

The State of Health Care Integration in Estonia

*Summary Report
The World Bank Group
January 2015*



Table of Contents

Estonian Health Insurance Fund Preface	4
World Bank Group Preface	5
Acknowledgements	6
1. Introduction	8
2. Overview of the Estonian Health System	8
3. Research Rationale	11
4. Key Challenges of Care Integration	13
5. Methodological Approach	9
6. Results	18
I. A Tendency Toward Acute Inpatient Care with Extended Hospital Stays, of which Substantial Shares are Avoidable	19
II. A Tendency Toward Ambulatory Specialist Care, of which Substantial Shares are Avoidable	26
III. Weak Patient Management in Primary Care, Despite Adequate Continuity, with Little Value Added from Specialist Care for Disease Prevention	28
IV. Weak Pre and Post-Acute Coordination of Care	35
V. Integration Challenges across Population Sub-groups	42
7. Conclusion	46
8. References	48
Patient and Provider Narratives	49

Estonian Health Insurance Fund Preface

All health systems face new challenges in the 21st century. One of the biggest of these is the constantly increasing number of people suffering from non-communicable diseases. Average life expectancy is growing and modern science is now capable of offering new and efficient treatments. This, in turn, creates the preconditions for a person with one or more chronic diseases to have a greater chance of living longer life with higher quality than decades ago. This is, of course provided that the health system is able to adapt to the new challenges.

The Estonian Health Insurance Fund is the biggest purchaser of health care services in Estonia. Health services provided for people insured by the Estonian Health Insurance Fund make up almost 90% of the Estonian specialised medical care and nearly the entire family physicians budget. This puts a great responsibility on us because when using the available funds we must be certain that every patient receives the best possible health care services according their needs and that every party involved in the system is doing everything in their power to ensure that we are all as healthy as possible. We have to ask ourselves whether our current health care system and strategic purchasing model take the changing needs into account or whether any changes must be made.

To answer the question of how well today's Estonian health system follows the principles of integrated care of patients with non-communicable diseases, we turned to the World Bank Group. Our co-operation with the World Bank Group over the last year has given us a great chance to work with internationally recognized experts and gain world-class expertise for our system. This study is in many ways unique for Estonia, as well as internationally, since the adherence to principles of integrated care by Estonian health care system is analyzed first time by using well documented set of standardized indicators. In addition to a very thorough data analysis, a profound qualitative study was also conducted, and it gave us an overview of the positions of patients as well as other stakeholders in the health care system. It also confirmed that the Estonian health insurance database is of high quality and very detailed, which allows an overall analysis of the different aspects of the patient care and a comparison with international practices.

Over the last decades we have built a strong framework for our health system, which we can rely on with full confidence while preparing further improvements. We have functioning primary care, a strong network of hospitals, competent health care professionals and a steady financing model. The analysis with its conclusions let us know that the current system is not yet ready for following the principles of integrated care in the best possible way, which means that changes are indispensable. All of us, as parties involved in the health system, have a mutual interest in offering our people the best possible health care. This analysis points out the aspects that need our joint effort.

Tanel Ross
Chairman of the Board
Estonian Health Insurance Fund

World Bank Group Preface

Estonia's health care system has been hailed for achieving positive health outcomes at low costs. The World Bank Group is grateful to the Estonian Health Insurance Fund for the opportunity to look into the future challenges that this and similar health care systems may face due to population aging and the rising prevalence of chronic disease. In response to these trends, many countries, including Estonia, will have to reassess the ability of their healthcare systems to meet the resulting fundamental changes in the demand for health care. In particular, these changes will require better integration of care – that is, delivery of care in the appropriate care setting as well as adequate coordination and continuity of care across care settings.

This report presents a first attempt to assess the state of health care integration from a health system perspective as part of a joint research study between the World Bank Group and the Estonian Health Insurance Fund. This study uses an innovative approach to measuring care integration, which builds on established measures and methods from the national health system performance frameworks of several OECD countries and from the literature. This approach can be replicated in countries across the region. In addition, the study demonstrates the value for policy-making that can result from analyses of high-quality administrative data. The findings of this analysis will hopefully serve as an input to the development of policy changes that will help strengthen the Estonian health care system and ensure that it is ready to address the challenges of the future.

This analysis benefited from a close partnership between the World Bank Group and the Estonian Health Insurance Fund throughout duration of the study. As the analysis delves into an area of research that is of growing interest to many countries looking to improve their health systems, this partnership has set the stage for similar endeavors within the Europe and Central Asia region and elsewhere.

Daniel Dulitzky
Health, Nutrition & Population Global Practice Manager
World Bank Group

Acknowledgements

The report “The State of Health Care Integration in Estonia” was prepared by a team led by Christoph Kurowski. Team members were Amit Chandra, Elyssa Finkel, and Marvin Plötz.

The project was accomplished with the guidance from a Steering Committee in line with the project objective and components agreed in the Reimbursable Advisory Services Agreement (RAS) between the Estonian Health Insurance Fund and the World Bank Group. The Steering Committee members were Professor Ruth Kalda (Department of Family Medicine, University of Tartu), Professor Margus Lember (Faculty of Medicine, University of Tartu), Dr. Urmas Sule (Hospitals Association), Anneli Habicht (Society for Disabled People), Dr. Heli Paluste (Ministry of Social Affairs), Pille Saar (Health Board), Dr. Diana Ingerainen (Society of Family Doctors), Dr. Maris Jesse (National Institute for Health Development), Tanel Ross (Estonian Health Insurance Fund). The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of the Steering Committee, and the World Bank Group team takes the responsibility for any errors in the final report.

The team is grateful to numerous individuals who provided input and comments at various stages of the report's preparation. The team benefited from consultations with Ranit Mishori (Georgetown University) and the presenters and participants of the workshop “Toward Enhanced Integration of Health Care in Estonia” held in Washington DC in November 2014. The following experts gave presentations: Ian Forde (OECD), Ellen Nolte (WHO European Observatory), Peter Fitzgerald, Robert Murray (Global Health Payment LLC), Sarbani Chakraborty, Safir Sumer, Jack Langenbrunner, Julian Pettengill, Cheryl Cashin (Results for Development), and Steve Kenny.

The team would like to express its appreciation to the staff of the Estonian Health Insurance Fund, and in particular to Tanel Ross, Triin Habicht, and Kaija Lukka, for their close collaboration during the entire duration of the project.

The team also gratefully acknowledges the comments of the peer reviewers Toomas Palu, Armin Fidler, and Antonio Giuffrida at both the concept note stage and the final review of the report and the excellent editorial support by Layla McCay.

The Estonian translation of this report was not created by The World Bank and should not be considered an official World Bank translation. The World Bank shall not be liable for any content or error in this translation.

Disclaimer

This work is a product of the staff of The World Bank Group with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank Group, its Board of Executive Directors, or the governments they represent.

The World Bank Group does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank Group concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

1. Introduction

This paper summarizes an assessment of the state of health care integration in Estonia and its driving forces. In the absence of a widely accepted definition, this study defines health care integration as: i) the delivery of care in the appropriate care setting and ii) coordination and continuity of care across care settings. The study focuses on integration issues related to the prevention and treatment of chronic diseases, with particular attention to the role and functioning of primary care and equity issues. The findings of this analysis therefore do not provide a comprehensive assessment of quality within specific care settings (i.e., primary care, acute inpatient care, etc.), nor of overall health system performance. Yet, they constitute one of several inputs that may be relevant for future policy changes.

These study findings are based on a quantitative analysis of health insurance claims data plus stakeholder interviews and focus group discussions as part of a joint research agenda between the Estonian Health Insurance Fund (the EHIF) and the World Bank Group (WBG).

The paper is structured as follows: Section 2 provides an overview of the Estonian health care system, section 3 outlines the rationale for assessing the state of health care, section 4 provides a brief overview of the methodological approach, section 5 discusses study findings with respect to key challenges as well as possible underlying problems and causes and section 6 concludes.

2. Overview of the Estonian Health System

Estonia's health system has been hailed for achieving good health outcomes at low cost (WHO, 2010). In contrast to many other countries emerging from the Soviet Union, life expectancy in Estonia has steadily increased toward the EU-15 average¹, while child (under 5) mortality fell below the EU-15 average (Table 1). At the same time, total health expenditure was 6.0% of GDP in 2013, far below the EU average of 9.6%. The dominant source of health financing is public (approximately 77 % in 2013). The 22.3% proportion of out-of-pocket expenditures, which is similar to the EU average, is concentrated on co-payments for medicines and dental services, suggesting that the financing system is effective in protecting households against catastrophic health expenditures (Lai et al., 2013).

Table 1: Life Expectancy and Child Mortality

Health outcome indicator	Estonia		EU
	1991	2011	2011
Life expectancy at birth (total) / years	69.8	76.6	80.33
Life expectancy at birth (female) / years	75.0	81.4	83.19
Life expectancy at birth (male) / years	64.4	71.3	77.37
Child mortality / per 1,000 live births	16.7	3.1	4.8

Source: WHO Health for All, 2014

¹ One of the major reasons life expectancy is still lagging behind the EU-15 average is the relatively low male life expectancy, which is about 10 years lower female life expectancy.

Estonia's health system benefits from strict separation of functions with the main actors being the Ministry of Social Affairs and its agencies, the Estonian Health Insurance Fund, and independent provider units operating under private law (so-called autonomized units). The Ministry of Social Affairs and its agencies perform the main stewardship role for the Estonian health care system, including the development of national health care policies and legislation, supervision of compliance with legal acts, collection and analysis of data on activity volumes and economic indicators of providers, as well as registration of health care professionals and licensing of facilities. The Ministry of Social Affairs is also responsible for financing emergency care for the uninsured, as well as ambulance services and public health programs. Both the Ministry of Social Affairs and local governments finance social care.

The Estonian Health Insurance Fund (EHIF), operates the national, mandatory health insurance scheme and performs some quality assurance activities. The national health insurance scheme covers approximately 95% of the population with a broad range of curative and preventive services as well as some monetary benefits. Revenues stem primarily from earnings-based employer and employee contributions, in addition to state contributions for certain population groups. The EHIF acts as a single purchaser, compensating all contracted providers under a sophisticated payment system (Box 1). It contracts with providers under agreements that specify case and cost caps and minimum service quality requirements (including waiting times). Combined, contract and payment arrangements provide for effective cost control.

All health care providers are independent entities operating under private law. Family physicians operate as private entrepreneurs or salaried employees of private companies owned by family doctors or local municipalities. Most hospitals are either limited liability companies owned by local governments or foundations established by the state, municipalities or other public agencies. The remaining few are privately owned.

Structural reforms in the 1990's established primary care provided by family physicians at the center of the health service delivery system. Family physicians serve as the first level of contact and gate-keeper² of the system. There are currently about 800 family physician practices in Estonia, and while there has been a growing trend towards group practices, approximately 70% of family physicians continue to work in solo practices. Family physicians are responsible for providing a core package of services to their self-selected constituencies (individuals registering with them under a practice list-system). Each family physician's practice list cannot contain more than 2000 patients or less than 1200 patients. All together, these practice lists cover the entire population. In addition, family doctors and nurses provide more than half of all ambulatory care visits, while ambulatory specialists deliver the remainder of these visits.

Secondary and tertiary care is provided in hospitals and outpatient centers. There are currently about 65 public and private hospitals in Estonia, including 35 nursing and rehabilitation hospitals. The EHIF has contracts with the 19 public hospitals that are included in the Hospital Network Development Plan (HNDP). This plan, approved in 2003, lists the investment needs of these hospitals in order to renovate their premises and restructure their services. The HNDP investment needs served as a basis for the implementation of EU structural funds from 2007-2013. HNDP hospitals are divided into regional, central, general, and local. Regional hospitals deliver the full range of services, central hospitals deliver most services with the exception of a few procedures, general hospitals provide 24/7 emergency care, intensive care and some surgical and medical

² A gatekeeper is a health care professional - usually a primary care physician - who coordinates, manages, and authorizes all health services provided to a person covered by a certain health (insurance) plan.

specialties, while local hospitals deliver 24/7 emergency and some general surgery procedures. The EHIF also has contracts with other non-HNDP hospitals, including hospitals specialized in nursing or rehabilitation care.

The majority of ambulatory specialist care is provided in hospital outpatient departments, with the remainder provided by health centers or specialists practicing independently. Day care, which is defined as treatment requiring at least a four-hour stay without the need for the patient to stay overnight, is provided by hospitals and ambulatory care providers with a day-care license.

Rehabilitation care (inpatient and outpatient) is provided by licensed hospitals. Rehabilitation care is seen as an inseparable part of specialized medical care in Estonia, and includes services that focus on restoring impaired functions, preserving restored functions or adjusting to disability. Finally, nursing care services are delivered either in licensed nursing care institutions (hospitals) or in patient's homes. The nursing care services financed by the EHIF include inpatient nursing care and home nursing (including home care for cancer patients).

Box 1: Estonia's Health Care Provider Payment System

Payment methods, service prices and benefits packages are regulated through a single, government approved health service list. Prices include capital costs, serve as maximum ceilings (with the option to for providers to offer lower tariffs) and apply universally (that is, without any further, provider-specific adjustments).

Family physicians

Monthly prepayments, recalculated four times per year; combination of:

- Capitation: Five age groups: 0-2, 3-6, 7-49, 50-69, 70+ years
- Fee-for-service: For diagnostic procedures up to 42% of capitation, a separate "therapeutic fund" up to 3% of capitation (cover services provided by psychologists and speech therapists) and activity fund with no cap including minor surgery and gynecological procedures that a family doctor can do by her(him)self
- Quality Bonus Scheme (QBS): Mandatory since 2015, with annually negotiated, pro-rated lump sum with minimum requirement of 80% compliance across 38 indicators for (i) disease prevention, (ii) chronic disease management, (iii) others.
- Allowance: Premises and transport, additional payments service in remote areas (i.e. the distance to the nearest hospital).

Specialist ambulatory care

Reimbursement of claims based on:

- Case and cost caps by specialty
- Fee-for-service

Acute inpatient care and specialist ambulatory services with surgical procedures

Reimbursement of claims based on combination of:

- Case and cost caps
- Diagnosis-Related Groups (based on Nordic DRGs, central grouper; constituting 70% of each case) with exemptions for outliers³
- Fee-for-service including outliers (e.g. chemotherapy, organ transplant), constituting 30% of each case.
- Per-diems (covering basic examination, diagnosis and treatment planning, nursing, meals, simple medical procedures, laboratory tests and pharmaceuticals).

Rehabilitation care

Reimbursement of claims based on:

- Case and cost caps
- Fee-for-service, which includes per-diems.
- Inpatient rehabilitation included in acute inpatient care payment
- Outpatient rehabilitation included in acute care payment

Nursing care

Reimbursement of claims based on:

- Case and cost caps
- Per-diems and fee-for-service for inpatient care and home nursing.

Source: *Estonia Health System Review, European Observatory on Health Systems and Policies; Personal Communication*

³ Outliers can be a) price outlier (too low or high cost based on FFS) b) specialty (psychiatric care) or activity related

3. Research Rationale

Despite the strong performance of Estonia's health system as well as recent policy measures to improve quality of service delivery and access to care, there is a general consensus among stakeholders that some fine-tuning, if not deeper reforms, are necessary to continue preparing the system to meet the challenges of the future, including the changing demand for services due to the rise of non-communicable diseases (NCDs). In particular, stakeholders have deemed it important that an assessment of the current state of health system integration be carried out, with a focus on the role of primary care.

Several policies aiming to improve health care quality and integration have recently been implemented, with many targeting primary care. Most importantly, the EHIF introduced the financing of up to two family nurses per family physician practice, a Quality Bonus Scheme (QBS) to create stronger incentives for better management of patients with chronic conditions, an uncapped, fee-for-service fund for minor surgeries and gynecological procedures, and a so-called "therapeutic fund" up to 3% of capitation to cover services provided by psychologists and speech therapists. To improve problem solving capacity in primary care and reduce unnecessary specialist visits, an e-consultation system allowing primary care physicians to consult with specialists regarding specific patient cases has been established in one major hospital, and is expected to be replicated in other major hospitals across the country. In ambulatory specialist and acute inpatient settings, fee-for-service financing beyond case volume caps has been increased to reduce waiting times. Long-term inpatient nursing care capacity has also been increased to improve access to both long-term health and social care, and possibly also to reduce acute inpatient lengths of stays. Finally, a number of new and improved quality assurance initiatives have been implemented, such as the introduction of handbooks to standardize the process of developing clinical guidelines and conducting EHIF clinical audits, clinical pathways for cancers, and a voluntary accreditation programs for family physicians.

However, over the past decades, the burden of NCDs in Estonia has been growing constantly, and as of 2010, accounted for more than 80% of the total disability adjusted life years (DALYs) in the country (Institute for Health Metrics and Evaluation, 2014). This trend has been largely driven by the aging of the population, the result of falling avoidable pre-mature mortality and increases in life expectancy. The proportion of the population over 65 years of age is expected to rise over the next two decades from the current 18% up to 22% (Health for All, 2014).

As the experience of other countries has shown, a rapidly aging population with a rising prevalence of chronic diseases (particularly older people with two or more chronic diseases) can be expected to drive both an increase and change in the nature of the demand for health services. For example, in Germany, multi-morbid patients have twice as many contacts with physicians each year than non-multi-morbid patients (36 vs. 16), with the number of contacts per patient directly correlated with the number of chronic diseases they have, requiring coordination among different providers across different care settings. Again, in Germany, patients with multiple morbidities contact on average 5.7 different physicians each year compared to 3.5 for non-multi-morbid patients (Van den Bussche et al., 2011). The increase in demand is also different in nature, as the rise in chronic conditions and aging is associated with higher needs for nursing, rehabilitation, and easier access to care due to decreased functioning and mobility (Figure 1).

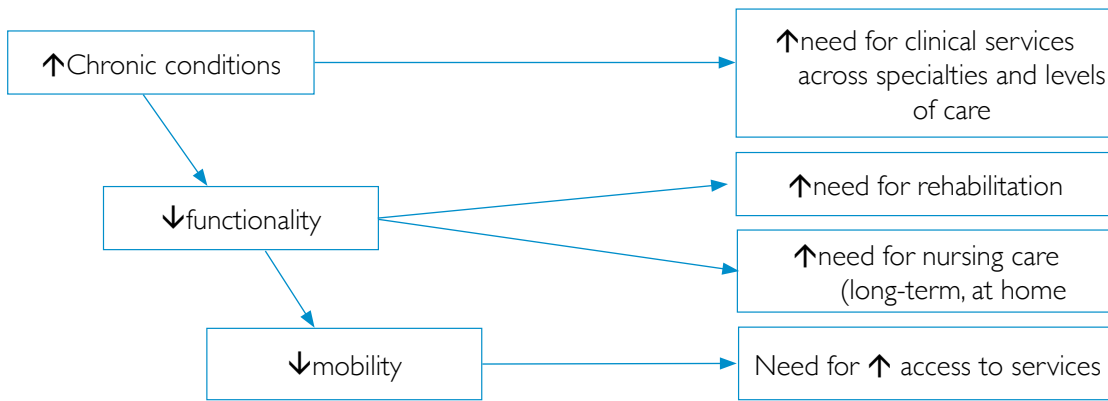


Figure 1. Changes in Demand for Health Care from Aging and Rise in Chronic Diseases

Source: World Bank team.

As premature mortality continues to decrease and Estonia’s population continues to age, it will be critical for the country to meet this increasing and changing demand to further improve life expectancy and reduce the burden of disease. Indeed, despite much progress in life expectancy overall, certain disease groups continue to pose a challenge. In particular, life expectancy and mortality rates for cardiovascular and circulatory system diseases are still trailing EU-15 averages. Cardiovascular diseases account for nearly 50% of all deaths, while the standardized death rates for diseases of the circulatory system are more than twice the EU-15 average (Figure 2).

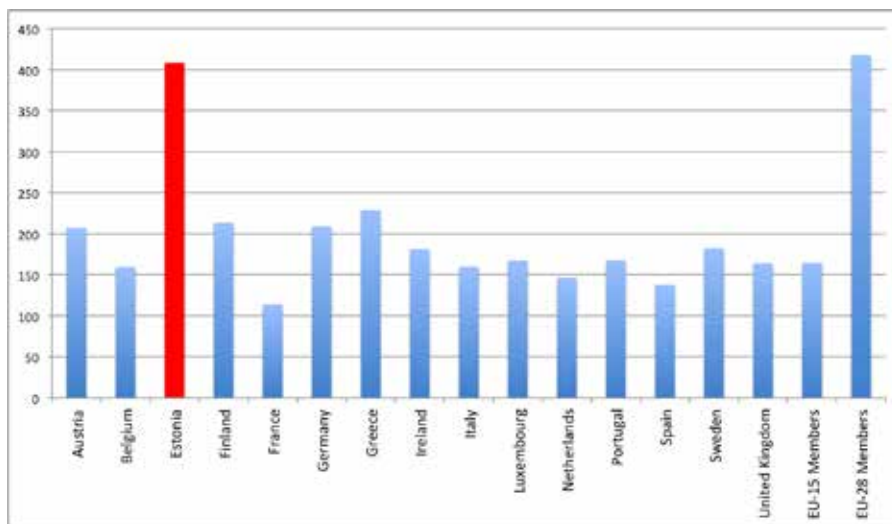


Figure 2. 2010 SDR, Diseases of Circulatory System, All Ages, per 100,000

Source: European Health for All Database, WHO

Addressing the challenge of the growing proportion of the population with these diseases will require a two-fold approach. First, the changes in health care demand will increasingly require improvements in the types and quality of available services, as well as better integration throughout the health care system. Second, a continuing focus on prevention and promotion initiatives will also be necessary to further reduce premature mortality, in particular among males, and the future burden of disease more generally.

The current study attempts to assess the state of system integration in Estonia to better understand where key challenges lie.

Methodological Approach

To do so, the study investigates specific research questions, which provide a sense of whether (i) care is being delivered in the appropriate care setting and (ii) there is adequate coordination and continuity of care across care settings.

With respect to the delivery of care in the appropriate care setting, the study investigates the following questions:

- Is there in acute inpatient or ambulatory specialist care that could be avoided through adequate primary care?
- Are stays in acute inpatient care longer than what is recommended for specific conditions?

In turn, the questions with respect to adequate coordination and continuity of care are the following:

- Is there adequate adherence to good technical practice in primary care as specified by clinical guidelines?
- Are there strong, enduring relationships between patients and family physicians (i.e. adequate continuity of care)?
- Is there adequate coordination of care before and after episodes of acute inpatient care?

To answer these questions the study focuses on care related to the prevention and treatment of chronic diseases, which will become increasingly important as the country's population ages. The study also examines whether there are any disproportionate effects for population sub-groups such as the poor, rural residents, residents of the predominantly Russian minority-inhabited region of Ida Viru, males and patients with self-management impairing conditions.

4. Methodological Approach

The study uses a mixed-methods approach. The quantitative component attempts to gauge the importance of performance issues resulting from weak integration of care. In turn, the qualitative component seeks to confirm the importance of these performance issues as well as gauge the importance other potential performance issues that were not amenable to measurement through the quantitative analysis. Moreover, the qualitative component seeks to identify potential underlying causes, which are substantiated with available data and information on the Estonian health care system.

Quantitative Indicators

The quantitative analysis uses indicators that are well-established in national performance frameworks and the literature (Box 2). Also, for the purposes of this study, additional indicators were newly developed to account for Estonia-specific system features and issues, which were endorsed by a representative from the Family Physicians' Association.

With respect to the delivery of care in the appropriate care setting, the study indicators determine whether; and to what extent, there are:

- a) Avoidable hospital admissions;
- b) Extended hospital stays; and
- c) Avoidable specialist visits.

With respect to adequate coordination and continuity across care settings, the study indicators reflect whether, and to what extent, there is/are:

- a) Under-provision of preventive services (according to what is specified by clinical guidelines);
- b) Adequate provider continuity in primary care;
- c) Incomplete discharges from acute inpatient care;
- d) Inadequate acute inpatient follow-up care; and
- e) Unnecessary pre-operative diagnostic procedures.

Box 2. Methods by Indicator

Avoidable Hospital Admissions⁴

This indicator assumes that hospital admissions for certain diseases (as defined by the principal diagnosis according to the International Classification of Diseases - ICD 10), are not justified unless a certain procedure is required (as defined by the Nordic Medico-Statistical Committee Classification - NOMESCO) or certain additional diagnoses indicate a complication of the patient's condition. Avoidable hospital admissions are calculated as a share of all admissions for a certain disease group (e.g., avoidable asthma admissions as a share of respiratory disease admissions) as well as age- and sex-standardized population rates.

Extended Hospital Stays⁵

This indicator gives the proportion of patients discharged back to their usual place of residence within the internationally recognized maximum length of stay for a specific condition after their admission to the hospital. In addition, the study distinguishes proportions of cholecystectomies that are conducted in a minimally invasive manner (i.e., laparoscopically) vs. a non-minimally invasive manner, which requires a much longer length of stay.

Avoidable Ambulatory Specialist Visits⁶

Internationally, there is no universally accepted protocol or indicator to determine the validity or need for a specialist visit. This indicator looks at specialist visits by patients whose conditions are considered uncomplicated based on the primary diagnoses made. Of these, visits were considered avoidable if patients presented to a specialist not specified in national Estonian guidelines. If several visits were billed under the same claim (e.g., pertaining to one care cycle), the decision on whether these visits were avoidable was made based on the primary diagnosis code assigned to the claim.

Under-provision of Preventive Services⁷

The indicator states for both hypertension and diabetes patients the percentage of i) patients receiving none of the tests recommended in Estonian guidelines and ii) patients receiving all the tests recommended in national guidelines. These percentages were calculated taking into account i) only tests provided by GPs, and ii) tests provided by both GPs as well as ambulatory specialists.

4 OECD Health Care Quality Indicators (HCQI) Primary Care Indicators.

5 US Agency for Healthcare Research and Quality - Inpatient Quality Indicator #23: Laparoscopic Cholecystectomy Rate and Compendium of Population Health Indicators Health and Social Care Information UK: Returning to usual place of residence following hospital treatment: fractured proximal femur/stroke

6 Developed by WBG staff in collaboration with medical experts from the US. Vetted by the Estonian Association for Family Medicine. Future applications of this protocol could benefit from the use of ePrescription data in order to better distinguish between cases that warrant specialist visits and such that do not (i.e., hypertension patients needing 3 or more agents in order to stabilize their condition should see a specialist despite their diagnosis code indicating uncomplicated hypertension).

7 Quality Bonus Scheme for General Practitioners in Estonia

Provider Continuity⁸

The study measures the frequency and sequence of patients' visits with primary care providers versus ambulatory specialists. The study uses the following measures for the general population and the different tracer groups: average number of outpatient visits per year, percentage of outpatient visits that occur with ambulatory specialists, average number of consecutive specialist visits before seeing a family physician and average number of consecutive family physician visits before seeing a specialist (includes both doctor's office and home visits).

Incomplete Discharges⁹

The indicator calculates the rate at which patients with a relevant tracer condition were prescribed beta-blockers, ACE inhibitors, statins, no prescription, or all 3 prescriptions i) during their inpatient stay, ii) within 30 days of discharge and iii) within 90 days of discharge. Only patients with an acute inpatient stay and a relevant primary diagnosis code (e.g., not a secondary diagnosis) that did not die during the 90 days after discharge were considered. Any prescription made during the entire inpatient care episode was considered as a valid prescription.

Inadequate Acute Inpatient Follow-up Care¹⁰

The indicator states the rate of patients with a relevant tracer condition that have follow-up visits with either (i) a family physician or (ii) an ambulatory specialist within a period of either (a) 30 or (b) 90 days of discharge from acute inpatient care. Only patients with an acute inpatient stay and a relevant primary diagnosis code (e.g., not a secondary diagnosis) that did not die within 90 days of discharge were considered for the analysis. An outpatient care visit counted as a follow-up visit if it occurred before the next inpatient care episode and if any diagnosis relevant to the tracer condition was made.

Unnecessary Preoperative Diagnostic Tests¹¹

The indicator identifies unnecessary pre-operative tests performed on patients undergoing a relevant tracer surgery based on both patient factors (age and co-morbidities) and the types of surgery and tests being performed. Tests were counted as unnecessary if they were performed up to 30 days before the surgery on a patient whose surgical grade, age, and American Society of Anesthesiology (ASA) category (as constructed based on renal, cardio-vascular and respiratory co-morbidities) did not warrant the test according to the used classification. Patients were classified into ASA categories based on relevant diagnosis codes given at the time of admission for surgery or any time during the calendar year of the surgery and the preceding calendar year.

8 The Canadian Health Services Research Foundation and the Canadian Institute for Health Information - Defusing the Confusion: Concepts and Measures of Continuity of Healthcare (2002) and Sandra H. Jee & Michael D. Cabana - Indices for Continuity of Care: A Systematic Review of the Literature, Medical Care Research and Review, Vol. 63 No. 2, (April 2006) 158-188.

9 New Zealand Best Practice Evidence-based Guideline on the Assessment and Management of Cardiovascular Risk (2003) and OECD Health Technical Papers No. 14 - Selecting Indicators for the Quality of Cardiac Care at the Health Systems Level in OECD Countries.

10 Lin, Barnato & Degenholtz - Physician Follow-Up Visits After Acute Care Hospitalization for Elderly Medicare Beneficiaries Discharged to Non-institutional Settings (2011).

11 Adapted by WBG staff in collaboration with medical experts from the US based on NHS Clinical Guideline 3 on Preoperative Tests - The use of routine preoperative tests for elective surgery. Evidence, Methods & Guidance. Vetted by the Estonian Association for Family Medicine. 1. Future applications of this protocol could use ePrescription data in order to better distinguish between moderate and severe comorbidities thanks to the medications being prescribed to the patient (e.g., Asthma or COPD patients).

Tracer Conditions

For feasibility of the analysis, each of the study indicators uses selected tracer conditions, which include chronic diseases and acute conditions (Table 2).

Table 2: Overview of Tracer Conditions by Indicator

Indicator	General Population	Diabetes	Hypertension	CHF	COPD	Asthma	CVD	AMI	Heart Failure	Unstable Angina	Stroke	Hip Fracture	Cholecystectomy	Hernia Repair	Cataract Surgery	Breast Lumpectomy
Avoidable Hospital Admissions		x	x	x	x	x										
Extended Hospital stays											x	x	x			
Avoidable Specialist Visits		x	x													
Provider Continuity	x	x	x				x									
Under-provision of Preventive Services		x	x													
Incomplete Discharges								x	x	x						
Inadequate Acute Inpatient Follow-up Care								x	x		x	x	x			
Unnecessary Pre-operative Diagnostic Procedures												x	x	x	x	x

Breakdowns by population sub-group¹²

The analysis also examines the variation of findings across sub-populations including different patient income groups, rural vs. urban residents as well as residents of the predominantly Russian-minority inhabited Ida-Viru region, to account for potential differences in service delivery capacity and to identify any disadvantaged communities (Table 3). Moreover, the analysis considers the gender of patients to shed light on possible system-related causes of the unusually large gap in life expectancy between females and males, as well as whether patients have a self-management impairing condition including (i) depression, (ii) dementia or (iii) a disability from vision or hearing loss.

For the analysis according to income,¹³ income quintile 1 is the poorest one as measured by household income per adult equivalent, while quintile 5 is the richest one as measured by household income per adult equivalent.

The urban/rural analysis used the patient's registered place of living, which in Estonia can be classified as urban municipality or town, or rural municipality or parish.

¹² Since the different population breakdowns differed considerably from each other in terms of their age and gender composition, age-sex standardizing as defined in OECD Health Care Quality Indicators (HCQI) 2012/2013 - Methodology for the Calculation of Age/Sex Standardised Rates/Mean and Confidence Intervals was applied.

¹³ The analysis use income estimates from Söstra and Aru (2013). Household income per adult equivalent was constructed using the OECD adjusted equivalence scale.

The analysis used patients' residence in Ida-Viru as a proxy for disaggregating results according to patients' ethnicity. Close to 80% of the population in Ida-Viru are of Russian origin and have limited command of the Estonian language.

The three comorbidities that potentially impair a patient's capacity to self-manage were identified using any diagnosis code associated with a patient's medical record at any time of the reference year and the preceding calendar year.¹⁴

Table 3: Overview of Breakdown Analysis Conducted by Indicator

	Provider Type	SES (Income Quintile)	Urban/Rural	Ida Viru/Rest of Estonia	Gender	Self-Management Impairing Comorbidities
Avoidable Hospital Admissions	X	X	X	X	X	X
Extended Hospital stays	X					
Avoidable Specialist Visits	X	X	X	X	X	X
Provider Continuity		X	X	X	X	X
Under-provision of Preventive Services	X	X	X	X	X	X
Incomplete Discharges	X	X	X	X	X	
Inadequate acute inpatient follow-up care	X	X	X	X	X	
Unnecessary pre-operative diagnostic tests	X					

Data Source

Study uses anonymized administrative claims data submitted by healthcare providers to the Estonian Health Insurance Fund. Such claims data exist for all publicly financed healthcare in Estonia. Given that the public share of health care spending is about 80%, and private financing of health care is mainly related to dental care and pharmaceuticals (and partially to copayments for pharmaceuticals) (Health Systems in Transition, 2013), these claims data virtually contain information about the entirety of health care being sought in Estonia. The claims data include billing data from inpatient care (including acute care, nursing care, and rehabilitation care), day care, and outpatient care (including ambulatory specialist care, nursing care, rehabilitation care, and primary care). These datasets specify patient information (e.g., birth year, gender, municipality of residence, etc.), healthcare facility information, doctor information, case information, diagnosis codes, surgical procedures codes, and all healthcare services offered by the EHIF as established in the Health Insurance Act and the List of Health Services. Furthermore the study

¹⁴ The classification of chronic conditions followed the methodology of Van den Bussche et al. - Patterns of ambulatory medical care utilization in elderly patients with special reference to chronic diseases and multimorbidity - Results from a claims data based observational study in Germany BMC Geriatrics 2011, 11:54.

also uses pharmaceutical prescription data¹⁵. The time frames used in the analysis are 2007-2009 and 2012-2014. Income data were obtained from the 2011 Population and Housing Census in Estonia as well as household per-capita income estimates constructed in Söstra & Aru (2013).

Sample Inclusions and Exclusions

For each indicator, the analysis uses all relevant observations for insured patients (with a valid personal identification number) unless the observations were incomplete (e.g., missing patient gender, patient age, or admission/visit dates). Also, all observations with a miscoded or incomplete primary diagnosis code (e.g., a diabetes code without the necessary specification of the condition – E10 instead of E10.9) were discarded. Overall, the number of observations excluded due to incompleteness or miscoding was negligible (less than 0.15% of observations for all indicators).

Key Informant Interviews and Focus Group Discussions

The qualitative research activities consisted of key informant interviews with representatives from main sector organizations and focus group discussions with providers and patients. The interviews/discussions follow semi-structured formats, using questions aiming to confirm system performance issues and elicit causes that may be associated with health system design, contracting and financing mechanisms, health system inputs and clinical processes. The results of the interviews and discussions were then triangulated with existing data and analyses on the Estonian health care system.

Key informant interviews were conducted with representatives from the following health sector organizations:

- (i) Estonian Health Insurance Fund
- (ii) Ministry of Social Affairs
- (iii) Health Board
- (iv) National Institute for Health Development
- (v) Association of Family Physicians
- (vi) Cardiologist Association
- (vii) Nurses Association
- (viii) Hospitals - Tartu University Hospital and North-Estonia Regional Hospital

Focus group discussions were conducted with provider groups (including specialists, family physicians and nurses) as well as with patients with chronic conditions (including urban, rural, and Russian minority patients). Each focus group had between 8-10 participants.

¹⁵ For Statins, beta-blockers, and ACE inhibitors. For 2008, only data on filled prescriptions was available, while for 2013, ePrescription data including both filled and unfilled prescriptions was used.

6. Results

In line with the study's original hypotheses, the study findings demonstrate that there are significant challenges toward achieving care integration in Estonia, which are broadly summarized by the following four categories:

- i) A tendency toward acute inpatient care, with extended hospital stays, of which substantial shares are avoidable
- ii) A tendency toward ambulatory specialist care, of which substantial shares are avoidable
- iii) Weaknesses in patient management in primary care, despite adequate continuity of care, with little added value from specialist care
- iv) Weaknesses in pre-and post-acute coordination of care

The specific performance indicators for these challenges, potential system-related underlying problems and causes, as well as variations according to different population sub-groups are discussed in more detail below.

It is important to note that these results are based on findings in relation to a set of tracer conditions and not from an analysis of the entire spectrum of illness. However, these tracers were selected to reflect a significant share of Estonia's burden of disease and therefore are reflective of the major challenges facing the health care system.

I. A Tendency Toward Acute Inpatient Care with Extended Hospital Stays, of which Substantial Shares are Avoidable

Estonia continues to face a tendency towards acute inpatient care, in line with the health care system's historical focus on acute inpatient and ambulatory specialist care located in hospitals. The country has made substantial progress over the recent two decades to reduce hospital capacity, and shift resources and services into alternative care settings. The country has since reduced its total number of acute care hospital beds¹⁶, reaching EU average levels (Figure 3). At the same time, Estonia has significantly reduced the number of acute inpatient discharges, partly by shifting surgical procedures into outpatient settings. Meanwhile, Estonia succeeded in reducing the average length of acute inpatient episodes. Currently, Estonia's performance falls somewhere in the middle compared to other EU countries.

Nevertheless, Estonia also spends one of the largest shares of government expenditure on health on hospital care when compared to Nordic and Western European countries (Figure 4), suggesting that there may still be further room for improvement. In 2011, it spent 56.6 % of government expenditure on health on hospital care, compared to 51.1 % in Denmark, 44.1 % in Norway and 34.5 % in Germany.

Indeed, the current study shows substantial shares of acute inpatient care is avoidable. This alludes to weaknesses in primary care as a chief cause. Moreover, a large share of hospital stays for certain acute conditions may also be reduced. Financial incentives at the hospital level, patient and provider behaviors, as well as low nursing and rehabilitation care capacity may also contribute to these performance issues.

¹⁶ Note: Acute care beds do not include beds in mental health care facilities.

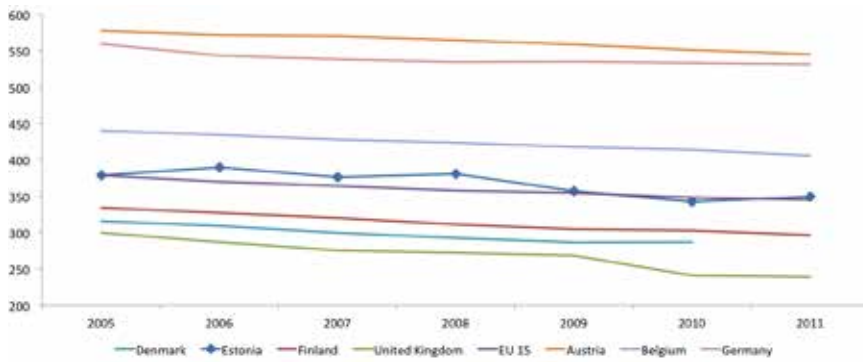


Figure 3. Acute Care Hospital Beds per 100,000

Source: European Health for All Database, WHO, 2014

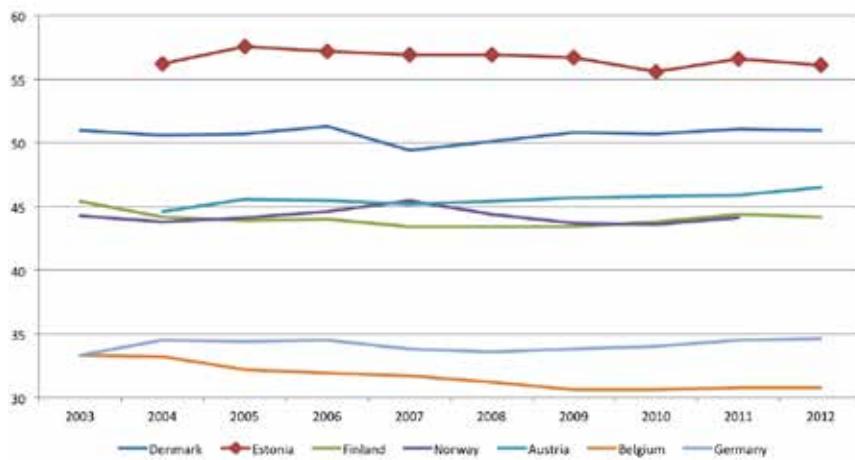


Figure 4. % of GGHE on Hospitals

Source: OECD, 2014

Avoidable hospital admissions

The study considers avoidable hospital admissions in Estonia as the share of hospitalizations for selected chronic disease complications that could have been prevented through adequate ambulatory care.¹⁷ The OECD protocol utilized defines these disease admissions to be avoidable unless they are directly related to a set of procedures.¹⁸ The chronic diseases included in the analysis are asthma, chronic obstructive pulmonary disease (COPD), diabetes, congestive heart failure (CHF) and hypertension.

Avoidable admissions for these chronic diseases constitute a large share of all admissions for relevant disease groups (Table 4). They constitute approximately 80% of admissions for corresponding disease groups such as lower chronic respiratory disease, diabetes mellitus, and hypertension and other forms of heart disease. They also comprise significant shares of other relevant disease groups. For example avoidable diabetes admissions constitute 47% of admissions for endocrine, nutritional and metabolic disease admissions. This is followed by avoidable CHF and hypertension admissions, which constitute about 23% of circulatory disease admissions, and avoidable COPD and asthma admissions, which constitute about 9% of respiratory disease admissions.

¹⁷ Hospital admissions are defined as acute inpatient care admissions, with the exception of hemodialysis day care admissions for diabetes patients.

¹⁸ See Operations Manual.

Table 4: Avoidable admissions as a share of hospital admissions for related disease groups (2013)

Tracer condition and related disease group	Avoidable Admissions
Avoidable COPD & asthma admissions as a share of: <ul style="list-style-type: none"> • Lower chronic respiratory disease admissions • Respiratory disease admissions 	76.9% 8.7%
Avoidable diabetes admissions as a share of: <ul style="list-style-type: none"> • Diabetes Mellitus admissions • Endocrine, nutritional and metabolic disease admissions 	83.0% 46.7%
Avoidable CHF & hypertension admissions as a share of: <ul style="list-style-type: none"> • Hypertension & other forms of heart disease admissions • Circulatory disease admissions 	84.3% 22.35%

Source: World Bank team calculations.

There is a trend towards larger proportions of total avoidable admissions for respiratory, metabolic, and circulatory disease occurring at lower-level hospitals (Table 5). General hospitals, which offer the most limited range of services, have the highest proportion of avoidable admissions for all three chronic disease categories (22.5%). This may be due to the fact that these hospitals are more accessible and therefore are often the first point of contact for many patients, including those that do not have access to regular outpatient care for financial reasons, or those that lack the social support to be cared for at home. These hospitals may also admit patients with less complex conditions.

Table 5: Avoidable admissions by hospital type

Provider type	Total admissions (2013): Respiratory, Endocrine, and Circulatory	% Avoidable
Regional	22,903	14.69%
Central	20,612	18.58%
General	18,144	22.33%
Non HNDP providers	10,138	14.01%
All providers	71,797	17.64%

Source: World Bank team calculations.

Note: Referrals and transfers to other facilities are excluded from this analysis.

Estonia's population standardized avoidable admission rates have already decreased substantially between 2008 and 2013 (Table 6).

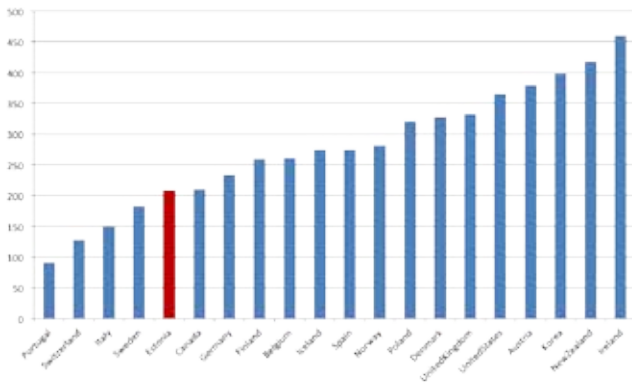


Figure 5: All Tracer Avoidable Admission Rates (2008)

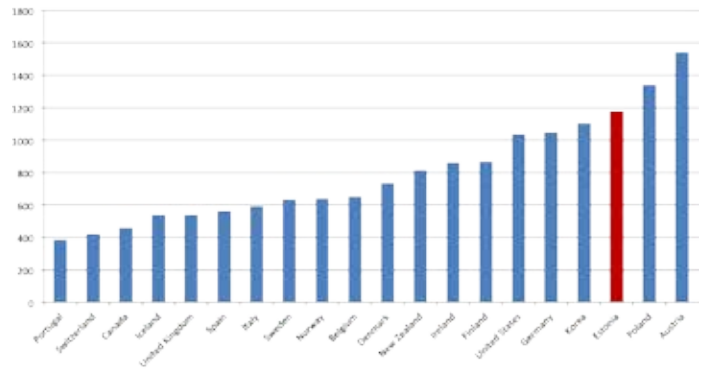


Figure 6: Respiratory Avoidable Admission Rates (2008)

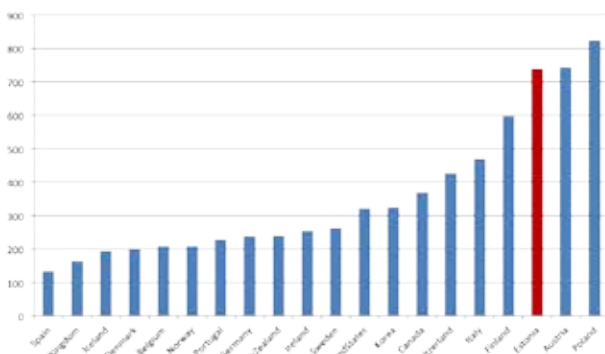


Figure 7: Diabetes Avoidable Admission Rates (2008)

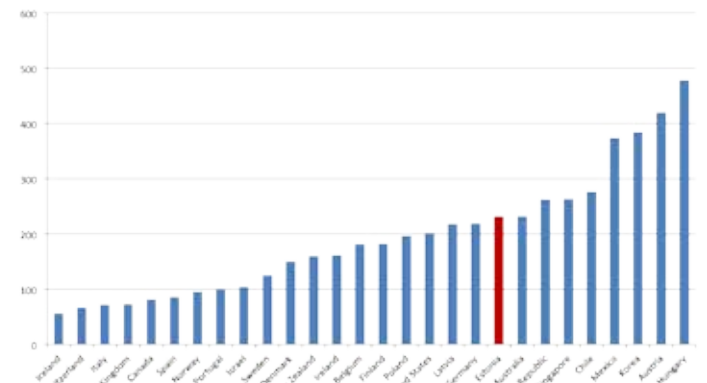


Figure 8: CVD Avoidable Admission Rates (2008)

Source: Estonia data from study results, other country data from OECD.

Table 6: Change in standardized avoidable admission rates over time

Tracer/Year	Asthma	COPD	Diabetes	CHF	Hypertension
2008	78.0	133.0	232.0	403.0	343.0
2013	48.0	125.0	200.0	340.0	229.0

Source: World Bank team calculations.

Estonia has the third largest rate of standardized avoidable admissions in the OECD (about 1189 per 100,000 population in 2008¹⁹; Figure 5), but this varies by diagnostic group. While Estonia does have the third highest avoidable admission rates for CHF and hypertension (Figure 8), rates for diabetes mellitus are close to the median (Figure 7), and Estonia’s rates for avoidable respiratory disease admissions are the fifth lowest in the OECD (Figure 6).

A variety of factors could contribute to the variation in performance across tracers including country-specific burdens of disease, levels of health spending, differences in quality assurance systems, and coding practices.

¹⁹ Age and sex-standardized rates are calculated for 2008 in order to include the widest range of comparator countries from the OECD for which data are available.

Extended Hospital Stays

Extended hospital stays are more frequent for hip fracture patients than for stroke patients (Table 7).²⁰ About 32.6% of hip fracture patients remain hospitalized beyond the international standard of 28 days. The percentage of stroke patients remaining in acute inpatient care beyond the recommended 56-day period is 6.91%. For both conditions there have been slight increases in the percentages of extended stays since 2008.

Table 7: Share of hospital stays beyond recommended period, stroke

Tracer	Total cases (2008)	% of outliers	Total cases (2013)	% of Outliers	% pt. Change
Hip fracture (28 days)	1374	29.33%	1529	32.6%	3.27%
Stroke (56 days)	4054	5.56%	4335	6.91%	1.35%

Source: World Bank team calculations.

The results for stroke show no striking patterns when broken down among regional, central, general and Non-HNDP hospitals (Table 8), whereas a slightly larger percentage of extended stays for hip fractures (39.3%) occur in general hospitals, as compared to other HNDP and non-HNDP hospitals (Table 10). For both conditions, there have been slight increases in the percentages of extended stays in all hospitals from 2008.

Table 8: Share of extended hospital stays, stroke, by hospital type (56 days)

Stroke	Total cases (2008)	% of outliers	Total cases (2013)	% of outliers
Regional	850	5.88%	1220	6.64%
Central	1400	6.00%	1539	7.86%
General	1287	4.97%	1018	6.48%
Non HNDP providers	517	5.22%	558	5.73%
All providers	4054	5.56%	4335	6.91%

Source: World Bank team calculations.

Table 9: Share of extended hospital stays, hip fracture, by hospital type (28 days)

Hip fracture	Total cases (2008)	% of outliers	Total cases (2013)	% of outliers
Regional	594	26.26%	656	31.71%
Central	457	29.98%	511	32.09%
General	251	37.05%	267	39.33%
Non HNDP providers	72	23.61%	95	22.11%
All providers	1374	29.33%	1529	32.60%

Source: World Bank team calculations.

²⁰ Hospital stays are defined as stays in acute inpatient care, however, also include hospital-based rehabilitation until return to usual place of residence.

In addition to admissions that extend beyond the international standard period, the analysis also considers the extent to which inappropriate procedures contribute to increased length of stay in hospital. Current evidence recommends conducting cholecystectomies by laparoscopy, associated with a 3-day hospital stay. However, the study shows that in Estonia in 2013, over 11% of cholecystectomies conducted in HNDP hospitals²¹ still used non-minimally invasive surgeries (NMIS), which presents a very small decrease from the 11.8% in 2008 (Table 10). Moreover, NMIS procedures have an average length of stay of about 13.6 days, more than quadrupling the length of stay for laparoscopic procedures.

Table 10: Share of (NMIS) procedures

Tracer	Total cases (2008)	% of NMIS	Total cases (2013)	% of NMIS
Cholecystectomy	2924	11.81%	2706	11.12%

Source: World Bank team calculations.

Although it was hypothesized that general hospitals would have the highest percentage of NMIS, since these hospitals tend to have the least technologically advanced procedures, the study found that these hospitals actually have the lowest percentage of NMIS (Table 11). In contrast, regional hospitals have the highest level of NMIS, at 19.5% of total cases in 2013. While the overall percentages of NMIS has decreased since 2008 in both central and general hospitals, the percentage in regional hospitals increased from 12.85% in 2008. In hindsight, this result may be due to the fact that more serious or complex cases require the more invasive open procedure for improved visualization and access to the surgical field. These cases are more likely to be dealt with in regional hospitals.

Table 11: Percentage of (NMIS) procedures, by provider type

Cholecystectomy	Total cases (2008)	% NMIS	Total cases (2013)	% NMIS
Regional	1011	12.85%	862	19.49%
Central	1138	9.40%	1128	8.33%
General	775	9.30%	716	5.45%
Non HNDP providers	-	-	-	-
All providers	2924	11.81%	2706	11.12%

Source: World Bank team calculations.

Also, contrary to the study's original hypothesis, in more than 10% of cases the majority of doctors conducting these NMIS surgeries operate in both central and regional hospitals (Figure 9), again reflecting the possibility that these higher-level hospitals may deal with the most complex cases. In contrast, the doctors who conduct no NMIS are nearly evenly distributed among all HNDP hospital types.

Underlying causes

The sizable share of avoidable hospital admissions for chronic diseases point to potential weakness weaknesses in primary care that result in: i) inappropriate referral and care-seeking behaviors and/or ii) the deterioration of a patient's disease/condition, leading to a need for higher levels of care. These weaknesses in primary care will be discussed further in section III. At the hospital level financial incentives

²¹ Both in 2008 and 2013, cholecystectomies were only conducted in HNDP hospitals.

Results

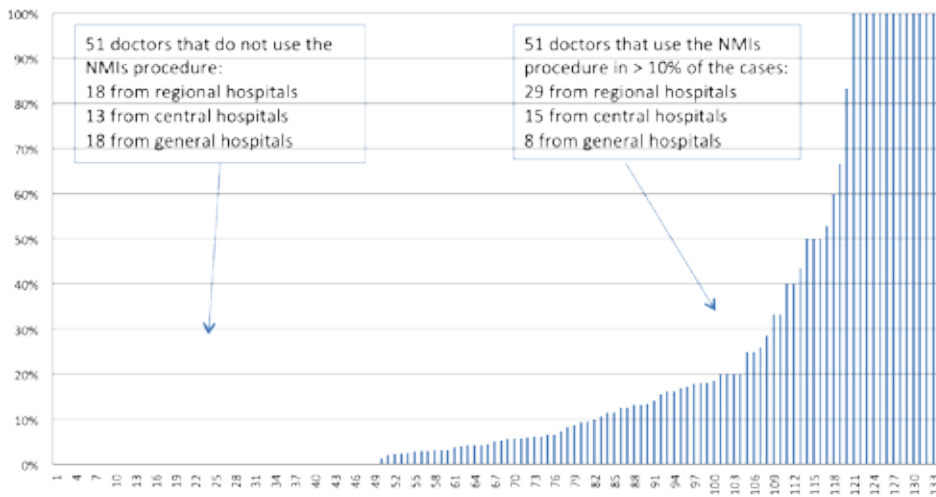


Figure 9: Number of doctors that use NMIS procedure

Source: World Bank team calculations.

to increase volumes until case volume caps are reached may favor these avoidable admissions and extended stays. Moreover, limitations in nursing, rehabilitation and social care capacity may prevent the potential shifting of services outside of acute care settings.

Incentives in acute inpatient care to maximize volumes

Financial reimbursement methods in acute inpatient care may create incentives for avoidable admissions and extended hospital stays. Although EHIF contracts set annual cost and bi-annually negotiated volume caps on acute inpatient care services, hospitals may still face an incentive to increase volumes. The combination of payment mechanisms - where DRG payments comprise 70% and FFS comprise only 30% (Box 1) - promotes shortening the length of stays and reducing the number of services provided per case to some extent, yet, it still provides an incentive to increase the volume of cases until caps are reached. This effect may be compounded by the lack of a policy to partially pay for unrealized quota, for example, at a rate corresponding to the fixed cost of services. Moreover, in 2006, the EHIF began to reimburse 30% of the cost of hospital services beyond the capped volumes and amounts. As the cost caps are negotiated annually, hospitals may also choose to overprovide services and incur losses in the short run, in hopes of increasing revenues in consecutive years.

While the share of extended hospital stays is relatively low in international comparison, financial incentives may also present a significant barrier to shifting some inpatient nursing and rehabilitation services to more appropriate settings outside of acute inpatient care, thus reducing extended hospital stays. Inpatient nursing care is subject to volume caps that are determined for each provider. However, until the volume caps are reached, the payment mechanisms for these types of care may create incentives to increase the volume of services provided. In addition, although payment for nursing care in acute inpatient settings, which is primarily on a per diem basis, lasts only for a period that is equal to the average length of stay for a case (about 21 days), hospitals may, if needed, negotiate an extension of this period based on historical data showing longer patient stays, or based on the severity of cases the hospital attends to. Regardless, providers may have the incentive to extend patient stays until this maximum length of stay is exhausted. Acute inpatient rehabilitation is included in the payment for acute inpatient care and is paid on a FFS basis, which includes a per-diem payment, subject to the same volume cap as acute inpatient care. Hospitals thus

may also have financial incentives to continue providing rehabilitation within acute inpatient care settings until the volume caps are reached. Afterwards, referring on to outpatient or rehabilitation wards, rather than transferring care to external facilities, may help keep further revenues within the same hospital, while eliminating any costs associated with coordinating transfers to an external facility.

Limited capacity in nursing, rehabilitation and social care

The primary issue with shifting nursing and rehabilitation care outside of the inpatient setting may be a lack of capacity. In the case of nursing, while there has been an increase in recent years in institutional nursing care capacity, home-based care still remains considerably underdeveloped. Rehabilitation is currently provided in both hospitals and specialized medical centers, although access has historically been severely limited and geographically uneven, resulting in a lack of timely access to care and a high level of unmet need. Access to social care after discharge is also severely limited, since separate financing systems lead to very little coordination between the health and social care sectors (Lai et al., 2013).

II. A Tendency Toward Ambulatory Specialist Care, of which Substantial Shares are Avoidable

Estonia continues to face a tendency toward ambulatory specialist care, in line with the system's historical focus. However, study results reveal that substantial shares of these visits may be avoidable, pointing again to potential weaknesses in patient management at the primary care level. In addition, possible financial incentives to increase volumes in ambulatory specialist care (until case volume caps are reached), as well as patient and provider behaviors due to preferences and health system limitations may also contribute to avoidable specialist visits.

Avoidable Specialist Visits

The study determined the extent of avoidable specialist visits for diagnoses related to hypertension and diabetes. All diagnosis codes pertaining to these diseases were reviewed by an expert panel, and divided into complicated vs. uncomplicated disease categories. Estonia's national guidelines on these diseases were also reviewed to determine when specialist referrals are recommended (e.g. all diabetics should have an annual dilated eye exam). An avoidable specialist visit was defined as a patient presenting to a specialist not mentioned in the guidelines with an uncomplicated diagnosis code.²²

In 2013, 67.5% of specialist visits for hypertension were deemed avoidable. Hypertension accounted for the most avoidable specialist visits; however, about one fifth of specialist visits for diabetes were also avoidable (Table 12). Over 80% of avoidable hypertension visits were with cardiologists while over 90% of diabetes visits were with endocrinologists. The proportion of avoidable visits has decreased marginally since 2008 for both of these conditions.

22 See Operations Manual.

Table 12: Share of avoidable specialist visits

Tracer Condition	2008		2013		2008-2013
	Specialist Visits	%	Specialist Visits	%	% pt. Change
Diabetes	39,520	26.03%	42,064	19.91%	-6.12%
Hypertension	60,302	70.81%	63,917	67.49%	-3.32%

Source: World Bank team calculations.

While there is no pronounced pattern for avoidable hypertension visits according to type of hospital in 2013 (Table 13), general/local hospitals had the highest share of avoidable diabetes visits (Table 14). Moreover, while all other hospital types experienced a significant decrease in avoidable specialist visits since 2008, general/local hospitals experienced an increase in these visits of about 10 percentage points for both diabetes and hypertension patients.

Table 13: Share of avoidable specialist visits by provider type, hypertension

Hypertension	2008		2013	
Provider type	Specialist visits	% avoidable	Specialist visits	% avoidable
Regional	12,697	78.58%	14,704	67.83%
Central	26,262	69.58%	27,017	66.97%
General	10,440	53.75%	10,304	62.44%
Non HNBP providers	10,903	81.07%	11,893	72.62%
All providers	60,302	70.81%	63,918	67.49%

Source: World Bank team calculations.

Table 14: Share of avoidable specialist visits by provider type, diabetes

Diabetes	2008		2013	
Provider type	Specialist visits	% avoidable	Specialist visits	% avoidable
Regional	6,298	21.17%	6,172	13.09%
Central	12,885	29.20%	17,073	13.75%
General	7,685	33.85%	7,344	43.60%
Non HNBP providers	12,652	20.47%	11,475	17.58%
All providers	39,520	26.03%	42,064	19.91%

Source: World Bank team calculations.

Underlying causes

Financial incentives in ambulatory specialist care to increase volumes may favor these avoidable visits in addition to weaknesses in patient management at the primary care level, which may lead to a deterioration of health conditions requiring higher levels of care or inappropriate referral practices. Moreover, inappropriate patient care-seeking behaviors due to preferences for immediate and/or more specialized care, as well as inappropriate referrals to emergency care may also contribute to the large numbers of avoidable visits.

Incentives in ambulatory specialist care to maximize volumes

Financial reimbursement methods in ambulatory specialist care may create incentives to increase case volumes. Specialist care is paid on a FFS basis until a volume cap agreed upon with the EHIF is reached. From 2014, the EHIF also reimburses 70% of the cost of outpatient care services (as well as day care services) up to 5% beyond this volume cap if the agreed minimum number of cases has been provided. And as in acute inpatient care, hospitals may choose to overprovide services and incur losses in the short run, in hopes of increasing revenues in consecutive years.

Patient behaviors

The high share of avoidable specialist visits also points to a potential preference among patients for specialist care. Patients tend to be particularly keen to access care through emergency departments, which provide around-the-clock access to care that patients can access after primary care office hours, and a wider range of diagnostic services than in primary care. While specialist and emergency care copayments were instituted to counteract this trend, the relatively low price of these copayments (€ 5) may not set a sufficiently high threshold to deter patients from seeking such care. However, added to the standard EHIF fee (on average, € 18 for a first-time specialist consultation and € 12 for follow-up visits), it may create a strong financial incentive for specialists to see as many patients as possible, to increase revenues.

Provider behaviors

Patients may also access the emergency room on the instructions of their family physicians, not because they require emergency care, but as a route to hospital admission to circumnavigate bed vacancy restrictions faced by family physicians while trying to directly admit their patients to acute inpatient care.

III. Weak Patient Management in Primary Care, Despite Adequate Continuity, with Little Value Added from Specialist Care for Disease Prevention

As described in the previous section, the relatively high number of avoidable specialist visits and hospital admissions may be partly attributed to weaknesses in primary care that result in i) inappropriate referral and care-seeking behaviors and/or ii) the deterioration of a patient's disease/condition that requires higher levels of care. The study's results partially support this notion by showing that although patients with chronic conditions generally have frequent contacts with their primary care physicians, these physicians are not providing adequate prevention services, leading to deterioration in health and creating increased need for specialist and hospital care. Specialist care provides little added value in terms of increasing coverage with these preventive services. Potential weaknesses in primary care leading to poor patient management may include poor adherence to guidelines, a lack of emphasis on self-management, and a lack of problem solving capacity. Moreover, a lack of clarity in terms of the roles and responsibilities for coordinating the management of patients across health and social care sectors may contribute to the problem.

Continuity at the primary care level

Ensuring adequate continuity in primary care is an important factor in avoiding unnecessary hospital admissions and specialist visits, particularly for patients with chronic conditions. By maintaining regular visits with a primary care provider, family physicians can provide adequate disease management services and are more likely to catch precursors to more serious complications that may arise from the disease if left untreated. Patients in general and particularly those with chronic conditions receive a large share of ambulatory care from specialists, yet they have frequent contact with primary care physicians. This is contrary to the general perception that once patients are referred to specialist care, they tend remain there (i.e. primary care and specialist care are separate worlds).

For the purposes of this analysis, people with chronic diseases were compared to the general population ages 18 and over. The general adult population made an average of 6.4 outpatient visits in 2013 (as compared to 5.64 visits for the total insured population), while patients with chronic diseases made around 10 visits in 2013 (Table 15). These averages have remained relatively consistent over time, changing very little from the averages in 2008 (see Data Deck , p.35²³).

Table 15: Average number of outpatient visits for population over 18 years seeking care and chronic disease patients (2013)

Disease / condition ²⁴	Average number of visits (2013)
	Country
Population seeking care older than 18 years	6.4
Diabetes (18 and older)	10.3
Hypertension (18 and older)	9.8
CVD (18 and older)	9.5

Source: World Bank team calculations.

The proportion of primary care visits for the general adult population seeking care is about 60%, with the remaining 40% of visits taking place in specialist care (Table 16). This ratio remains roughly the same for patients with diabetes, hypertension and CVD, and has not changed since 2008 (see Data Deck, p. 36).

Table 16: Share of primary vs. ambulatory specialist visits for population over 18 seeking care and chronic disease patients (2013)

Disease / condition ²⁵	Primary care	Ambulatory specialist care
General population seeking care older than 18 years	61.0%	39.0%
Diabetes	59.2%	41.8%
Hypertension	60.6%	39.4%
CVD	60.9%	30.1%

Source: World Bank team calculations.

²³ The Data Deck is available on the EHIF website: www.haigekasse.ee.

²⁴ All visits with obstetricians/gynecologists are excluded (see Operations Manual).

²⁵ All visits obstetricians/gynecologists are excluded (see Operations Manual).

In terms of sequential continuity, patients with chronic diseases also differ only slightly from the comparator population (Table 17). For the sequential continuity index, where 1 implies remaining with the same type of physician (i.e., primary care or specialist care) for 100% of consecutive visits, and 0 implies constant switching of physician types, the general adult population has a sequential continuity index of .79. This suggests that approximately 80% of consecutive visits are with the same type of provider. Similarly, patients with chronic conditions have an index of .72, indicating a slightly lower proportion of consecutive visits with the same provider. These indices have remained consistent since 2008 (see Data Deck, p.38). However, patients in general do not tend to have several consecutive visits with specialists, with almost 60% of patients returning to a family physician after only one specialist visit and more than 80% after two (Figure 10). This pattern holds for patients with chronic conditions (see Data Deck, p.41-43). These results disprove the hypothesis that patients tend to remain in specialist care settings once they are referred.

Table 17: Sequential continuity index for population over 18 seeking care and patients with chronic conditions (2013)

Disease / condition	Sequential continuity
Population seeking care older than 18 years	0.79
Diabetes	0.72
Hypertension	0.72
CVD	0.72

Source: World Bank team calculations.

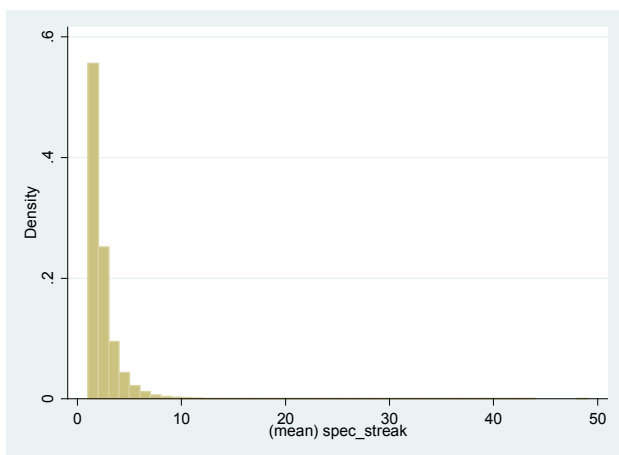


Figure 10: Average number of specialist visits by patient in a row before seeing family physician again

Source: World Bank team calculations.

Under-and-over provision of preventive services

Despite the frequent contact with primary care, patients with chronic diseases do not receive adequate preventive care according to clinical guidelines. Only about 41% of patients with diabetes receive the full range of recommended annual diagnostic tests from their family physician, and 20% receive no tests at all (Table 18). The findings are consistent with only about half of the physicians participating in the Quality-Bonus-Scheme providing the required level of care to receive the bonuses. With the exception of albuminuria, for which only about 45% of patients are tested, 70% to 75% of patients receive some of the recommended diagnostic tests. In addition, nurse counseling is provided to about 65% of patients. There is only a slight improvement seen

Results

with ambulatory specialist visits, with about 44.2% of patients receiving all recommended tests (an additional increase of 3.1 percentage points) and 13% of patients receiving no tests at all (a drop of 7 percentage points). The change in total coverage for individual tests as a result of those provided in ambulatory specialist care, increases by less than 10 percentage points in all cases. Moreover, patients tend not to receive further counseling during specialist visits. This small increase in coverage of preventative services sheds further doubt on the value added by the large shares of avoidable specialist visits.

Nevertheless, there has been an overall improvement in the coverage of these tests and counseling between 2008 and 2013 (See Data Deck, p. 50). Including ambulatory specialist visits, in 2008 only about 25% of patients received all tests, while about 20% received no tests at all. Furthermore, no nurse counseling was provided in any care setting. Individual tests were given to less than 60% of patients during family physician visits (and only 25% were tested for albuminuria). The improvement from 2008 to 2013 appears to be due to an increase in test coverage in primary care, with a declining role of specialists in providing these tests.

Table 18: Compliance with guidelines for diabetes in family physician (FP) and ambulatory specialist (AS) care (2013)

Procedure	FP only	FP & AS	Difference
Glycated Hemoglobin	72.8%	79.6%	6.8%
Cholesterol	74.9%	79.8%	4.9%
Cholesterol Fractions	68.2%	72.9%	4.7%
Albuminuria	45.5%	48.4%	2.9%
Creatinine	75.0%	82.7%	7.7%
All	41.1%	44.2%	3.1%
None	20.0%	13.0%	-7.0%
Nurse Counseling	65.7%	NDA	NDA

Source: World Bank team calculations.

In the case of hypertension, only 9.5% of patients receive the full complement of recommended diagnostic tests in primary care, and about 24.6% of patients received no tests at all (Table 19). Taking tests provided in specialist care into account, the picture improves only slightly, with 10.2% of patients receiving all recommended tests and 19.4% receiving no tests at all. Provision of the individual diagnostic tests is slightly lower than in the case for diabetes patients, with about 60-65% of patients receiving tests. This excludes albuminuria tests, which are only provided to about 37% of patients, and EKGs, which were provided to 20% of patients. Similar to diabetes, nurse counseling for hypertension was only provided in GP care, and to about 58% of patients

Coverage of diagnostic tests for hypertension has increased over the years. Including tests provided during ambulatory specialist visits, only 10% of patients received all recommended tests in 2008, while nearly 20% received none at all (See Data Deck, p.53). Individual tests were provided to less than 55% of patients with hypertension in primary care, and no care setting provided nurse counseling. The lowest coverage levels were for cholesterol fractions (38.6%), albuminuria (17.4%) and EKG (19.2%). As with diabetes, the improvements in coverage between 2008 and 2013 appear to be due to increases in primary care services, with a declining specialist role.

Table 19: Compliance with guidelines for hypertension in family physician (FP) and ambulatory specialist (AS) care (2013)

Procedure	FP only	FP & AS	Difference
Glucose	65.4%	65.6%	0.2%
Cholesterol	68.4%	71.7%	3.3%
Cholesterol fractions	62.0%	65.2%	3.1%
Albuminuria	37.3%	38.0%	0.7%
Creatinine	66.5%	74.0%	7.5%
EKG	20.3%	22.0%	1.7%
All	9.5%	10.2%	0.7%
None	24.6%	19.4%	-5.2%
Nurse Counseling	58.4%	NDA	NDA

Source: World Bank team calculations.

Underlying causes

There are many potential causes of poor patient management in primary care, some of which would require simple adjustments in practice while others may require a more fundamental change in the service delivery system.

Insufficient financial incentives for effective disease prevention

While there has been much progress in recent years to increase the levels of financing for specific primary care services to encourage a stronger role of family physicians in the health system, financial incentives may still be insufficient to promote full compliance with clinical guidelines for chronic disease prevention. The capitation component constitutes approximately two-thirds of family physician payments, which is large in comparison to family physician payment systems in other European countries. This may create the incentive for family physicians to forgo their gatekeeping function and ignore patients immediately seeking care or actively refer them to specialist care.

In addition, although the EHIF increased the cap of FFS funds for diagnostic services by 5 percentage points to 42% percent of total capitation in 2015 and also finances 70% of the cost of services beyond the cap, the limitations on funding may nevertheless discourage them from providing screening to patients with chronic conditions. Indeed, there are cases of some family physicians failing to even exhaust the original cap. Depending on contracting capacity of family physicians, reimbursements rates may over- or under-compensate them for the incurred costs even when they rely on other providers to render the services.

Although a pay-for-performance system, the QBS, was implemented in 2006 to create incentives for better management of patients with chronic conditions in primary care, the limited FFS funds as well as several characteristics of the scheme itself may undermine the achievement of this aim. For example, the scheme, which is based on a point system, rewards the provision of individual procedures or services rather than for coordinating the provision of a full set of recommended services for patients with a

specific condition. It also lowers the bar by awarding the bonus to family physicians when only 80% of all possible points are reached. Furthermore, the scheme does not monitor the type of physicians that provide the services – that is, family physicians benefit from the marginal increase in preventive services provided by specialists. The size of the bonus payment is small, constituting only about 2% of the average family physician's annual revenues in 2014. In addition, there is some indication that family physicians find the scheme patronizing, which may further compromise compliance.

Heavy workloads for family physicians

Family physicians' heavy workloads may also contribute to poor adherence to the guidelines and difficulties in meeting patient needs. As independent business owners operating under private law, the need to devote time to the administrative demands of running a practice contribute to family physicians' workloads reducing the amount of time per day available for clinical work, which may affect the quality and comprehensiveness of the care that is provided. To ensure adequate access, family physician practices are required by law to accept patients for at least 4 hours per day and to be open at least eight hours each working day between 8 am and 6 pm (and to be open until 6:00 pm at least once a week). The EHIF monitors adherence to these mandated working hours during its regular audits, demonstrating, in general, good compliance. Similarly, the EHIF monitors compliance with the maximum waiting time of five days for primary care, also showing good adherence. However, it remains to be proven whether this target waiting time sufficiently meets patient expectations and successfully deters bypassing of primary care.

Family physician preferences

Aside from the lack of incentives and heavy workload, family physician preferences may hinder the provision of preventive services according to guidelines. Some family physicians interviewed for this study indicated a preference for providing care that is more tailored to individual patients rather than adhering to clinical guidelines. In addition, a few family physicians felt that their primary role was to provide treatment, and that prevention should be the responsibility of public health specialists and more broadly community health. A preference for treatment may stem from the past training as specialists of many family physicians, only retraining in family medicine in the early 1990s (currently, about 80% of Estonia's family physicians are retrained specialists).

Lack of patient-centered communication and focus on patient empowerment to self-manage

Being able to explain treatment choices in an understandable manner, respond to patient concerns and treat them as partners in health care decisions are essential factors in strengthening relationships with patients as well as ensuring patient adherence to treatment and self-management regimens. A lack of training in patient-centered communication may contribute to many family physicians' inadequate provision of prevention services and inadequate response to patients' needs and preferences.

A persisting cultural mindset perceives family physicians as the authority figures and patients as passive recipients of care, inhibiting a focus on patient empowerment to self-manage. This is perpetuated by a lack of guidelines, counterproductive financial incentives, and inadequate accountability mechanisms that could be preventing family physicians from educating patients to self-manage their chronic conditions in order to avoid complications that may require specialist care. In recognition of these limitations,

courses for family medicine residency trainees as well as already practicing family doctors and nurses on patient counseling and motivational interviewing were recently added to Estonia's medical education and Continuous Medical Education (CME).

Efforts to increase patient empowerment to effectively manage their own health conditions may also be undermined by a lack of long-term financing for many municipality-run health promotion programs.

Outdated family physician education

Outdated family physician education that fails to fully reflect current evidence-based practice may also weaken patient management. Despite the Estonian Family Physicians Association recommendation that all family physicians be recertified every five years, participation in CME courses and re-certification programs is low, which may result in outdated practices. This is particularly true in the Eastern part of Estonia, where most family physicians speak Russian and encounter language barriers in accessing Estonian-language training courses and literature. Low engagement in CME and re-certification is particularly concerning given that the average age of family physicians is 54.5 years. This high average age stems from low training capacities in medical universities, which were significantly reduced in the 1990s due to a perceived oversupply of physicians, along with emigration for financial reasons. Thus, the low participation in any type of educational course aside from the family medicine retraining courses beginning in the 1990s, suggests that many family physicians' formal medical training is likely to be relatively outdated.

Limited scope of primary care services

Family physicians may be limited in their problem-solving capacity, due in part to insufficient time, insufficient resources for investment, and insufficient flexibility. For example, the current system is designed to allow in some cases only specialists to make a definitive diagnosis and initiate treatment for chronic diseases, contributing to the trend of bypassing primary care when accessing health services. Some steps are being taken to expand the scope of services provided in primary care. In 2014 the EHIF introduced an uncapped FFS activity fund for minor surgical and gynecological procedures that family physicians can carry out on their own, and in 2015, added a separate "Therapeutic Fund" up to 3% of capitation to cover the cost of psychologists and speech therapists. In addition, an e-consultation system has been implemented in one major Estonian hospital. Through this system specialists are reimbursed to provide consultation services to family physicians, which allows them to make diagnoses at the primary care level, and determine if further specialist care is needed. Broader implementation of this system could substantially reduce the number of avoidable specialist visits by increasing problem-solving capacity at the primary care level.

Lack of multi-professional care and group practices

Limited multi-professional care, including a lack of access and coordination of services with other healthcare professionals such as nurses and physiotherapists, may also contribute to reduced overall quality of primary care services. Although the EHIF has financed one nurse per practice since the 1990s, and has recently begun financing a second nurse per practice, nurses have historically only conducted administrative tasks. This has resulted in low levels of trust by both patients and physicians in nurses' clinical skills, and thus a lack of realization of their full potential. Furthermore, the overall supply of

nurses remains below EU averages, due to both reduced training capacities during the 1990s and nurses leaving the country for higher paying salaries (a study revealed that only half of those awarded nursing certifications in the period 2004-2011 in Estonia were still working in a health care institution in Estonia in 2012). Similarly, there is an overall shortage of qualified physiotherapists in the country (Lai et al., 2013). Family physicians may be reluctant to hire additional health professional staff and expand their services due to infrastructure limitations, or lack of financial resources. Since family physicians operate as firms under private law, they may require non-traditional mechanisms for public stimulus and investments, such as access to finance with tax breaks, leasing of public spaces, etc.

Group practices are another way to help improve quality of care, delivering peer learning, improved access and continuity of care, and enabling patients to visit other family physicians within the same practice if their own physician is not available. While there has been a growing trend toward group practices, solo family physician practices continue to comprise over 70% of primary care physician practices. The major bottleneck for increasing the number of group practices is, again, a lack of resources for investments in infrastructure.

Limited gatekeeping and lack of pathways

The high number of avoidable specialist visits may be related to both the limited gatekeeping function granted to family physicians and a lack of formal care pathways. Patients are allowed to bypass the primary care level to access gynecologists, dermatologists, ophthalmologists, psychiatrists, pulmonologists in the case of tuberculosis, and all needed specialists in the case of trauma. In Estonia, formal clinical pathways have been developed for gynecological, prostate, breast, kidney and colorectal cancers, but are generally underdeveloped for other diseases and conditions.²⁶ This may lead to uncertainty around which services should be provided in primary care, particularly for chronic diseases, increasing the tendency to allow patients to bypass family physicians. Given the country's disease burden, Estonia would likely benefit in particular from clinical pathways for heart, cerebral and peripheral vascular disorders as well as for mental and behavioral disorders.

Unclear roles and responsibilities in terms of monitoring and patient management at the interface between health and social care

Aside from the weaknesses in primary care, a lack of clarity in terms of the roles and responsibilities in terms of coordinating the management of patients across health and social care may also contribute to avoidable specialist visits and hospital admissions. Since many patients with chronic diseases require both health and social care, clearly defined roles and cooperation between these two sectors could improve adherence to treatment and ensure timely access to care to avoid the development of complications requiring hospital care. A major barrier to creating this partnership stems from the separate organization and financing of health and social care.

²⁶ Clinical pathways are disease-specific routes that patients should follow from first contact with the health care system across levels of care through to the completion of treatment. They also specify what services should be provided in each care setting, as well as the appropriate time frame in which services should be received.

IV. Weak Pre and Post-Acute Coordination of Care

A final set of issues revealed by the study's findings include weak pre and post-acute coordination of care, as reflected by significant proportions of hospitalized patients that are i) receiving unnecessary pre-operative diagnostic procedures, ii) discharged without appropriate medications, and iii) not receiving follow-up care within an adequate time frame. These challenges appear to stem largely from a lack of clarity of responsibilities, and poor information flow between acute inpatient and ambulatory care settings.

Incomplete discharges

Overall, the number of medications prescribed for and filled by patients with hospital episodes for acute conditions such as unstable angina, acute myocardial infarction (AMI) and heart failure is relatively low. Fewer than 3% of the 6,500 patients with these diseases in Estonia receive prescriptions for all three of the drugs recommended by international guidelines at discharge, less than 30% of patients received prescriptions for any of the individual drugs and over half receive no prescriptions for these drugs at all (Table 20 and 21). In particular, statins are prescribed to fewer than 15% of patients for all tracer conditions, despite their known effectiveness (Smith & Nguyen, 2013). There is only marginal improvement in this proportion at 90 days post-discharge (Table 22).²⁷ Among those patients with prescriptions for the appropriate medications, even fewer actually pick-up the drugs, leading to even larger percentages of patients receiving no medications at all for these acute conditions.

There has been little change in the percentage of patients who fill prescriptions for all recommended drugs at discharge since 2008, while the percentages of patients who filled no drug decreased by about 10 percentage points or less (Data Deck, p.61). The percentages of patients who filled prescriptions for all drugs or no drug within the 90 day post-discharge period decreased since 2008 (Data Deck, p.63).

Table 20: Number of tracer condition cases (2013)

	Unstable angina	AMI	Heart Failure	All tracers
Cases	700	4397	1460	6557

Source: World Bank team calculations.

Table 21: Percent of patients prescribed medications and percent filled, at discharge (2013)

Prescription drug	Unstable angina		AMI		Heart Failure		All tracers	
	Prescribed	Filled	Prescribed	Filled	Prescribed	Filled	Prescribed	Filled
Beta-blocker	20.43%	13.43%	27.66%	20.76%	17.60%	12.33%	24.65%	18.10%
Statins	2.57%	2.00%	11.10%	9.07%	0.89%	0.62%	7.92%	6.44%
ACE inhibitor	13.71%	7.00%	24.65%	15.58%	15.75%	9.18%	21.50%	13.24%
All	0.14%	0.14%	2.30%	2.00%	0.14%	0.00%	1.60%	1.36%
None	72.57%	82.71%	58.52%	69.66%	73.70%	81.71%	63.40%	73.74%

Source: World Bank team calculations.

²⁷ The 90-day post-discharge time window was chosen since this is the upper limit of prescription validity. It will therefore account for patients with home supplies of the medications (who will require a refill within the 90 day time period) and who receive prescriptions at follow-up visits. This finding is validated by the 2013 data described in the text indicating a low overall rate of statin prescriptions.

Table 22: Percent of patients prescribed medications and percent picked-up, 90 days post-discharge (2013)

Prescription drug	Unstable angina		AMI		Heart Failure		All tracers	
	Prescribed	Filled	Prescribed	Filled	Prescribed	Filled	Prescribed	Filled
Beta-blocker	29.86%	20.86%	34.86%	26.61%	30.82%	22.60%	33.43%	25.10%
Statins	3.57%	2.57%	12.71%	10.28%	1.71%	1.23%	9.29%	7.44%
ACE inhibitor	22.86%	11.86%	31.86%	19.81%	26.71%	16.44%	29.75%	18.21%
All	0.14%	0.14%	3.32%	2.87%	0.21%	0.07%	2.29%	1.95%
None	60.57%	73.86%	49.74%	63.09%	57.60%	69.52%	52.65%	65.67%

Source: World Bank team calculations.

Of the different hospital types, regional hospitals appear to have higher percentages of patients who receive prescriptions for these medications at discharge, followed by central and then general hospitals (Table 23). However, the variation is small and coverage even among the better performing hospitals low.

Table 23: Percent of patients prescribed medications at discharge, by provider type

All tracers	2013				
	Provider type	Total cases	Beta Blocker	ACE Inhibitor	Statins
Regional		2,553	28.45%	25.33%	13.75%
Central		1,474	23.70%	18.81%	5.46%
General		2,295	17.30%	15.99%	2.28%
Non HNNDP providers		235	56.97%	45.42%	7.17%
All providers		6,557	24.50%	21.32%	7.64%

Source: World Bank team calculations.

Unnecessary pre-operative diagnostics

Most of those interviewed in this study consider the issue of unnecessary pre-operative diagnostic tests a relatively minor issue, with only a small percentage of patients affected. However, quantitative sources reveal a considerable percentage of elective surgery procedures involve unnecessary preoperative diagnostic tests. The study focuses on elective surgeries including cataract surgery, lumpectomy, hernia repair, cholecystectomy and hip replacement. Among these, cataract surgery is the most frequent, with 16,933 cases in 2013 and lumpectomies the most infrequent with 597 cases (Table 24). A protocol was designed utilizing the UK NHS guideline on pre-operative testing to assign each tracer surgery a grade based on invasiveness, and each patient an illness score utilizing the American Society of Anesthesiologists classification system (ASA). A pre-operative test was defined as unnecessary if the grade of the procedure, matched with the patient's ASA score, did not warrant it to be performed (e.g. an otherwise healthy patient undergoing a lumpectomy does not require a haemostasis/coagulation profile).²⁸

²⁸ See Operations Manual.

Of the 20,692 patients who receive these surgeries, about 4,755 (about 23%) receive some unnecessary test (according to factors such as age and presence of systemic disease) (Table 22). Among these patients, 15,972 tests are conducted of which 7,767 (about 48.6%) are unnecessary. These tests also constitute 30% of all tests considered.

Table 24: Total number of surgeries (2013)

Tracers	Cataract surgery	Lumpectomy	Hernia repair	Cholecystectomy	Hip replacement
In total	16,339	597	3,405	2,737	1,504

Source: World Bank team calculations.

Table 25: Unnecessary pre-operative tests (2013)

Overview of pre-operative tests	
Patients with relevant surgery	20,692
Patients with any test	8,046
Patients with any unnecessary test	4,755
Number of tests	25,466
Number of tests among patients with any unnecessary test	15,972
Number of unnecessary tests	7,767
% of unnecessary tests as a share of the number of all tests among patients with any unnecessary tests	48.6
% of unnecessary tests as a share of all tests	30.5

Source: World Bank team calculations.

More than half of all relevant tests are conducted in hospitals, while the remaining tests are conducted in primary care (Table 26). Of these hospitals, regional hospitals have the highest share of unnecessary tests, although central hospitals have the highest absolute number of tests. The most common unnecessary tests for these surgeries include random glucose, renal function and Haemostasis tests, which are conducted in more than 1500 cases (Figure 11). Chest x-rays are also relatively common, with over 500 tests in 2013. The remaining tests (ECG, blood count, urine analysis, blood gases and lung function) are done to a much lesser extent, at fewer than 100 tests.

Table 26: Unnecessary pre-operative tests, by provider type (2013)

Provider Type	Nr. relevant tests	% of unnecessary tests
Regional*	2,634	33.9%
Central*	8,623	27.1%
General*	2,126	23.8%
Non HNNDP providers*	288	20.8%
GPs	11,802	33.6%
All providers*	25,466	30.5%

Source: World Bank team calculations.

* Both inpatient and outpatient services

Results

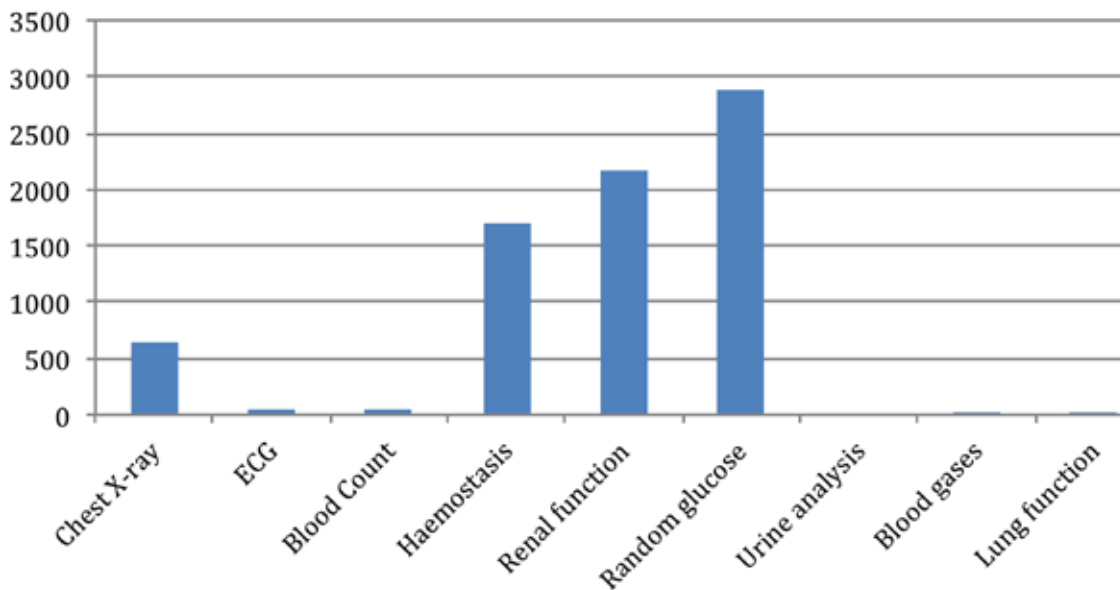


Figure 11: Unnecessary pre-operative tests (2013)

Source: World Bank team calculations.

Inadequate follow-up care

Finally, study results show that a large percentage of patients hospitalized for an acute condition or surgery fail to receive follow-up care within an adequate time frame. Under 36% of patients with these conditions have a follow-up visit with a family physician within 30 days post-discharge (Table 27). When including all ambulatory specialist visits, there is only a slight increase for all tracer conditions of about 5 percentage points or less, except a moderate increase in cholecystectomy follow-ups. The larger increase for cholecystectomy follow-ups in ambulatory specialist settings may be due to immediate follow-ups with surgeons after minimally invasive surgeries.

Even after 90 days post-discharge, 50% of patients with these conditions do not receive followup care. In this time frame, follow-up visits with either family physicians or specialists increase by less than 15 percentage points for all acute conditions or surgeries. The smallest increase is for cholecystectomy follow-up visits, which only increase by about 2 percentage points.

The figures for both 30 and 90 days post-discharge show no major improvements (10 percentage points or less) over those in 2008 (Data Deck, p.74).

Of the different hospital types, regional hospitals have the highest percentages of patients with follow-up care, for all procedures except cholecystectomy, for which central hospitals have the highest percentage (Tables 28-32).

Table 27: Acute inpatient follow-up care for acute conditions (2013)

Tracer	AMI	Stroke	Heart failure	Hip fracture	Cholecyst.
Patients with single hospital Episode	4428	2819	1453	929	2715
Follow-up visit within 30 days (FP)	30.13%	35.79%	21.75%	21.10%	31.71%
Follow-up visit within 30 days (FP/AS)	35.59%	38.77%	25.81%	25.73%	48.91%
Follow-up visit within 90 days (FP)	40.92%	43.38%	30.97%	27.02%	33.52%
Follow-up visit within 90 days (FP/AS)	49.23%	47.53%	38.06%	36.38%	50.98%

Source: World Bank team calculations.

Table 28: Acute inpatient follow-up care for AMI, by provider type (2013)

AMI	2013		
Provider type	Total cases	GP/AS within 30 days	GP/AS within 90 days
Regional	2,131	42.70%	55.04%
Central	1,212	27.64%	43.07%
General	889	33.18%	46.46%
Non HNDP providers	185	23.78%	37.30%
All providers	4,417	35.86%	49.29%

Source: World Bank team calculations.

Table 29: Acute inpatient follow-up care for stroke, by provider type (2013)

Stroke	2013		
Provider type	Total cases	GP/AS within 30 days	GP/AS within 90 days
Regional	617	44.73%	54.94%
Central	979	40.65%	50.05%
General	714	32.21%	38.52%
Non HNDP providers	500	38.00%	47.60%
All providers	2,810	38.93%	47.76%

Source: World Bank team calculations.

Table 30: Acute inpatient follow-up care for heart failure, by provider type (2013)

Heart failure	2013		
Provider type	Total cases	GP/AS within 30 days	GP/AS within 90 days
Regional	220	33.18%	45.00%
Central	157	23.57%	38.22%
General	1,033	24.59%	37.17%
Non HNDP providers	37	24.32%	37.84%
All providers	1,447	25.78%	38.49%

Source: World Bank team calculations.

Table 31: Acute inpatient follow-up care for hip fracture, by provider type (2013)

Hip fracture	2013		
	Provider type	Total cases	GP/AS within 30 days
Regional	307	27.36%	42.02%
Central	228	25.88%	36.84%
General	218	24.77%	34.40%
Non HNDP providers	175	25.14%	29.14%
All providers	928	25.97%	36.53%

Source: World Bank team calculations.

Table 32: Acute inpatient follow-up care for cholecystectomy, by provider type (2013)

Cholecystectomy	2013		
	Provider type	Total cases	GP/AS within 30 days
Regional	869	34.41%	36.13%
Central	1,125	60.00%	61.42%
General	717	48.81%	52.30%
Non HNDP providers	-	-	-
All providers	2,708	49.00%	51.07%

Source: World Bank team calculations.

Underlying causes

Weak pre and post-acute coordination of care, as demonstrated by high proportions of patients with unnecessary pre-operative diagnostics, incomplete discharges and inadequate follow-up care, likely result from issues such as heavy workload, lack of communication and unclear responsibilities between care settings.

Heavy workloads, lack of guidelines and quality monitoring in acute inpatient care

The underlying problems within inpatient care are likely to be three-fold. Within inpatient care, the heavy workload due to high capacities and patient turnover may limit the ability of physicians and nurses to ensure that patients are discharged with the appropriate medication prescriptions and instructions on how to achieve proper recovery and avoid relapse. However, the small percentages of patients that receive all three recommended prescriptions, and the large percentage of patients discharged with no prescriptions at all also point to a potential lack of clarity in terms of standard practices for treating these acute conditions. This may be due to a lack of updated guidelines in line with international standards. In addition, weak monitoring and reporting of quality of care within acute inpatient settings may contribute to this issue.

Lack of pathways and incomplete information flow between acute inpatient and ambulatory care

The high prevalence of unnecessary pre-operative tests and inadequate follow-up care (including lack of appropriate provision of medication prescriptions post-discharge) may be due to unclear responsibilities between physicians in acute inpatient and ambulatory care, and could be addressed by the better use of guidelines reflecting the latest evidence-based practices and care pathways defining roles and responsibilities.

Incomplete and inconsistent information flow between physicians in acute inpatient and ambulatory care settings may further contribute to the lack of follow-up care. The bottlenecks in information flow could be due to incompatibilities between local hospital and national EMR systems, as well as the lack of clear instructions on what specific information to include in patient records and referrals.

Lack of capacity in nursing and rehabilitation care

In cases where patients require post-discharge nursing or rehabilitative care, inadequate follow-up may also result from the lack of capacity in these settings as well as uneven geographical access. Expanding access to these services would require increased investments in the human and physical resources needed to provide this care. Finally, since a sizable percentage of the patients with these acute conditions may also be recipients of social care, the lack of clarity as to the respective responsibilities of these two sectors in coordinating follow-up care may also contribute to the challenges in providing adequate care.

V. Integration Challenges across Population Sub-groups

The integration challenges disproportionately affect several population sub-groups assessed by the study, in particular the poor, males, rural residents and individuals with self-management impairing conditions.²⁹

Variations in healthcare by income

The poor appear to receive both less and lower quality health care (Figure 12). While avoidable specialist visits are significantly higher for the richest segment of the population, the poor are significantly more likely to have avoidable hospital admissions, which may be associated with low quality primary care as well as financial barriers that prevent them from receiving outpatient care or purchasing pharmaceuticals. The number of total outpatient visits and the number of patients receiving all preventive diagnostic tests tend to be lower among the poor, although the difference is not statistically significant. There is no significant variation in the share of patients who receive recommended prescriptions following any hospitalization across income quintiles. The number of patients with adequate acute inpatient follow-up care appears to be lower for the poor; however this trend is only significant for AMI, Stroke and CHF.

Performance Indicator	Income Quintile				
	Q1 vs. Q5	Q2 vs. Q5	Q3 vs. Q5	Q4 vs. Q5	Q5
Avoidable Hospital Admissions	↑*	↑	↑	↑	-
Avoidable Specialist Visits	↓*	↓*	↓*	↓*	-
Number of Visits	↓	↓	↑	↑	-
Share of Specialist Visits	↑	=	↓	↓	-
Share of Diabetes Patients Receiving All Preventive Care	↓	=	↑	↑	-
Share of Diabetes Patients Receiving No Preventive Care	↑	=	↓	↓	-
Share of HTN Patients Receiving All Preventive Care	↓	=	↑	↑	-

²⁹ In some cases, further breakdowns of these population sub-groups could not be performed due to sample size limitations.

Performance Indicator	Income Quintile				
Share of HTN Patients Receiving No Preventive Care	↑	=	↓	↓	-
Follow-up After Acute Care Episodes ¹	↓ ↓* (AMI, Heart Failure, Stroke)	↓	↓	↓	-
Incomplete Discharges: All Prescriptions Given	=	=	=	=	-
Incomplete Discharges: No Prescriptions given	=	=	=	=	-

Figure 12: Performance indicators by income quintile (as compared to Q5) (2013)

* Indicates >90% statistically significant difference

¹ Statistically significant difference only for AMI, Heart Failure and Stroke

Source: World Bank team calculations.

Variations in healthcare by gender

Men tend to receive both less and lower quality outpatient care than women, which may partially explain their significantly higher number of avoidable hospital admissions; however, these findings are insufficient to explain their significantly lower life expectancy (Figure 13). Indeed, lower male life expectancy in Estonia may be more explicitly linked with the higher prevalence of risky health behaviors including smoking and alcohol abuse. Men have significantly fewer outpatient visits, and appear to receive worse preventive care (although this latter difference is not statistically significant). Men also tend to be less likely to have outpatient visits with ambulatory specialists, and fewer of them avoidable, although neither difference is statistically significant. In contrast, men may have fewer incomplete discharges and improved follow-up, though, again, none of these differences are statistically significant.

Performance Indicator	Males as compared to Females
Avoidable Hospital Admissions	↑*
Avoidable Specialist Visits	↓
Number of Visits	↓*
Share of Specialist Visits	↓
Share of Diabetes Patients Receiving All Preventive Care	↓
Share of Diabetes Patients Receiving No Preventive Care	↑
Share of Hypertension Patients Receiving All Preventive Care	↓
Share of Hypertension Patients Receiving No Preventive Care	↑
Follow-up After Acute Care Episodes ¹	↑ ↓ (Cholecystectomy)
Incomplete Discharges: All Prescriptions Given	↑
Incomplete Discharges: No Prescriptions Given	↓

Figure 13: Performance indicators by gender (2013)

* Indicates >90% statistically significant difference

¹ Lower only for Cholecystectomy

Source: World Bank team calculations.

Variations in healthcare in urban vs. rural populations

Rural residents have significantly more avoidable hospital admissions than urban residents, which may be explained by lower income and lower access to specialist care – indeed, the incidence of both total and avoidable specialist visits is significantly lower among rural patients, yet the overall number of outpatient visits tends to be higher for rural patients (Figure 15). Fewer rural patients tend to receive comprehensive preventive services, though not at a statistically significant level. Also, follow-up for acute hospital admissions tends to be less likely, though this difference is statistically significant only for congestive heart failure (CHF).

Performance Indicator	Rural as to Urban Population
Avoidable Hospital Admissions	↑*
Avoidable Specialist Visits	↓*
Number of Visits	↑
Share of Specialist Visits	↓
Share of Diabetes Patients Receiving All Preventive Care	↓
Share of Diabetes Patients Receiving No Preventive Care	↑
Share of Hypertension Patients Receiving All Preventive Care	↓
Share of Hypertension Patients Receiving No Preventive Care	↑
Follow-up After Acute Care Episodes ¹	↓ ↓*(CHF)
Incomplete Discharges: All Prescriptions Given	↑
Incomplete Discharges: No Prescriptions Given	↑

Figure 14: Performance indicators by urban/rural status (2013)

* Indicates >90% statistically significant difference

¹ Statistically significant difference only for CHF

Source: World Bank team calculations.

Variations in healthcare in Ida Viru region vs. rest of country

Residents from the Ida Viru region, of which close to 80% are of Russian origin and have limited command of the Estonian language, have significantly fewer avoidable specialist visits (Figure 15). Otherwise, there appears to be no systematic difference between patients from this region and the rest of the country.

Performance Indicator	Ida-Viru as Compared with the Rest of Estonia
Avoidable Hospital Admissions	↑
Avoidable Specialist Visits	↓*
Number of Visits	↑
Share of Specialist Visits	↑
Share of Diabetes Patients Receiving All Preventive Care	↑
Share of Diabetes Patients Receiving No Preventive Care	↑
Share of Hypertension Patients Receiving All Preventive Care	↓
Share of Hypertension Patients Receiving No Preventive Care	↑
Follow-up After Acute Care Episodes	↑

Performance Indicator	Ida-Viru as Compared with the Rest of Estonia
Incomplete Discharges: All Prescriptions Given	↓
Incomplete Discharges: No Prescriptions Given	↓

Figure 15: Performance indicators by geographic location

* Indicates >90% statistically significant difference

Source: World Bank team calculations.

Variations in healthcare for patients with neuropsychiatric and sensory disorders vs. general population

The management of neuropsychiatric and sensory disorders revealed a more nuanced picture than expected (Figure 16). Patients with depression appear to have higher care-seeking behavior as demonstrated by the significantly higher rates of outpatient visits, avoidable hospital admissions and avoidable specialist visits than the general population. Although there seems to be a tendency of patients with depression to receive more preventive care for diabetes and hypertension than the general population, this difference does not appear to be significant.

Patients with dementia, in contrast, have lower care seeking behavior, as demonstrated by their lower number of outpatient visits and their significantly lower number of avoidable specialist visits. These patients seem to have a higher number of avoidable hospital admissions and receive less preventive care, however these findings are not statistically significant.

Finally, it appears that the health care system and social services may help compensate for patients with sensory disorders and motor disabilities to allow for increased healthcare access. These patients tend to have a higher number of outpatient visits, as well as a significantly higher share of specialist visits than the general population. Although these patients seem to have a higher number of avoidable hospital admissions and avoidable specialist visits, these results are not statistically significant.

Performance Indicator	Self Management Impairing Condition as Compared to General Population		
	Depression	Dementia	Disability
Avoidable Hospital Admissions	↑*	↑	↑
Avoidable Specialist Visits	↑*	↓*	↑
Number of Visits	↑*	↓	↑
Share of Specialist Visits	↓	↓	↑*
Share of Diabetes Patients Receiving All Preventive Care	↑	↓	↑
Share of Diabetes Patients Receiving No Preventive Care	↓	↑	↓
Share of Hypertension Patients Receiving All Preventive Care	↑	↓	↑
Share of Hypertension Patients Receiving No Preventive Care	↓	↑	↓

Figure 16: Performance indicators by self-management impairing condition

* Indicates >90% statistically significant difference

Source: World Bank team calculations.

7. Conclusion

Estonia's healthcare system performs well compared with many other European countries in terms of health outcomes such as child mortality and life expectancy, while keeping total health expenditures low. The country has also made great strides to improve health care quality and integration such as the introduction of the QBS, e-consultation system, and various quality assurance mechanisms. Nevertheless, this study demonstrates that some challenges to achieving healthcare integration exist. If left unresolved, these challenges may particularly hinder the ability of the system to adequately address the needs of its ageing population with an increasing prevalence of NCDs. The results of the study's qualitative research with various health system stakeholders, which are further substantiated by available data, point to a number of possible underlying causes for these challenges, and thus, potential policy entry points.

The study indicates that a large proportion of acute inpatient care could be avoided and a substantial share of hospital stays reduced, potentially by shifting care to more appropriate settings. Likewise, the study finds that a large share of specialist visits could be avoided. The large proportion of avoidable acute inpatient care admissions and specialist visits points to potential weaknesses in the management of patients at the primary care level. This is evidenced in this study by the low coverage of preventive services for diabetes and hypertension patients. Such weaknesses in the quality of primary care may prompt patients to bypass primary care, even though the study shows that specialists may provide little added value to prevent the deterioration of chronic conditions. Nevertheless, patients seem to maintain consistent contact with their primary care physicians – a finding which promises to enhance the results of efforts to strengthen primary care. Finally, coordination challenges across levels of care exist before and after acute inpatient care episodes, as evidenced in this study by the significant share of unnecessary pre-operative tests and inadequate follow-up care. Moreover, the study finds that significant shares of patients are discharged without recommended medication prescriptions, reflecting a weakness in hospitals' management of patients to ensure adequate continuity of care.

When examining the effects of these challenges on different population groups, the study finds that once patients have accessed the system, healthcare providers in Estonia do not systematically discriminate across population groups in the provision of care. Yet, some of these challenges still appear to significantly affect some population subgroups. For example, avoidable hospital admissions are significantly higher among the poor, men, rural residents and patients with depression.

While the study results point to the elimination of potential weaknesses in primary care as key to reducing avoidable acute inpatient care admissions and specialist visits, a number of factors in acute inpatient care and specialist care may also contribute to these issues. Factors in acute inpatient care identified by the study include financial incentives to increase case volumes, as well as costs and lack of capacity for transferring services (i.e., rehabilitation and nursing care) to other care settings. Thus, potential strategies for reducing avoidable admissions and extended stays may include introducing financial incentives to reduce case volumes, as well as increasing the capacity and geographical access of nursing care (particularly, home-based nursing care) and outpatient rehabilitation care.

Similar to acute inpatient care, financial incentives to increase case volumes in specialist care may contribute to the large share of avoidable visits. In addition, patient preferences for the expertise and convenience

Conclusion

of specialist and emergency care, low user fees for specialist services, as well as the use of emergency departments as a middle step to hospitalization may also lead to these avoidable visits. Potential responses to reduce avoidable specialist visits may include improving prioritization of patients, for example through an electronic referral system with a centralized waiting list and higher copayments for specialist and emergency care to deter patients from bypassing primary care services. In turn, reducing avoidable acute inpatient care episodes, extended hospital stays, and specialist visits would help alleviate waiting times, which are especially long in outpatient care.

Weaknesses in the management of patients in primary care may originate from structural, financial and cultural issues. These issues possibly include insufficient financial incentives to ensure complete adherence to clinical guidelines, a lack of multi-disciplinary teams, and a preference, among some family physicians, for treatment over prevention. Possible responses can be grouped according to those that can be carried out in the short-term vs. in the in the medium- to long-term. In the short-term, responses may include improving financial incentives and accountability for the provision of preventive services and outcomes, including improved patient self-management skills. A stratification of patients based on the complexity of their health and social needs would allow for re-defining the roles of family physicians vis-a-vis specialists. For example, less complicated cases may be managed in primary care, while more complex cases are managed at the specialist level. In addition to moving from gatekeeping to a more flexible division of labor, broader implementation of the e-consultation system would strengthen the problem solving capacity in primary care.

In the medium- to long-term, responses may focus on strengthening the overall quality of primary care and a more fundamental transformation of the role of family physicians. For example, introducing regulatory mechanisms and/or financial incentives could encourage higher participation of family physicians in continuing medical education (CME) courses. Simultaneously, mainstreaming evidence-based medicine and standardized patient models would further improve the quality of training. Enhanced training capacities and absorbing more graduates would rejuvenate the family physician workforce. Increasing access to finance to improve and expand infrastructure could encourage a movement toward multi-professional and group care, where clinical responsibilities are shared and coordinated among health care professionals under a proper management function. Expanding the role of family physicians in community health initiatives and social care could improve overall quality of preventive care and patient management. In sum, efforts should focus on strengthening functional capacity of primary within the broader health care system.

Finally, weak pre- and post-acute coordination of care may be the result of a lack of adequate guidelines, a lack of pathways and information flow between acute inpatient and ambulatory care, and a lack of capacity or uneven geographical access to nursing and rehabilitation care. Immediate measures to improve pre-and-post acute care coordination could include updates of clinical guidelines, more pathways for chronic diseases, and improvements in the national EMR system. At the same time, systems to monitor the quality of care in hospitals could be significantly improved, as few hospitals have comprehensive quality indicator monitoring systems, and there is no requirement to report to a designated authority, let alone make this data publicly available. Efforts to strengthen these systems, however, should build on a more in-depth analysis of the quality of hospital care, the relationship between quality of care and case and service volumes, as well as possible underlying causes.

As the study shows, the needs of some population subgroups may be inadequately addressed by the health care system. In particular, the system does not appear to effectively redress socioeconomic inequalities in access to care, as demonstrated by the significantly higher number of avoidable hospital admissions among the poor. This may stem from the general perception that addressing issues of inequality is considered the responsibility of social care, which highlights the importance of better coordination between the two sectors. Moreover, a stratification of population groups within catchment areas according to health and social needs would facilitate the development of targeted approaches to build a more equal system, which as the international evidence suggests, would also yield efficiency gains.

While this analysis points to some possible directions for policy change, the next step is to identify the most pressing integration challenges and the most appropriate courses of action based on international evidence and applicability to the Estonian context. The findings of this study present concrete, albeit narrowly focused, baseline indicators of system performance on issues that stem from weaknesses in care integration. Thus, these indicators can be used to gauge the effectiveness of improvement efforts in these areas. Moreover, they present a case for increased use of EHIF claims data in similar, future initiatives to monitor and evaluate health system performance.

8. References

- European Health for All database (HFA-DB). (2014). WHO/Europe. Available at: <http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db> [Accessed 7 Jan. 2015].
- Institute for Health Metrics and Evaluation. (2014). Available at: <http://www.healthdata.org> [Accessed 8 Jan. 2015].
- Lai T, Habicht T, Kahur K, Reinap M, Kiivet R, van Ginneken E. (2013). Estonia: health system review. *Health Systems in Transition*, 15(6), pp. 1–196.
- OECD Health Statistics. (2014). Available at: <http://www.oecd.org/els/health-systems/health-data.htm> [Accessed 8 Jan. 2015].
- Smith, O. and Nguyen, S. (2013). *Getting Better: Improving Health System Outcomes in Europe and Central Asia*. Washington, DC: The World Bank, pp.69-104.
- Sõstra, K. and Aru, J. (2013). "Regional poverty mapping," in Narusk, E. (ed.), *Regional Development in Estonia 2013*. Eesti Statistika, Tallinn, pp. 111-115.
- van den Bussche, H., Koller, D., Kolonko, T., Hansen, H., Wegscheider, K., Glaeske, G., von Leitner, E., Schäfer, I. and Schön, G. (2011). Which chronic diseases and disease combinations are specific to multimorbidity in the elderly? Results of a claims data based cross-sectional study in Germany. *BMC Public Health*, 11(1), p.101.
- WHO, (2010). *Estonia Health System Performance Assessment: 2009 Snapshot*. Copenhagen, Denmark: WHO Regional Office for Europe.

Patient and Provider Narratives

*Based on findings of the World Bank study
“The State of Health Care Integration in Estonia”*

*World Bank Group
January 2015*

Patient and Provider Narratives

The following cases are based on findings of the World Bank study on integration of care in Estonia. They present snapshots of experiences within the healthcare system in Estonia from the patient and provider perspective. These cases are by no means representative of all patients or providers; there is a great degree of variation in both experiences and health outcomes within the country.

Patient Narrative 1: Erki P

Erki P. is a 60 year-old man who lives in a rural hamlet of eastern Estonia. He is married with two children, a non-smoker, but a heavy alcohol drinker, consuming four to five drinks every evening. He works as a driver for a shale oil company. He has a past medical history of Type 2 diabetes mellitus, for which he takes oral medication, and he has untreated borderline hypertension.¹

In his late forties, Erki began to gain weight, his body mass index (BMI) gradually increasing to 29. He was diagnosed with diabetes at the age of 50 after hospitalization for an episode of sudden elevated blood sugar levels. During his short hospital admission, he was evaluated by an endocrinologist who confirmed the diagnosis of diabetes, prescribed an oral hypoglycemic (metformin), and discharged him home.²

Since then, Erki has not changed his medication regimen, though he continues to see his endocrinologist yearly, and his last glycosylated hemoglobin test (HbA1C) test, performed three years ago by his endocrinologist, demonstrated inadequate blood sugar control (8%). He also visits his family physician three to four times per year for prescription refills and consultations. His family physician performed a cholesterol test almost five years ago, which revealed low HDL and mildly elevated LDL levels; he was not prescribed a statin medication. Despite the risk of kidney complications associated with diabetes, he has never had a renal function test.³

One morning, Erki experiences an episode of shortness of breath while shoveling snow. This resolves within a few minutes, so he continues with his daily activities. The next day he visits his family physician who performs an EKG and orders a chest x-ray. Both studies appear to be normal, so she refers him to a pulmonologist working out of the nearest central hospital to further investigate his breathing problem. Reassured by the test results however, Erki does not proceed to make an appointment with this specialist.

One month later, Erki has an episode of chest pain while resting, and is taken by his family members to the

1 As a male from a low-income household residing in a rural area of Estonia, Erki P. is at higher risk than patients from other population groups to have an avoidable hospital admission during his life. Also, the prevalence of hypertension is higher among patients from low-income households.

2 The vast majority of hospital admissions that occur due to diabetes could be prevented by a better management of the condition and are therefore considered to be avoidable.

3 Given that Erki suffers from uncomplicated diabetes, he could also be treated by his family physician. While men are not particularly likely to have avoidable specialist visits, an estimated fifth of diabetes-related specialist visits in Estonia could be handled by family physicians. Men have significantly fewer outpatient care visits than women in Estonia (about 4.5 yearly visits vs. about 6.5 visits). However, the fact that Erki has diabetes makes him likely to have several more visits (diabetes patients have about 5 more visits than the general population in Estonia). Despite their more frequent visits, not all diabetes patients in Estonia receive diagnostic preventive tests as they should according to medical guidelines. Less than 50% of diabetes patients received all recommended tests in 2013.

emergency department of the central hospital. His condition is stabilized with treatment in the emergency department, but his EKG and blood work both indicate a mild acute myocardial infarction (AMI). He is admitted to the hospital for further treatment where he remains for 8 days, during which time he is reviewed by a cardiologist who recommends “medical management” including a statin, beta-blocker, ACE inhibitor, and daily aspirin. At the time of discharge, Erki receives prescriptions and instructions to take aspirin and an ACE inhibitor only. He is not provided with a prescription to refill his home supply of metformin, nor is he provided with a prescription for a statin. He receives no diet or exercise counseling prior to discharge.⁴

Over the subsequent three months, Erki takes his prescribed medications inconsistently, not believing that he needs to take so many different pills every day, particularly as he does not have another episode of chest pain, although he sometimes experiences shortness of breath after mild exertion. When he returns to his family physician to refill his prescriptions, she is unaware of his admission to hospital, and has received no records regarding the admission or care plan, so she just refills his prescriptions for the aspirin, ACE inhibitor, and metformin, and refers him back to the cardiologist for further care. Feeling a lot better in the last couple of weeks, Erki has not made a follow-up appointment with this specialist as yet.⁵

Provider Narrative 1: Dr. Triin K

Dr. Triin K is a 55 year-old female family physician. Originally from Põlva, she now operates a private primary care practice in a rural region of eastern Estonia. She graduated from the University of Tartu in 1988 and trained and worked as a neurologist under the old polyclinic system. In the 1990's she retrained as a family physician and moved to her current location. She owns her own practice and has one nurse on her payroll. She has over 1,800 patients on her patient roster.⁶

Given the number of patients on her list, Dr. K is unable to spend more than a few minutes with each patient that visits her office, leaving her limited time for counseling or prolonged diagnostic investigations. She often refers more complicated or possible new diagnoses to specialists working out of a nearby central hospital. The majority of her patients see her for sick visits and follow-up care, and some bypass her office to visit a variety of specialists directly.

Dr. K has not participated in any continuing medical education (CME) courses since she retrained as a family physician, which she attributes to a busy practice and administrative responsibilities. She has enrolled in the quality bonus scheme (QBS) however, and tries to adhere to the associated guidelines for prevention, screening, and care. She finds that inconsistent follow-up and patients bypassing her practice to visit specialists make it difficult to adhere to the guidelines, since patients may have already had the required tests performed by these other providers. Dr. K often prefers to leave more specialized tests up to specialists' discretion to avoid duplication and so that the cost of these tests does not exceed her allocated funding

4 People from low-income households are more likely to have an AMI than people from higher-income households. However, on discharge from hospital, they receive similar medical prescriptions. Only a third of AMI patients received prescriptions for crucial medication (either beta-blockers, ACE inhibitors, or statins) in 2013. In particular, the prescription rate of statins was very low, with less than 12% of AMI receiving statins.

5 Only about half of the AMI patients had a follow-up visit with either their GP or a relevant specialist within 90 days after their hospital discharge. Inconsistent and incomplete information flows between specialists and family physician practices do not allow Erki's doctor to check whether he actually attended the follow-up appointment.

6 On average, each of the around 800 GP practices in Estonia is assigned approximately 1,800 patients. A large proportion of family physicians currently practicing in Estonia were initially trained as specialist doctors and later retrained to become family physicians.

for lab tests. She feels that she does not have time to provide screening tests and lifestyle counseling⁷ for every patient on her roster.

Erki P has been Dr K's patient for nearly fifteen years, and she has treated his diabetes since his hospitalization for elevated blood sugar many years ago. She refers him to his endocrinologist for medication adjustment and further testing. She knows Erki continues to visit this endocrinologist periodically, so she prefers to leave diabetes-related tests for him to order for the reasons described above. She did however order a cholesterol test for him several years ago, and although it was abnormal she did not initiate statin therapy or refer him for further tests or consultations.

On a visit scheduled for prescription refills, Dr. K was shocked to learn that Erki had been hospitalized for an AMI several months prior. She refilled his diabetes and blood pressure medications and advised him to continue his aspirin therapy as well. In order to ensure that he would receive sufficient follow-up care, she also referred him to the cardiologist who had evaluated him during his hospitalization for further care and to perform his required annual blood tests.⁸

Patient Narrative 2: Kaie T

Kaie T is a 45-year-old woman living in a large urban center. She has a graduate degree and works as a senior executive in an office for a large company. She is single, an occasional drinker, and a ½ pack per day smoker. She has a past medical history of mild hypertension and depression, both of which are treated with oral medication.⁹

Kaie's diagnosis of hypertension was made by her family physician two years ago, who noted a persistently elevated blood pressure and referred her to a cardiologist who prescribed an ACE inhibitor. She has had a diagnosis of depression for over five years, and regularly visits a psychiatrist who prescribes her an antidepressant. She visits her family physician four to five times per year, her cardiologist two to three times per year, and her psychiatrist two to three times per year. Despite her frequent visits, she has never had an EKG, renal function, or albuminuria test. Her family physician checked her cholesterol last year and she was noted to have a normal HDL and mildly elevated LDL.¹⁰

When she was 42 years old, Kaie began to note frequent abdominal pain after eating. Her family physician

7 Focus group discussion participants noted that the dual role of physicians as entrepreneurs, running a business, and as doctors, providing clinical care resulted in heavy workloads and competing priorities, leaving little time to spend with patients and participate in activities such as CME courses. Discussions with family physicians revealed their limited funding for diagnostic tests as a major limitation to performing these tests. The QBS is a means of rewarding family physicians that provide preventive services to chronic patients assigned to them, but only half of all family physician practices participating in the QBS scheme actually receive the bonus.

8 Inconsistent and incomplete information flows between specialists and family physicians was cited as a significant barrier to adequate follow-up care in discussions and interviews with key stakeholders. Reasons may be incompatibilities between hospital EMR systems and the national e-health system, which leads to delays in the transfer of information.

9 As a female living in an urban center and disposing of a high-income, Kaie is significantly more likely than patients from other population groups to have avoidable specialist visits for her hypertension. Also, the number of outpatient visits (with either specialists or family physicians) is particularly high among patients with this kind of profile. The fact that Kaie suffers from depression makes her even more likely to have avoidable specialist visits related to her hypertension and to seek outpatient care in general.

10 Kaie's uncomplicated hypertension could be handled by a family physician. Despite her numerous yearly visits due to her hypertension, Kaie has not received all the diagnostic preventive tests recommended for people with hypertension. In fact, only about 10% of all people with hypertension received all recommended tests in 2013.

diagnosed her with gallstones and referred her to a general surgeon working out of the nearby regional hospital. She had to wait over six months before her procedure could be scheduled. During her preoperative visit she received several diagnostic tests (including a random glucose test, a hemostasis/coagulation profile, and a chest x-ray) that were unnecessary for the upcoming surgery, given her patient profile. She underwent an uncomplicated laparoscopic cholecystectomy and was discharged from the hospital three days after the procedure.¹¹

One morning while at work, Kaie begins to notice a moderate headache associated with weakness and numbness in her left arm and leg. She is taken by ambulance to the regional hospital emergency department where she is diagnosed with an acute ischemic stroke. She is admitted to the hospital for further care and evaluated by a neurologist who recommended daily aspirin therapy. She is discharged home after ten days with instructions to take aspirin. She receives no diet/exercise or smoking cessation counseling prior to discharge.

Kaie continues to note very mild residual left arm and leg weakness. Over the sixty days following her hospitalization she visits her family physician three times, in addition to her cardiologist and neurologist. She still has never had a renal function test or EKG performed, and her cholesterol test has not been repeated so she is not on a statin medication.¹²

Provider Narrative 2: Dr. Gustav R

Dr. Gustav R is a 40 year-old male neurologist based at a regional hospital in a large urban center. He graduated from the University of Tartu in 1998 and subsequently completed his specialist training.

Dr. R conducts inpatient consultations for patients admitted to his hospital, and sees new and follow-up patients in the hospital's outpatient department. Every two weeks, Dr. R is also required to travel to a general hospital one hour away to perform neurology consultations. He sees a high volume of patients in his home hospital and the two outpatient departments he works at. He considers many of his outpatient department patients to be uncomplicated cases that should be managed at the primary care level, including cases of chronic headaches and vertigo, although he is able to bill for these visits. He often complains that referrals from family physicians are unclear in terms of what diagnosis is suspected and what work up has already been done. He often considers applying for specialist physician jobs somewhere abroad where the salaries in his field are higher.¹³

While on hospital rounds, Dr. R evaluated Kaie a day after she suffered a mild stroke. Her symptoms

11 The laparoscopic (keyhole surgery) method of performing a cholecystectomy is a less invasive procedure for patients and hence reduces the average length of hospital stay for cholecystectomy patients by about 10 days. Almost 90% of cholecystectomies in Estonia are now laparoscopic. Still, about 30% of all diagnostic tests being conducted before an elective surgery are unnecessary and could be avoided, as in Kaie's case.

12 Kaie has had a follow-up visit with both her family physician and specialists after her stroke. She belongs to the only 40% of stroke patients that have such a follow-up visit within the first 30 days after their discharge from the hospital. Although Kaie has elevated cholesterol levels, she does not receive statins, which could help her lowering these levels. This reflects the low nationwide level of statin prescriptions in Estonia. Less than 3000 patients received statin prescriptions in 2013, a fraction of the number of patients that would actually need them.

13 Discussions with specialists revealed the common perception that they were handling cases that should be managed at the primary care level. During these discussions specialists expressed their frustration with the lack of clarity in some referrals from family physicians. The fact that some specialists need to make biweekly or monthly visits to smaller rural hospitals, increases their workload. Furthermore, it is even more difficult for them to stay on top of their patients' conditions and treatment at these locations. The fact that Estonian health professionals are well trained, but earn less than their colleagues in other European countries, makes many of them consider moving abroad.

appeared to be improving and a CT scan of her brain did not reveal any signs of intra-cerebral hemorrhage, so he prescribed a daily dose of aspirin and recommended follow-up in his outpatient department within a month of her discharge date. A few weeks later, Kaie presented to Dr. R's outpatient department for re-evaluation. During the quick visit, Dr. R noted that her symptoms had continued to improve. He advised her to continue her blood pressure medication and daily aspirin to visit with him again in a few months. He considered ordering a cholesterol panel to see if she might need a statin, but decided to leave that up to her family physician.¹⁴

¹⁴ Interviews and discussions with specialists and family physicians indicate that – as in Kaie's case - the low coverage of preventative diagnostic tests may be due to a lack of clarity as to which type of doctor is responsible for conducting these tests.