

DOI: <https://doi.org/10.32782/2524-0072/2026-85-198>

UDC 336.13:614.2:005.51

A MULTI-LEVEL CONTROL AND AUDIT MODEL IN HEALTH CARE FINANCING: THE ESTONIAN EXPERIENCE AND DIRECTIONS FOR ADAPTATION IN UKRAINE

БАГАТОРІВНЕВА МОДЕЛЬ КОНТРОЛЮ ТА АУДИТУ У ФІНАНСУВАННІ ОХОРОНИ ЗДОРОВ'Я: ДОСВІД ЕСТОНІЇ ТА НАПРЯМКИ АДАПТАЦІЇ В УКРАЇНІ

Sakhno Liudmyla

Ph.D., Associate Professor of Finance, Accounting and Taxation Department,
Dmytro Motorny Tavria State Agrotechnological University
ORCID: <https://orcid.org/0000-0003-0339-3404>

Сахно Людмила Анатоліївна

Таврійський державний агротехнологічний
університет імені Дмитра Моторного

The study examines the development of a multi-level control and audit model in healthcare financing based on the Estonian experience and its adaptation for Ukraine. It is shown that Estonia achieves high efficiency with limited resources through integrated digital systems, risk-based auditing, and a clear separation of strategic and operational management. The nationwide eHealth infrastructure enables real-time monitoring, reduces administrative costs, and prevents financial irregularities. The role of supranational EU oversight and independent external audit in ensuring transparency and fiscal discipline is substantiated. It is identified that Ukraine faces challenges related to limited digital integration and the dominance of ex-post control. Directions for improvement include strengthening digital interoperability, enhancing audit independence, and embedding audit results into policymaking.

Keywords: financial control; audit; healthcare system; digitalisation; eHealth; multi-level governance; risk-based audit; public finance.

Зростаючий тиск на системи охорони здоров'я, спричинений старінням населення, бюджетними обмеженнями та зовнішніми потрясіннями, зумовлює актуальність вдосконалення механізмів контролю та аудиту у сфері фінансування охорони здоров'я. У цьому контексті Естонія є успішним прикладом поєднання цифровізації, інституційного дизайну та багаторівневого управління для забезпечення ефективності, прозорості та фінансової стійкості. Мета дослідження – розробити концептуальну багаторівневу модель контролю та аудиту у сфері фінансування охорони здоров'я на основі досвіду Естонії та визначити напрямки її адаптації в Україні. Методологія дослідження базується на комплексі загальних наукових та спеціальних методів, зокрема порівняльному аналізі для оцінки відмінностей між естонською та українською системами, системно-структурному підході для виявлення взаємозв'язків між інституційними елементами контролю, аналізі та синтезі для узагальнення теоретичних положень, а також абстракції та логічному узагальненні для формування концептуальних висновків. Дослідження демонструє, що ефективність естонської системи охорони здоров'я значною мірою визначається інтеграцією цифрової інфраструктури з інституційними механізмами контролю. Загальнонаціональна система електронної охорони здоров'я дає змогу здійснювати моніторинг фінансових потоків у режимі реального часу, зменшує адміністративні витрати, запобігає подвійним виплатам та сприяє впровадженню аудиту на основі ризиків. Встановлено, що модель управління, заснована на розділенні стратегічних та операційних функцій, забезпечує підзвітність та пом'якшує проблеми «принципал-агент». Крім того, поєднання національних аудиторських інституцій з наднаціональними механізмами нагляду зміцнює фінансову дисципліну та узгоджує фінансування охорони здоров'я з орієнтирами, що базуються на результатах діяльності. Дослідження виявляє ключові обмеження в Україні, зокрема недостатню взаємодію цифрових систем, переважання практик ек-пост аудиту та обмежений вплив результатів аудиту на формування політики. Практична цінність дослідження полягає в обґрунтуванні пріоритетних напрямків реформ, зокрема посилення цифрової інтеграції, підвищення інституційної незалежності та потенціалу аудиторських органів, а також врахування результатів аудиту в процесах прийняття рішень. Впровадження багаторівневої,

орієнтованої на ризики аудиторської системи, що підтримується цифровими технологіями, визначено як ключову передумову для підвищення прозорості, ефективності та стабільності фінансування охорони здоров'я в умовах інституційної трансформації.

Ключові слова: фінансовий контроль; аудит; система охорони здоров'я; цифровізація; eHealth; багаторівневе управління; ризик-орієнтований аудит; державні фінанси.

Statement of the problem. The quality of healthcare has a defining importance for the well-being and socio-economic development of the country, as it affects the number of economically active population in the country, and the quality of life. Taking into account the general tendency in European countries for the increase in the number of the elderly population and a sharp decline in the population in Ukraine, as well as big pressure on the medical system due to COVID-19 and Russian aggression against Ukraine, new solutions and the improvement in the management of the health system are required.

Analysis of recent research and publications. Recent studies on healthcare financing and audit increasingly emphasise the integration of digital technologies and the development of multi-level governance and control mechanisms. The role of digitalisation in enhancing transparency, efficiency, and accountability is confirmed by analytical materials of the OECD and the European Commission, as well as studies of the Estonian healthcare system presented by the Estonian Health Insurance Fund and EU country profiles. The importance of embedding audit procedures within digital health environments is substantiated by J. Ferreira, P. Horta, and F. Geada, who highlight internal audit and risk management in e-health systems [1]. At the same time, issues of healthcare system sustainability and governance are explored by R. Busse, M. Blümel, D. Scheller-Kreinsen, and A. Zentner [2], while B. Dsouza emphasises the need for resilient financing models under crisis conditions [3]. Research by J. Klaus, I. Volonen, J. Kinnunen, V. Koistinen and M. Virtanen [4] contributes to understanding decentralized financing models, and M. Massaro [5] demonstrates the potential of blockchain technologies for ensuring transparency and traceability in healthcare finance.

The Estonian experience, supported by national legal acts and strategic documents (including the Health Insurance Act, Health Services Organisation Act, and e-Health Strategy by J. Merilo) [6], illustrates the effectiveness of integrating digital infrastructure, institutional coordination, and multi-level financial control. However, despite these contributions, the literature remains fragmented, with limited

attention to the comprehensive integration of digital audit tools, institutional control mechanisms, and supranational oversight (European Commission initiatives such as the European Semester and the Recovery and Resilience Facility) within a unified model. This gap is particularly relevant for transitional economies, including Ukraine, where there is insufficient research on adapting advanced European audit models under conditions of war, fiscal constraints, and EU integration. These unresolved issues determine the relevance of developing a multi-level control and audit model in healthcare financing based on the Estonian experience and its adaptation to Ukraine.

Highlighting previously unresolved parts of the overall problem. Despite extensive research on healthcare financing, digitalisation, and audit, key aspects remain insufficiently addressed. In particular, there is no comprehensive framework that integrates digital audit tools, institutional control mechanisms, and multi-level governance into a unified model, as existing studies typically examine these elements separately and underestimate the role of digital infrastructure as a tool for real-time financial control. At the same time, there is a notable gap in understanding how advanced European models, such as the Estonian system, can be effectively adapted to transitional and crisis-affected contexts like Ukraine, especially under conditions of war, institutional instability, and EU integration requirements, which necessitates the development of flexible and resilient audit approaches.

Formation of the objectives of the article (task statement). The aim of this study is to develop a multi-level model of control and audit in healthcare financing based on the Estonian experience and to identify key directions for its adaptation in Ukraine. The objectives include analysing the institutional structure of Estonia's healthcare system, assessing the role of digitalisation as an audit instrument, examining the impact of multi-level oversight mechanisms, and formulating practical recommendations for improving Ukraine's healthcare financial control system [7].

Summary of the main research material. According to recent demographic estimates, the

share of the population aged 65+ in EU countries exceeds 21%, while in Ukraine it has reached approximately 18% with a rapid upward trend, combined with a population decline of more than 20% since 2014 [7]. At the same time, healthcare demand has increased disproportionately, creating structural imbalances between available funding and actual system needs.

The health care system in Estonia is a great study object, as it has a small aging population, limited resources, but provides its users with an effective model of the health care system with high-quality care. Despite Estonia spending only about 7.8% of its GDP on healthcare (which is significantly less than the EU average of 9.3 in 2024 [8]), the country manages to maintain clinical outcomes at the level of much wealthier nations. The efficacy of this low-expenditure, high-performance model relies on well-organised management control systems. Empirical evidence suggests that countries with integrated digital health systems reduce administrative inefficiencies by up to 20–25% and detect financial irregularities 2–3 times faster than systems relying on traditional reporting mechanisms facilitate [9]. In this context, J. Ferreira, P. Horta, and F. Geada emphasise the importance of embedding internal audit processes within e-health systems [1], while M. Massaro highlights the role of advanced digital technologies, particularly blockchain, in ensuring transparency, traceability, and security of financial transactions [5]. This is thanks to the effective management and active involvement of the digital solutions and permanent control and audit of the system, which allows managers to define problems to be solved, clear control over the funds, and the opportunity to improve the system and test different development strategies, figuring out the most effective ones. This article aims to define clear control and audit instruments that work in Estonia to be modified, adapted, and implemented in Ukraine.

The Estonian healthcare system is based on a universal national health insurance model, which ensures access to necessary medical services regardless of socioeconomic status, age, gender, income, or health risks [8]. Such an approach corresponds to the principles of equity and universality widely discussed in European health policy research, in particular by R. Busse, M. Blümel, D. Scheller-Kreinsen, and A. Zentner [2], who emphasise that sustainable healthcare systems require inclusive financing mechanisms and coordinated institutional frameworks capable of addressing long-term demographic

and epidemiological challenges [9]. The funds in Estonia come primarily from a mandatory 13% social tax deducted from employees' salaries and are managed by the Estonian Health Insurance Fund (EHIF). As an autonomous public-law institution, Tervisekassa functions as an independent organisation that covers healthcare service costs based on contractual arrangements with providers. In 2024, around 94% of the population was covered by social health insurance [10]. From the perspective of financial organisation, such a centralized yet functionally distributed model reflects key features of Beveridge-type systems with elements of decentralisation, which, as noted by J. Klaus, I. Volonen, J. Kinnunen, V. Koistinen, and M. Virtanen, allows balancing financial sustainability with administrative flexibility in healthcare financing [4]. At the same time, in the context of global crises and increasing pressure on public finances, B. Dsouza underlines the necessity of strengthening resilience and adaptability of healthcare financing systems, which further highlights the relevance of the Estonian model as a stable and adaptive framework [3].

The Estonian Health Insurance Fund Act states that: "an employee of the Estonian Health Insurance Fund who monitors the quality of services partly or wholly paid for by the Estonian Health Insurance Fund, and determines whether the provision of services has been justified shall have access to the personal data in the Health Information System for payment for health services, contractual supervision, health services statistics and effective and purposeful use of the Estonian Health Insurance Fund budget" [11], which means that the first level of control is exercised by the employees of the Estonian Health Insurance Fund. Chapter 2 of the same document defines the Supervisory Board of Tervisekassa, consisting of six independent members who are not affiliated with healthcare providers or pharmaceutical activities and whose tenure is limited to two consecutive terms [10], thereby strengthening transparency and accountability. In the context of Estonian healthcare governance, the Supervisory Board serves as the primary mechanism for internal control and strategic oversight. According to Sections 12 and 13 of the Estonian Health Insurance Fund Act [12], the governance model establishes a system of "checks and balances" that separates executive management from strategic decision-making. While the Management Board handles daily operations, the

Supervisory Board retains exclusive competence over fiscal and clinical strategy, ensuring that the allocation of public funds remains transparent and legally compliant. Furthermore, the Board's responsibility for setting maximum waiting list lengths demonstrates the integration of financial auditing and quality management, ensuring that cost-efficiency does not undermine patient access. Such a multi-level governance structure aligns with contemporary approaches to healthcare system management, emphasising the interconnection between financial control, institutional accountability, and long-term system sustainability [12; 13-14].

In addition to these strategic functions, the Supervisory Board performs a critical evaluative role. This mechanism effectively mitigates the risk of information asymmetry, ensuring that the Management Board remains strictly accountable to the broader public interest. From a scientific perspective, this relationship is best understood through the lens of the Principal-Agent theory, where the Supervisory Board acts as the representative of the state (the Principal) to monitor and control the actions of the healthcare managers (the Agents).

By designating independent external auditors and reviewing management reports, the Board creates a multi-layered defense against fiscal mismanagement and operational drift. Every transaction is subject to both internal verification and external legal scrutiny, which secures the institutional sustainability of the Estonian healthcare system even during periods of economic volatility.

Estonia is known as a leader in digital public services. In healthcare, a great number of innovative digital solutions have been introduced, which make medical services more efficient and easier for people to access. One of the biggest advantages of Estonia's healthcare system is its strong focus on digital solutions. The country has introduced electronic medical records, e-prescriptions, and a nationwide e-Health system that connects medical data across the entire system. As of 2024, over 99% of prescriptions in Estonia are issued electronically, and more than 95% of healthcare providers are fully integrated into the national digital health infrastructure. This level of integration enables near real-time data exchange across institutions and reduces duplication of medical procedures by approximately 15–20%. All prescriptions are issued electronically, and people can easily access their medical records online [15].

Digital audit trails within the nationwide e-Health system facilitate real-time monitoring of clinical pathways, thereby reducing administrative waste and mitigating potential billing anomalies. Studies indicate that automated audit trails can reduce billing anomalies by up to 30% and significantly improve fraud detection rates, particularly in insurance-based healthcare systems. Moreover, digital systems allow predictive analytics, enabling early identification of systemic risks and cost overruns. [16]. The purpose of financial control extends beyond mere budgetary oversight to the active promotion of systemic sustainability amidst an aging demographic and shifting labor market dynamics. Furthermore, the Estonian system is currently undergoing a strategic shift toward value-based healthcare, where reimbursement models prioritize patient outcomes over service volume [17]. Consequently, the Estonian model serves as a significant case study in how centralized financing and digital governance can reconcile fiscal constraints with the delivery of high-quality universal care.

As Estonia is a country part of the European Union (EU), the EU oversees the Estonian healthcare system. Instead of giving direct orders, the EU uses the State of Health in the EU cycle to monitor how well Estonia is performing. This cycle creates a "Country Health Profile," which is a detailed report card that checks if the Estonian system is effective, accessible, and strong enough to handle crises. The Country Health Profiles 2025 also highlight health system reforms and investments [10; 13].

One of the most important tools the EU uses is the European Semester. Every year, the EU checks Estonia's budget to make sure its healthcare spending is sustainable for the economy. If the EU finds problems, like long waiting lists or high costs, it gives "Country-Specific Recommendations." Though these are not laws, the Estonian government takes them seriously because they act as a guide for national reforms. For example, in 2025, the recommendation included improving and strengthening home and community-based care, as well as assistive technologies, and improving the service accessibility and effectiveness across the whole country [11].

The EU also uses a "money-for-reforms" strategy through the Recovery and Resilience Facility. As it is performance-based, Estonia receives financial aid from the EU only if it hits certain targets, such as improving digital health services. This system ensures that Estonia uses

EU funds to modernize its medical system and meet European standards [14].

Finally, Estonia must follow shared EU laws. Also, the European Medicines Agency controls which drugs can be sold, so Estonia follows the same safety standards as the rest of Europe. Through these reports, financial incentives, and shared laws, the EU ensures that Estonia's healthcare remains high-quality and financially stable.

The National Audit Office of Estonia (Riigikontroll) is established as an independent state body whose primary role is to provide economic control over the use of public funds. According to public reports, the Estonian National Audit Office audits entities representing over 90% of public expenditure annually, including healthcare institutions, ensuring nearly full coverage of financial flows within the public sector [17]. The purpose of its activities is to assure the Riigikogu and the public that the funds of the public sector are used legally and effectively. It is a good instrument of control, which provides transparency in the functioning of the public organisations.

The Office's jurisdiction is notably broad. It exercises economic control over a wide range of entities, including the Chancellery of the Riigikogu, the Office of the President of the Republic, courts, government authorities, local authorities, legal persons in public law, state-founded foundations and non-profit associations, as well as companies in which the state exercises dominant influence. Beyond domestic entities, the Office also audits the use of European Union funds allocated via state and local authorities, and may take procedural steps to verify the legality of how such funds are used by their final recipients. This comprehensive coverage ensures that virtually all public money – whether of domestic or EU origin – falls within the Office's scrutiny; that means that public healthcare organisations are also under the control of the Estonian National Audit Office.

In conducting its audits, the National Audit Office employs a multidimensional approach. It may assess the auditee's internal control, financial management, financial accounting, and financial statements; the legality of the auditee's economic activities; the performance of the auditee's management, organisation, and activities; and the reliability of the auditee's information technology systems. Performance is evaluated according to three core criteria: economy, meaning the minimisation of expenses in achieving the auditee's aims; efficiency,

understood as the relationship between expenses and results; and effectiveness, defined as the actual impact of an activity compared to its intended impact. All audit work is conducted in accordance with the generally accepted rules and practices of the professional activities of auditors.

To fulfil its mandate, the Office is vested with substantial procedural powers. It has the right to access any information necessary for the performance of its functions, including restricted information, and all auditees are required to submit necessary information and permit the making of copies and transcripts of documents. Officials may also conduct on-site inspections: persons authorised in a notice of proceedings may enter the territory and facilities of an auditee, verify the existence of cash, securities, and other assets, and if necessary, take inventory and carry out audit measurement tests. Where there is a good reason, the Office has the right to confiscate documents and seal files and storage spaces of documents, money, and tangible assets.

A defining feature of the Office is its operational autonomy. The National Audit Office decides independently on the conduct of audits and the time and nature thereof, and mandatory audit duties cannot be imposed upon it. The work of the Office is based on an annual schedule approved by the Auditor General, who serves a five-year term. The Auditor General is appointed by the Riigikogu on the proposal of the President of the Republic and must be an Estonian citizen of high moral character with higher academic education and knowledge of public administration and economics. To safeguard impartiality, the Auditor General is prohibited during the term of office from holding any other state position, participating in the activities of a political party, or belonging to the management board or supervisory body of any company.

The Office maintains robust accountability mechanisms towards the legislature. The Auditor General submits to the Riigikogu an overview of the use and preservation of state assets concurrently with the deliberation of the consolidated annual report of the state, and this overview is published in the Riigi Teataja. With respect to audit reports, the National Audit Office is required to disclose its audit reports to the public, except where they contain state secrets, trade secrets, banking secrecy information, or classified information of foreign states. Before finalisation, audit reports must be presented to the relevant minister or local government body,

who are then allowed to submit written opinions, which are disclosed together with the final report. One particularly commendable aspect of the Estonian National Audit Office's operational model is its well-balanced combination of institutional independence and structured democratic accountability. The legal prohibition on imposing mandatory audit duties upon the Office, coupled with the strict restrictions on the Auditor General's political engagement, creates robust conditions for genuinely impartial oversight – a quality that is often cited as essential in comparative public administration literature. Equally noteworthy is the Office's commitment to transparency: the mandatory public disclosure of audit reports, the inclusion of auditee responses within those published documents, and the requirement to present findings before parliamentary committees all ensure that audit outcomes are not confined to internal government circles but are made accessible to civil society at large. This dual emphasis on independence from the executive and openness towards the public represents a model of good governance that strengthens the democratic legitimacy of state financial oversight [17].

The comparative analysis of Estonia's public medicine financing framework reveals a multi-layered system of governance that rests on four interconnected pillars: statutory internal control, digital infrastructure, supranational oversight, and independent external audit. Comparative analysis shows that countries implementing multi-level audit systems improve public spending efficiency by 12-18% on average and increase transparency indicators (such as public trust and corruption perception indexes) by up to 20% [15]. Each of these pillars provides useful lessons for Ukraine, but they need to be adapted to Ukraine's specific situation. This is especially important because of the ongoing war, the challenges of rebuilding afterward, and the need to carry out major reforms required for closer integration with the European Union. One of the easiest parts of the Estonian system for Ukraine to adopt is its two-level management structure in the Health Insurance Fund. In Estonia, everyday operations are handled by a Management Board, while a separate Supervisory Board oversees strategy and finances. This clear division helps prevent common problems in public healthcare, where those in charge may not act in the public's best interest, and can overlook the challenges and problems that arise.

In Ukraine, healthcare management has often been unclear. Creating a similar independent supervisory body could help address these issues. If its members are legally banned from having financial ties to healthcare providers or pharmaceutical companies, and if their terms are limited, it would reduce the risk of corruption and long-term control by powerful groups.

Estonia's example shows that these kinds of structures are not just formal rules- they are effective tools for protecting fairness and trust in a publicly funded healthcare system, as well as the quality of the health service.

Though there is little information available about how exactly the private and government audit companies use Estonia's digital health system – including electronic medical records, e-prescriptions, and connected data systems – for control, but as we can see from the reports, it reduces unnecessary paperwork, avoids duplicate payments, and quickly detects unusual billing patterns before they become bigger problems.

Ukraine has already started moving in this direction with its eHealth system under the National Health Service of Ukraine (NHSU), which uses electronic contracts and checks claims digitally. However, current integration levels remain below 60%, and interoperability between databases is still limited, which reduces the effectiveness of real-time financial monitoring and audit procedures. However, it is still not as advanced or fully connected as Estonia's system.

Below is a conceptual scheme illustrating the Estonian healthcare control and audit system:

The figure illustrates a multi-level, digitally integrated model of healthcare control and audit in Estonia, where digitalisation functions as a core instrument for ensuring transparency, efficiency, and accountability. At the highest level, the system operates under state and EU oversight, combining supranational governance mechanisms with national supervision performed by the National Audit Office.

At the central level, the Estonian Health Insurance Fund (Tervisekassa, EHIF) serves as the key coordinating institution. Its governance structure is divided into two complementary components: the Supervisory Board, responsible for strategic control, and the Management Board, which performs operational control functions. This dual structure ensures both long-term policy alignment and effective day-to-day administration.

A fundamental element of the system is the digital health infrastructure, which integrates

ESTONIAN HEALTHCARE CONTROL AND AUDIT SYSTEM

Digitalisation as an Audit Instrument

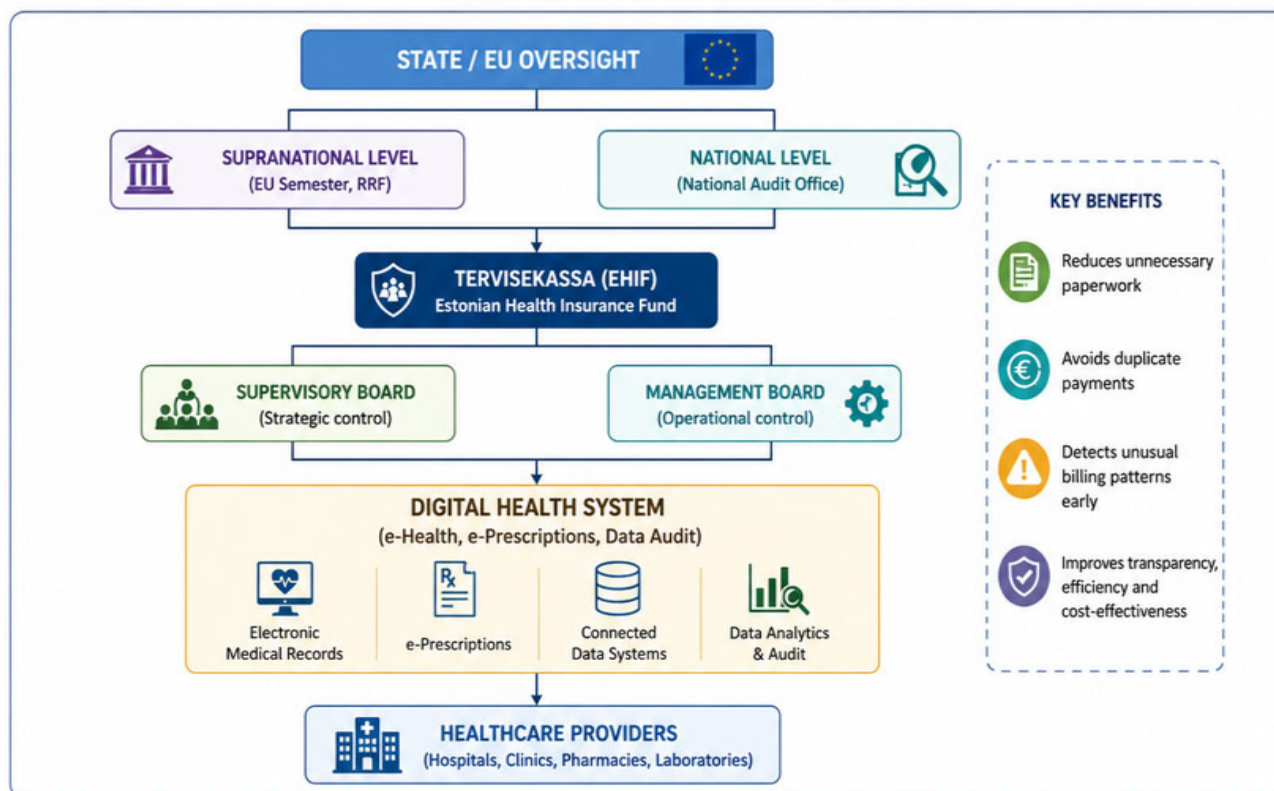


Figure 1. Conceptual model of the Estonian healthcare control and audit system based on digitalization

Source: formed by the authors

electronic medical records, e-prescriptions, interconnected data systems, and data analytics tools. This digital ecosystem enables continuous data exchange and supports automated audit procedures, allowing for real-time monitoring of financial flows and service provision.

At the operational level, healthcare providers – including hospitals, clinics, pharmacies, and laboratories – interact directly with the digital system, ensuring that all transactions and services are recorded and traceable.

The model demonstrates how digitalisation reduces administrative burden, prevents duplicate payments, and facilitates early detection of irregularities through data-driven audit mechanisms. Overall, the scheme highlights the role of integrated digital systems as a critical foundation for modern audit practices and effective financial control in the healthcare sector.

For Ukraine, the Estonian experience demonstrates several priority directions for adaptation. These include strengthening the

independence and practical influence of the Accounting Chamber, ensuring systematic use of audit results in parliamentary decision-making, deepening integration between eHealth systems and financial control bodies (in particular, the State Audit Service), and enhancing interoperability of databases to enable real-time monitoring. Equally important is the use of EU integration processes and international financial cooperation as instruments for enforcing reforms through clear targets and conditionality.

Overall, the figure underscores that the synergy between independent audit, multi-level governance, and advanced digital infrastructure is a critical prerequisite for increasing transparency, efficiency, and accountability in healthcare financing, and represents a strategic benchmark for Ukraine's ongoing institutional transformation.

To improve, Ukraine should focus on better linking NHSU data with the State Audit Service so financial oversight bodies can monitor spending in real time instead of relying on slower, paper-based checks. Estonia's example shows that

digital systems are not just an added benefit – they are essential for making healthcare more efficient, transparent, and cost-effective.

Estonia's National Audit Office provides a useful example for Ukraine on how to strengthen oversight of healthcare spending through its own Accounting Chamber (Rakhunkova Palata). The main ideas Ukraine could adopt are: giving auditors independence to choose what and when to audit, ensuring they have access to all necessary information, requiring audit results to be made public along with responses from the audited bodies, and keeping the Auditor General out of politics.

In Ukraine, the Accounting Chamber has played a limited role in healthcare, and its findings are not always used in policymaking. To improve this, Ukraine could update its laws so that audit results are regularly presented to and discussed by parliament. This would help turn audit findings into real policy changes.

Ukraine's path toward EU membership creates a structural opportunity analogous to the European Semester mechanism that disciplines Estonian healthcare spending. As Ukraine works with the EU, the World Bank, and the IMF, the conditions attached to funding can help push reforms forward.

Rather than seeing these conditions as pressure from outside, Ukrainian policymakers can use them as support for making necessary changes that might otherwise face resistance. Setting clear goals for healthcare spending – and linking funding to meeting those goals, as Estonia does with EU funds – would improve accountability and ensure better results in Ukraine's system.

It's important to remember that copying systems from one country to another is never simple. Estonia's model developed under specific conditions: a small population, high levels of education and digital skills, relatively

low corruption, and a strong national focus on digital governance.

Ukraine faces a very different situation. It is dealing with an ongoing war, large numbers of displaced people, a much bigger and more diverse population, and a healthcare system weakened by years of underfunding and recent destruction. Because of this, any reforms need to be introduced gradually, in the right order, and supported by major investments – especially in audit capacity, digital systems, and enforcement of rules.

Conclusions. Overall, Estonia's experience does not offer a ready-made solution, but it does provide clear guiding ideas. These include separating oversight from day-to-day management, using digital tools to control spending as well as deliver services, giving audit institutions real independence and access to information, and ensuring strong parliamentary oversight.

For Ukraine, key priorities include completing the digital transformation of healthcare, ensuring real-time data exchange between institutions, strengthening the independence and role of external audit bodies, and aligning national systems with EU governance frameworks. At the same time, reforms must consider Ukraine's specific challenges, including wartime conditions and post-war reconstruction.

If Ukraine applies these ideas step by step, and adapts them to its current challenges, it can build a healthcare financing system that is more transparent, efficient, and resilient – one that supports reconstruction and meets the standards expected for future EU membership.

Further research should focus on developing quantitative indicators for assessing the effectiveness of digital audit systems, as well as on modelling the economic impact of implementing integrated control mechanisms in transitional economies.

REFERENCES:

1. Ferreira, J., Horta, P., & Geada, F. (2023). The internal audit process in e-health: A case study. *International Journal of Health (Online)*. <https://doi.org/10.56226/50>
2. Busse, R., Blümel, M., Scheller-Kreinsen, D., & Zentner, A. (2010). *Tackling chronic disease in Europe: Strategies, interventions and challenges*. WHO Regional Office for Europe. <https://iris.who.int/handle/10665/326484> (accessed, March 29, 2026)
3. Dsouza, B. (2022). On sustainable health systems: A research emergency in pandemic times. *International Healthcare Review*, 1(1). <https://doi.org/10.56226/ihr.v1i1.7>
4. Klaus, J., Volonen, I., Kinnunen, J., Koistinen, V., & Virtanen, M. (2012). An assessment of health care financing in a highly decentralized Beveridge model. *Health*, 4, 1046–1052. <https://doi.org/10.4236/health.2012.411160>

5. Massaro, M. (2023). Digital transformation in the healthcare sector through blockchain technology: Insights from academic research and business developments. *Technovation*, 120, 102386. <https://doi.org/10.1016/j.technovation.2021.102386>
6. Merilo, J. (2025). *The e-Health strategy 2025–2030*. <https://s3-web-1a.tehik.ee/tehik-live-web-prd/s3fs-public/2025-06/Jaanika%20Merilo.pdf> (accessed, March 29, 2026)
7. OECD. (2026). *Health expenditure and financing* [Data set]. [https://data-explorer.oecd.org/vis?fs\[0\]=Topic%2C1%7CHealth%23HEA%23%7CHealth%20expenditure%20and%20financing%23HEA_EXP%23&pg=0&fc=Topic&bp=true&snb=4&df\[ds\]=dsDisseminateFinalDMZ&df\[id\]=DSD_SHA%40DF_SHA&df\[ag\]=OECD.ELS.HD&dq=.A.EXP_HEALTH.PT_B1GQ._T._T._T...&pd=2015%2C&to\[TIME_PERIOD\]=false&vw=tb](https://data-explorer.oecd.org/vis?fs[0]=Topic%2C1%7CHealth%23HEA%23%7CHealth%20expenditure%20and%20financing%23HEA_EXP%23&pg=0&fc=Topic&bp=true&snb=4&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_SHA%40DF_SHA&df[ag]=OECD.ELS.HD&dq=.A.EXP_HEALTH.PT_B1GQ._T._T._T...&pd=2015%2C&to[TIME_PERIOD]=false&vw=tb) (accessed, March 29, 2026)
8. Estonian Health Insurance Fund. (2026). *Estonian health care system*. <https://tervisekassa.ee/en/estonian-health-care-system> (accessed, March 29, 2026)
9. European Commission. (2025). *State of health in the EU: Country health profile 2025 – Estonia*. Publications Office of the European Union. (accessed, March 29, 2026)
10. Riigi Teataja. (2023). *Health Insurance Act*. <https://www.riigiteataja.ee/en/eli/ee/505042023001/consolide> (accessed, March 29, 2026)
11. Analysis of the health care system in Estonia. (2025). *Journal of Health Policy and Outcomes Research*, 2. <https://doi.org/10.7365/JHPOR.2025.2.3>
12. European Commission. *European Semester*. https://commission.europa.eu/topics/economy-and-euro/european-semester_en (accessed, March 29, 2026)
13. The Baltic Times. (2026). *Estonian Health Fund's 2026 budget deficit smaller than forecast*. https://www.baltictimes.com/estonian_health_fund_s_2026_budget_deficit_smaller_than_forecast/ (accessed, March 29, 2026)
14. European Commission. (2025). *Country health profiles 2025*. https://health.ec.europa.eu/state-health-eu/country-health-profiles/country-health-profiles-2025_en (accessed, March 29, 2026)
15. European Commission. (2025). *Communication from the Commission COM(2025) 206 final*. https://commission.europa.eu/document/download/771b483b-1bd0-4b5c-8d6a-624a4fd11050_en (accessed, March 29, 2026)
16. European Commission. (2025). *Recovery and Resilience Facility*. https://reforms-investments.ec.europa.eu/recovery-and-resilience-facility-1_en (accessed, March 29, 2026)
17. Riigi Teataja. (2016). *Health Services Organisation Act*. <https://www.riigiteataja.ee/en/eli/507012016002/consolide> (accessed, March 29, 2026)

Дата надходження статті: 10.04.2026

Дата прийняття статті: 04.05.2026

Дата публікації статті: 14.05.2026