of AGnES zwei has been established. AGnES zwei practice assistants act as case managers and coordinate patients' care (62). Approximately 90 AGnES zwei practice assistants were trained in 2014 to provide additional services (63) such as conducting home visits to immobile and mostly multimorbid patients, performing diagnostic tests and treating patients under the supervision of the responsible GP (57). Comprehensive incorporation of non-physician medical personnel into a patient-centred model of care based on individual case management would provide an additional resource to improve ACSC management, particularly in high-risk patients requiring close and continuous monitoring.

4.3.5 Physician networks

Local or regional physician networks are becoming increasingly popular in Germany.

¹² GP-relieving, community-based, e-health-assisted, systemic intervention (Arztentlastende, Gemeindenähe, E-Healthgestützte, Systemische Intervention =AGnES).

¹³ Practice assistants in Family Practice (Versorgungsassistentinnen in der Hausarztpraxis = VERah).

¹⁴ Mobile practice assistants (Mobile Praxisassistentin = MoPra).

¹⁵ Care assistants (Entlastende Versorgungs-Assistentin = EVA).

¹⁶ Physician assistants in ambulatory care (arztHELferinnen in der ambulanten VERSorgung = HELVER).

Participants of the stakeholder workshop considered physician networks and interdisciplinary work to be important initiatives in the reduction of preventable ACSC hospitalizations (average value of 4.75 out of 7 in the question about effectiveness of an initiative in the reduction of ACSC hospitalizations).

More than 400 physician networks are registered in Germany, most of them with the declared objective of improving the coordination of care (64). Based on empirical evidence, two types of physician networks can be distinguished in Germany. Ambulatory networks are organized by assigning patients to a GP who qualifies as the so-called usual provider, who delivers most of the care and if necessary refers the patient to assigned relevant specialists within the network. Ambulatory networks are highly relevant for ACSCs as they ensure continuity and longitudinally of care within a set network of providers and allow timely provision of specialist care.

The second type is multilevel networks. These are constructed by assigning insured patients to a GP who qualifies as usual provider and then assigning the GP to a hospital (65). They are not directly relevant for the prevention of ACSC-related hospitalizations, but are important once a hospitalization has occurred and good coordination of care is needed to ensure, for example, timely discharge and optimal follow up in ambulatory care. The degree of cooperation and performance can be assessed on the basis of selected quality indicators, such as readmission rates.

Physician networks can be funded in various ways, including selective contracts with insurance companies (64). The most recent approach to further support the networks was undertaken through the Care Structures Act of 2011. It enables RASHIPs to provide direct support for networks that meet a set of criteria set

by the RASHIPs. These criteria can be informed by national framework criteria set by the NASHIP (66). According to the national criteria, the networks must meet structural preconditions in three areas to qualify for funding: patient-centredness (e.g. the availability of structured care pathways), collaborative care (e.g. regular discussion of results in quality circles), and improved efficiency (e.g. an appropriate IT infrastructure to speed up the exchange of information between care providers). Structural prerequisites for the establishment of physician networks are also defined by NASHIP and include a minimum network size, a regional focus, appropriate management structure and several other legal requirements (66). However, RASHIPs have discretion over the level of financial support provided to networks. So far, a limited number of networks have received direct RASHIP financing as defined in the Care Structures Act (8).

Coordinating mechanisms include timely and structured management of appointments and referrals to participating physicians, agreed treatment guidelines and connected IT systems for patient management (64). Empirical studies confirm the efficacy of health information technologies in improving quality and efficiency (67) and the new e-health law envisaged for 2015 will promote their scope and practical applicability to achieve their full potential and ensure wider implementation (34).

4.3.6 Waiting times

Evidence suggests that waiting times to access a GP in Germany does not vary between SHI- and PHI-covered patients (2,67), while waiting time to get a specialist appointment can be significantly longer for patients covered by SHI. This is the case even in areas with a high physician density and so-called ‘oversupply of

ambulatory care providers'.¹⁷ Several studies have shown that PHI patients have reduced waiting times for an appointment ranging from 2.5 to 23 days less than SHI-insured patients (2,67). It should be noted that waiting times vary considerably depending on the requested treatment (68).

A recent study (69) has shown that waiting time differences for a specialist consultation was 28% longer for SHI-insured patients. Providers prefer to treat PHI-covered patients for whom budgets are not capped and remuneration is higher (70). As a result, both patient groups may be exposed to risks related to inadequate volumes and quality of care through, for example, delayed service provision for SHI-covered patients and overprovision of unnecessary services for PHI-enrolled patients (2,71).

A recent NASHIP-led survey of over 6000 SHI-covered patients (72) found that most are satisfied with current waiting times, with only one in ten considering them to be too long. Two thirds received an appointment for their chosen GP or medical specialist within three days. Freedom of choice was very important to the surveyed patients, 64% of whom reported wanting to see a particular medical specialist for their treatment. Reform of waiting times for GPs and medical specialists is being prepared to ensure appointments occur within a timeframe of four weeks (26).

4.3.7 Use of e-health card

An electronic health (e-health) card was introduced in 2011 in Germany and became mandatory for most SHI-covered patients (73). Initially, only information on the insured person's administrative data was stored on the e-health card but access to essential medical

information has gradually been enabled. Vertically integrated, system-wide e-health records were successfully implemented in the *Gesundes Kitzingtal* project (44).

The e-health initiative in Germany also focuses on drug interaction safety [Arzneimitteltherapiesicherheit, AMTS] to ensure, for example, that patient-specific medication histories and up-to-date information on drug interactions are shared across the care pathway. This would bring an immediate safety benefit for the selected ACSCs, as affected patients generally require a multiplicity of pharmacological treatments that require continuous adjustment throughout the course of therapy.

According to the e-health law proposal of June 2015 [Entwurf eines Gesetzes für sichere digitale Kommunikation und Anwendungen im Gesundheitswesen] (34), comprehensive use of the e-health card will be accelerated by introduction of financial incentives for activities like maintaining patients' emergency data [Notfalldatensatz], medication plans and digitalizing patient discharge letters [Elektronischer Entlassungsbrief]. Patient access to their own e-health data will be facilitated to foster patient autonomy. Patients may also choose to provide their electronic emergency data in non-emergency GP visits to support routine treatments (34). Full implementation of the envisaged features remains delayed due to data-protection and transparency issues.

4.3.8 Use of telemedicine

The Federal Ministry of Health has established a telemedicine platform to enhance visibility of most ongoing projects in this innovative medical field (74), and the German Parliament has acknowledged that telemedicine offers a broad spectrum of possibilities for use in health services in Germany. The distance between

¹⁷ As defined by the 2013 needs-based capacity-planning directive [Bedarfsplanungs-Richtlinie].

patients and providers, and among themselves, should be bridged through information and communication technology (75). Applications of telemedicine can be roughly divided into telemonitoring of patients, enhancing cooperation among health professionals, and treating patients over a spatial distance (76). Empirical literature provides evidence for its positive effects in chronic disease management (77).

Several experimental projects that involve telemedicine have been piloted in Germany (74). Those that address patients with chronic diseases and older people are most common and provide an opportunity to strengthen health services delivery for ACSCs (8). However, none of them has yet been implemented throughout the entire country. The main obstacles to the scale-up include unregulated reimbursement of telemedicine services and reluctance to integrate with conventional models of care (76). Federal state of Baden-Wuerttemberg has set up a coordinating office for telemedicine to support improvement in the quality and sustainability of the projects. Its goal is to ensure evidence-based assessment of the initiatives qualifying projects for reimbursement by the SHI. The acceptance of telemedicine services by health insurance companies is a crucial prerequisite for sustaining the projects beyond the pilot phase.

To expand and enhance the use of telemedicine [Telematik] in Germany, other providers, such as lay health workers working in social care and LTC as well as the medical research community will have access to it. The Society for Telematics [Gematik] will improve the interoperability of e-health services and continue to support policy implementation by appointing a federal arbitrator to mediate and resolve conflicts between purchasers and providers (34).

4.4 Performance improvement

4.4.1 Peer-review and quality assurance

The Quality and Development in Physician Practices [Qualität und Entwicklung in Praxen] programme was developed by the NASHIP to guide and support physicians in private practice (GPs and medical specialists) and ambulatory physicians in medical care centres to implement systems of internal quality management and self-assessment (2). Accordingly, 24 000 physicians and practice staff participated in the programme in 2009 (2).

The NASHIP implemented quality circles [Qualitätszirkel], which are subject-specific informal gatherings among SHI-contracted physicians (GPs and specialists) and/or psychotherapists in private practice to discuss patient cases in a confidential setting of trust. Quality circles were established 20 years ago and are a widely accepted form of quality assurance. This peer-review concept enables physicians to analyse their actions in moderated working groups with the aim of enhancing the quality of treatments. German experience of quality circles shows that are efficient as they provide an opportunity to review and discuss new evidence-based recommendations and allow feedback on prescription behaviour in a structured and written form (78). Approximately 9500 are active currently in Germany (79).

4.4.2 Pay for performance

The current remuneration scheme for GPs is not based on performance indicators for quality of care. The introduction of selective contracts of integrated care in 2004 provided an opportunity to explore alternative remuneration schemes, such as pay for performance (P4P) (24).

The *Gesundes Kinzigtal* initiative (see Annex 6), for instance, is a joint-venture, targeted model

of integrated care implemented in the Kinzigtal area. It uses an efficiency-based remuneration system incentivizing providers and SHI funds. In addition to the traditional payments received from SHI funds, providers receive a P4P reimbursement from *Gesundes Kinzigtal* for additional services known to benefit treatment quality and a share of the company's profit, allocated according to providers performance (55). The P4P payments are estimated to make up 10–15% of providers' income (42).

Selective contracting models cover only specific sickness fund populations and serve as marketing tools for sickness funds to attract clients in a competitive health insurance market. Currently, sickness funds do not have an economic incentive to collaborate with other sickness funds. As a result, selective contracts are – by design – not suitable instruments to achieve universal and equally well coordinated care for across insured population in a specific region.

4.5 Health services delivery for ACSCs in brief

This subsection summarizes the opportunities and challenges to ACSCs in Germany.

4.5.1 Governance and management of health services

Remuneration schemes for PHC and SHC traditionally are separate and do not promote vertical integration in levels of care, but may instead cultivate competition across the care trajectory. Differing physician reimbursement schemes for treating PHI- and SHI-covered patients can affect waiting times and lead to differences in provision of medical services. Selective contracts of integrated care (between a specific sickness fund and groups of health care providers) have provided opportunities

to improve ACSC management through implementation of people-centred models of integrated care and P4P schemes for providers on an experimental basis. ACSC hospitalization rates appear to be highest in rural areas, suggesting a potential correlation. Recent legislation has aimed to tackle these issues by means of more needs-based planning for allocation of health care providers, the establishment of additional practice models and medical care centres, and a greater focus on telemedicine solutions for undersupplied rural areas. Many patients choose to use out-of-hours health services, creating a need for better provision of after-hours care to avoid unnecessary hospital admissions through forced emergency ward visits. The German health system still lacks a comprehensive IT infrastructure across levels of care, mostly due to privacy and data-safety issues and structural incompatibility of current systems.

4.5.2 Models of care

The German health system is traditionally fragmented across levels of care. This is a major problem, particularly in relation to discharge management of patients, and can lead to avoidable (re)admissions for ACSCs. Selective contracts have strengthened integrated care management of chronic ACSCs, but over half of such concluded contracts did not offer services across levels of care, and therefore their sustainability over time and capacity to address issues of equity in access was limited. While several regional pilot projects of integrated care have yielded successful results, it will be essential to develop models of care that equally benefit populations across sickness funds within a specific region. The introduction of DMPs has provided useful additional structures for managing selected chronic diseases (including the selected ACSCs) in more integrated and better coordinated PHC settings. LTC provision is an important pillar in the management of selected chronic ACSCs and plays an indispensable role

in the delivery of care. Barriers to adequate LTC delivery, such as inequities related to type of disability, socioeconomic status, ethnic background and gender, need to be addressed. These programmes fail, however, to take into account the typically multimorbid status of eligible patients and lack solid outcome-related long-term evaluations.

4.5.3 Organization of providers

In Germany generally have free choice of GPs, medical specialists and hospitals. The traditional absence of gatekeeping has been addressed through incentivizing patients to enrol in GP-centred schemes, a currently underused opportunity that could improve ACSC management through achieving better continuity of care.

Physician networks have been effective in improving coordination and quality of care and were considered important programmes in reducing ACSC hospitalization rates at the stakeholder workshop. The role of physician assistants in ambulatory care provision is limited in Germany, but several innovative ways of empowering physician assistants by, for instance, promoting task-sharing with GPs,

increasing their scope of care provision and case management abilities, and integrating them into DMP structures may strengthen ACSC management. These ideas require further evaluation and broader implementation. Implementation of the 2015 e-health law proposal can boost vertical integration of care and support patient literacy and self-management, all of which may promote better ACSC management.

4.5.4 Performance improvement

Several peer-review and internal quality management programmes for private practice-based SHI physicians in ambulatory care have been put in place by the NASHIP to ensure adequate feedback loops for quality maintenance and performance improvement. Expanding these programmes through inclusion of ACSC-specific quality circles can help raise awareness about ACSCs and their optimal management. The picture regarding assessment of waiting times is ambivalent. Studies suggest an incentive-related bias for average waiting times in favour of PHI-covered patients, which may conversely lead to longer waiting times for those with SHI cover, specifically for specialist care.

5. Policy recommendations

In conjunction with the recommendations and opinions gathered from the stakeholder workshop as well as findings of the literature review, this study has identified several key strategies to improve ACSC management from a health services delivery perspective, upon which the following policy recommendations have been formulated.

5.1 Strengthen ACSC management in ambulatory settings

5.1.1 Implement systematic monitoring and analysis of ACSCs

The SVR suggested in its 2012 report that selected risk-adjusted rates of hospitalizations should be used as an indicator for ambulatory care quality. Recent plans to establish an institute for systematic quality measurement for the ambulatory and hospital sectors formulated in the Grand Coalition Agreement may further support the collection of a more comprehensive set of quality indicators for ambulatory care (80).

Systematic monitoring of ACSC hospitalization rates at physician-network or small-area levels would inform individual office-based physician about preventable hospitalizations among patients with ACSCs, indicate potential shortcomings in the provision of care and help to identify strategies to address them. The agendas of existing peer-review programmes and internal quality management processes should be expanded through the inclusion of ACSC-specific discussion rounds to help raise awareness of ACSCs and their optimal management among providers.

5.1.2 Implement ACSC-specific training

Primary and continuing education of all health professionals should cover the concept of ACSCs and their significance to quality of care. Mentorships between junior and senior GPs in routine work or special training on how a GP can prevent hospitalization may help physicians to better understand the needs of patients with ACSCs.

5.2 Foster integrated models of care

5.2.1 Promote cooperation across levels of care

A key challenge is to strengthen universal access to population-wide models of integrated care, which benefit all SHI members. This implies moving beyond selective contracts that benefit only the members of an individual sickness fund. In particular, RASHIPs could make greater use of instruments provided by the Care Structures Act 2011 (now codified in the Social Code Book V, §87b) that enable the provision of financial support for physician practice networks, the strengthening of which was identified by stakeholders as a relevant strategy for reducing ACSC-related hospitalizations. Provision for continuous evaluation of integrated care models should be put in place to identify best practices and implement a performance-based reward system to support expansion of successful projects.

5.2.2 Enhance the care management for chronic conditions

Stakeholders agreed that the introduction of DMPs in 2002 has provided supporting structures for managing selected chronic diseases including the selected ACSCs in PHC. However, being disease-specific, DMPs fail

to take into account the multimorbid status of patients.

Additional models of care management that tailor individual risk profiles and associated specific needs of patients with multiple chronic conditions are needed. Performance reviews of DMPs consequently should include a critical revision of quality target feasibility and alignment to the capacities and needs of different regions.

5.2.3 Expand the role of physician assistants

Stakeholders rated innovative physician assistant models as relevant additional resources to improve ACSC management, particularly in high-risk patients who require close and continuous monitoring. Novel training concepts that empower practice assistants by increasing their scope of care provision, case management abilities and task-sharing with GPs have been successfully launched on a pilot basis. While their employment in GP practices is already financially incentivized, the benefits need to be evaluated in order to identify whether and how their nationwide implementation can deliver the greater benefits.

5.2.4 Strengthen physician networks

Evidence shows that physician networks should be further strengthened to allow better patient movement along the continuum of care and employ population-focus on care. Furthermore, physician networks should not be limited to working only within ambulatory and hospital sectors, but should also include such stakeholders as providers of allied health services, pharmacies and other sectors (e.g. social sectors).

5.2.5 Establish a comprehensive IT infrastructure

The German health system still lacks a comprehensive IT infrastructure across levels of care, mostly due to privacy and data-safety issues and structural incompatibility of current systems. The new e-health law will promote the creation of a nationwide telematics infrastructure for Germany that could pave the way for comprehensive integration across the care pathway. Emphasis should be placed on implementing an electronic communication infrastructure that ensures mutual exchange of up-to-date medical information between ambulatory care providers and hospitals in real time. This measure is of the utmost importance for achieving better vertical integration and quality of care. Stakeholders agreed that ACSC hospitalization rates could be reduced by implementing electronic patient record systems that should improve efficiency of ambulatory care and facilitate patient discharge management. Patient access to their own e-health data should be facilitated to foster patient autonomy and stimulate patients' health literacy, self-care and better adherence to treatment.

5.3 Enhance accessibility of ambulatory care

5.3.1 Expand mobile practice initiatives

Buses that collect patients in peripheral regions and bring them to physicians' practices or mobile practices that travel to urban sites have been tested in some rural areas. In a mobile and medically equipped practice, a GP travels around a number of municipalities and treats patients in local settings. Mobile practices are only being trialled in Germany at present. The so-called rolling practice office in Wolfenbuettel, for instance, has been established as part of a larger health initiative in federal state of Lower

Saxony (81). Expanding these initiatives has a potential to relieve GPs from time-intensive home visits.

5.3.2 Enhance the prestige and attractiveness of the GP profession, especially in rural areas

Initiatives are in place to address the problem of urbanization and a lack of young GPs in rural areas. Financial support to general medicine departments at university hospitals aims to promote the attractiveness of the GP profession and funding may be used to supplement internships in rural GP practices or support scholarships for training in general medicine. However, predictions suggest that ageing of the health workforce and shortage of GPs in rural areas will require additional strategies both at national and regional levels, as well as scaling up of the existing initiatives in this field.

5.3.3 Strengthen after-hours care

Strengthening of on-call duties in ambulatory care and ambulatory emergency services at hospitals were also considered by participants at the stakeholder workshop as means of potentially reducing ACSC-related hospitalization rates.

5.3.4 Expand implementation of telemedicine services

Improvement in health services delivery in rural areas, where ACSC-related hospitalization rates appear to be highest, is essential to maintain sustainable nationwide access to PHC and ensure adequate ACSC management. Telemedicine solutions have been shown to reduce hospitalization risks for the asthma and COPD ACSCs and should be employed more in undersupplied rural areas. Further research is warranted to assess their potential benefits for patients with other selected ACSCs. Evidence from the evaluation of pilot projects is crucial for the acceptance of telemedicine services by health insurance companies – a key prerequisite for scaling-up projects to national level.

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Annex 1. Summary of the analytical framework

The analytical framework draws from existing literature to identify those elements of a health system that are instrumental in strengthening health service delivery to better respond to the challenges of diagnosing and treating ambulatory care sensitive conditions (ACSCs). The analytical framework is intended as a tool for assessing opportunities and challenges of providing the right service in the right place for patients with conditions that could be treated at ambulatory settings.

Forty-four features of health systems influence the hospitalization of patients with ACSCs as identified through literature research. These features have been depicted from a health service delivery perspective as: governance and management of services, model of care, organization of providers and improvement of performance.

The **governance and management of service delivery** refers to the oversight of operations in the delivery of care – ensuring that the desired outcomes are attained, that departments within a health facility are running smoothly, that the right people are in the right jobs, that people know what is expected of them, that resources are used efficiently and that all partners in the production of services are working together to achieve a common goal. The task of management comprises the thoughtful design and resourcing (encompassing all resources: human, financial, consumables and technologies) to best direct the provision of care, whether it be for an oblast-level tertiary hospital or a singular health house or a polyclinic in a rural area.

The second area of health service delivery calling for attention is the **model of care** – referring more specifically to *what* services are provided and *how* the provision of services is perceived and experienced by the individual. In articulating a pathway for clinical and social care, patient flows are made common and known, and referrals along the full continuum of service delivery can be clarified, for example, the foundation for more coordinated/integrated care that is people-centred rather than illness or disease-specific.

The **organization of providers** refers to the structure and arrangement of the so-called hardware of the system – the *who* and the *where* in the production of services – looking specifically to the mix of providers in the health sector, their scope of practice, and how they operate as a collective profession, in both the public and private sector. The organization of providers is a determining factor for ensuring models of care are actualized, and thus, the extent to which needed services are received at the right time and in the right way, optimizing health results and improving the patient experience. To treat a patient's full health care needs, numerous health care providers may be called upon, in different settings – such as primary, secondary and tertiary care – and in different capacities – for consultation in diagnosis, the development of a treatment plan, counselling or rehabilitation. To optimize this process, organizational strategies, like the introduction of multidisciplinary teams and group practices in PHC, or the expansion of provider profiles and their alignment for shared-care tasks may be called upon. Whichever means to designing the flow of services, these efforts share in their common objective to promote diversity in technical expertise – found in strong association with the ability of the system to respond to the population's increasingly complex health needs.

Mechanisms for **continuous performance improvement** refer to those efforts that aim to safeguard the delivery of services, creating a learning system through the standardized models of care, regular monitoring of the provision of care and feedback loops allowing a continuous critique of the provision of care, with opportunities and resources (skills, time, authority) for improvement. Creating a system of learning calls attention to the principles of collegiality and autonomy, fuelled by a sense of responsibility, peer pressure and a common transformative culture. Measures to cultivate this may include, for example, the standardization of training and retraining requirements, as well as (re)accreditation and certification schemes for health professionals, each providing systematic incentives for providers to adhere to certain standards of quality and regularly improve their practice.

Summary of the methodology

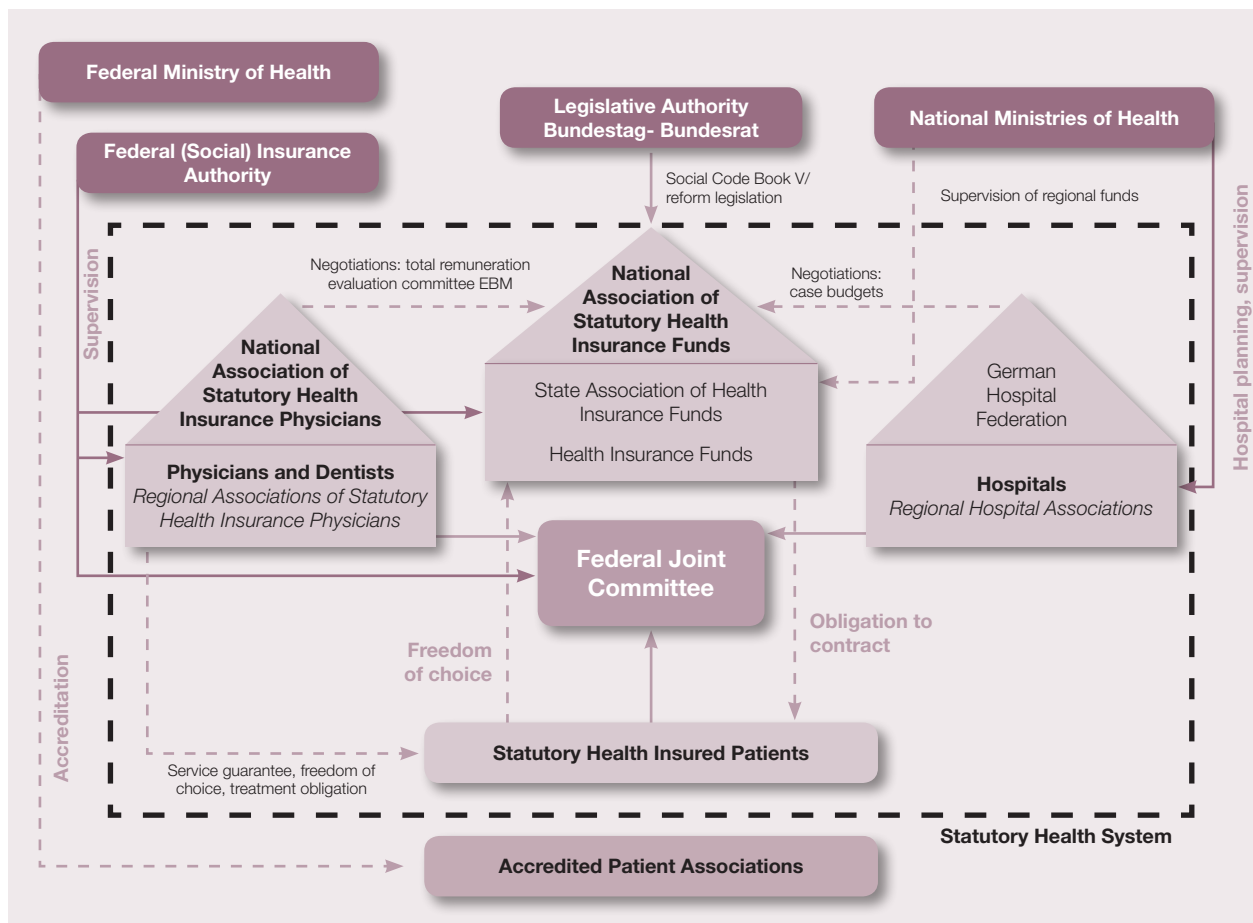
The study on ACSCs followed certain standard steps.

1. Conduct desk research to retrieve information regarding the indicators of the analytical framework and identify key stakeholders in each country for an online meeting or as survey participants.
2. Analyse hospital admission data to select high potential (i.e. top 10) ACSCs per country.
3. Organize online meeting or hold a survey to introduce the study to relevant stakeholders and invite them to select a limited number (2–4) of ACSCs per country.
4. Hold a local country stakeholder meeting in the form of a two-day workshop to identify challenges and opportunities for strengthening the PHC related to the selected ACSCs. Possibly follow-up with additional interviews if the stakeholder meeting in the form of a workshop does not yield sufficient information.
5. Calculate potential savings for the selected ACSCs (depending on the availability of data).
6. Draw relevant lessons and formulate actionable policy recommendations for each selected country.
7. Deliver country reports, including an interpretation of results and actionable policy recommendations for the relevant country.

Annex 2. Overview of the key stakeholders in health system of Germany

Fig A2.1 shows institutions in the German health care system.

Fig A2.1. Institutions in the German health care system



Source: designed by Sundmacher based on Busse (1) and official information.

Reference

1. Busse R, Riesberg A. Health care systems in transition: Germany. Copenhagen: WHO Regional Office for Europe, on behalf of the European Observatory on Health Systems and Policies; 2004 (http://www.euro.who.int/__data/assets/pdf_file/0018/80703/E85472.pdf).

Annex 3. List of participants and results of the stakeholder consultation

Participants were representatives of the following institutions:

- National Association of Statutory Health Insurance Funds:
 - representative of the Division of Quality Management of Hospitals
 - Division of Hospital Reimbursement;
- large social health insurance funds:
 - representative of the Institute for Benefit and Efficiency in Health Care (Techniker Krankenkasse)
 - Federal Association of the AOK: representative of the Division of Medicine
 - Barmer GEK: representative of the Division of Inpatient Care;
- German Hospital Association:
 - human resource management and hospital organisation;
- Federal Association of Statutory Health Insurance Physicians
 - representative of the Department of Innovation and Strategic Analysis;
- Federal Association of Statutory Health Insurance Dentists
 - representative of the Division of Quality Promotion;
- Patient representatives at the Federal Joint Committee (G-BA):
 - two representatives of the Coordinating Committee of Patient Representatives;
- Regional Association of Statutory Health Insurance Physicians:
 - representative of the Strategy Unit;
- Federal Association of Managed Care
 - Representative of the Directorate.

Table A3.1 shows results from the stakeholder survey.

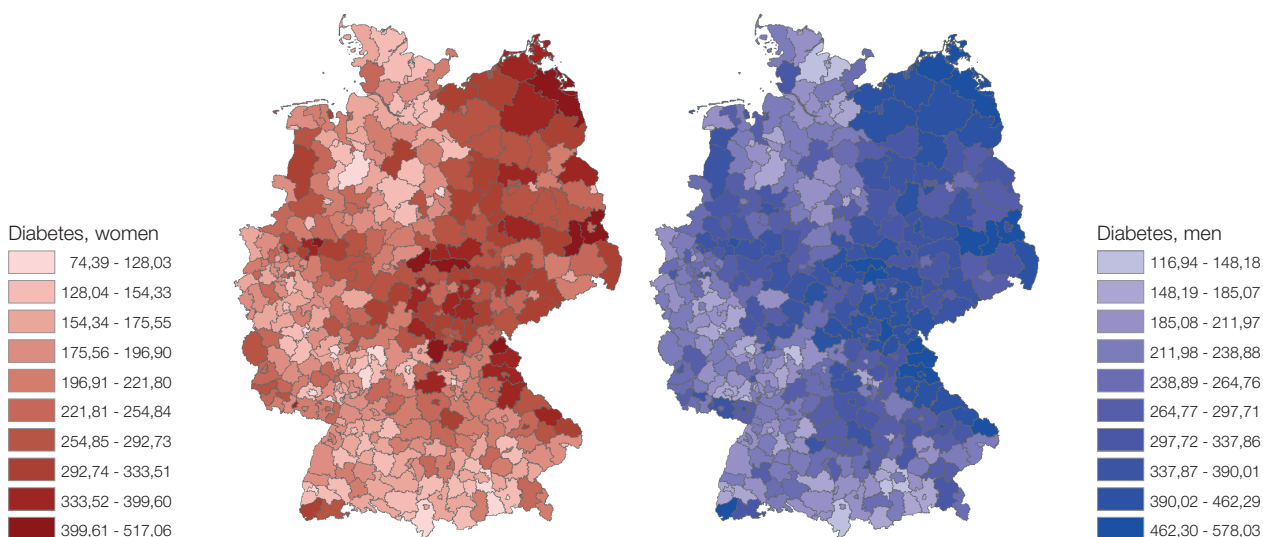
Table A3.1. Results of anonymous stakeholder survey regarding the rating of effective strategies to reduce ACSC-related hospitalizations, April 2014, Berlin (Germany)

How would you rank the strategies according to their relevance in reducing ACSC-related hospitalizations?							
		Ambulatory care emergency services at hospitals	Strengthen on-call duty in the ambulatory care sector	More physician networks and interdisciplinary work	Implement electronic patient record systems	Disease management programmes	Physician assistant models
Not relevant	1	1	0	0	0	0	0
	2	2	2	2	2	2	1
	3	0	1	2	2	2	0
	4	2	2	1	2	2	2
	5	3	3	1	3	0	5
	6	2	3	4	2	4	3
Very relevant	7	2	1	2	1	2	1
Average		4.5	4.58	4.75	4.33	4.67	5

Annex 4. Regional variations of hospitalization rates for selected ACSCs

Fig. A4.1 shows regional variations in hospitalization rates for diabetes in 2011.

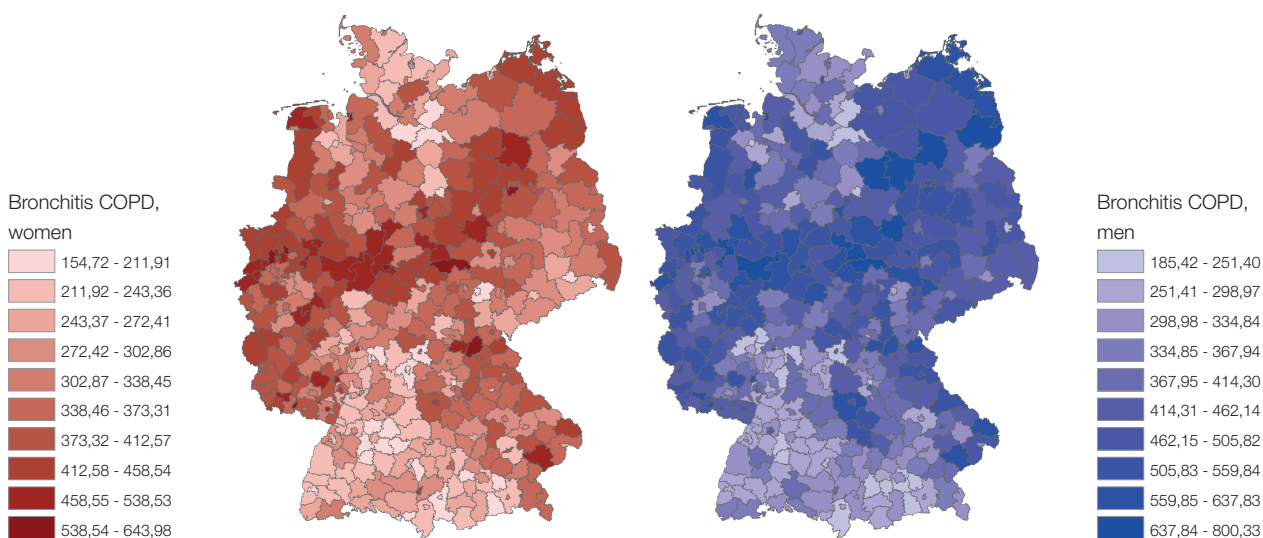
Fig. A4.1. Regional variations in hospitalization rates for diabetes, disaggregated by district and sex, age-standardized, 2011



Source: adapted from Sundmacher et al. (1).

Fig. A4.2. shows regional variations in hospitalization rates for chronic obstructive pulmonary disease (COPD) and bronchitis in 2011.

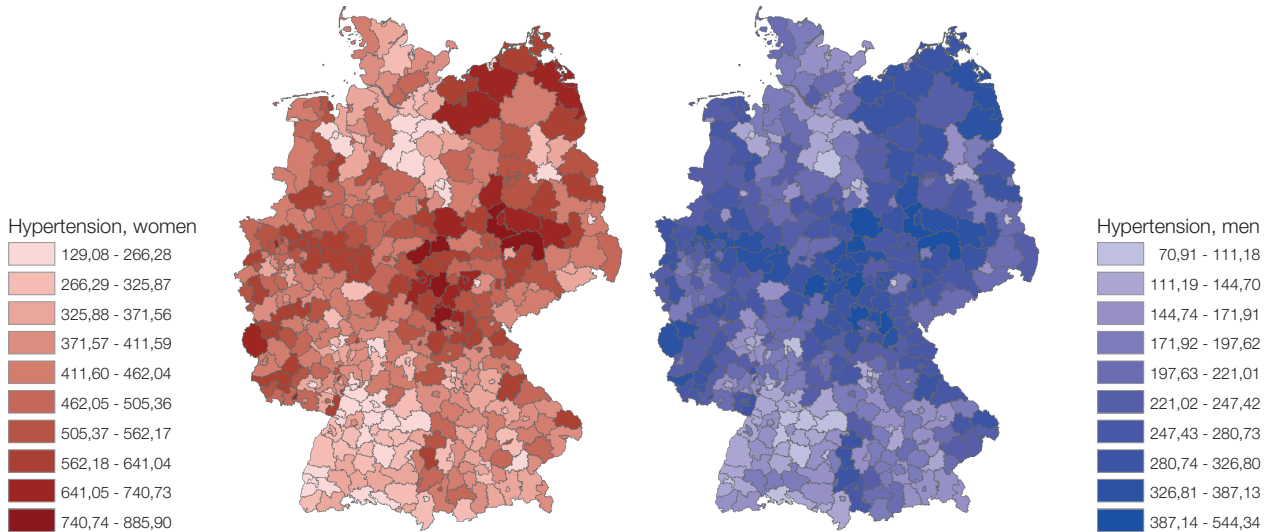
Fig. A4.2. Regional variations in hospitalization rates for COPD and bronchitis, disaggregated by district and sex, age-standardized, 2011



Source: adapted from Sundmacher et al. (1).

Fig. A4.3. shows regional variations in hospitalization rates for hypertension in 2011.

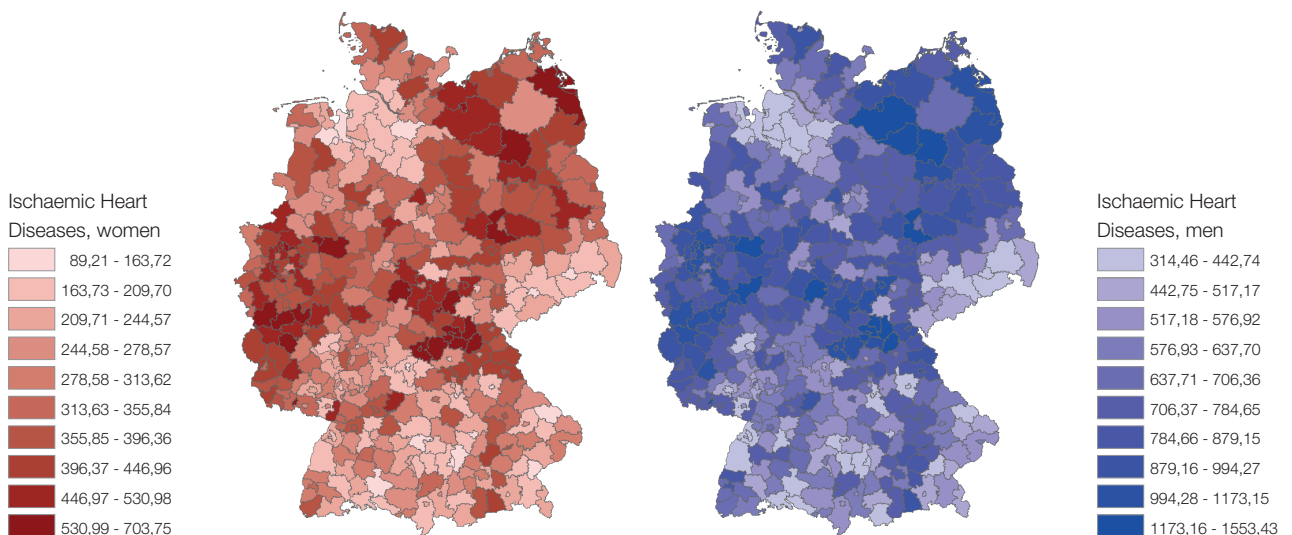
Fig. A4.3 Regional variations in hospitalization rates for hypertension, disaggregated by district and sex, age-standardized, 2011



Source: adapted from Sundmacher et al. (1).

Fig. A4.4. shows regional variations in hospitalization rates for ischaemic heart disease in 2011.

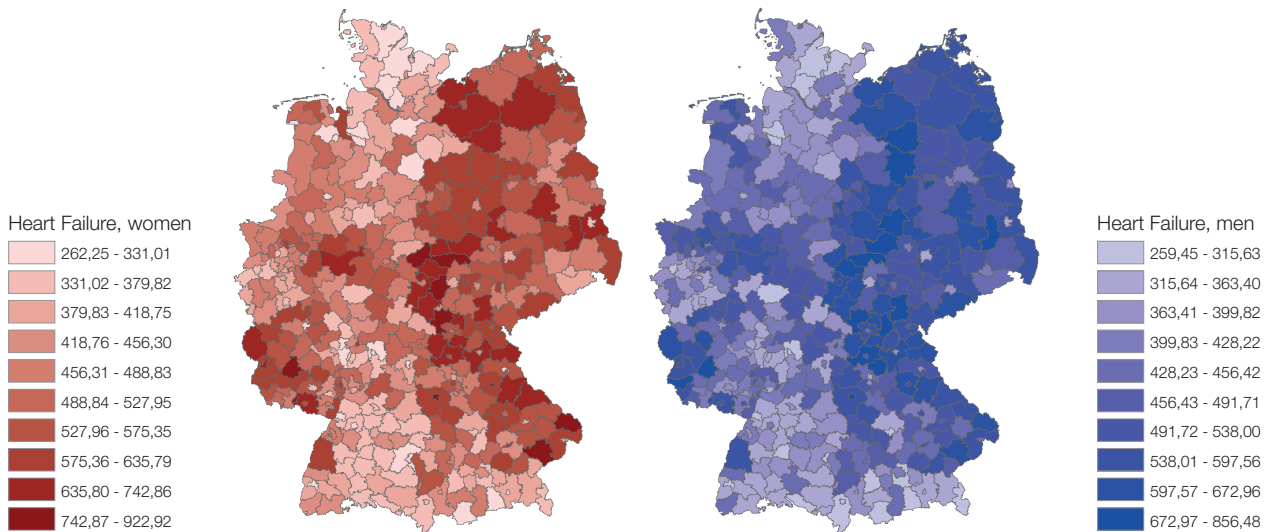
Fig. A4.4. Regional variations in hospitalization rates for ischaemic heart disease, disaggregated by district and sex, age-standardized, 2011



Source: adapted from Sundmacher et al. (1).

Fig. A4.5. shows regional variations in hospitalization rates for heart failure in 2011.

Fig. A4.5. Regional variations in hospitalization rates for heart failure, disaggregated by district and sex, age-standardized, 2011



Source: adapted from Sundmacher et al. (1).

Reference

1. Sundmacher L, Fischbach D, Schuettig W, Naumann, C, Augustin, U, Faisst C. Which hospitalisations are ambulatory care-sensitive; to what degree; and how could the rates be reduced? Results of a group consensus study in Germany. Health Policy (in press).

Annex 5. Results of the physician survey on approaches to reduce high hospitalization rates for ACSCs

Fig. A5.1 shows systemic changes needed to reduce ACSC-related hospitalizations.

Fig. A5.1. Systemic changes needed to reduce ACSC-related hospitalizations

Systemic changes to reduce ACSC hospitalization rates (times mentioned, across all diagnoses, by 35 physicians)

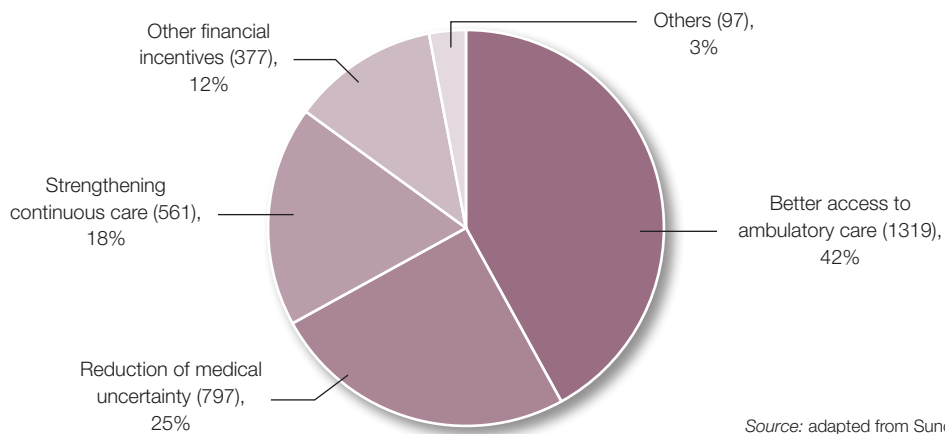
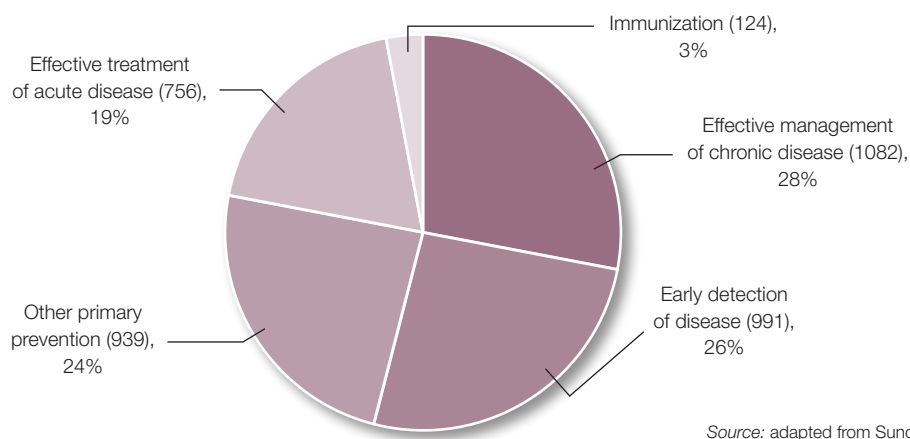


Fig. A5.2 shows medical actions needed to reduce ACSC-related hospitalizations.

Fig. A5.2. Medical actions needed to reduce ACSC-related hospitalizations

Medical actions to reduce ACSC hospitalization rates (times mentioned, across all diagnoses, by 35 physicians)



Reference

1. Sundmacher L, Fischbach D, Schuettig W, Naumann, C, Augustin, U, Faisst C. Which hospitalisations are ambulatory care-sensitive; to what degree; and how could the rates be reduced? Results of a group consensus study in Germany. Health Policy (in press).

Annex 6. Integrated care in Germany: short overview of outstanding best practices

Several pilot models of integrated care have been implemented in Germany at regional level.

The **Prosper-Network of the Knappschaftskasse** (miners' health insurance and pension scheme) unites health insurance, long-term care insurance and pension schemes and includes several hospitals and rehabilitation centres (1), with 1.7 million health-insured patients and over 1500 physicians and dentists in 2013 (2). Insured patients are obliged to seek care within the Prosper-Network but receive benefits, such as waived costs, and better coordinated services across levels of care through treatment plans developed by multidisciplinary teams, a central care coordination unit and the use of standardized electronic health records (1).

The **Gesundes Kinzigtal**, a joint venture contracting a local network of over 40 physicians and two statutory health insurance (SHI) funds, has been providing care for almost half of the 69 000 inhabitants of the Kinzigtal region since 2006. It uses a population-based model of integrated care to cover a myriad of health services along the care continuum, delivered by almost 100 regional providers (3). *Gesundes Kinzigtal* has an efficiency and pay-for-performance-based remuneration system that incentivizes providers and SHI funds (see subsection 4.1.1, Health insurance and coverage of services).

Gesundes Kinzigtal's integrated care focuses on chronic disease management and prevention, using individual risk stratification to define treatment plans and goals (based on shared decision-making), encouraging patient self-management and providing education programmes. Provision of a medical home and (voluntarily provided) system-wide electronic health records facilitates the continuity of care (3).

External evaluation of the initiative showed that 2.5 years after initiation, the mortality rate of enrolled patients had reduced by half compared to non-participating patients (4). The overwhelming majority of patients and providers reported positive experiences and SHI fund savings increased by €151 per patient per year in the first three years of the programme (3).

Following the 2004 SHI Modernization Act and based on the former German Democratic Republic polyclinic model, medical care centres that provide interdisciplinary and coordinated ambulatory care services, particularly for chronic disease management, have been re-established and can conclude selective integrated care contracts with SHI funds and hospitals (5). The enacted 2015 Care Provision Strengthening Act means their role in multidisciplinary ambulatory service provision, particularly in rural areas, will be further strengthened (6).

A prominent example is the large **Polikum Friedenau**, which emphasizes integrated care for chronic conditions through provision of case management in interdisciplinary physician teams, patient health promotion programmes for weight reduction and smoking cessation and the use of system-wide electronic health records (1).

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The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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World Health Organization Regional Office for Europe

UN City, Marmorvej 51, DK-2100 Copenhagen Ø, Denmark

Tel.: +45 45 33 70 00 Fax: +45 45 33 70 01

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