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Assessing health services delivery performance with hospitalizations for ambulatory care sensitive conditions

Assessing health services delivery performance with hospitalizations for ambulatory care sensitive conditions

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Abstract

This document sets out to review evidence related to ambulatory care sensitive condition hospitalizations (ACSHs) as a proxy indicator of health services delivery (HSD) performance. Based on ACSHs, this review identifies specific vantage points for HSD improvements. Explored concepts and evidence is further operationalized in a guide for country studies on ACSCs.

Keywords

Contents

List of figures, boxes and tables

List of figures

List of boxes

List of tables

Abbreviations

ACSCs	ambulatory care sensitive conditions
ACSHs	ambulatory care sensitive condition hospitalizations
AHRQ	Agency for Healthcare Research and Quality
CHF	congestive heart failure
COPD	chronic obstructive pulmonary disease
CVD	cardiovascular diseases
ECHI	European Community Health Indicators
EFFA IHSD	European Framework for Action on Integrated Health Services Delivery
GIFT	WHO Global Information Full Text
GP	general practitioner
HSD	health services delivery
ICD-10 (9)	International Classification of Diseases, 10th (9th) revision
NHS	National Health Service (England)
OECD	Organization for Economic Co-operation and Development
PHC	primary health care
UTI	urinary tract infection
WHO	World Health Organization

Acknowledgments

Preface

Health system strengthening has been recognized as critically important for the achievement of health and development goals. This notion is operationalized in the WHO Twelfth General Programme of Work for the period 2014-2019, with a priority cluster of technical activities and corporate services concentrated on health system strengthening. The forthcoming Framework on integrated people-centred health services has been developed in line with this priority and is to be put to the World Health Assembly in 2016 (1).

In the WHO European Region, the signing of the 2008 Tallinn Charter has marked the commitment of Member States to health system strengthening and accountability for the performance of their health systems (2). Endorsed in 2012, the European health policy framework, Health 2020, sets out the course of action for realizing the Region's greatest health potential by year 2020 (3). It calls for transformations towards people-centred health systems based on principles of equity and social justice through a primary health care approach, reinforcing the messages of the landmark Declaration of Alma-Ata (4). Globally, a primary health care approach has been instrumental in achieving progress towards universal health coverage and improved health outcomes (5).

In line with this collective priority and the implementation of Health 2020, the WHO Regional Office for Europe has worked to highlight specific entry points for strengthening people-centred health systems. At the Sixty-fifth session of the WHO Regional Committee for Europe, the document *Priorities for health systems strengthening in the European Region 2015–2020: walking the talk on people-centredness* was endorsed, making transforming health services delivery (HSD) one of two priority areas of work (6).

The realization of this priority area has included the development of an action-oriented health system framework to accelerate these transformations, coined the European Framework for Action on Integrated Health Services Delivery (EFFA IHSD).

EFFA IHSD promotes the integration of services to tackle health needs and determinants of health through HSD performance improvements; focusing, to the extent possible, on the contribution of health services delivery to overall health system performance (7). It is with this rationale, and as part of the working package of forthcoming EFFA IHSD, that this document has explored means of measuring HSD performance.

In 2012, a review of the relevant literature on ambulatory care sensitive conditions (ACSCs) and the development of a conceptual framework to assess HSD performance while identifying vantage points for HSD improvements marked the start of this stream of work at the WHO Regional Office for Europe.

Background

The link between HSD performance and health outcomes makes a compelling case for the prioritization of the HSD function (7). While the strength of health services delivery is determined by a number of factors both within and beyond the health system, there is clear consensus that tackling the root causes that fall within the boundaries of services delivery is key to improving its performance (7-9).

ACSCs are an example of acute, chronic, or vaccine-preventable conditions that can serve as markers for assessing HSD performance. Examples of ACSCs include chronic obstructive pulmonary disease (COPD), diabetes, asthma and angina, and can be described as those conditions where it is possible, to a large extent, to prevent acute exacerbations and reduce the need for hospitalizations through strong primary health care-based services delivery.

In the WHO European Region, while the levels of hospital admissions for select ACSCs appear to be decreasing or stabilizing over time, there remain wide variations in hospitalization rates for ACSCs. This is indicative that ambulatory care sensitive hospitalizations (ACSHs[1]), and the associated performance constraints, can be reduced. The trends may also account for changes over time including intensified disease management and patient registration efforts.

Fig. 1-3 illustrate this trend, reporting the number of hospital admissions per 100 000 population over time for asthma, diabetes and COPD across each (grey) and as an average (red) for 25 reporting Member States of the WHO European Region.

Fig. 1. Asthma hospital admissions per 100 000 population, 2000-2013
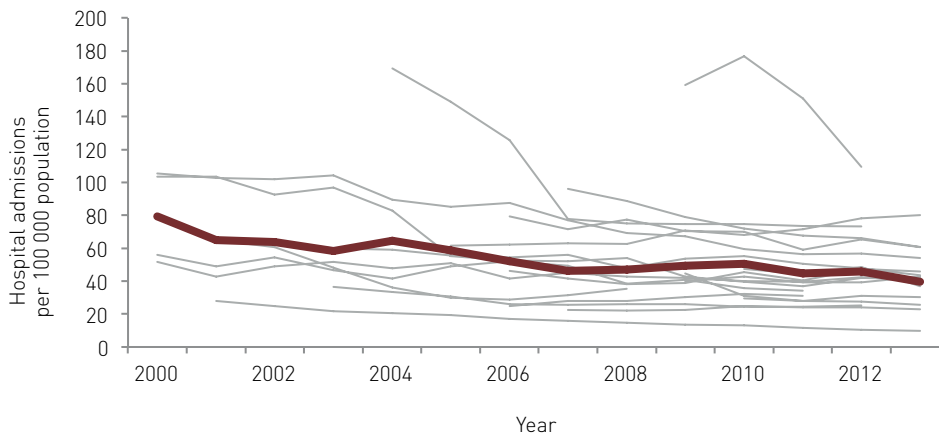
Source: (10)
Note: age-sex standardized rate, age 15+ years

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1   ACSH is an indicator measuring the hospitalization rates for ACSCs.

Fig. 2. Diabetes hospital admissions per 100 000 population, 2000-2013
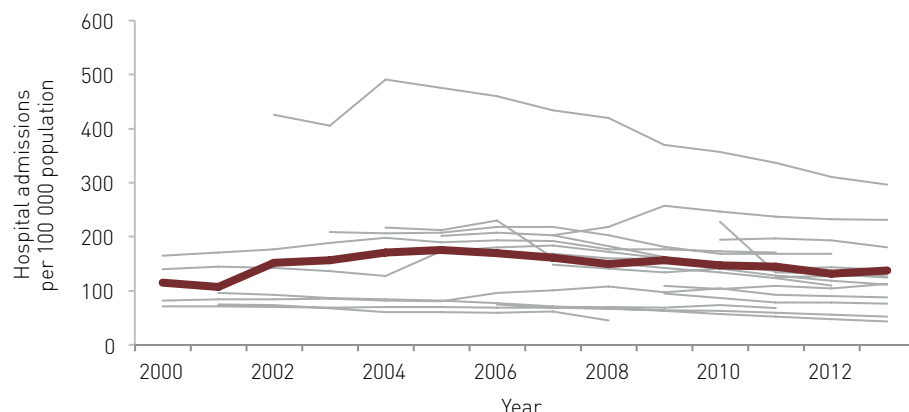
Source: (10)
Note: age-sex standardized rate, age 15+ years

Fig. 3. COPD hospital admissions per 100 000 population, 2000-2013
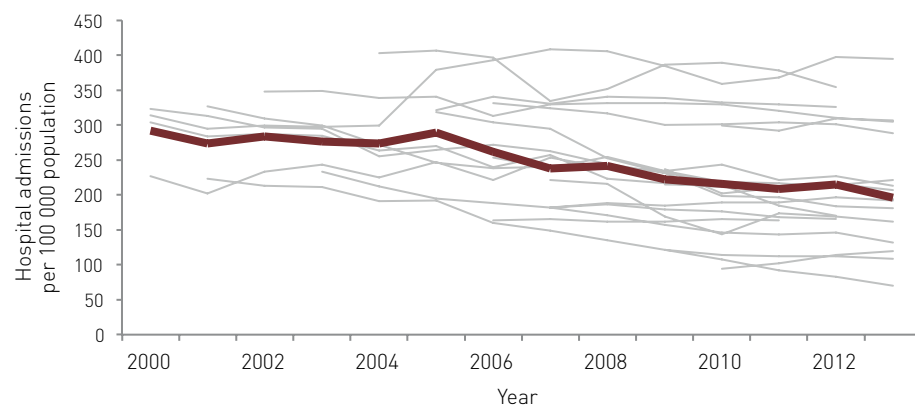
Source: (10)
Note: age-sex standardized rate, age 15+ years

Working to tackle shortfalls in HSD performance, Member States have prioritized health services delivery transformations that take an integrated, primary health care-based approach. The ever-changing health landscape has accelerated a focus on services delivery at present, with trends including population ageing, rising chronicity and increasing rates of co- and multimorbidities demanding more coordinated, comprehensive, effective, and patient-centred services (11).

Moreover, the imperative of timely and reliable evidence has been underscored in a recent review of initiatives aiming to transform health services delivery across the Region (12). The review finds the use of data on HSD performance vital to first make the case for change and to present comparative data between regions or neighbouring countries to gauge the magnitude of possible improvement.

Rationale

The importance of measuring the performance of services delivery and tightening the link with interventions to improve performance has emerged with new vigour. However, measuring HSD performance has remained ambiguous. In the WHO European Region, ACSHs have been widely used by different organizations and institutions for measuring performance, including the quality and efficiency of care (13,14), resolutive capacity of primary care (15), coordination between providers (16) and the accessibility of primary care services (17).

Despite interest and activity in measuring and reporting on HSD performance through reporting on hospitalizations of ACSCs, important differences in terms, definitions and the approaches to measurement being taken remain.

Aims

This work has set out to review the different approaches to measuring ACSCs set in the context of health systems-thinking to reason from outcomes to processes for performance improvement. Available evidence on the study of ACSHs as a performance indicator is first reviewed and then the potential of this measure to guide transformations for improving HSD performance is explored.

The following research questions have guided the investigation undertaken:

1. How have ACSHs been used as a measure of HSD performance to date?

2. Which HSD performance outcomes are captured in reporting on ACSHs?

3. What are the associations between ACSHs and HSD processes that influence performance and do they have an enabling or constraining effect on HSD improvements?

4. How can associations between ACSHs and HSD performance outcomes be applied for assessing HSD performance and guiding HSD improvements in countries?

Applying the findings for each, a self-assessment tool for use by countries to guide the study of HSD performance driven by a review of hospitalizations for priority ACSCs is provided.

Methods and sources of evidence

This work has been developed through a purposive scoping review surveying the field of ACSCs, an analytical analysis to put forward a policy-oriented framework aligned with health systems-thinking for measuring HSD performance, and the application of findings to country case studies to validate the framework and methodology for assessment. These processes and respective sources of evidence are further described as follows.

- **Review of scientific and grey literature.** A first review of initiatives and studies in the field of ACSCs and ACSHs was conducted at the outset of this work. This was later complemented by an in-depth review of empirical and analytical studies published between January 1990 and November 2015 and extracted from electronic databases (PubMed/Medline, WHO Global Information Full Text (GIFT) and Google Scholar). The search strategy combined terms related to ambulatory or primary care, ACSCs, ACSHs and avoidable hospitalizations. Reference lists of identified studies were used to determine additional sources. Websites and works of relevant organizations, including the King's Fund, OECD and Agency for Healthcare Research and Quality (AHRQ), were reviewed. The evidence presented in this document is limited to selective scoping of the literature rather than a systematic process and is, therefore, not exhaustive.

- **Alignment with health services delivery concepts.** This work has been prepared in the context of the forthcoming European Framework for Action on Integrated Health Services Delivery (EFFA IHSD) in the WHO European Region. It has adopted the Framework's definition of health services delivery processes and alignment with other health system functions as described in the document, Health Services Delivery: A Concept Note (7). Alignment has also been sought with other services delivery and health system frameworks and analytical studies, including a system response to improving outcomes for noncommunicable diseases (18), and tool for evaluating the performance of primary care (19).

- **Development of country case studies.** Review findings and the proposed conceptual framework for measuring ACSHs in the WHO European Region have been applied in a series of country case studies between 2013 and 2016. A small sample of countries was selected based primarily on their interest and the availability of resources to carry out the exercise. By early 2016, country assessments had been carried out in Germany (20), Kazakhstan (21), Latvia (22), Portugal (23) and the Republic of Moldova (24). Marker conditions from a country-specific or general list of ACSCs were selected according to the defined methodology and those selected conditions guided the investigation. In each case, a percentage for avoidable hospitalizations was identified, ranging from 40% to 80% for selected ACSCs (Table 1).

Table 1. Percentage of avoidable hospitalizations for selected ACSCs in country assessments

Country	Diabetes	Hypertension	Kidney and UTI	Heart failure
Germany	81	83	-	64
Kazakhstan	-	75	44	-
Latvia	39	-	47	-
Portugal	-	66	-	57
Republic of Moldova	40	70	-	-

Source: (20-24)

The methods for assessing ACSHs presented here have undergone a series of peer-reviews, in addition to the validation and review processes that have taken place in the context of each country assessment.

This investigation of ACSHs assumes the selection of priority ACSCs as representative markers for HSD performance. Consideration has also been given in the different contexts to ensure the sampling of data and key informants allows for generalizable findings to specific regions or across the country.

A glossary of key terms has been prepared to give an overview of technical terms described throughout the document and can be found in last Annex of this document.

ACSCs

The concept of ACSCs was introduced in the late 1980s by John Billings of New York University as a means for describing the differences in access and utilization of health services among vulnerable populations. Billings and colleagues developed a catalogue of ACSCs based on their likelihood to be avoidable through timely and effective provision of ambulatory care (25).[2] Until the mid-2000s, research in this area was concentrated in the United States of America. The first application of ACSCs to the European context was made by Caminal et al. in 2004, suggesting that ACSCs can be a measure of primary care's capacity to solve health problems (15). Since then, different ACSC lists have been developed in Germany (27), Portugal (28), Spain and the United Kingdom of Great Britain and Northern Ireland.

AHRQ has played a leading role in the theoretical development of the concept since early 2000s. AHRQ defines ACSCs as "conditions for which good outpatient care can potentially prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease" (14). Based on hospital discharge data, AHRQ developed a set of prevention quality indicators to serve as a measure of access to appropriate primary care (14). AHRQ suggests collecting routine information on age-standardized acute care hospitalization rates for conditions where appropriate ambulatory care prevents or reduces the need for hospital admissions. These conditions are defined through selected and catalogued conditions with corresponding ICD-9 and ICD-10 codes.

In 2007, OECD started to analyse and report data on avoidable hospital admission rates as a proxy indicator of care quality for chronic conditions such as asthma and diabetes (29). Currently, OECD has expanded the list of monitored ACSCs, collecting and reporting data on avoidable hospital admissions defined as the number of hospital admissions with a primary diagnosis of asthma, COPD, congestive heart failure (CHF) or diabetes among people aged 15 years and over per 100 000 population (age-sex standardized). In this case, avoidable hospital admission rates are used as a proxy for measuring the lack of effective management of chronic conditions in primary care caused by problems such as poorly coordinated care, lack of continuity and structural access barriers (13).

In the United Kingdom, The King's Fund has been leading the conceptualization and practical application of the ACSCs (30). This has mainly been driven by growing pressure to contain costs of hospital care and prevent disruptions in elective hospital care due to a growing number of unplanned hospital admissions. In this context, The King's Fund has focused on identifying characteristics of health services delivery that most likely influence ACSH rates (30,31). Findings show that characteristics such as continuity of care with a general practitioner (GP), patient self-management and integration of services delivery have, among other benefits, a positive impact on reducing ACSHs (31).

The National Health Service (NHS) of England has also been collecting and reporting data on ACSCs as part of the NHS Outcomes Framework, defining ACSCs as "conditions where effective community care and case management can help prevent the need for hospital admission". With this definition, NHS England has been using a number of ACSHs as a means of assessing the quality of primary and community care (32).

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2   Ambulatory or outpatient care refers to health services provided to patients who are not confined to an institutional bed as inpatients during the time the services are rendered (26). Ambulatory care includes medical services of general (primary) and specialized (secondary) nature.

Drawing from the range of definitions used by institutions that regularly monitor and report ACSH data (Table 2), this document defines ACSCs as those health conditions for which hospitalizations can be avoided by timely and effective care in ambulatory settings.

Table 2. Summary of ACSC definitions*

Organization	ACSC definition
AHRQ	Conditions for which good outpatient care can potentially prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease (14)
OECD	Chronic conditions for which access to appropriate primary care could prevent the need for the current admission to hospital (13)
NHS England	Conditions where effective community care and case management can help prevent the need for hospital admission (33)
WHO Europe	Conditions for which hospitalizations can be avoided by timely and effective care in ambulatory settings

* Definitions used by individual and groups of researchers were not used in this overview of definitions due to overlaps with organizational definitions of ACSCs

According to this definition, avoidable ACSHs represent the preventable fraction of all hospitalizations that are attributable to ACSCs (Fig. 4). It should be noted that not all ACSHs are avoidable due to severity of conditions and presence of other clinical indications for hospitalization.

Fig. 4. Avoidable ACSHs as a subset of all hospitalization
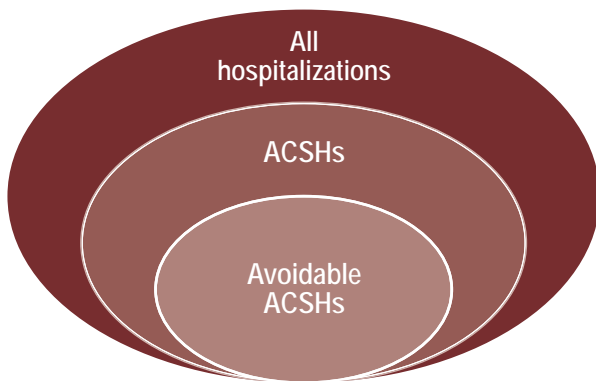
Nomenclature of conditions identified as ambulatory care sensitive is well described in the literature. A list of the most widely used ACSCs can be found in Annex 1. In 2004, Caminal et al. published the first adaptation of ACSCs to the European context (15). The list contained a wide range of conditions principally categorized as communicable and noncommunicable diseases. According to Caminal et al., hospitalizations for communicable diseases should, essentially, be eliminated, while for noncommunicable diseases the most immediate result should include reducing: (i) occurrence of acute complications; (ii) length of stay; and (iii) hospital readmissions (15). For the NHS Outcomes Framework, ACSHs are classified as ¨unplanned hospital admissions for chronic ACSCs¨ and ¨emergency admissions for acute conditions that should not

usually require hospital admission" (33). A list published by The King's Fund focuses on emergency hospital admissions for 19 conditions (34).

A review by Bardsley et al. (35) has combined different ACSCs lists, producing a generic list of conditions that can be considered as ambulatory care sensitive across different countries (Annex 1). According to this list, all ACSCs can be classified into three main types:

- **Acute conditions.** Hospitalizations due to real or perceived acute medical care need for a condition where early stages or symptoms of which were not detected and addressed in ambulatory settings in a timely manner. For example, early symptoms of urinary tract infections (UTI) can be detected and treated in ambulatory settings; a failure to do so, however, can lead to acute glomerulonephritis which will most likely require hospitalization.

- **Chronic conditions.** Hospitalizations for exacerbated chronic long-term conditions due to inappropriate or insufficient management of disease in ambulatory settings or failure to monitor and control the course of disease. Examples of such conditions are diabetes and cardiovascular disease (CVD). According to OECD data (13), the numbers of hospital admissions for diabetes ranged from 43.5 per 100 000 population (Italy) to 337.8 (Mexico) per 100 000 population in 2013. While some of the variation can be attributed to differences in prevalence, it is also indicative of variations in quality and accessibility of care.

- **Preventable conditions.** Hospitalizations for diseases that are mostly preventable in nature but due to the insufficient coverage of ambulatory services and/or poor population outreach lead to disease outbreaks. Vaccine-preventable diseases, such as measles or seasonal influenza, are an example.

ACSHs as indicator of HSD performance

Since ACSCs are conditions that by definition can be treated in ambulatory settings, ACSHs signal the suboptimal capacity of health services delivery to effectively prevent, diagnose, treat and/or manage these conditions in ambulatory settings in a timely manner. ACSH rates, therefore, inversely correlate with performance (36–38). Conceptually, overall health system performance can be defined and measured as the result of the interactions of the performance of its four key functions: governing, financing, resourcing and delivering services (7). Evidence shows that ACSHs correlate with such performance outcomes as access, quality, coordination and efficiency (13,14,39,40).

This section focuses on the health system performance attributable to the delivery function (HSD performance); assuming contributions of all other health system functions remain constant. In order to achieve this, ACSHs are used as a combined proxy indicator for the HSD performance features of access, quality, coordination and efficiency (Fig. 5). The following subsections summarize the evidence on ACSHs and their association to HSD performance.

Fig. 5. ACSCs outcomes and HSD performance
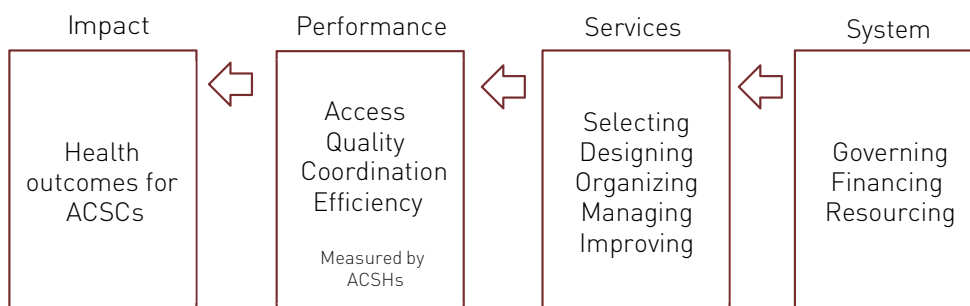
Source: Adapted from (7)

ACSHs and access

Access to ambulatory care plays a crucial role in timely seeking of care and prevention of disease progression. In areas where access to primary care is limited, rates of avoidable hospitalizations are higher (41). A recent literature review reported the inverse correlation between access to primary care and rates of ACSHs (17,42,43). Access to primary care is associated with, for example, a reduction in potentially avoidable hospitalizations for patients with COPD, taking into account disease prevalence and number of hospital beds (44).

Geographical accessibility of care directly correlates with the availability of providers, distribution of the health workforce and population access to transportation (45). In the case of chronic conditions which affect people of working age, the possibility of accessing regular check-ups with minimal disruption to patients' daily routines is an important factor in preventing exacerbation of conditions (46). Timely raising of health concerns to a health provider is influenced by how much time a patient spends on travelling to the point of care (44,47).

Social deprivation is associated with higher risk of emergency hospital admissions (48–50). Access to primary care free-of-charge is known, for example, to positively correlate with higher continuity of care and a lower number of complications among chronic patients (30). Free access to hospital care and the absence of strong primary care is documented to push patients towards hospital-based care, even in the absence of clinical need (44).

ACSHs and quality

ACSHs have been proposed as an important indicator of quality for the provision of optimal ambulatory, particularly primary, care. Quality of ambulatory care has been shown to be inversely correlated with avoidable hospital admissions (36). OECD utilizes avoidable hospital admissions as a measure of care quality provided at the primary level (13).

Gaps in health care can undoubtedly contribute to suboptimal health outcomes, such as higher rates of potentially avoidable hospitalizations and mortality (35). Failure to control diabetes complications, for example, has been shown to weigh heavily on avoidable hospital admissions (13). The rates of uncontrolled diabetes-related hospital admissions are testament to the potential health gains of strong primary care (51). In the United Kingdom, 29% of all hospital beds in 2012 were used by patients whose admissions could have been avoided if their care had been better managed (52). Possible improvements acknowledged included the provision of services and treatment of patients in day clinics and community settings (32,33).

Quality of primary care and its association with unplanned and emergency hospital admissions for ACSCs was recently documented in research conducted by Kringos et al. (47,53). Researchers measured the strength of primary care in 31 European countries,[3] using indicators of governance, economic conditions, workforce development, access, continuity, coordination and comprehensiveness. Results showed that strong primary care is associated with lower rates of ACSHs, better population health and relatively lower socioeconomic inequality in self-perceived health (44,47,53). More specifically, it showed that having high-quality primary care is associated with a reduction in potentially avoidable hospitalizations for patients with asthma, after accounting for disease prevalence.

ACSHs and coordination

Coordination describes the extent to which services and providers are well-organized, both in a given episode of care and over time according to individuals' needs (1). Lack of coordination leads to fragmentation of care, delay in the delivery of care and, eventually, poor health outcomes (6). In other words, coordination results in the timely delivery of care in optimal volume and reduces the chances of avoidable hospital admissions (16,54).

As growing scientific evidence has shown, improvements can be realized with primary care at the centre of care, including lower rates of unnecessary hospitalizations through improved structures and coordination (44). Integration of services is an important tool in preventing hospital admissions, especially through the provision of well-coordinated secondary prevention activities. Integration of care heavily relies on providers' ability to

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3   The study included 27 EU Member States, Iceland, Norway, Switzerland and Turkey

identify patients' needs, tailor care processes and coordinate with other care providers both vertically and horizontally (30).

Several modalities of coordination can be captured using ACSHs. Firstly, coordination implies organization of health providers in a way that ensures longitudinal patient-provider relationships and continuity of care, particularly for persons with chronic conditions (30,55–58). Secondly, it also implies optimal levels of coordination between providers in ambulatory settings and their ability to work together to avoid fragmentation and duplication of services, which greatly influences the quality of services and patients' care-seeking behaviour (53). According to the findings of a NHS-commissioned study, poor coordination between primary and hospital care increases the likelihood of emergency admission for ACSCs (48). For example, higher degrees of coordination between providers is associated with a reduction in potentially avoidable hospitalizations for patients with COPD (59).

ACSHs and efficiency

Optimizing health services delivery for ACSCs has a well-recognized effect in reducing ACSH rates and, consequently, maximizes technical efficiency. A study by The King's Fund (34) estimated that one in six hospital admissions in England are ACSHs. Admissions for ACSCs have been estimated to cost NHS England US$ 2 billion annually, with influenza, pneumonia, COPD, CHF, dehydration and gastroenteritis accounting for more than half of these costs. The study concludes that emergency admissions for ACSCs could be reduced by 8-18% with a result in savings between US$ 155-384 million per year (34). Another study found that, in family practices in England, better glycaemic control was associated with a 14% decrease in the rate of emergency admissions for short-term diabetes complications and an annual expenditure reduction of approximately US$ 3800 per practice (60).

The wide variation of ACSHs across similar contexts shows the differences in efficiency of services; for example, the eight-fold difference in number of diabetes-related hospital admissions reported across OECD countries with the lowest and highest ACSH (13). Data analysis conducted across 329 health authorities in England found that the number of emergency admissions for ACSCs varied from 9.2 to 21.5 per 1000 population after adjusting for differences in age, gender and deprivation (34). A similar analysis in Switzerland found 12-fold regional differences over a period of three years, reporting underlying medical practice variations in ambulatory care as one of the major inefficiencies leading to high numbers of ACSHs (17).

Feasibility of using ACSHs as HSD performance indicators in the WHO European Region

Hospital discharge data is usually collected for reimbursing providers. It is one of the most comprehensive, timely and verified datasets when compared to data collected on ambulatory care (37,61). All WHO European Region Member States routinely collect and most regularly report hospital discharge data to Eurostat, OECD and WHO.
Availability of hospital discharge data constitutes the main input for calculating ACSH rates, and hence measuring HSD performance, without additional burden on countries.

On a regional level, hospital discharge data and ACSHs are regularly available from:

- **Eurostat.** Eurostat collects and reports hospital discharge data as part of its European Community Health Indicators (ECHI) database. This indicator is expressed as inpatient discharges by disease group per 100 000 population and in absolute numbers. This data can also be disaggregated by age group and and sub-national region for 36 countries: 28 European Union members and eight additional countries.[4] All, except Liechtenstein, are WHO European Region Member States. The ECHI database can be used to calculate ACSH estimates by extracting hospital morbidity data with corresponding ACSC disease codes. It can be accessed at http://ec.europa.eu/health/indicators/indicators/index_en.htm

- **OECD.** OECD collects and reports rates of avoidable hospital admissions, defined as the number of hospital admissions with a primary diagnosis of asthma, COPD, CHF or diabetes, among people aged 15 years and over per 100 000 population, age-sex standardized. Data is collected from all 34 OECD member countries, of which 26 are Member States of the WHO European Region.[5] It can be accessed at http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_HCQI

- **WHO.** The European Hospital Morbidity Database of the WHO Regional Office for Europe holds aggregated data on hospital statistics from all 53 countries of the WHO European Region. It contains hospital discharge data both in absolute numbers and as age-standardized rates per 1000 population, which can be further disaggregated by sex. The database can be used to calculate the estimates of ACSHs by extracting hospital morbidity data with corresponding ACSC disease codes. The database allows comparisons between countries per disease group. It can be accessed at http://data.euro.who.int/hmdb/index.php

On a national level, NHS England routinely collects and reports data specifically on ACSHs:

- **NHS England.** As part of the NHS Clinical Commissioning Group Outcomes Indicator Set, ACSHs are reported through two age-sex standardized indicators: (i) unplanned hospitalizations for chronic ACSCs and (ii) emergency admissions for acute conditions that should not usually require hospital admission. It contains hospital discharge data on defined disease codes, sex and age. It can be accessed at https://indicators.hscic.gov.uk/webview/.

Some limitations should be considered in the interpretation of ACSH data. Hospital discharge data is based on each episode of hospitalization and could, in some cases, also capture hospital readmissions. Furthermore, ACSCs are often referred to a single condition, while in practice they are often associated with co- or multimorbidities (for example, links between diabetes and CVD).

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4   Iceland, Liechtenstein, Norway, Switzerland, the former Yugoslav Republic of Macedonia, Albania, Serbia and Turkey

5   Lithuania is in the process of OECD accession.

ACSHs and HSD

This section explores evidence-informed links between HSD performance measured by ACSHs and the HSD processes of selecting, designing, organizing, managing and improving services delivery (7).

Variables that likely influence overall ACSHs are explored and described for each process (Table 3). In particular, this chapter looks at how those factors enable or challenge the provision of ambulatory care in a timely manner with the necessary volume and quality. Interpretation of ACSHs through the lens of identified HSD variables allows identifying and prioritizing vantage points for HSD transformations and overall performance improvements.

Table 3. Overview of HSD areas for action and their variables

HSD areas for action	HSD variables
Model of care (selecting services and designing care)	• Standardization of ACSC clinical practice • Identification and monitoring of high-risk patients • Promotion of patient self-management • Availability of ambulatory care services • Planning of hospital discharge
Organization of providers	• Gatekeeping role in primary care • Arrangement of multidisciplinary teams • Level of provider competencies • Scope of practice of providers • Use of e-health services and telemedicine
Management of services	• Depth of coverage and entitlements • Access to ambulatory care • Availability of after-hours services
Continuous quality improvement	• Use of quality indicators • Payment for performance • Existence of peer-review mechanisms

Source: Adapted from (7) and informed by review of literature (11-17, 20-24, 27-108)

The following subsections present findings of this review.

ACSHs and the model of care

The model of care is concerned with the selection of services and how these services are designed in order to respond to the needs of individuals and populations. Services made available should be guided by the target population's needs along the full continuum of care, therefore adopting a person-facing orientation (7). Based on the evidence and country assessments, the variables that influence ACSHs identified are described below.

Standardization of ACSC clinical practice. Guidelines standardize clinical practice by minimizing practice variation and clarifying the responsibilities of different providers. Studies have shown an inverse correlation between adherence to treatment guidelines and occurrence of ACSHs (54,62–64). In the country assessment conducted in Latvia,

absence of clearly defined referral criteria for UTIs in clinical guidelines was found to influence high ACSH rates for this condition group (22). Country assessments show that outdated clinical guidelines support the overprovision of inpatient care by, for example, requiring first time hospitalizations for the confirmation of a diagnosis or the prescription of certain drugs, as found in the ACSC assessment in Kazakhstan (21). The Kazakhstan study also found that absence of clear algorithms summarizing clinical guidelines served as a strong barrier to provider adherence (21). Furthermore, in most settings of care, clinical guidelines tended to overlook the growing prevalence of multimorbidity by treating conditions in disease silos and challenging the provision of effective ambulatory care for people with multiple chronic conditions (65). Timely updates to clinical guidelines and protocols, as well as effective clinical governance strategies for their dissemination and implementation in ambulatory care, have the potential to reduce the number of ACSHs (66), as well improve overall quality of health services.

Identification and monitoring of high-risk patients. Identification and monitoring of high-risk patients is seen as a critical element in preventing and reducing ACSHs (40,67,68). For example, in the country assessment conducted in Portugal, introduction of integrated clinical pathways for diabetes was found to reduce respective ACSH rates by allowing effective patient risk stratification and respective adjustments to the intensity of interventions and monitoring (23). Case management, as one of the strategies of working with high-risk patients, has been shown to reduce the occurrence of emergency hospitalizations in a number of studies (30,40). The variety of practical solutions to disease management ranges from regular check-ups by family physicians to chronic care models and telemonitoring strategies (16). High-risk patients show overall better health status when they are routinely managed in primary care, resulting in shorter duration of hospitalization episodes and better treatment outcomes (60).

Promotion of patient self-management. Identified as predictive factors for the occurrence of selected ACSHs (16), patient education and self-management raise the awareness and understanding of patients on how a condition affects their lives and how to deal with symptoms which, in turn, may contribute to the reduction of ACSHs (31). This is of particular importance for chronic diseases such as diabetes, CVDs and COPD, where a patient's ability to self-care outside of health facilities is a predictor of possible exacerbation of the disease (69). Zwerink et al. (70), for instance, reported a reduced risk of hospital admissions among COPD patients educated in self-management compared to patients receiving standard episode-based care. In the German country assessment on ACSCs, it was found that despite the existence of disease-management programmes since 2002, physicians often lacked necessary knowledge and skills for effective physician-to-patient communication and patient education (20). In the context of growing prevalence of chronic diseases and increasing demand for care, HSD transformations should include services that facilitate the process of active patient engagement in self-care.

Availability of people-centred services in ambulatory care. Studies have shown that programmes supporting people-centred services, in which the right care is delivered at the right time and at the right place, will lead to a reduction ACSH rates (15,71). In Germany, disease-management programmes have widely used shared-decision making strategies to ensure that treatment goals are aligned with patient needs and values (20). The establishment of specialist nurse support and subacute care facilities have been highlighted by clinicians as valuable innovative options in the delivery of care targeted to chronic conditions (30). Patients after asthma attack or stroke episodes who are clinically stable and do not need service-intensive care for subacute disease phases can benefit from services such as hospital-at-home (72). Empirical evidence suggests that the provision of such alternative services yield similar health outcomes as inpatient care, but at lower cost and with higher patient satisfaction (30).

Planning of hospital discharge. There is a strong evidence that personalized discharge plans reduce the probability of hospital readmissions when compared to routine discharge planning (72). Availability of personalized discharge plans facilitates shorter duration of hospitalization and enables optimal patient flow back to ambulatory providers. Evidence suggests that structured discharge plans tailored to individual patients likely bring about small reductions in hospital length of stay and readmission rates for elderly. Preferably, discharge planning is to be initiated at the beginning of hospital admission and informed by patient-centric identification of needs and treatment goals, education in self-care and planning transition back to regular ambulatory providers. ACSC assessments in Kazakhstan and the Republic of Moldova have identified the absence of bilateral exchange of hospital discharge data and clear counter-referral mechanisms as main obstacles for ensuring continuity of care for ACSCs (21,24). Empirical evidence shows that the use of discharge programmes and effective communication between providers reduces the number of hospital readmissions, increases patient satisfaction and contributes to cost containment (30).

ACSHs and the organization of providers

Organization of providers refers to the structure and arrangement of providers and their distribution across settings of care, including the mix of providers, their scope of practice and their interactions with each other and other sectors. Securing the optimal organization of providers determines the actualization of models of care ensuring that needed services are received at the right time and in the right way (7). Based on the evidence and findings of conducted country assessments, the variables that influence ACSHs have been identified and described below.

Gatekeeping role in primary care. The existence of a gatekeeping function, in which primary care physicians act as the first contact point for patients with the health care system, plays an important role in delivering appropriate care (30,58,73) and implies long-term relationships of patients with primary care providers (56,74). Studies conducted in Canada and the United States of America have reported higher odds of ACSHs among individuals who do not have a regular family physician (75,76). A systematic review on organizational aspects of primary care related to ACSHs found that higher levels of provider continuity decrease risk of ACSHs (54,77,78). Similarly, findings of ACSC country assessments have reported that direct access to specialized care, hospital services and absence of a regular physician contribute to higher ACSHs rates (20–24). Thus, use of a system of GP-centred models of care in Germany since 2004 that imitates the gatekeeping function has resulted in better continuity of care and overall better health outcomes (20).

Arrangement of multidisciplinary teams. The introduction of multidisciplinary teams in primary care is seen as an effective tool in meeting the needs of complex patients. The patterns of provider organization in many health systems often fail to acknowledge patients with co- and multimorbidities, resulting in treatment in parallel disease silos (79). Doing so has a tendency to mutually amplify the disease severity, signalling a need for better integration and coordination of services for such patients. For example, the introduction of multidisciplinary teams in Germany has been shown to enhance the effectiveness of services delivery, especially when encompassing providers of allied health services and the social sector (20). Delivery of care by multidisciplinary teams of providers (both clinical and non-clinical) who regularly work together in an integrated way has proven to improve health outcomes (80,81). Multidisciplinary approaches to care delivery for ACSCs increase the effectiveness of services delivery by reducing the number of hospitalizations and improving overall health outcomes for patients (82–86).

Level of provider competencies. Likelihood of avoidable hospital admissions is highly influenced by the physician's decision-making skills in ambulatory settings (30,40). Results of a study conducted by Freund et al. show that some hospitalizations for ACSCs are initiated by ambulatory providers in order to receive a second professional opinion from hospital specialists, especially in cases of diagnostic uncertainty (40). As clinical knowledge and skills transform to clinical competencies and advance with years of clinical practice (87), it is accurate to assume that quality and resolutive capacity of ambulatory care will depend on the experience of providers. GPs with more than 10 years working experience showed significantly lower rates of ACSHs compared to less experienced colleagues (30). Furthermore, in cases where an episode of care does require hospitalization, providers with advanced decision-making skills have been shown to identify such needs earlier, resulting in shorter length of stays and better health outcomes. Insufficient physician competencies that fail to respond to complex patient needs were reported to influence the care seeking behaviour in the Republic of Moldova, resulting in higher referrals and self-referrals to hospitals (24). Provider competencies that include routine application of tools, such as clinical priority access criteria, reduce number of hospitalizations (40).

Scope of practice of providers. Scope of practice of ambulatory care providers has proven to influence health outcomes for patients with chronic conditions. In particular, roles and scope of practice of providers should meet patient needs and be contextually bound (7). Realignment of tasks and extension of responsibilities are effective tools for overcoming increasing human resource challenges (56) and securing better health outcomes in certain types of interventions (31,88). A study by Freund et al. reports that scope of practice of German ambulatory care providers has been extended by enabling, for example, performance of elective cardiac catheterization for patients with angina. However, due to an absence of incentives and reimbursement schemes, these services remain underprovided in ambulatory settings (40). At the same time, findings of the ACSC assessment in Germany show positive effects of expanding the scope of practice of physician assistants and nurses in some pilot projects such as VERah[6] and HELVER[7] (20). Clear articulation and formalization of provider roles in reducing ACSHs is another strategy to ensure clarity in provider roles and responsibilities.

Provision of e-health services and telemedicine. The support of information systems is needed to meet patient needs by delivering the most appropriate type of care. With the wide availability and use of various technologies in everyday life, ACSHs can also be prevented or reduced by the use of e-health. Such services can range from electronic booking of ambulatory consultations (reducing waiting times and increasing patient satisfaction) to referral to ambulatory specialists (ensuring timely consultations and interventions) (90). Enabling the exchange of patient records across the continuum of care has been found to be a general recommendation of all ACSC country studies (20–24). In Kazakhstan, e-referrals for specialized consultations showed a positive effect on waiting times and patient satisfaction; however, inability to access patient discharge data through the existing e-health platform was identified as an obstacle for appropriate follow-up by GPs (21). Recommendations also concern the expansion of various types of telemonitoring and telemedicine services for patients with chronic diseases as efficient substitutes of in-person care for clinically stable patients (31,91).

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6   Practice assistants in Family Practice (Versorgungsassistentinnen in der Hausarztpraxis, VERah)
7   Physician assistants in ambulatory care (arztHELferinnen in der ambulanten VERsorgung, HELVER)

ACSHs and the management of services

This domain refers to the oversight of day-to-day operations, ensuring that services are delivered smoothly, the right resources are used efficiently and that the right people are in the right jobs and are aware of what is expected of them (7). Managing services encompasses operationalization of decisions on financing and resourcing made at the wider health system level into everyday activities. It also implies a certain degree of managerial autonomy to ensure tailoring of services to the context where these services are delivered and reactive flexibility to needs. Based on the evidence and findings of the country assessments, variables that influence ACSHs have been identified and described below.

Depth of coverage and entitlements. Findings of the systematic review conducted by Muenchberger et al. report that people with no or limited health insurance coverage often do not receive preventive activities and delay seeking care until exacerbation of their symptoms (16). ACSC studies conducted in Kazakhstan and the Republic of Moldova show that free medicine coverage during hospitalization episodes compared to only partially-reimbursed medicine coverage in outpatient settings can be a driver of patients' care-seeking behaviour, resulting in higher hospitalization rates (21,24). Excessive hospital capacity can also cause supply-induced demand (49,77), which was a finding of ACSC country studies in Kazakhstan and the Republic of Moldova (21,24). Enabling wider coverage of ambulatory services informed by patient needs has been shown to decrease the likelihood of ACSHs in number of studies (48,58,92).

Access to ambulatory care. Rurality and remoteness from primary care providers have shown to be directly linked with ACSHs (17,75). Long travel distances to outpatient specialists limit the level of complementation between primary and specialized care (93). In country assessments conducted in Germany, Kazakhstan and Portugal, regional variations in ACSH rates can also be partially attributed to variations in accessibility of ambulatory care (20,21,23). Explanatory factors for decreased access to primary care and an increased number of ACSHs include long waiting times for appointments and the absence of a regular primary care physician (94–96). Longer waiting times to get an appointment for an ambulatory care provider can delay the timely provision of services, leading to the exacerbation of ACSCs and real or perceived need for hospitalization (30,54,97). Results of the country studies show that waiting times for care in emergency wards and hospitals are much shorter than those for ambulatory providers and therefore overused by patients with ACSCs (20–24,98,99).

Availability of out-of-hours services. Out-of-hours ambulatory services have proven to play a crucial role in avoiding ACSHs (16,30,48). Inability to secure a timely visit or follow-up with primary care services often leads to delays in care and the exacerbation of conditions or direct reporting to hospital emergency departments (44,83). In the Republic of Moldova, for example, emergency departments provided out-of-hours services in urban settings which, in practice, increased the likelihood of hospitalization (24). Modalities in delivery of out-of-hour services are also important to consider as, according to the study conducted in Germany (40), the mere presence of these services is not enough. In particular, the availability of regular physicians and patient records at out-of-hour clinics has been shown to reduce the number of ACSHs (40,100).

ACSHs and continuous quality improvement

Mechanisms for continuous quality improvement aim to safeguard the delivery of services, creating feedback loops and learning mechanisms through standardized models of care and opportunities for continuous learning (7). Actions to continuously

improve performance can be articulated around routine monitoring of ACSHs, financial incentives and peer-review. Based on the evidence and country cases, variables that influence ACSHs are described below.

Use of quality indicators. Health system monitoring of ACSH rates and informing ambulatory providers of their performance has a positive effect on providers' practice (21,33). It allows identification of variations in health outcomes for the same ACSCs and reporting of differences in the quality and efficiency of ambulatory care (43,101). Stakeholders consulted during the ACSC country case studies have widely recognized the potential of utilizing ACSH data for informing and discussing provider performance (20–24). For example, in Kazakhstan the quality indicator of hospitalizations for acute cardiovascular events among target populations is routinely monitored by quality management councils in health facilities and is linked to provider payment mechanisms (21). Collected performance indicators for ACSCs can be utilized for regional and inter-facility comparisons (20), paying ambulatory providers as done in England (33), and horizontal country analysis like those by AHRQ and OECD (13,14).

Payment for performance. Provider payment mechanisms influence the way services are delivered. For example, if primary care providers are reimbursed solely by capitation, there is no incentive to perform additional tasks such as health education to people with chronic conditions. In turn, this translates into a higher number of referrals to specialists and/or hospitals and, consequently, an increase in ACSHs (40). Financial incentives play an important role in improving performance of providers for certain conditions (102). In the country case study conducted in Latvia, it was found that existing incentives for GPs were mainly focused on chronic disease management, while a high number of ACSHs resulted from poorly managed kidney and urinary tract infections and tuberculosis (22). Financial incentives can support individual risk stratification or disease management, as well as facilitate the uptake of new models of care that prevent hospital admissions (103–105).

Existence of peer-review mechanisms. Evidence shows mechanisms to improve quality of care such as peer-reviews and quality circles, among others, can transform ambulatory care (106,107). Peer-review allows for continuous and iterative reflection processes that are based on principles of professional accountability (7). For example, in Germany, so called quality circles enable physicians to analyse their actions in moderated working groups with the aim of enhancing treatment quality. This peer-review mechanism has proven to be an efficient tool for improving performance as it provides an opportunity to review and discuss new evidence-based recommendations and allows feedback on clinical practices in a structured and written form (20).

Guide for ACSC country assessment

This section describes the six key steps for conducting a country assessment on ACSCs: (i) scoping and set up, (ii) data extraction, (iii) prioritization of ACSCs, (iv) stakeholder consultation, (v) formulation of policy recommendations, and (vi) reporting of assessment results.

Each step requires a participatory and inclusive process that involves stakeholders such as provider representatives, insurance fund administrators, policy makers and researchers in order to ensure ownership and applicability of final policy recommendations. A detailed overview of key actions, tools and outputs for each step is presented in Annex 2.

Step one: Scoping and set up

Step one aims to scope existing information relevant to ACSCs in a country of interest and through review of scientific and grey literature. It includes a description of the demographic and epidemiological context, health system, and organization and functioning of services. During this step, the institution that manages the hospital discharge data needed for the assessment should be identified. Also, key stakeholders who should be engaged in subsequent stages of the study are expected to be identified.

Key resources for the review can be WHO Europe's country-specific websites and publications such as the Health Systems in Transition series, Health System Strengthening for Better NCD Outcomes reports and Primary Care Evaluation Tool reports; published documents and grey literature from other agencies such as the European Commission, OECD and World Bank and relevant documents and reports produced at the national or subnational level. When possible, WHO country offices can provide assistance in identifying and obtaining these documents. A search of literature in indexed databases such as Pubmed, Google Scholar and WHO GIFT can also be conducted to retrieve other relevant studies.

The output of this step is a brief on the background information related to the country's health status and health system, as well as a list of the relevant stakeholders and institution(s) that manages hospital discharge data.

Step two: Data extraction

Step two aims to obtain hospital discharge data from the responsible national institution and conduct analysis of this data by the research team. Examples of data providers are the national health statistics office, the national health insurance fund and WHO Europe's Hospital Morbidity Database (108).

Initial data extraction can be guided by the list of most common ACSCs presented in Annex 1. In particular, in countries where there is no system in place for collecting and monitoring ACSH data, the list developed by Bardsley et al. (35) has been widely used in informing WHO country assessments in Kazakhstan, Latvia and the Republic of Moldova (21,22,24). Whenever possible, extracted datasets should allow for subnational and socioeconomic disaggregation in addition to epidemiological variables.

The output of this step is a comprehensive list of ACSCs (eight to 10 conditions) with their corresponding ACSH rates.

Box 1. Avoidable ACSHs: methodological considerations

When estimating ACSH rates in country assessments, it should be noted that ACSHs are monitored and calculated differently across organizations and countries. Differences in calculations are determined by the level of data disaggregation available at the country level. ICDs (both 9th and 10th) consist first of three numeric or alphanumeric digits, known as the category of disease. The category describes the general illness, injury or condition of the patient. However, the three-digit category code is not specific enough to describe the full extent of the patient's condition necessary to estimate avoidable ACSHs. The ICD system uses an additional sub-category numeric code, separated from the category code with a decimal point. The subcategory provides information about the cause and manifestation of the disease or condition and ican contain up to 10 digits (Fig. 6).

Fig. 6. Example of disease coding using ICD-10

| Category: Diabetes mellitus type 2 | → E11.01 ← | Subcategory: hyperosmolar coma |
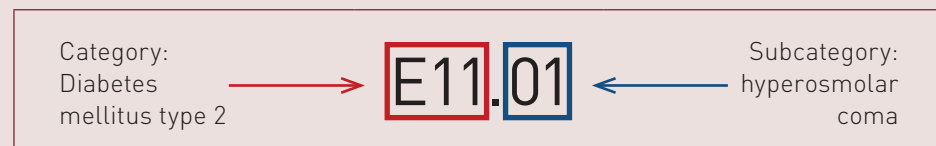
Countries with more advanced health information systems, such as the United Kingdom and the United States of America, estimate ACSH rates using the subcategory level (14,33). However, in many countries and regional databases hospitalization data is available only at the ICD category level rendering estimates of ACSH rates inoperational. In fact, the ICD category does not allow separation of avoidable and non-avoidable hospitalizations as they are aggregated by a certain disease or condition.

In order to overcome this limitation, an indirect approach for estimating ACSH rates has been developed and applied in countries in the WHO European Region (20-24). This indirect approach calculates ACSH rates using experts to estimate the proportion of avoidable hospitalizations for a given ACSC category. For example, hospitalizations for type 2 diabetes can be directly tracked as the number of hospitalizations attributed to acute complications such as hyperosmolar coma (ICD-10 code: E11.01). In countries without hospital discharge data available at the subcategory level, ACSH rates can be indirectly estimated as the proportion of all hospitalizations for type 2 diabetes (ICD-10 code: E11) using the experience of experts, usually GPs and hospital doctors, to estimate the proportion of cases that could have been diagnosed, treated and managed in ambulatory care. The approach has proven useful in many countries. Avoidable ACSH rate estimates obtained with this method were comparable to those obtained using ICD subcategories (direct method).

Step three: Prioritization of ACSCs

Step three seeks to prioritize from the comprehensive list of ACSCs identified in step two, approximately two to four conditions that will be subject to further in-depth analysis. The selection of a limited number of ACSCs aims to identify those conditions that represent a higher burden of ACSHs in terms of absolute numbers but also proportion of avoidability. Prioritization is achieved with the help of specifically designed questionnaires completed by health providers and other relevant stakeholders such as policy-makers and facility managers. Dissemination of the questionnaires can be organized as an online survey, face-to-face workshop or email exchange.

The questionnaire contains the comprehensive ACSC list with total numbers of annual hospitalizations for each ACSC. Respondents are asked to prioritize ACSCs according to the greatest possible improvement to the country considering the overall prevalence and epidemiological significance of conditions, as well as the corresponding number of hospitalizations. The questionnaire includes the option of suggesting ACSCs not initially included in the long list. A section of the survey inquires about the proportion of ACSHs that could have been avoided, according to the best knowledge of the respondent. A final section of the questionnaire seeks to identify interventions that could reduce ACSHs in the country.

A sample of the questionnaire used for ACSC country assessments is presented in Annex 3.

Step four: Stakeholder consultation

Step four consists of verifying and discussing questionnaire findings. For this purpose, stakeholder consultations are conducted within the country. Key stakeholders include representatives from the ministry of health, health insurers, national and regional public health institutes, provider organizations, providers from across all care levels and patient organizations.

During the consultation, the questionnaire findings are presented. Delphi-technique, or similar, can then be used to reach consensus among stakeholders on (i) ACSCs relevant for the country and (ii) their rates of avoidability. Results are then used to calculate ACSHs (Table 4).

Table 4. Avoidable ACSHs for hypertension (ICD code: I10.0-I13.0), selected countries

Country	Number of ACSHs per year	Estimated % of avoidability	Estimated number of avoidable ACSHs
Germany	279 000	83	231 570
Kazakhstan	62 637	75	46 978
Portugal	17 448	66	11 516
Republic of Moldova	18 389	65	11 953
United Kingdom (comparator)	–	60-90	–

Sources: (20,21,23,24,32)

Once consensus on the number of avoidable ACSHs is reached, interventions aimed at reducing ACSHs can be discussed. The discussion is informed by HSD variables identified as influencing ACSHs as applicable to the country context. If appropriate,

stakeholders can be split into two separate groups: (i) providers and (ii) policy-makers and health system experts. The rationale behind such an approach lies in the need to identify interventions that are complementary while influencing performance. However, both groups should be brought together to agree on the possible policy options for improving HSD performance from both the clinical and health systems perspective.

The output of this step is the selection of prioritized ACSCs for the country and a range of policy options to reduce ACSH rates.

Step five: Formulation of policy recommendations

Based on the previous steps, actionable policy recommendations for reducing ACSH rates for prioritized conditions can be formulated. Step five is usually performed by the research team.

Policy recommendations can be articulated as short-, mid- and long-term interventions and by those responsible for their implementation. This process is complemented with one-to-one stakeholder interviews to fine-tune the specificity and applicability of suggested policy recommendations. Table 5 presents an overview of recommendations that were produced as an output of country assessments on ACSCs.

Table 5. Overview of key recommendations from ACSCs country assessments

HSD areas of action	Key recommendations	Countries
Model of care	Improve management of high-risk patients in ambulatory settings	Germany Kazakhstan Portugal
	Advance the use of clinical guidelines and protocols for ACSCs	Kazakhstan Latvia Republic of Moldova
	Empower the population and engage patients	Kazakhstan Latvia Republic of Moldova
Organization of providers	Reinforce first contact point and care coordinating role in primary care	Kazakhstan Latvia Portugal
	Expand the scope of practice of nurses	Germany Kazakhstan Republic of Moldova
	Improve use of e-health and telemedicine	Germany Portugal
Management of services	Expand the package of ACSC services	Latvia Portugal Republic of Moldova
	Improve accessibility of ambulatory care	Germany Latvia
	Promote affordability of health services	Kazakhstan Latvia

Table 5. Overview of key recommendations from ACSCs country assessments (continued)

HSD areas of action	Key recommendations	Countries
Continuous quality improvement	Align incentives for better disease management in ambulatory settings	Kazakhstan Latvia Republic of Moldova
	Create mechanisms for quality improvement for ACSCs	Germany Kazakhstan Portugal

Sources: (20-24)

Step six: Reporting the assessment results

The final step of the country assessment is reporting the outputs of previous steps in a unified and articulated way. Country assessment reports serve for advocacy, but also as operational tools for HSD transformations using the ACSHs as proxy indicators of performance.

A standard outline of a country assessment report is shown in Table 6 below.

Table 6. Standard outline of an ACSC country assessment report

Chapter	Description
Introduction	Presentation of the ACSC concept and rationale for the country study
Methodology	Description of data sources, methods used and limitations
Building the case for focusing on ACSCs	Presentation of prevalence and hospital discharge data for ACSCs, ACSH rates for selected key conditions and results of ACSH data disaggregation by age group, sex and geographic region
Health services delivery perspective on ACSCs	Analysis and description of HSD variables that influence delivery of ambulatory care and identification of vantage points in HSD processes where action can decrease ACSH rates and improve performance of ambulatory care in terms of access, efficiency, integration and quality
Policy recommendations	Actionable policy recommendations that address identified challenges in performance for ACSCs, including timeline for their implementation and responsible stakeholders

Sources: (20-24)

ACSC country assessment reports are to be disseminated to stakeholders and international partners. These reports have informed both national health improvement initiatives and projects funded by international organizations.

Final remarks

This document proposes the use of ACSHs as a composite proxy measure for reporting HSD performance and provides links between HSD process variables that represent vantage points for ambulatory care improvements. Additionally, this document provides a guide for ACSC country assessments.

Below the key policy questions that have driven this study are addressed and summarized based on the previous sections.

1. **How have ACSHs been used as a measure of HSD performance to date?** ACSCs and ACSHs have been used by different organizations and countries for measuring HSD performance. AHRQ, OECD and NHS England, among others, routinely collect and monitor ACSH data, although with certain diversity in definitions and measurement. For the purposes of this review, the operational definition of ACSCs refers to conditions for which hospitalizations can be avoided by timely and effective care in ambulatory settings.

2. **Which HSD performance outcomes are captured by ACSHs?** The review of evidence finds that the accessibility, quality, integration and efficiency of services can be associated with ACSH rates. ACSHs can then be characterized as a composite performance indicator. While acknowledging that health system performance outcomes are the result of the interaction of all functions (governing, financing, resourcing and delivering), ACSHs can be strongly associated to the specific contributions of health services delivery, assuming contributions of all other health system functions remain constant. Hospital discharge data, on the other hand, remains a reliable source of health data in most WHO European Region Member States, reinforcing its wide applicability in the Region.

3. **What are the associations between ACSHs and HSD processes that influence performance and do they have an enabling or constraining effect on HSD improvements?** Organized into its key process, evidence shows that HSD variables are strongly associated to performance. For example, the availability of services that manage high-risk patients with hypertension has a positive effect on decreasing the number of ACSHs associated with hypertension.

4. **How can associations between ACSHs and HSD performance outcomes be applied for assessing HSD performance and guiding HSD improvements in countries?** Interpretation of the disease-specific ACSH through the lens of HSD variables allows identifying vantage points where HSD improvements can maximize performance. Operationalization of this process is described through a country assessment guide.

ACSHs can be therefore used as a proxy indicator for HSD performance and inform HSD improvements in WHO European Region Member States.

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Annex 1: ACSC lists

ACSCs by Caminal et al.

Caminal et al. (2004) developed a list of ACSCs specific to the European setting. The complete list of ACSCs from Caminal et al. is provided in the Table A1.1 below.

Table A1.1. ACSCs by Caminal et al.

ACSCs	Corresponding ICD-9 code
Immunization and preventable infectious diseases	032, 037,045, 320.0,390,391
Congenital syphilis	090
Tuberculosis	011, 012-018
Diabetes mellitus	250.0, 250.1, 250.2, 250.3, 250.7,250.8, 251.0,785.4+250.7
Disorders of hydro-electrolyte metabolism	276.5, 276.8
Iron-deficiency anaemia	280
Convulsions	345, 780.3
Diseases of the upper respiratory tract	382, 463, 465,475
Hypertensive heart disease	401, 402.00,402.10, 403-405,410-414,430,431,463,437.2
Heart failure	428, 402.01,402.11,402.91,518.4
Pneumonia	481, 482.2, 482.3, 482.9, 483, 485,486
Bronchitis / Chronic obstructive pulmonary disease (COPD)	466.0, 490,491,492,494,496
Asthma	493
Bleeding or perforating ulcer	531.0, 531.2, 531.4, 531.6, 532.0,532.2, 532.4, 532.6, 533.0,533.2,533.4,533.6
Appendicitis with complication	540.0, 540.1
Disease of the skin and subcutaneous disease	681, 682, 683,686
Gastroenteritis	558.9
Urinary tract infections	590.0, 590.1,599.0,590.8
Pelvic inflammatory disease	614

Source: (1).

ACSCs monitored by NHS England

The NHS Outcomes Framework monitors two groups of indicators that correspond to ACSCs: (i) unplanned hospital admission for chronic ACSCs and (ii) emergency admissions for acute conditions that should not usually require hospital admission. The list of conditions monitored in each group is presented in Table A1.2 below.

Table A1.2. ACSCs by NHS England

ACSCs	Corresponding ICD-10 code
Unplanned hospital admissions	
Infections	B18.1, B18.0
Nutritional, endocrine and metabolic conditions	E10, E11, E12, E13, E14
Diseases of blood	D50.1, D50.8, D50.9, D51, D52
Mental and behavioural disorders	F00, F01, F02, F03
Neurological disorders	G40, G41
Cardiovascular diseases	I10X, I11.0, I11.9, I13.0, I20, I25, I50, I48X, J81X
Respiratory diseases	J20, J41, J42X, J43, J44, J45, J46X, J47X
Emergency admissions for acute conditions that should not usually require hospital admission	
Influenza, pneumonia	J10,J11, J13X, J14, J15.5, J15.4, J15.7, J15.9, J16.8, J18.1, J18.8
Other vaccine preventable conditions	A36, A37, B05, B06, B16.1, B16.9, B26, M01.4
Angina	I24.0, I24.8, I24.9
Dehydration and gastroenteritis	E86, K52, A02.0, A04, A05.9, A07.2, A08, A09
Pyelonephritis and kidney/urinary tract infections	N10, N11, N12, N13.6, N15.9, N39.0, N30.0, N30.8, N30.9
Perforated/bleeding ulcer	K.25.0-K25.2, K25.4-K25.6, K26.0-K26.2, K26.4-K26.2, K27.0-K27.2, K27.4-K27.6, K28.0-K28.2, K28.4-K28.6, K20, K21
Cellulitis	L03, L04, L08.0, L08.8, L08.9, L88, L98.0, I89.1, L01, L02
Ear, nose and throat infections	H66, H67, J02, J03, J06, J31.2, J04.0
Dental conditions	A69.0, K02, K03, K04, K05, K06, K08, K09.8, K09.9, K12, K13
Convulsions and epilepsy	R56, O15, G25.3

Source: (2).

ACSCs by The King's Fund

Some years after the publication by Caminal et al., the King's Fund published a list of 19 conditions for which early intervention can prevent hospital admissions (Table A1.3). This list differentiates between vaccine-preventable, chronic and acute conditions. Note that this list focusses on emergency admissions and can be regarded as a specific subset of a larger group of ACSCs that also contains planned hospital admissions.

Table A1.3. ACSCs by The King's Fund

ACSCs
Acute conditions
Cellulitis
Convulsions and epilepsy
Dehydration and gastroenteritis
Dental conditions
Ear, nose and throat infections
Gangrene
Pelvic inflammatory disease
Perforated/bleeding ulcer
Pyelonephritis
Chronic conditions
Asthma
Congestive heart failure
Diabetes complications
Chronic obstructive pulmonary disease (COPD)
Angina
Iron-deficiency anaemia
Hypertension
Nutritional deficiencies
Vaccine-preventable conditions
Influenza and pneumonia
Other vaccine-preventable conditions

Source: (3).

Combined list of ACSCs by Bardsley et al.

In a recent publication by Bardsley et al., 13 ACSC lists were compared and scored for a common set of ACSCs. We assume that this non-country specific list is the most robust generic ACSC list (Table A1.4).

Table A1.4. Combined list of ACSCs by Bardsley et al.

ACSC by Bardsley et al.	Type of ACSC
Angina	Chronic
Asthma	Chronic
Cellulitis	Acute
Chronic obstructive pulmonary disease	Chronic
Congestive heart failure	Chronic
Convulsions and epilepsy	Chronic
Dental Conditions	Acute
Diabetes	Chronic
Diabetes complications	Chronic
Gastroenteritis	Acute
Hypertension	Chronic
Immunisation preventable conditions	Vaccine-preventable
Iron deficiency anaemia	Chronic
Kidney/urinary infection	Acute
Nutritional deficiency	Chronic
Pelvic inflammatory disease	Acute
Perforated or bleeding ulcer	Acute
Pneumonia	Chronic

Source: (4).

References for Annex 1

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3. Purdy S. Avoiding hospital admissions [Internet]. 2010 [cited 2016 Jan 22]. Available from: http://www.kingsfund.org.uk/publications/avoiding-hospital-admissions
4. Bardsley M, Blunt I, Davies S, Dixon J. Is secondary preventive care improving? Observational study of 10-year trends in emergency admissions for conditions amenable to ambulatory care. BMJ Open [Internet]. 2012;(3:e00200). Available from: http://bmjopen.bmj.com/content/3/1/e002007.full

Annex 2. Table A2.1. Summary of key steps for ACSC country assessment

Step	WHAT	WHY	HOW	OUTPUT
1 Scoping and set up	Identify existing information and stakeholders relevant to conducting a country study on ACSCs	To serve as a first scoping of information and gain contextual information for interpretation of data analysis results; to identify relevant stakeholders to participate in country assessment	Scoping review of published and grey literature, using WHO and other resources	Background contextual information on country health system; list of relevant stakeholders; identified national stakeholder in charge of hospital discharge data
2 Data extraction	Extract data from national hospital morbidity database	To see general trends in ACSC-related hospitalizations and form a long list of ACSCs for further study	Extract hospitalization data using one of the commonly used ACSC lists (e.g. Bardsley et al.)	Comprehensive list of ACSCs for the country assessment and their corresponding ACSH rates
3 Prioritization of key ACSCs	Prioritize key ACSCs that will be further studied in the country assessment	To identify ACSCs that have highest burden both in absolute numbers and proportion of avoidability; to identify preliminary list of interventions to reduce ACSH rates	Questionnaires on ACSCs for providers	Shortened list of two to four ACSCs for further analysis; estimates of avoidability for each shortlisted ACSC; list of interventions to reduce ACSH rates
4 Stakeholder consultation	Present results of the questionnaires	To verify and reach consensus on shortened list of ACSCs and their proportion of avoidability; to map interventions for reducing the ACSH rates	Questionnaire result charts Delphi-technique or similar; open discussion	Final list of key ACSCs and ACSH rates; map of respective interventions to reduce each of selected ACSHs
5 Formulation of policy recommendations	Formulate policy recommendations from list of identified interventions	To address high burden of shortlisted ACSHs through actionable policy recommendations	Mapping of policy recommendations as short-, mid- or long-term; identifying specific stakeholders responsible for implementation of policy recommendations	Complete list of policy recommendations
6 Reporting the assessment results	Develop the analysis into a complete narrative, circulate for feedback from key stakeholders and incorporate comments to finalize	To develop a comprehensive narrative on country assessment; to ensure that narrative is accurate and interpretation of data reflects the real situation in country; to finalize and disseminate the country assessment report for further action among stakeholders	Background information collected at scoping review of literature; results of data analysis and stakeholder consultation; formulated policy recommendations	Completed and published report

Annex 3. Sample questionnaire for ACSC country assessment

Presented below is the sample questionnaire that was used in the ACSC country study for Kazakhstan (1).

General information

Survey completed by
Name/title (Professor, Dr, Mr, Mrs, Ms etc.)
Function/position
Organization/department
Profession
General practitioner
Medical specialist, please specify your specialty: ....

ACSCs in Kazakhstan

Table A3.1 below presents selected ACSCs used in international literature. For each of the ACSCs, the prevalence and hospitalization rate in Kazakhstan are specified.

Table A3.1. Prevalence and hospitalization rate for ACSCs in Kazakhstan, 2013

ACSCs	ICD-10 code	Total number of cases	Hospitalized cases (%)
Angina pectoris	I20.0–I20.9	99 368	45
Bronchial asthma	J45.0–J45.9	14 802	20
Chronic bronchitis and unspecified emphysema	J40–J43	4 941	3
Chronic obstructive pulmonary disease (COPD)	J44.0–J44.9	21 930	28
Crohn's disease, ulcerative colitis	K52.0–K52.9	6 490	41
Diabetes mellitus type 1	E10	10 496	52
Diabetes mellitus type 2	E11	21 646	9
Epilepsy (without psychosis or dementia)	G40–G41	16 899	38
Heart failure (congestive)	I50.0–I50.9	3 899	8
Hypertension	I10.0–13.0	62 636	6

Table A3.1. Prevalence and hospitalization rate for ACSCs in Kazakhstan, 2013 (continued)

ACSCs	ICD-10 code	Total number of cases	Hospitalized cases (%)
Infectious and parasitic diseases	J10, J11, A15, A16, A19, A35–A37, A80, B05, B06, B161, 169, 180, 181, B26, G000, M014	32 714	60
Iron deficiency anaemia	D50	7 333	1
Kidney infection	N10–N12, N15	35 522	9
Other forms of acute ischaemic heart disease	I23–I24	134	2
Pneumonia	J12–J16, J18	101 371	89
Salpingitis and oophoritis	N70.0–N70.9	18 100	27
Ulcus of stomach and duodenum	K25–K27	11 915	13

Question 1. Are any ACSCs of importance to Kazakhstan missing from Table A3.1?

No (please continue to question 2)
Yes (please specify below)

-
-

Question 2a. Which ACSCs should receive the highest priority in Kazakhstan?

Table A3.2 below lists ACSCs by acute, chronic and vaccine-preventable condition type. Please select the two most import ACSCs for each category (six ACSCs total), by marking the boxes next to them. If you want to choose a condition that is missing from this list, please write it in the relevant column then mark the box beside it.

Table A3.2. ACSCs by type of condition

Acute	Chronic	Vaccine-preventable
Cellulitis	Angina	Influenza
Dental conditions	Asthma	Tuberculosis
Gastroenteritis	Chronic obstructive pulmonary disease (COPD)	Measles
Kidney/urinary infection	Congestive heart failure	Rubella
Pelvic inflammatory disease	Convulsions and epilepsy	Bacterial meningitis
Perforated or bleeding ulcer	Diabetes	Hepatitis

Table A3.2. ACSCs by type of condition (continued)

Acute	Chronic	Vaccine-preventable
	Diabetes complications	Mumps
	Hypertension	Whooping cough
	Iron deficiency anaemia	
	Nutritional deficiency	
	Pneumonia	

Please explain why you selected the conditions above as the most important ACSCs in Kazakhstan:

_____

_____

_____

Question 2b. What percentage of hospitalizations could be avoided if ACSCs were effectively treated in PHC settings?

Please specify for each of the six ACSCs you selected in question 2a what percentage (0–100%) of all hospitalizations for each condition could have been avoided. If you are unsure, you can provide a rough estimate.

Table A3.3. Estimates of avoidable hospitalizations

ACSCs	Avoidable hospitalizations (%)
Acute conditions • •	
Chronic conditions • •	
Vaccine-preventable conditions • •	

Question 3. What should happen in Kazakhstan to effectively address the six selected ACSCs in PHC settings?

_____

_____

_____

_____

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Comments

If you wish to make any further comments about your experiences with ACSCs in your country and/or this survey please use the space provided below.

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Reference for Annex 3

1. Ambulatory care sensitive conditions in Kazakhstan [Internet]. Copenhagen: WHO Regional Office for Europe; 2015. Available from: http://www.euro.who.int/__data/assets/pdf_file/0003/294402/Ambulatory-care-sensitive-conditions-Kazakhstanen.pdf?ua=1

Annex 4. Glossary of terms

Ambulatory care sensitive conditions. Conditions for which hospitalization can be avoided with timely and effective care in ambulatory settings.

Ambulatory care sensitive hospitalizations. Indicator measuring hospitalization rates for ambulatory care sensitive conditions.

Ambulatory or outpatient care. Health services provided to patients who are not confined to an institutional bed as inpatients during the time the services are rendered (1). Ambulatory care includes medical services of general (primary) and specialized (secondary) nature. Examples of facilities that provide ambulatory services are: primary care clinics and physicians' offices, hospital-based outpatient clinics, ambulatory surgical centres, public health clinics, imaging centres, ambulatory behavioural health and substance abuse clinics and physical therapy and rehabilitation centres.

Health services delivery transformation. Describes efforts that work to tackle the shortcomings of health services delivery by optimizing the processes of selecting services, designing care, organizing providers, managing services and improving performance, as well as finding alignment among the other health system functions of governing, financing and resourcing, for changes that are fully embedded within the health system (2).

Hospitalization or inpatient care. Health services provided to patients whose condition requires admission to hospital with assignment of institutional bed. Inpatients are patients who are formally admitted (or hospitalized) to an institution for treatment and/or care and stay for a minimum of one night or more than 24 hours in the hospital or other institution providing inpatient care.

Improving performance. The process of establishing feedback loops that enable a learning system for spontaneously testing and adopting adjustments towards a high standard of performance, made possible through cycles of continuous learning and the regular review of clinical processes (3).

Integrated health services delivery. A vehicle for improving the alignment of health systems and core health systems functions, setting the conditions for the processes of health services delivery to optimally manage the health needs of the population and individuals (3).

Management of services. The process of planning and budgeting, aligning resources, overseeing implementation and monitoring results to maintain a degree of consistency and order in the delivery of services and acting upon observed deviations from plans, problem-solving and trouble-shooting as needed (3).

Models of care. Model of care is defined as the scope of services as defined by the package of interventions along a continuum of care and their configuration as specified in protocols, pathways and guidelines, promoting comprehensive care throughout the life-course and according to an individual's needs (3).

Organizing providers. Alignment of the health workforce to match selected services and their design with the distribution of professional roles and scopes of practice and the arrangements in which the health workforce works according to settings of care and practice modalities for the provision of services as envisaged (3).

Primary care. Individuals' first point of contact with the health care system, including general medical care for common conditions and injuries (1).

References for Annex 4

1. Health Systems in Transition. Template for authors. [Internet]. WHO on behalf of the European Observatory on Health Systems and Policies; 2010. Available from: http://www.wpro.who.int/asia_pacific_observatory/hits/template/HitTemplate-Final. pdf

2. A step-by-step guide for developing profiles on health services delivery transformations. Copenhagen: WHO Regional Office for Europe; 2016. Available from: http://www.euro.who.int/__data/assets/pdf_file/0010/298297/Step-by-step-guide-developing-profiles-HSD-transformations.pdf?ua=1

3. Tello J, Barbazza E. A concept note on health services delivery. Copenhagen: WHO Regional Office for Europe; 2015. Available from: http://www.euro.who.int/__data/assets/pdf_file/0020/291611/Health-Services-Delivery-A-concept-note-301015. pdf?ua=1

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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