



State of Oncology in Slovakia

Annual Report
2023

Compiled by
National Oncology Institute

Bratislava | 2024

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FORMAL AND LINGUISTIC REVIEW

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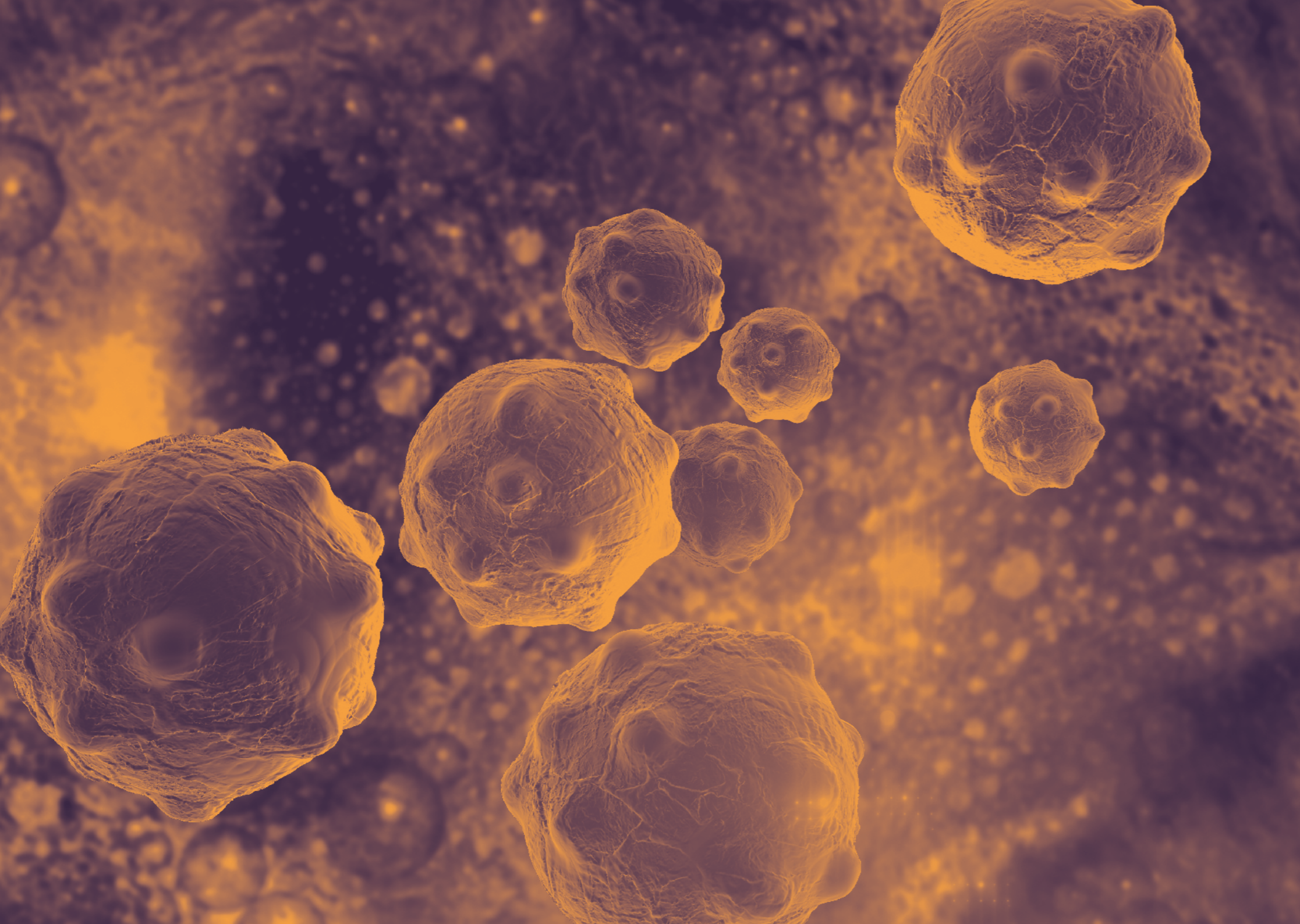
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1. Introduction

Dear Colleagues,

Please find on the following pages the sixth Annual Report on the State of Oncology in Slovakia for 2023. The current annual report maps important areas of oncology with activities implemented in 2023 and also reflects on the challenges that lie ahead.

In 2023, in Slovakia, we followed up on the activities from 2022 and succeeded in further developing activities already started in previous years. In the previous year, we achieved more visible development, especially in international cooperation either within European projects or ongoing collaborations established in previous years, such as partnerships with prestigious comprehensive cancer centers in Europe and the USA.

Creating a comprehensive cancer center, or infrastructure of comprehensive cancer care in Slovakia is what resonated to a large extent in 2023 thanks to Slovakia's participation in the European JA-CraNE project (Network of Comprehensive Cancer Centers –

preparatory activities), but also as a result of the knowledge and understanding that only systematically set health care, including preventive schemes with clearly defined quality assessment criteria and the inclusion of research, development and education will ultimately guarantee the quality that is essential in oncology. It is necessary to take into account recommendations based on medical evidence, such as the need for centralization in the case of diagnosis and treatment of certain diagnoses, decision-making within multidisciplinary teams, involvement, and decentralization within clinical trials, as well as the provision of systematic education at all levels.

The use of IT technologies and the digitization of health care play an important role in this regard, as it has the potential to reduce administrative demands but, above all, to improve awareness in the provision of health care by several experts, or by sharing imaging and laboratory examinations in real-time when the examinations were

carried out. Moreover, it can also facilitate communication with the patient or their journey in the health system. Properly applied digitalization hence not only improves communication but also makes data collection and evaluation easier and more feasible. This can thus make it easier and more accessible to adequately monitor and evaluate the quality of examinations and processes.

In today's world, the need for teamwork is much more evident, where not only people in different jobs in the same field, but also experts from different fields help each other and work together, and in the case of medicine, provide the best possible care. Man is the focus of medicine as a comprehensive bio-psycho-social-spiritual being with his own individual needs both in health and in illness. Understanding the importance of teamwork is related to the importance of applying the principles of belonging and solidarity, mutual understand-

ing, listening, and support with unceasing enthusiasm on the way to a common goal. Even turbulent periods or events are an opportunity for a clearer awareness of what is right, what needs to be worked on, and what needs to be developed.

We are not isolated in Slovakia, and thanks to joint international projects focused on various areas of oncology, we can grow stronger in cooperation with other countries. We are happy that Slovakia is also active in this area, and we believe that in the coming period, we will move together as a team towards a healthier Slovakia, Europe, and the world.

We would like to thank all our co-authors for their valuable contributions and wish you a fruitful reading.

Mária Rečková and Michal Mego

2. Facilities Providing Oncology Care in Slovakia

2.1. Clinical Oncology Facilities

Overview of oncology facilities network in Slovakia as of 31st December 2023

Region	Regional/Chief Expert	Number of beds	Number of Clinical Oncologists	Full time Equivalent, Clinical Oncology (FTE)
Bratislava region	Klaudia Gočárová, M.D., PhD.	(188 + 6TU*)	78	33.7
Trnava region	Marián Streško, M.D., PhD.	30	14	12.6
Trenčín region	Branislav Bystrický, M.D., PhD., MPH	42	12	9.2
Žilina region	Assoc. Prof. Richard Hrubý, M.D., PhD., MBA, MPH	101	22	13.2
Nitra region	Juraj Detvay, M.D., PhD., MPH	88	20	13.8
Banská Bystrica region	Matej Hrnčár, M.D., PhD., MBA	98	19	11
Prešov region	Juraj Beniak, M.D.	35	19	16.8
Košice region	Assoc. Prof. Igor Andrašina, M.D., PhD.	137	22	17.3
Slovakia	Prof. Michal Mego, M.D., D.Sc.	(719 + 6TU*)	206	127.6

*TU = transplantation unit

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Bratislava region – Regional Expert: Klaudia Gočárová, M.D., PhD.					
Bratislava	National Cancer Institute	2 nd Oncology Clinic, Faculty of Medicine of Comenius University and National Cancer Institute	86	Head of Clinic: Prof. Michal Mego, M.D., D.Sc.	14.0
		Clinical Oncology Department A	18	Head of Department: Jozef Šufliar, M.D., PhD. Andrej Jurík, M.D. Michaela Kubičková, M.D. Tomáš Minárik, M.D., PhD. Michaela Soják, M.D., PhD.	3.0
		Clinical Oncology Department D	17	Head of Department: Zuzana Syčová-Milá, M.D. Assoc. Prof. Michal Chovanec, M.D., PhD. Prof. Michal Mego, M.D., D.Sc. Jana Obertová, M.D., PhD. Dr. Patrik Palacka, M.D., PhD., MPH, MBA, LL.M. Katarína Rejlek, M.D., PhD.	2.0
		Clinical Oncology Department E	17	Head of Department: Jozef Dolinský, M.D. Róbert Godál, M.D. Silvia Jurišová, M.D. Melinda Kračalíková, M.D. Veronika Švabová, M.D., PhD.	2.0
		Clinical Oncology Department F Cancer Institute	19	Head of Department: Andrea Škripeková, M.D., PhD. Lucia Dzurillová, M.D., Katarína Jakubovits, M.D. Andrea Sysáková, M.D.	2.0
		Clinical Oncology Department G	15	Head of Department: Štefan Pörsök, M.D., PhD. Natália Pazderová, M.D. Tomáš Šálek, M.D. Eva Zomborská, M.D.	2.0

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
		Clinical Oncology Department – Outpatient chemotherapy	0	Head of Department: Dr. Patrik Palacka, M.D., PhD., MPH, MBA, LL.M., Barbora Dobiášová, M.D., Miroslava Malejčíková, M.D., Eva Oravcová, M.D., PhD.	3.0
Bratislava	National Cancer Institute	Oncohematology Clinic, Faculty of Medicine of Comenius University and National Cancer Institute	27+6TU	Head of Clinic: Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM	6.0
		Oncohematology Department, I.	15+6TU	Head of Department: Andrej Vranovský, M.D., PhD. Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM Radoslav Greksák, M.D., PhD. Miriam Ladická, M.D.	3.0
		Oncohematology Department II.	12	Head of Department: Eva Mikušková, M.D., PhD. Ľudmila Demitrovičová, M.D., PhD. Vanda Mikudová, M.D. Iveta Oravcová, M.D., PhD.	3.0
Bratislava	St. Elisabeth Cancer Institute	Oncology Department I., FoM UC	28	Head of Clinic: Prof. Stanislav Špánik, M.D., PhD. (until August 2023) Prof. Dalibor Ondruš, M.D., D.Sc. (from September 2023)	5.0
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Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
		Outpatient Department	0	Head of Department: Vanda Ušáková, M.D., PhD. Assoc. Prof. Lýdia Helpianska, M.D., PhD. Milada Mikulová, M.D.	3,2
Bratislava	UNSP Milosrdní bratia, spol. s r.o.	Clinical Oncology Department	20	Head of Department: Vladimír Václav, M.D. Miriám Drahokoupilová, M.D., Maroš Fermal, M.D. Mária Novisedláková, M.D., Zuzana Dudová, M.D.	2,0
Bratislava	Bratislava University Hospital Ružinov	Clinical Oncology Department (Lung Oncology) Department of Pneumology, Phthysiology and Functional Diagnostics the Slovak Medical University and University Hospital Bratislava, Department of Clinical Oncology	17	Head of Clinic: Milada Veselá, M.D. Mária Černá, M.D., PhD., Lucia Denková, M.D. Lýdia Ďordayová, M.D., Peter Kasan, M.D. Maroš Marták, M.D., Radka Radecká, M.D. Anna Remišová, M.D., Zuzana Švihelová Lišková, M.D.	2,0
Bratislava	Bory Hospital – Penta Hospitals	Clinical Oncology Department (since 1 May 2023)	10	Head of Department: Assoc. Prof. MUDr. Richard Hrubý, PhD., MBA, MPH Margita Pobijaková, M.D. PhD. Rastislava Rosinská, M.D.	2,0
Bratislava	Ružinov Hospital	Clinical Oncology Clinic	0	Pavel Vojtko, M.D.	1,0
Bratislava	Antolská Hospital and Polyclinic	Clinical Oncology Clinic	0	Marián Príbelský, M.D., PhD.	1,0
Bratislava	Ružinov Polyclinic	Clinical Oncology Clinic	0	Ľubica Sládkovičová, M.D.	0,5
Bratislava	St. Michaels Hospital	Clinical Oncology Clinic	0	Miriám Drahokoupilová, M.D.	0,2
Total			188 + 6TJ	78	33,7

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
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Trnava	Teaching Hospital Trnava	Oncology Clinic	30	Head of Clinic: Marián Streško, M.D., PhD. Head of Department: Monika Dienerová, M.D., PhD. Abdul Dammak, M.D., Erika Grmanová, M.D. Eliška Volochová, M.D.	4,0
Trnava	EKUMED, spol. s r.o.	Private Oncology Clinic	0	Assoc. Prof. Eva Kukučková, M.D.	1,0
Galanta	St. Lucas Hospital and Polyclinic Galanta, (JSC)		0	Jozef Kováč, M.D.	1,0
Hlohovec	SPOKO (LLC)	Clinical Oncology Clinic	0	Marián Kučma, M.D.	1,0
Banka	MEDEON (LLC)	Clinical Oncology Ward	0	Monika Matejková, M.D.	1,0
Piešťany		Clinical Oncology Clinic	0	Eva Popracová, M.D.	1,0
Senica	Senica polyclinic (NGO)		0	Adrian Nečas, M.D. (only dispensarization)	0,6
Skalica	Agel Teaching Hospital Skalica Hospital and Clinic (JSC)		0	Jana Mišová, M.D.	1,0
Dunajská Streda	Dunajská Streda Hospital with polyclinic (JSC)		0	Tibor Csoka, M.D. Juraj Kubik, M.D.	2,0
Total			30	14	12,6

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Trenčín Region – Regional Expert: Branislav Bystrický, M.D., PhD., MPH					
Trenčín	Teaching Hospital Trenčín	Oncology Clinic	42	Head of Clinic: Branislav Bystrický, M.D., PhD., MPH Zuzana Hatalová, M.D. Filip Kohútek, M.D., PhD. Alžbeta Kohúteková, M.D. Katarína Riedlová, M.D. Miroslava Stratená, M.D. Viliam Špánik, M.D.	4.6
Považská Bystrica	Nemocnica s poliklinikou Považská Bystrica	0	0	Andrej Rosík, M.D. Veronika Pechová, M.D.	2
Bojnice		0	0	Dušan Magdín, M.D. Mária Pastorková-Šafariková, M.D.	1.6
Partizánske		0	0	Alexandra Szabová, M.D.	1
Total			42	12	9.2

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Nitra region – Regional Expert: Juraj Detvay, M.D., PhD., MPH					
Nitra	Specialized St. Svorad Hospital Nitra	Clinical Oncology	35	Head of Department: Assoc. Prof. Peter Beržinec, M.D., PhD., FCCP Lucia Doláková, M.D., Gabriela Chowaniecová, M.D., Helena Kuzmová, M.D.	2.0
Nitra	Teaching Hospital Nitra	Clinical Oncology	31	Head of Clinic: Michaela Miškovičová, M.D., Ph.D. Zuzana Pribulova, M.D., Jana Ďurková, M.D., Rastislav Gura, M.D. Ján Solčanský, M.D.	1.5
Nitra	MedCenter Dzurila		0	Rastislav Gura, M.D.	1.0
Nitra	Private Oncology Clinic		0	Anna Rábeková, M.D.	1.0
Topoľčany	Hospital Topoľčany (JSC)	Ambulancia klinickej onkológie I.	0	Ján Kubiš, M.D.	1.0
Topoľčany	Hospital Topoľčany (JSC)	Ambulancia klinickej onkológie II.	0	Katarína Lepeyová, M.D.	1.0
Komárno	Zdravspol (LLC)	Ambulancia klinickej onkológie	0	Eva Konkolovská, M.D.	1.0
Komárno	Agel Komárno		0	Oľga Rosinská, M.D.	1.0
Levice	Agel Levice		0	Lyudmyla Rudenko, M.D.	1.0
Levice	Pelegrín (LLC)	Clinical oncology Clinic	0	Blanka Puškárová, M.D.	1.0
Nové Zámky	Teaching Hospital with policlinic	Clinical Oncology Department	22	Pavol Demo, M.D., Ľudovít Gremeň, M.D., Oľga Szegeöová, M.D.	1,3
Nové Zámky	ONKO MED (LLC)	Clinical oncology Clinicklinickej onkológie	0	MUDr. Danica Horváthová	1.0
Total			88	20	13,8

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Žilina region – Regional Expert: Assoc. Prof. Richard Hrubý, M.D., PhD., MBA, MPH					
Žilina	Teaching Hospital and Policlinic Žilina	Clinical Oncology Department	40	Head of Department: Dagmar Sudeková, M.D., MBA*(RO) Milan Krošlák, M.D., Ivan Kudera, M.D. Zuzana Štofová, M.D., Andrea Šulgan, Murínová, M.D. Alena Thomková, M.D.	2.0
Žilina	ONKOMED ZA (LLC)	Clinical Oncology Clinic	0	Assoc. Prof. Richard Hrubý, M.D., PhD., MBA, MPH	1.0
Martin	University Hospital Martin	Oncology Center	19	Head of Department: Eva Hajtmanová, M.D. PhD. *(RO) (until 1 July 2023) Ivan Kecskés, M.D., MBA *(RO) (from 1 July 2023) Jana Gabajová, M.D., Zuzana Špaňová, M.D. Silvia Šulajová, M.D., Dagmar Šuteková, M.D. Katarína Šváblová, M.D.	1.68
Martin	ONKO MARTIN (LLC)	Clinical Oncology Clinic	0	Anna Naništová, M.D.	1.0
Ružomberok	Central Military Hospital Ružomberok	Radiation and Clinical Oncology Clinic	36	Director: Roman Podoba, M.D., PhD. Head of Department: Iveta Kalinová, M.D., *(KO) Soňa Johnová, M.D., Tatiana Komová, M.D.	3.0
Dolný Kubín	Onkológia DK s.r.o.	Clinical Oncology Clinic	0	Lucia Beňušová, M.D.	1,0
Námestovo	Hornooravská nemocnica	Clinical Oncology Clinic	0	Ľudmila Guspanová, M.D.	
Trstená	Hornooravská nemocnica	Clinical Oncology Clinic	0	Ľudmila Guspanová, M.D.	1,0
Čadca	Kysucká nemocnica s oliklinikou	Clinical Oncology Clinic	0	Pavol Lamoš, M.D.	1,0
Čadca	Šíranec s.r.o.	Oncology Clinic	0	PhDr. Alojz Šíranec, M.D. MPH	1,0
Kysucké Nové Mesto	MEDICA-CARE s.r.o.	Clinical Oncology Clinic	0	Dagmar Krešáková, M.D.	0,2
Total			101	22	13,2

*RO – Radiation Oncology Specialist

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Banská Bystrica region – Regional Expert: Matej Hrnčár, M.D., PhD., MBA					
Banská Bystrica	F.D.Roosevelt Hospital and Policlinic Banská Bystrica	Clinical Oncology	58	Head of Clinic: Matej Hrnčár, M.D., PhD., MBA Deputy Head: Anna Švidraňová, M.D. Emília Fatkulínová, M.D. Soňa Johnová, M.D. Silvia Mrázová, M.D. Alexander Savka, M.D. Lucia Venglarčíková, M.D.	4.0
Banská Bystrica	St. Agatha Mammacenter		0	Eva Pritzová, M.D. Dagmar Mazalová, M.D. Klaudia Šurmaneková, M.D.	2.0
Lučenec	General Hospital and Policlinic Lučenec, n.o.		20	Andrea Kašínská, M.D. Jaroslava Machanová, M.D.	
Rimavská Sobota	Rimavská Sobota Hospital	Clinical Oncology	20	Head of Department: Assoc. Prof. Richard Hrubý, M.D., PhD., MBA, MPH, Adela Englerová, M.D. Iveta Palková, M.D.	0,8
Rimavská Sobota	Avimed			Vincent Alakša, M.D. Adela Englerová, M.D,	1.2
Veľký Krtíš	Veľký Krtíš		0	Anna Bomborová, M.D,	1.0
Zvolen	Zvolen Hospital		0	Petronela Lalíková, M.D,	1.0
Total			98	19	11.0

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Prešov region – Regional Expert: Juraj Beniak, M.D.					
Poprad	POKO Poprad (LLC)		0	Head of Department: Juraj Beniak, M.D. Tatiana Albertová, M.D. Marian Kakalejčík, M.D. Lenka Medvecová, M.D. Mária Rečková, M.D., PhD. Marcela Uhríková, M.D.	4.5
Prešov	J. A. Reiman Teaching Hospital and Policlinic Prešov	Oncology Clinic – Clinical Oncology Clinic	35	Head of Clinic: Marek Paľo, M.D., PhD. *(RO) Head of Department: Jaroslava Lešková, M.D. Lenka Kundríková, M.D. Michal Milas, M.D. Valéria Tkáčová, M.D.	5.0
Prešov	BEKY-MED (LLC)	Clinical Oncology Clinic	0	Alena Benedikty, M.D.	1.0
Levoča	General Hospital and Policlinic Levoča (JSC)	Clinical Oncology Clinic	0	Valér Kováč, PhD., M.D.	1.0
Stará Ľubovňa	Hospital and Policlinic Stará Ľubovňa – Ľubovňa Hospital	Clinical oncology Clinic I., II.	0	Martina Turčániová, M.D. Peter Ondrejko, M.D.	2.0
Svidník	Generl L. Svoboda Svidník Hospital	Oncology Clinic	0	Erika Hnátová, M.D.	0.5
Sabinov	Sabinov	Clinical Oncology Clinic	0	Wali Kohi, M.D.	1.0
Bardejov	St. Jacob Hospital and Policlinic Bardejov	Oncology Clinic I, II	0	Jozef Chovanec, M.D. Jozef Chovanec Jr., M.D.	1.8
Total			35	17	16.8

Location	Hospital	Department	Number of beds	Clinical Oncologists	FTE
Košice region – Regional Expert: Assoc. Prof. Igor Andrašina, M.D., PhD.					
Košice	East Slovakia Oncology Institute (JSC)	Radiotherapy and Oncology Clinic	total 55	Head of Clinic: Assoc. Prof. Igor Andrašina, M.D., PhD.	6.0
		Clinical Oncology Department – Outpatient Department	0	Head of Department: Andrea Cipková, M.D., MPH Assoc. Prof. Igor Andrašina, M.D., PhD. Eleonóra Pihúriková, M.D., Mária Višňovská, M.D. Renáta Šikrová, M.D., Monika Žák, M.D.	5.0
		Clinical Oncology Department – Inpatient Department	55	Robert Biel, M.D., Jana Jankurová, M.D. Martin Petríľák, Jana Tabišová, M.D.	1.0
Košice South	ONKOCARE (LLC)	Clinical Oncology Clinic	0	Hana Garanová, M.D.	1.0
Košice West	ONKO-MED (LLC)	Clinical Oncology Clinic	0	Jana Tabišová, M.D.	1.0
Košice		Clinical Oncology Clinic		Veronika Langerová, M.D. (until 1st December 2023) Radovan Barilla, M.D., PhD. (from 1st December 2023)	1.0
Rožňava	St. Barbara Hospital and Policlinic Rožňava	*POKO		Zlatica Šimkovičová, M.D.	1.0
Trebišov	AMALA (LLC)	Clinical oncology Clinic	0	Alica Malá, M.D.	1.0
Trebišov	Hospital and Policlinic Trebišov (JSC)	Clinical Oncology Department, Clinical Oncology Clinic I., II.	25	Head of Department: Bibiana Bereš-Žiarna, M.D. Bibiana Brezinová, M.D., Peter Jarušínský, M.D. Martin Michalanský, M.D.	4.0
Michalovce	Štefan Kukura Hospital and Policlinic	Oncology Center	57	Head of Oncology Center: Lenka Rušinová, M.D. Bibiana Bereš-Žiarna, M.D., Bibiana Brezinová, M.D.	1.8
Humenné	A. Leňo Hospital and Policlinic	Clinical Oncology Clinic	0	Svetlana Šarišská, M.D.	1.0
Humenné	ONKO-KR, s.r.o.	Oncology Clinic	0	Kvetoslava Roháčová, M.D.	1.0
Vranov n/Topľou	Hospital and Policlinic Vranov n/Topľou	Oncology Clinic	0	Bibiána Brezinová, M.D., Jarušínský Peter, M.D.	0.4
Kráľovský Chlmec	Hospital and Policlinic Kráľovský Chlmec	Clinical Oncology Clinice	0	Bibiana Bereš-Žiarna, M.D., Martin Michalanský, M.D.	0.4
Total			137	22	17.4

*POKO – Policlinic Department of Clinical Oncology

There are 3 Institutes specializing in Cancer care in Slovakia (National Cancer Institute, East Slovakia Oncology Institute, and St. Elisabeth Cancer Institute), 19 Clinical Oncology Departments, and 2 Specialized Lung Oncology facilities.

The challenge for the near future is to build the first Comprehensive Cancer Center in Slovakia according to OECI (Organisation of European Oncology Institutes) standards, which would also be part of the creating European network of Comprehensive Cancer Centers in accordance with Europe's Beating Cancer Plan.

Another challenge is the alignment of the historical setup of the oncology facilities network with the optimization of the hospital network drafted by the Ministry of Health of the Slovak Republic.

2.2. Centers of Specialized Oncohematology Care for adults (including a Transplantation program)

In 2023, standard diagnostic and therapeutic activities were carried out in both centers and regional facilities. The hematopoietic cell transplantation program continued, a total of 278 transplants were performed in children and adults (29 in children), 181 autologous and 97 allogeneic transplants.

The first certified workplace for applying CAR T-cell therapy was established at the National Cancer Institute in Bratislava. In April 2023, treatment of the first patients with tisa-cel and axi-cel preparations began at the Oncohaematology Clinic of the Faculty of Medicine of

Comenius University and the National Cancer Institute. It is an innovative therapy in which lymphocytes, which are part of the immune system, are modified and multiplied after their removal so that they are able to seek out and destroy tumor cells. The treatment is suitable for patients with certain types of malignant lymphomas and acute lymphoblastic leukemia in young patients who have already used all available treatment options.

The challenges for 2024 remain the correct, timely diagnosis and modern therapy of hematological malignancies (Slovak-wide protocols for the treatment of acute leukemia in adults are being prepared), the preparation of additional centers for CAR-T cell therapy in the Slovak Republic, the correct setting of the network of workplaces and their personnel and equipment provision and managing changes related to the new organization of the hospital network.

Inpatient Departments (adult patients):

- Hematology and Transfusiology Clinic of the Faculty of Medicine of the Comenius University, the Slovak Medical University, and the Bratislava Teaching Hospital, Antolská 11, Bratislava**
www.unb.sk/klinika-hematologie-a-transfuziologie-lfuk-szu-a-unb/
- Hematology and Oncohematology Clinic of the Louis Pasteur Teaching Hospital, Trieda SNP 1, Košice**
www.upjs.sk/lekarska-fakulta/klinika/hematologia/
- Hematology Clinic, FDR Teaching Hospital with Policlinic, Nám. L. Svobodu 1, Banská Bystrica**
www.fnspfdr.sk/kliniky-a-oddelenia/hematologicke-oddelenie/

- Hematology and Transfusiology Clinic of the Jessenius Faculty of Medicine of the Comenius University and Teaching Hospital, Kollárova 2, Martin**
www.unm.sk/klinika-hematologie-transfuziologie
- Oncohematology Clinic of the Faculty of Medicine of the Co-**

- menius University and the National Cancer Institute, Klenová 1, Bratislava**
<https://www.nou.sk>
- Clinical Hematology Clinic, Teaching Hospital, Jána Hollého 14, Prešov**
<https://www.fnsppresov.sk/oddelenia/klinicka-haematologia/>

2.3. Pediatric Oncology Facilities

Overview of pediatric facilities network in Slovakia as of 31st December 2023

Region	Chairman / Head Physician	Beds	Specialists	Full-time Equivalent, Pediatric Oncology (FTE)
	Wards	40	14	7.0
(FTE)	Eva Bubanská, M.D. Ivana Fedoráková, M.D.	18	6	1.2
Košice	Viktória Halušková, M.D.	15	4	2.0
Main expert as of 1st January 2019				
Slovakia	Prof. Alexandra Kolenová, M.D., PhD.	73	24	10.2

Location	Hospital	Department	Number of beds	Pediatric Oncologists
Bratislava	National Institute of Children's Diseases	Oncology Department for small children Children's Hematology and Oncology Clinic of the Faculty of Medicine of Comenius University and the National Institute of Children's Diseases	17	Head of Clinic: Prof. Alexandra Kolenová, M.D., PhD. Stanislava Hederová, M.D. Kristína Husáková, M.D. Marianna Džatková, M.D.
		Oncology Department for big children	17	Head of Department: Andrea Hrašková, M.D. Andrea Mocná, M.D. Judita Puškáčová, M.D., PhD.
		Transplantation Department	6	Peter Švec, M.D., PhD. Jaroslava Adamčáková, M.D. Ivana Boďová, M.D., PhD. Mária Fussiová, M.D. Júlia Horáková, M.D., PhD.
		Outpatient Clinic – Outpatient Chemotherapy	10	Andrea Hrašková, M.D.
		Oncology wards	0	Prof. Alexandra Kolenová, M.D., PhD. Daniela Sejnová, M.D. Judita Puškáčová, M.D.
		Transplantation Unit Clinic	0	Ivana Boďová, M.D. Júlia Horáková, M.D. Peter Švec, M.D., PhD.
		Palliative care	0	Mária Jasenková, M.D. Martina Mikesková, M.D.

Location	Hospital	Department	Number of beds	Pediatric Oncologists
Banská Bystrica	Children's Teaching Hospital with polyclinic	Pediatric Oncology and Hematology Clinic of the Slovak Medical University	18	Head of Clinic: Eva Bubanská, M.D., PhD. Head of Department: Ivana Fedoráková, M.D. Pavel Bician, M.D. Helena Fillová, M.D. Terézia Stančoková, M.D.
		Oncology Clinic		Ivana Fedoráková, M.D. Terézia Stančoková, M.D. Pavel Bician, M.D.
		Palliative care		Terézia Stančoková, M.D. Pavel Bician, M.D.
Košice	Children's University Hospital	Pediatric Oncology and Hematology Department	15	Head of Department: Viktória Halušková, M.D. Ladislav Deák, M.D. Natália Galoová, M.D. Milan Greš, M.D. Viktória Halušková, M.D.
		Oncology Clinic		Ladislav Deák, M.D. Natália Galoová, M.D. Milan Greš, M.D. Viktória Halušková, M.D. Igor Jenčo, M.D.

Challenges for 2024

The network of pediatric oncology centers in Slovakia is optimal and sufficient. The National Institute of Children's Diseases in Bratislava, the Children's Teaching Hospitals in Banská Bystrica, and Košice cooperate and have the same diagnostic and treatment procedures. Patient consultation is available in Bratislava at the multidisciplinary Tumor Board seminar and also within the international Tumor Board with the Children's Hospital of Philadelphia.

Within the optimization of the hospital network, the Children's Hematology and Oncology Clinic of the National Institute of Children's Diseases was categorized in Category 5, and the Children's Teaching Hospitals Banská Bystrica and Košice in Category 5 within the network of the MoH SR.

The modernization of the diagnostic procedure for CNS tumors as per the latest 2021 WHO classification poses another challenge by introducing methylation and genomic profiling in all childhood CNS tumors. Yet another challenge is to ensure the conditions for participation in international clinical academic studies.

2.4. Radiation Oncology Facilities

Overview of radiation facilities network in Slovakia as of 31st December 2023

Region	Regional/Chief Expert	Number of beds	Radiation Oncologists and Radiation Oncologists in preparation for board-examination in RO
Bratislava region	Martin Chorváth, M.D., PhD., MPH	66	29
Trnava region	Not appointed	0	0
Trenčín region	Not appointed	42*	9
Žilina region	Eva Hajtmanová, M.D., PhD.	110	16
Nitra region	Not appointed	40*	11
Banská Bystrica region	Vladimír Malec, M.D., PhD. until April 2023	98*	13
Prešov region	Not appointed	25	7
Košice region	Iveta Priateľová, M.D.	65	14
Slovakia	Assoc. Prof. Pavol Dubinský, M.D., PhD, MHA	446*	99

* Including joint beds with clinical oncology

City	Hospital	Department	Number of beds	Radiation Oncologists
Bratislava region – Regional Expert: Martin Chorváth, M.D., PhD., MPH				
Bratislava	National Cancer Institute	Radiation Oncology Department	35 (20 operated)	Head of Department: Zuzana Dolinská, M.D. Marta Fekete, M.D. Alexandra Hanicová, M.D. Andrea Huráková, M.D. Martina Kolarčíková –Lukačovičová, M.D. Mojmír Masár, M.D. Andrea Masaryková, M.D., PhD. Martina Pohrancová, M.D. Danijela Ščepanovič, M.D., PhD. Ingrid Závacká, M.D.
	St. Elizabeth Oncology Institute (LLC)	Radiation Oncology Clinic of the Slovak Medical University and the St. Elizabeth Oncology Institute	21	Head of Clinic: Martin Chorváth, M.D., PhD., MPH Elena Bolješiková, M.D., PhD. Head of Department: Pavol Lukačko, M.D. Head of Department: Zuzana Piňáková, M.D. Head of Department: Monika Šandorová, M.D. Dominika Hájková, M.D. (trainee) Dana Kekešiová, M.D. Barbora Kormaníková, M.D. (trainee) Ivana Krajčovičová, M.D., PhD. Andrea Ligačová, M.D. Martina Malá, M.D. Branislav Sepeši, M.D., MBA Peter Šiška, M.D. Miroslava Lukačovičová, M.D. Monika Švantnerová, M.D. Martina Vorobjov, M.D. Alena Závodská, M.D.
	Bory Hospital – Penta Hospitals	Radiation Oncology Department	10	Head of Department: Margita Pobijáková, M.D., PhD., Marin Džongov, M.D.

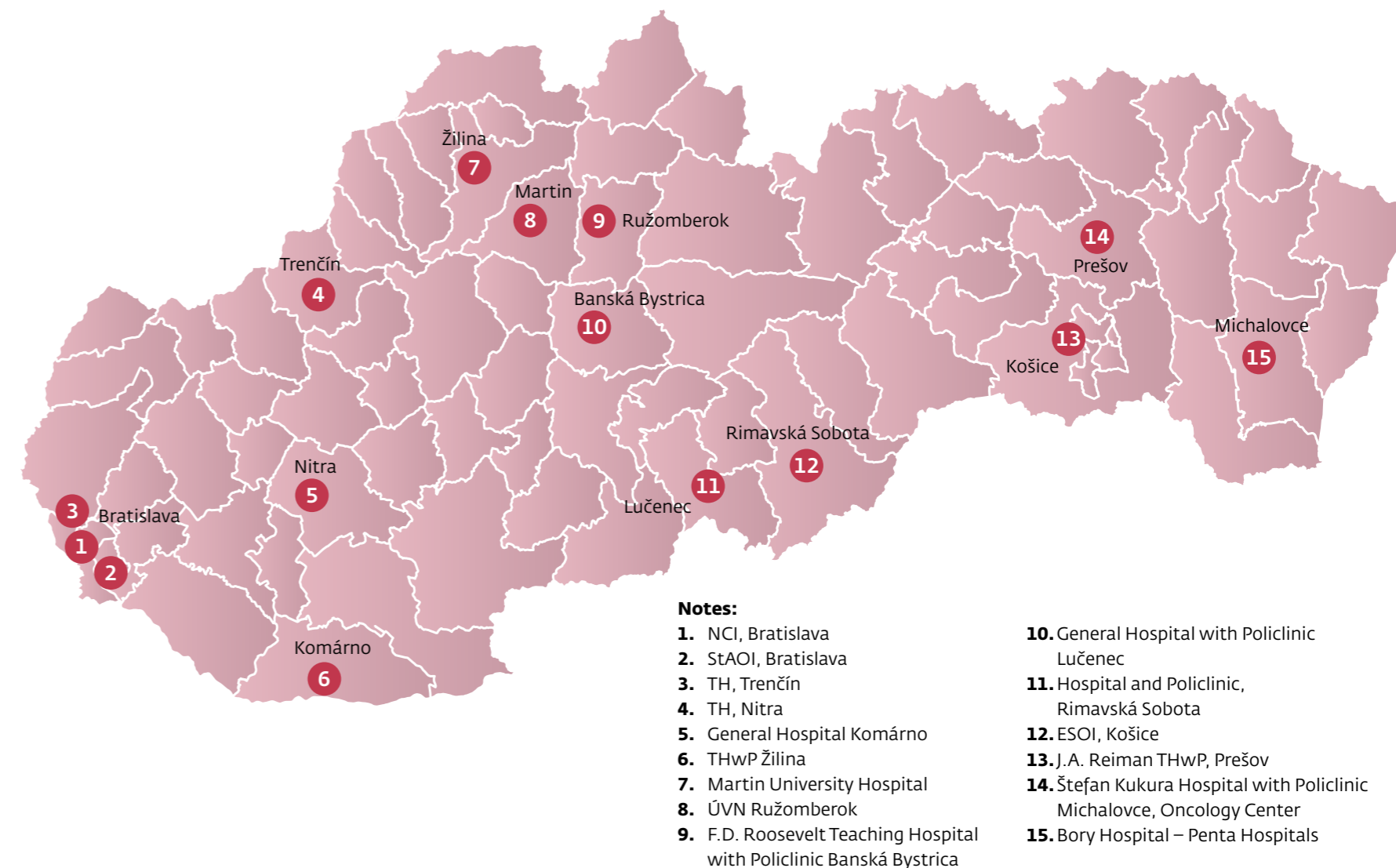
City	Hospital	Department	Number of beds	Radiation Oncologists
Banská Bystrica region – Regional Expert: Not appointed				
Banská Bystrica	F.D.Roosevelt Teaching Hospital with Polyclinic Banská Bystrica	Slovak Medical University Oncology Clinic	58 (RO + CO)	Deputy Head for Radiation Oncology: Dagmar Styková, M.D. Soňa Johnová, M.D., Milan Kuvik, M.D. Andrea Martinková, M.D., Marek Lafférs, M.D. Silvia Mrázová, M.D. (trainee) Karin Petrovičová, M.D. (trainee) Marcela Vojčiaková, M.D. (trainee)
Lučenec	General Hospital with Polyclinic Lučenec	Radiation Oncology Department	20	Head of Department: Andrea Kašínská, M.D. Vaněk Peter, M.D.
Rimavská Sobota	General Hospital Rimavská Sobota, Svet Zdravia (JSC)	Clinical and Radiooncology Department	20 (RO + CO)	Head of Department: Adela Englerová, M.D. Michaela Švajdová, M.D., Iveta Pálkovácová, M.D.
City	Hospital	Department	Number of beds	Radiation Oncologists
Košice region – Regional Expert: Iveta Priatelová, M.D				
Košice	East Slovakia Oncology Institute (JSC)	Radiation Oncology Department	57	Head of Department: Assoc. Prof. Pavol Dubinský, M.D., PhD., MHA Gabriela Barilíková, M.D., Jana Bocaková, M.D. (trainee), Katarína Belánová, M.D. Marián Frivaldský, M.D., MPH Natália Janíčková, M.D. Marek Marinčák, M.D. Daniela Nadzonová, M.D. Iveta Priatelová, M.D. Daniela Uhrincová, M.D. (trainee) Zuzana Tomková, M.D. (trainee) Petra Štefková, M.D.
Michalovce	Š. Kukura Hospital with Polyclinic Michalovce (JSC)	Radiation Oncology Department	8 (RO)	Head of Department: Gabriela Hermanová, M.D., MPH Jana Spišáková, M.D.

City	Hospital	Department	Number of beds	Radiation Oncologists
Nitra region – Regional Expert: Not appointed				
Komárno	AGEL Hospital Komárno	Clinical and Radiation Oncology Department	24 (RO + CO)	Head of Department: Pavel Demeter, M.D., MBA Eva Mrázová, M.D., MBA Oľga Rosinská, M.D. Krisztián Váradi, M.D. (trainee) Orsolya Bugár, M.D. (trainee)
Nitra	Teaching hospital Nitra	Oncology Clinic – Radiation Oncology Department	16 (exclusively RO)	Head of Department: Andrea Rybárová, M.D. Lea Mészáros, M.D. (trainee) Dana Lačná-Némethová M.D. (trainee) Oľga Miklóssyová, M.D. Marta Zacharová, M.D. Simona Zajacová M.D. (trainee)
City	Hospital	Department	Number of beds	Radiation Oncologists
Prešov region – Regional Expert: Not appointed				
Prešov	Ján Adam Reiman Teaching Hospital with Polyclinic Prešov	Radiation Oncology Department	25	Head of Department: Marek Paľo, M.D., PhD. Eva Bergendyová, M.D. Lucia Čintalanová, M.D. Barbara Guldenová, M.D. Juraj Kmec, M.D. Dorota Kolková, M.D. Viktor Rosenberg, M.D., PhD.

City	Hospital	Department	Number of beds	Radiation Oncologists
Trenčín region – Regional Expert: Not appointed				
Trenčín	Trenčín Teaching Hospital	Oncology Clinic	42 (RO + CO)	Head of Department: Branislav Bystrický, M.D., PhD., MPH Filip Kohútek, M.D., Alžbeta Kohúteková, M.D., Vladimíra Kurišová, M.D., Karol Martinka, M.D., Katarína Riedlová, M.D., Viliam Špánik, M.D., Silvia Zavřelová, M.D., Miroslav Bočák, M.D.
Žilina region – Regional Expert: Eva Hajtmanová, M.D., PhD.				
Martin	Martin Teaching Hospital	Oncology Center	20	Head of Department: Eva Hajtmanová, M.D., PhD. Marián Ďuroška, M.D., Petronela Káčerová, M.D. Mária Kočíšová, M.D., Ľubica Kostková, Anton Malicher, M.D., PhD.
Ružomberok	Slovak National Uprising Central Military Hospital Ružomberok – Teaching Hospital	Radiation and Clinical Oncology Clinic	30 (RO + CO)	Head of Department: Ivana Hulínová, M.D. Kristína Čelková, M.D. Miroslava Oravcová, M.D.
Žilina	Teaching Hospital with Policlinic Žilina	Clinical and Radiooncology Department	60 (RO + CO)	Head of Department: Dagmar Sudeková, M.D., MBA Peter Németh, M.D. Dáša Pazdúrová, M.D. Richard Paček, M.D. (trainee) Miroslava Rosincová, M.D. (trainee) Henrieta Šlosárová, M.D. (trainee)

Notes: RO – Radiation Oncology, CO – Clinical Oncology

Radiation Oncology workplaces with technological equipment



Technological equipment as of January 1 st , 2024				
Workplace	Linear accelerator	RTG therapy machine	CT simulator	HDR Brachytherapy
National Cancer Institute, Bratislava	× × ×		×	×
St. Elizabeth Oncology Institute (LLC), Bratislava	× ×	×	×	×
Trenčín Teaching Hospital	× ×	×	×	×
Teaching Hospital Nitra	× × ×		×	×
FORLIFE n.o., General Hospital Komárno	×		×	
Teaching Hospital with Policlinic Žilina	× ×	×	×	
Martin Teaching Hospital	× ×	×	×	
SNU CMH Ružomberok	×	×		×
F. D. Roosevelt Teaching Hospital with Policlinic in Banská Bystrica,	× ×		×	×
General Hospital with Policlinic Lučenec		×		
Hospital and Policlinic, Rimavská Sobota	×	×	×	
East Slovakia Oncology Institute (JSC)	× × ×	×	×	×
J.A.Reiman THwP, Prešov	× ×	×	×	
Štefan Kukura Hospital with Policlinic Michalovce, Oncology Centre	×		×	
Bory Hospital – Penta Hospitals	× ×*	×	×	×

2.5. Palliative Care Facilities and Hospices

The legislative framework for establishing a network of health care providers is Government Regulation No. 640/2008 Z.z. on the public minimum network of health care providers, as amended. This regulation establishes a public minimum network of health care providers (hereinafter referred to as “HP”) that provide outpatient health care, providers that provide inpatient health care, and, within the public minimum network of providers, a fixed network of providers and end-point network of providers.

Mobile hospices

They are defined as specialized outpatient facilities that provide specialized palliative health care for the duration of the indication of this health care .

With effect from 31st March 2023, the public minimum network (PMN) for mobile hospices was amended by an amendment to Gov-

ernment Regulation No. 640/2008 Z.z. – by the Government Regulation No. 105/2023 Z.z.

Public minimum network of mobile hospices until 30th March 2023

Until March 30, 2023, it was defined in Section 8 of Government Regulation No. 640/2008 Z.z., according to which the public minimum network for mobile hospice is established, that at least one mobile hospice on the territory of the self-governing region shall be available.

Public minimum network of mobile hospices after 30th March 2023

As of 31st March 2023, it is specified in Government Regulation No. 640/2008 Z.z. as amended by the Government Regulation No. 105/2023 Z.z) – mobile hospice standard

Number of mobile hospices as of 31 st December 2023								
Bratislava region	Trnava region	Trenčín region	Nitra region	Žilina region	Banská Bystrica region	Prešov region	Košice region	Slovakia
6	4	6	5	6	6	5	7	45

The standard for mobile hospices is expressed by the number of at least one mobile hospice per palliative clinic or one hospice per region according to the division of mandatory programs and supplementary programs established by the categorization of inpatient health care.

1 (Section 10e(3)(a)(2) of Act No. 576/2004 Z.z. as amended by Act No. 267/2022 Z.z.)

2 (Section 10e(5) of Act No. 576/2004 Z.z. as amended by Act No. 267/2022 Z.z.)

3 (According to available data from the National Centre for Health Information in 2022, 16 mobile hospice providers provided home hospice care in 26 medical facilities.

https://www.nczisk.sk/Statisticke_vystupy/Tematicke_statisticke_vystupy/Siet_poskytovatelov_zdravotnej_starostlivosti/Pages/default.aspx. As at the date of this report, the National Centre for Health Information has not yet released the state of mobile hospice providers in 2023.)

Placement of mobile hospices as of 31st December 2023

Current number of mobile hospices as of 31 st December 2023								
Bratislava region	Trnava region	Trenčín region	Nitra region	Žilina region	Banská Bystrica region	Prešov region	Košice region	Slovak Republic
6	4	3 (PMN not met*)	3 (PMN not met)	3 (PMN not met)**	5 (PMN not met)	9	2 (PMN not met)	35

Business name	Operation site	District
ADOS- NÁDEJ – AOK, s.r.o.	6, 090 11 Vyšný Orlík	Svidník
Archdiocesan Charity Košice	PRI ŠTADIÓNE 23, 085 01 BARDEJOV	Bardejov
Diocesan Charity Banská Bystrica	Tibora Andrašovana 14300/44, 974 01 Banská Bystrica	Banská Bystrica
Diocesan Charity Nitra	Chrenovská 1679/22B, 949 01 Nitra	Nitra
Home hospice care, s.r.o. - DHS, s.r.o.	Dr. G. Schaefflera 2399/12, 909 01 Skalica	Skalica
Dotyk Života, o.z.	Ulica Jána Zigmundíka 293/1, 922 03 Vrbové	Piešťany
ELEZI, s.r.o.	Roľnícka 9253/53, 831 07 Bratislava-Vajnory	Bratislava III
HOLUBICA - spájame a pomáhame, o.z.	Mother Roza mobile hospice, Kollárova 1246/13A, 014 01 Bytča	Bytča
HONESTUM, n.o.	St. Philomena treatment facility, Domašská 670/4, 093 02 Vranov nad Topľou	Vranov nad Topľou
Hospice of the Sisters of Mercy	Súvoz 739/14, 911 01 Trenčín	Trenčín
Inter Care s. r. o.	Hradská 20419/50, 821 07 Bratislava-Vrakuňa	Bratislava II
Inter Care s. r. o.	Horná 54/1 854 01 Banská Bystrica	Banská Bystrica

*PMN – public minimum network

Business name	Operation site	District
Kvalita života, FMK, n.o.,	Plzenská 2, 080 01 Prešov	Prešov
LEKOFARM s.r.o.	Kellerova 8, 085 01 Bardejov	Bardejov
Anna Pisanská, M.Sc.	170, 090 16 Cernina	Svidník
Mobile Hospice of Divine Mercy	Kukučínova 427/2, 036 01 Martin	Martin
Sacred Family Mobile Hospice s. r. o.	Odbojárov 189/6, 914 41 Nemšová	Trenčín
Hospital with Policlinic Revúca	Hospital with policlinic, Litovelská 635/25, 050 01 Revúca	Revúca
National Cancer Institute, Bratislava	National Cancer Institute, Klenová 3019/1, 833 10 Bratislava-Nové Mesto	Bratislava III
Sunflower NGO Slovensko	Mobile Hospice, Svätovojtešská 40, 821 05 Bratislava-Nové Mesto	Bratislava III
Ošetrovateľské centrum, s.r.o.	Lipová 765/32, 066 01 Humenné	Humenné
PLAMIENOK n.o.	Zadunajská cesta 6A, 85101 Bratislava-Petržalka	Bratislava V
Pod krídlami Dominiky, n.o.	Dlhá 849/6, Nitra and on-site upon agreement with clients, Dlhá 849/6, 949 01 Nitra	Nitra
SIMEON CENTRUM	1. PP, nebytové priestory, Medená 97/18, 811 02 Bratislava-Staré Mesto	Bratislava I
Spiš Catholic Charity	Cyrila a Metoda 318, 029 01 Námestovo	Námestovo
Spiš Catholic Charity	Belopotockého 1, 031 01 Liptovský Mikuláš	Liptovský Mikuláš
Spiš Catholic Charity	Sv. Anny 5401/21, 034 01 Ružomberok	Ružomberok
Spiš Catholic Charity	Námestie Jána Vojtašáka 1551/1, 026 01 Dolný Kubín	Dolný Kubín

Názov zariadenia	Miesto prevádzkovania	Okres miesta prevádzkovania
Spiš Catholic Charity	J. Hertela 323/11, 028 01 Trstená	Tvrdošín
Spiš Catholic Charity	Štúrova 508/66, 061 01 Spišská Stará Ves	Kežmarok
Spiš Catholic Charity	Slovenská 30, 052 01 Spišská Nová Ves	Spišská Nová Ves
Spiš Catholic Charity	Požiarnická 973/49, 053 61 Spišské Vlchy	Spišská Nová Ves
Spiš Catholic Charity	Nám. gen. Štefánika 6, 064 01 Stará Ľubovňa	Stará Ľubovňa
Spiš Catholic Charity	Námestie Majstra Pavla 49, 05401 Levoča	Levoča
Spiš Catholic Charity	Tvarožnianska 2480/16, 060 01 Kežmarok	Kežmarok
Spiš Catholic Charity	Alžbetina 372/5, 05801 Poprad	Poprad
SPREVÁDZANIE o.z.	Políclinic SANAT s.r.o Nábřežná 3 Blok A, Nábřežná ul. 3043/3, 934 05 Levice	Levice
Sv. Lujza, n.o.	Ulica M. Gorkého 316/1, 971 01 Prievidza	Prievidza
Sv. Lujza, n.o.	Nám. slobody 6208/5, 97401 Banská Bystrica	Banská Bystrica
SVETIELKO NÁDEJE	Rudlovska cesta 990/64, 974 11 Banská Bystrica	Banská Bystrica
SVETIELKO POMOCI n.o.	Pražská 4, 040 11 Košice-West	Košice II
SVETIELKO POMOCI n.o.	Hlavná 50, 080 01 Prešov	Prešov
Zdravá župa, s. r. o.	Ulica Študentská 3579/16, 917 01 Trnava	Trnava
Most domov, o. z.	Malženická cesta 6981/3	Trnava

The increase in the number of mobile hospices was mainly due to the new financing of mobile hospices by anchoring a flat-rate payment for patient visits by a physician and nurse and the introduction of the so-called mileage, as well as the possibility of drawing contributions from the REACT project for the establishment and operation of these hospices.

Ultimately, this increased number of mobile hospices represents an **improvement in the availability of palliative care for palliative patients**.

The current legislation allows **each mobile hospice and hospice to determine its own availability of health care**, in practice, the 40 km range rule is most often applied, and the health insurance company does not cover a longer range.

Due to the low prices of reimbursements by health insurance companies, which do not cover legitimate economic costs for longer distances, there are **still regions in the territory of the Slovak Republic where this care is unavailable for residents** – for example, the Dunajská Streda district.

⁴ (Section 10e(3(c)) of Act no. 576/2004 Z.z. as amended by Act No. 267/2022 Z.z.)

⁵ (Section 10e(4) of Act No. 576/2004 Z.z. as amended by Act No. 267/2022 Z.z.)

⁶ (According to available data from the National Centre for Health Information, in 2022, 9 hospice providers provided inpatient hospice care in 9 medical facilities.

Brick-and-mortar hospices

Brick-and-mortar hospices provide specialized palliative care in the form of inpatient care for a maximum of six months from the admission of a person to inpatient care⁴. The period of provision of palliative health care in the hospice can be extended if the health insurance company of the person to whom this care is provided agrees, even repeatedly; the health insurance provider requests consent according to the council's decision (Section 2(5))⁵.

With effect from 31st March 2023, the public minimum network for hospices was amended by an amendment to Government Regulation No. 640/2008 Z.z. – by Government Regulation No. 105/2023 Z.z.

Public minimum network of hospices until 30th March 2023⁶

Until March 30th, 2023, it was defined in Section 8 of Government Regulation No. 640/2008 Z.z., according to which the public minimum network for mobile hospice is established, that at least one mobile hospice on the territory of the self-governing region shall be available.

Public minimum network of hospices after 30th March 2023

As of 31st March 2023, it is governed by Government Regulation No. 640/2008 Z.z. as amended by Government Regulation No. 105/2023 Z.z.) – hospice standard

https://www.nczisk.sk/Statisticke_vystupy/Tematicke_statisticke_vystupy/Siet_poskytovatelov_zdravotnej_starostlivosti/Pages/default.aspx
As of the day of completing this Report, the National Centre for Medical Information has not yet published the state of mobile hospice providers in 2023.

Number of brick-and-mortar hospices								
Bratislava region	Trnava region	Trenčín region	Nitra region	Žilina region	Banská Bystrica region	Prešov region	Košice region	Slovakia
2	3	2	3	2	2	2	2	18

The standard for mobile hospices is expressed by the number of two hospices per region. In the case of the Trnava and Nitra regions, the availability of palliative wards is considered according to the division of mandatory programs and supplementary programs established by the categorization of inpatient health care.

Current number of brick-and-mortar hospices as of 31 st December 2023								
Bratislava region	Trnava region	Trenčín region	Nitra region	Žilina region	Banská Bystrica region	Prešov region	Košice region	Slovak Republic
1 (PMN not met*)	1 (PMN not met)	2	2 (PMN not met)	0 (PMN not met)	2	3	1 (PMN not met)	12

*PMN – public minimum network

Rozmiestnenie kamenných hospicov (stav lôžok k 19. 2. 2024)

Business name	Location	Beds	Available beds as of 19 February 2024	Of which reserved	Palliatologist	Management change	Surcharge per patient/per day in EUR
House of Divine Mercy	Banská Bystrica	16 (decreases - painting)	6	4	Zuzana Otrubová, M.D.	No changes	Information not provided upon request
Mother Theresa Hospice (next to the Stadium)	Bardejov	20+2 (capacity exceeded)	0 long-term	Waiting list 15-20	Physicians including in the attestation preparation	No changes	EUR 20, from
RAFAEL	Bratislava	12	2	2	Michal Mrocek, M.D.	No changes	EUR 55
SOLIDARITAS	Trstice	17, from 25 (decreased due to refurbishing)	0	Waiting list	None	No changes	EUR 23

Business name	Location	Beds	Available beds as of 19 February 2024	Of which reserved	Palliatologist	Management change	Surcharge per patient/per day in EUR
Hospice in the Hospital with Policlinic ILAVA	Ilava	13	8	1	None	No changes	EUR 19 insured person, EUR 40 self-paying
St. Elisabeth Hospice	Ľubica	24	6	2	None	No changes	EUR 25
St. Lucas hospice	Košice	14-15 (planned extension to 23-24)	2-3	0	Physician including in the attestation preparation	No changes	4-bed room EUR 17, 2-bed room EUR 20, 1-bed room EUR 23
Hestia Hospice	Lučenec	15	5	5	None	No changes	EUR 15
Bernadette's House of Peace and Reconciliation	Nitra	15	1	1	Leona Šóthová, M.D.	No changes	EUR 25
St. Francis of Assisi Hospice	Palárikovo	23	2	1	None	No changes	EUR 20
Sisters of Mercy Hospice	Trenčín.	24	1	0	Mária Dohňanská, M.D.	No changes	EUR 30
St. Philomena Hospice	Vranov nad Topľou	19	1	1	Patrik Jakubek, M.D.	No changes	EUR 17 in 2023, from 1st February 2024 patients with a catheter (PEG, NGS) EUR 23, patients without a catheter EUR 20.50

The slight increase in the number of hospices (two more hospices compared to 2022) was due to the amendment of the price decree, which introduced flat-rate payments for hospice care per bed-day. **Despite this price decree and the fact that the minimum public network of hospices has still not been met, there is no interest in establishing new hospices in the regions, because the whole process is time- and administratively demanding.** The provider has no guarantee whether health insurance companies will conclude a contract with them. We also point out that health insurance companies continue to contract these hospices per financial volume. This means that by introducing a higher price per bed-day without a subsequent aliquot increase in the financial volume, the price of a bed practically decreased if the hospice kept the existing number of beds.

The demand for inpatient hospice care is high due to the aging of the population and increasing morbidity. The current number of hospices with the existing number of hospice beds is insufficient and

there is a waiting list for placement in the hospice. **In practice, the waiting time for placing a patient in a hospice is from 2 to 6 weeks.**

We repeatedly point out the insufficient funding of these hospices, due to which part of the costs must be borne by the patient, or their relatives. Due to the amount of additional payment in individual hospices, this hospice care is still unavailable for socially weaker groups of the population.

Agencies of home nursing care (ADOS)

We do not have detailed information about these agencies, we only have information from the e-vuc website or websites of individual agencies.

As of the date of this report, the National Centre for Health Information has only published statistical data for the year 2022. According to the statistical data published by NCZI, in 2022 there were 174 ADOS providers in Slovakia who operated home nursing care in 206 medical facilities (sites).

Current number of ADOS – individual facilities are available at:

https://www.e-vuc.sk/e-vuc/vyhľadavanie.html?page_id=2293&search=agent%C3%BAra+dom%C3%A1cej+o%C5%A1etrovate%C4%BESkej+starostlivosti

Entering the search parameter “agentúra domácej ošetrovateľskej starostlivosti” will display 334 ADOS health facilities (sites). This list also includes canceled sites, and it is impossible to determine the number of providers who provide ADOS in several medical facilities.⁷

Number of nurse jobs** of home nursing care agencies

Bratislava region	Trnava region	Trenčín region	Nitra region	Žilina region	Banská Bystrica region	Prešov region	Košice region	Slovakia
90,7	83,2	90,0	106,2	104,2	98,5	119,9	115,9	808,6

Source: https://www.nczisk.sk/Statisticke_vystupy/Tematicke_statisticke_vystupy/Siet_poskytovatelov_zdravotnej_starostlivosti/Pages/default.aspx

*Standards for home nursing care agencies recalculated to the number of nurse jobs, the number of inhabitants of the Slovak Republic, and the number of inhabitants of the regions.

**SA nurse job is the provision of the activities of a nurse with the relevant professional competence in the scope of 40 hours of the working time fund, if it concerns high-risk activities, in the scope of 38 hours of the working time fund.

⁷ Please note: a provider is a legal entity or natural person licensed to provide home nursing care. However, this person (provider) may have established several sites (healthcare facilities) where they provide their services. A typical example is the Archdiocesan Charity, a provider with numerous facilities in Slovakia.

3. Oncological treatment availability y

3.1. State in 2023

The year 2023 saw the full implementation of the drug policy reform in the drug policy, which came into force with the amended Act no. 363/2011 Z.z. on the scope and conditions of reimbursement of drugs, medical devices, and dietetic foods from public health insurance. The law enabled the registration of oncological drugs that were previously covered only under an exceptional regime, medicines for rare diseases, but also so-called innovative drugs, which from 2011 to 2022 had little chance of being included in the proper categorization. Fortunately, the increase in the number of included drugs compared to the previous period, especially the 2022 (10), 2021 (4), and 2020 (1), was many times greater. However, the innovation gap in the availability of oncological drugs is being filled only slowly, and therefore it is important that the law, as well as processes, maintain continuity. The preliminary budget for drugs for 2024 foresees a further increase in resources, which could be good news for patients, but it will be essential to include drugs with the highest medical need and then drugs that have demonstrated the highest benefit for cost.

In 2023, 22 original oncological drugs and about 40 indication limitations were added to the categorization list.

Availability of original oncology treatment from the point of view of availability in the categorization list for 2023

2023 (all original oncological drugs)	Amount
Approved reimbursement dossiers (available in 2023)	22

Source: MoH SR, 2024; AIFP, 2024

New drugs and indication limitations entered into the list of categorized medicines in 2023

Active substance	ATC	The name of the drug	Reimbursed indication
atezolizumab	L01FF05	Tecentriq	treatment of NSCLC and hepatocellular carcinoma
niraparib	L01XK02	Zejula	Treatment of ovary carcinoma
palbociklib	L01EF01	Ibrance	Treatment of breast carcinoma
polatuzumab-vedotín	L01FX14	Polivy	Treatment of DLBCL
nivolumab	L01FF01	Opdivo	Treatment of metastatic melanoma
dabrafenib+trametinib	L01EC02+L01EE01	Tafinlar+Mekinist	adjuvant treatment of melanoma
axikabtagén-ciloleucel	L01XL03	Yescarta	Treatment of DLBCL (CAR-T)
tisagenlekleucel	L01XL04	Kymriah	Treatment of DLBCL and B-ALL (CAR-T)
Enzalutamid	L02BB04	Xtandi	Treatment of prostate carcinoma
Avelumab	L01FF04	Bavencio	Treatment of urothelial carcinoma
ruxolitinib	L01EJ01	Jakavi	Treatment of Myelofibrosis
ribociklib	L01EF02	Kisqali	Treatment of breast carcinoma – metastatic
darolutamid	L02BB06	Nubeqa	Treatment of prostate nmCRPC carcinoma
neratinib	L01EH02	Nerlynx	Treatment of breast carcinoma – extended adjuvant treatment
gilteritinib	L01EX13	Xospata	Treatment of AML
venetoklax+obinutuzumab	L01XX52+L01FA03	Venclyxto+Gazyvaro	Treatment CLL – 1st line
daratumumab	L01FC01	Darzalex	treatment of multiple myeloma - unsuitable for ASCT

brigatinib	L01ED04	Alunbrig	treatment of non-small cell lung cancer (ALK mutations) 1st line
trastuzumab/pertuzumab	L01XY02	Phesgo	Neoadjuvant and adjuvant treatment of breast carcinoma and treatment of metastatic breast carcinoma
karflizomib	L01XG02	Kyprolis	treatment of multiple myeloma
abemaciclib	L01EF03	Verzenios	Neoadjuvant and adjuvant treatment of breast carcinoma and treatment of metastatic breast carcinoma
pembrolizumab	L01FF02	Keytruda	Squamocellular neck and head carcinoma

Source: MoH SR, 2024

In the future, it will be interesting to observe the change in the number of drugs paid for the so-called exemptions by health insurance companies and their development over time as one of the important benchmarks for monitoring the success of the categorization process.

In cooperation with NOI and InovaHealth s.r.o., the list of drug indications registered by the EMA and categorized by the Ministry of Health of the Slovak Republic is updated monthly with the ESMO-MCBS score. The list is available at www.onkoportal.sk.

3.2. Challenges for 2024

- Transparent entry of innovations for oncology into the standard categorization based on the preservation of the basic principles of HTA (Health Technology Assessment), including adequate con-

sideration of EBM (evidence-based medicine) and using the list of drugs with scores according to ESMO-MCBS in the NOI.

- Cooperation in defining the basic principles of drug policy in oncology based on adequate and long-term investments.
- Determining the priority of diagnoses and areas in oncology through the so-called “horizon scanning” for the present as well as for the future period in cooperation with specialists, MoH SR, payers, and the Ministry of Finance of the Slovak Republic.
- Cooperation on the adequate development of the data economy in oncology, which refers to the collection, processing, and adequate analysis of all available data, including the full launch of the National Oncology Register serving both operational and strategic decisions in this area, including the evaluation of screening oncology programs.



4. Oncology Societies
and Cooperative Groups



4.1. Slovak Oncology Society

Slovak Oncology Society (S.O.S.) is an association of physicians in various specialties who directly participate in cancer patients' care or work in experimental oncology. Slovak Oncology Society is part of the Slovak Medical Association and a member of the European Society for Medical Oncology (ESMO) which unites oncology societies from many European countries.

The governing body of S.O.S. is the executive committee, which has 13 members. The S.O.S. supervisory board has 3 members. The executive committee and the supervisory board are elected for 4 years. Elections for the next term were held in November 2022.

SOS Executive Committee in 2023:

Chair: Prof. Stanislav Špánik, M.D., PhD.

Vice Chair: Branislav Bystrický, M.D., PhD., MPH

Head Secretary: Radovan Barilla, M.D., PhD

Treasurer: Klaudia Gočarová, M.D., PhD.

Members:

Assoc. Prof. Igor Andrašina, M.D., PhD.

Assoc. Prof. Peter Beržinec, M.D. CSc. FCCP

Andrea Cipková, M.D., MPH

Assoc. Prof. Pavol Dubinský, M.D., PhD., MHA

MUDr. Matej Hrnčár, PhD., MBA

Prof. Michal Mego, M.D., D.Sc.

Mária Rečková, M.D. PhD.

Marián Streško, M.D. PhD.

Jozef Šufliarsky, M.D., PhD.

SOS Supervisory Board in 2023:

Chair: Vanda Ušáková, M.D., PhD.

Members:

Jana Obertová, M.D., PhD.

MUDr. Bibiána Vertáková Krakovská, M.D., PhD.

4.1.1. Activity Report for 2023

1. S.O.S. continues its efforts to stabilize its member base and to activate and integrate all “young oncologists” into society. The committee set conditions for incentives for “young people” - support for active participation in professional events, rewarding the best (publications, lectures), and support for study exchanges.
2. We managed to stabilize professional events that are organized and guaranteed directly by S.O.S. - News from ASCO, DMO, B.O.D, SEKCAMA, and Bardejov oncology days in 2023.
3. The Section for Lung Carcinoma of the Slovak Oncology Society was established.
4. We managed to improve the coordination of professional events with subsidies by pharmaceutical companies + S.O.S. acting as the warrant.
5. Cooperation with foreign partners, particularly ESMO, continues – the task of increasing representation in the organization (more active members from S.O.S.), and active participation in projects and events continues.
6. Active cooperation between S.O.S., NOI, League against Cancer, and patient organizations towards the Ministry of Health of the Slovak Republic with the aim of ensuring sufficient financial coverage of NOS, NOI.
7. S.O.S. actively communicates requirements to the Ministry of Health of the Slovak Republic and the health insurance companies with the aim of improving the availability of standard (innovative) treatment – letters to the Ministry of Health of the SR,

health insurance companies, repeated direct negotiations at the Ministry of Health of the SR with the Minister of Health, State Secretary, General Secretary of the Ministry Office, General Director of the Section of Pharmacy and Medicine Policy, management of health insurance companies.

8. S.O.S. repeatedly directly communicated and sent letters to the Ministry of Health of the Slovak Republic and the NCZI management regarding the revitalization of the National Oncology Register and establishing a data interface to NOI – gradual digitization and simplification of reporting.
9. Cooperation with the League against Cancer in the preparation of educational materials for patients and cooperation with patient organizations in campaigns to support the improvement of diagnosis and treatment of cancer diseases in the Slovak Republic.
10. Cooperation and support of “European” activities were activated – Europe’s Beating Cancer Plan (EBCP), CraNE-JA, and ECHoS Projects.
11. Ongoing active support and cooperation with the Slovak Cooperative Oncology Group (SCOG).

4.1.2. Challenges for 2024

1. Increasing the number of members
2. Support for the activities of our sections – SEKCAMA, Geriatric Oncology Section, Lung Cancer Section of the Slovak Oncology Society
3. Cooperation with the Slovak Society of Paediatric Oncologists and Haematologists

4. Professional events
 - Events organized directly by S.O.S must have priority over other activities
 - Continue in forming the new B.O.D. format
 - Create and implement “Spring Oncology Days”
 - Coordination of events with colleagues in surrounding countries, to strive for international cooperation with foreign partners
 - Academic events, not organized by pharmaceutical companies, require an S.O.S. guarantee and S.O.S. participation in drafting the agenda
5. Cooperation with foreign partners
 - ČOS – mutual participation in events and the possibility of co-organisation, joint research and development projects
 - ESMO – increase representation in the organization, active participation in projects and events
 - Support of activities – Europe’s Beating Cancer Plan (EBCP), CraNE-JA Project.
6. Cooperation with the Ministry of Healthcare of the Slovak Republic, Health insurance companies, and patient organizations
 - An effort to increase the activity of members in the creation of standard preventive diagnostic and therapeutic procedures
 - Actively enter into direct negotiations with the Ministry of Health of the Slovak Republic and health insurance companies – request clear procedures in the financing of NOI, NOS, and screening programs - stability for this activity

- Actively ask for better availability of both standard and innovative treatment – new, transparent, and sustainable rules
- Continue actively cooperating with AC and patient organizations
- Continue cooperating with the Biomedical Centre of the Slovak Academy of Sciences – SAS BMC in translational research
- More active support and cooperation with the Slovak Cooperative Oncology Group (SCOG).

Information about the activities of the Slovak Oncology Society, as well as activities within oncology in Slovakia, as well as globally, are continuously updated on the S.O.S. website: <http://onkologia.sk>.

4.1.3. SEKCAMA (S.O.S. SLS)

SEKCAMA (S.O.S. SLS), the section for breast cancer within the Slovak Oncological Society (S.O.S.) and the Slovak Medical Society (SMS) was established at a meeting of the SMS board in 1996. The section was founded on the initiative of Vladimír Bella, M.D., Dušan Malatin, M.D., Jozef Halek, M.D., and Ľubomír Bohunický, M.D. with the significant support of the chair of S.O.S. and SLS at that time Assoc. Prof. Ivan Maňka, M.D. PhD.

The main goal of the section is to reduce mortality from breast cancer, which SEKCAMA (S.O.S. SMS) wants to achieve as the organizer of regular work conferences based on a multidisciplinary basis since the diagnosis and treatment of breast cancer are carried out multidisciplinary. The section would also like to contribute to the decrease in mortality by improving and unifying preventive, diagnostic, and

treatment procedures according to the latest knowledge of science, research, and innovation. Recently, the focus has been on the quality of life and trying to incorporate experimental oncology and especially integrative medicine into its lectures.

SEKCAMA (S.O.S. SMS) Committee in 2023:

Chair: Assoc. Prof. Vladimír Bella, M.D., PhD.

Vice Chair: Assoc. Prof. Martin Sabol, M.D., PhD.

Scientific Secretary: Andrea Šimová, M.D., MHA, MPH

Treasurer: Peter Chvalný, M.D., PhD.

Members:

Assoc. Prof. Richard Hrubý, M.D., PhD., MBA, MPH

Zoltán Jány, M.D.

Marián Streško, M.D., PhD.

Assoc. Prof. Marek Smolár, M.D., PhD., MPH

Assoc. Prof. Mária Wagnerová, M.D., PhD.

SEKCAMA (S.O.S. SMS) Supervisory Board in 2023:

Chair: Ján Šimo, M.D., MBA

Members:

Ivan Kecskés, M.D.

Katarína Mlyneková, M.D.

One-round – correspondence elections of SEKCAMA S.O.S. SLS for the election period from January 1st, 2023, to December 31st, 2026.

On 25h – 26h May 2023, the 28th SEKCAMA S.O.S SLS international conference was held at the Lindner Hotel in Bratislava. The main topic of the event was a comprehensive view of breast cancer. At the conference, lectures were given on the topic: of experimental oncology, pathology, prevention, diagnosis, surgical treatment, systemic therapy and radiotherapy of breast cancer, and follow-up.

The event was divided into two days. On 25h May 2023, lectures focusing on experimental oncology, pathology, screening, diagnostics, surgery, and radiotherapy were presented. The big discussion was about breast screening as well as idiopathic granulomatous mastitis. On 26h May 2023, lectures were presented with the main focus on immunology, follow-up, and chemotherapy.

The total number of lectures was 48, of which 19 lectures came from foreign authors.

244 physicians participated in the first conference day, and 222 physicians from various fields of medicine were present on the second conference day.

The lectures were of high quality and at a high level, which was reflected in a very fruitful and long discussion. The conference fulfilled its purpose - it increased the level of knowledge of physicians in malignant breast disease, and controversies between individual branches were discussed. Physicians confirmed and especially gained new knowledge related to everyday issues in routine practice in malignant breast cancer.

The 29th SEKCAMA S.O.S SLS international conference is planned for 23rd – 24th May 2023 in the Lindner Hotel in Bratislava.

Information about the activities of SEKCAMA S.O.S SLS is continuously updated on the website: www.sekcama.sk.

4.1.4. Geriatric Oncology Section (under S.O.S.)

The section of geriatric oncology (GO) was established in 2010 as part of the Slovak Oncology Society (S.O.S). Since 2023, it has been presented with its own logo.

The section is a member of SIOG (International Society of Geriatric Oncology), which was founded in 1999 with the aim of ensuring advances in science and practical activity for geriatric patients. The section has a national representative in SIOG (Assoc. Prof. Mária Wagnerová, M.D., CSc.) Even after addressing the Ministry of Health of the Slovak Republic for several years, it was not possible to significantly solve the issue of GO.

The main focus of the GO Section is primarily “Education” and its support. As part of the long-term cooperation with SIOG, 2 publications were created, which were published in the professional journal Geriatric Oncology.

As part of supporting education, the following 3 chapters in the significant monographies were created:

Prof. Jurga et al.: Clinical and radiation oncology

Kavcová, M.D. et al.: Lung carcinoma

Prof. Mladosievičová et al.: Cardiooncology in 2 issues

Operational agenda

We currently have 53 members. As part of its publication activity, the GO Section has so far processed four issues of the specialist journal Oncol-

ogy (No. 5/2012, 3/2017, 6/2020, and 6/2023) with geriatric issues. Several presentations and contributions were published in the Pharmacotherapy Journal on the topic of geriatric oncology. This topic was successfully included in the undergraduate education at the Faculty of Medicine of the Pavol Jozef Šafárik University, as well as in the postgraduate education at the Faculty of Medicine of the Comenius University.

In 2018, the GO Section organized the first GO conference during the Bardejov Oncology Days, which met with great interest. The second GO conference was only held in 2021 during the 11th Bardejov Oncology Days. The third GO conference was successfully held in June 2023 during the 12th Bardejov Oncology Days.

GO Section Committee for 1st November 2022 through 31st October 2026:

Chairwoman: Assoc. Prof. Mária Wagnerová, M.D., PhD.

Vice-Chairwoman: Assoc. Prof. Katarína Rejleková, M.D., PhD.

Science secretary: Róbert Bieľ, M.D., PhD.

Members:

Assoc. Prof. Peter Beržinec, M.D., PhD., FCCP

Assoc. Prof. Michal Chovanec, M.D., PhD.

Mária Rečková, M.D., PhD.

Dominik Šafčák, M.D., PhD.

GO Section Supervisory Board for 1st November 2022 through 31st October 2026:

Chairman: Jozef Chovanec Sr, M.D.

Members:

prof. Michal Mego, M.D., D.Sc.

Aurélia Mojzešová, M.D.

Activity Report for 2023

As of January 2023, the GO Section started using its own logo.

On 16th June 2023, the 3rd GO Section conference took place in Bardejov, which was focused on geriatric oncology, the specifics of geriatric patients, and the current situation in Slovakia. The professional event pointed out the necessity of specialization in geriatric oncology, as already in 2050 the population of seniors will be more numerous than the population of children. The GO Section provided information guides in the form of handouts to the participants of the professional event. Report from the conference: ONKO_4_2023_final – Biel.pdf (solen.sk)

In July 2023, an article on the activities of the GO Section was published in the Medical News Monthly.

The GO Section published the specialist issue of the journal Oncology No. 6 in 2023, focused on the area of geriatric oncology.

At the September meeting of the GO Section committee, held during the 19th Young Oncologists Days (DMO), which took place on 21st – 23rd September 2023, the following key initiatives in the continuous process were defined:

- Medicament policy: Availability of required medicaments
- Education: geriatric oncology was successfully included in the undergraduate education at the Faculty of Medicine of the Pavol Jozef Šafárik University, as well as in the postgraduate education at the Faculty of Medicine of the Comenius University and the

Slovak Medical University, a role was determined for the members of the GO Section committee - Issuing a publication one GO for the needs of undergraduate and postgraduate teaching

- International cooperation: informal establishment of contacts with the Czech Republic and Hungary with the aim of obtaining the opportunity for the GO Section to organize joint work for the purpose of internships at specialized workplaces (resources will be provided by the NOI and the Ministry of Health of the Slovak Republic)
- Registers Cooperation with patient organizations
- Supporting research activities within academic (non-commercial) research

The GO section arranged for the distribution of its information guides in the form of handouts at the DMO to increase the interest of young oncologists in geriatric oncology.

- The Committee of the GO Section gladly accepted the invitation for cooperation from Prof. Silvio Monfardini from Milan, one of the founders of SIOG.

Perspectives on dealing with issues faced by the GO Section

- Increasing awareness of the issue of GO, the epidemiological situation, and the need for a specific approach at the level of the Ministry of Health of the Slovak Republic, professional societies, the network of patient associations, through the media (including examples of cured geriatric oncology patients at an advanced age);
- Solving the shortage of specialists in GO by organizing special courses (SMU) with financial support, creating oncogeriatric working

groups and also a separate sub-specialization, establishing interdisciplinary GO centers, especially at oncology institutes and teaching hospitals, including comprehensive geriatric assessment (CGA) including comorbidity in the guidelines for oncological treatment;

- Solving GO issues can only be achieved if the clinical and departmental interest changes and transformation from obsolete approaches are implemented;
- **Only joint activities in beating cancer can lead to success.**

4.1.5. Section for lung cancer (within S.O.S.)

The Section for Lung Cancer was established as part of the Slovak Oncology Society on August 22nd, 2023.

4.2. Slovak Society of Chemotherapy

The Slovak Chemotherapy Society (SCHS) was founded in 1991. The founding members were Prof. Vladimír Krčméry, M.D., DrSc. and Jozef Šufliarsky, M.D., PhD. SCHS was a member of two international institutions - the European Federation (FESCI) and the International Society of Chemotherapy (ISC). The publication of Acta Chemotherapeutica magazine also dates back to 1991. SCHS, as one of the main organizers, has been organizing an important professional event - the Košice Chemotherapy Days - since 1996. The main focus of SCHS was on EDUCATION and its support in antineoplastic and anti-infective treatment.

The support of education in cooperation with the oncology society consisted of the active participation of members of SCHS in professional events such as Medifórum, SEKCAMA, Current management of breast cancer, Oncoforum, Oncospectrum, All-Slovak ATB symposium, Symposium on immune disorders. In 2023, SCHS, in cooperation with S.O.S., successfully managed to organize the Bratislava Oncology Days, Young Oncologist Days, and Bardejov Oncology Days, as part of education support.

SCHS Executive Committee in 2023

President: Position not occupied

Vice-President: Prof. Pavol Jarčuška, M.D., PhD.

Science secretary: Jozef Šufliarsky, M.D., PhD.

Members:

Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM

Assoc. Prof. Peter Beržinec, M.D., PhD., FCCP

Assoc. Prof. Andrea Demitrovičová, M.D., PhD.

Assoc. Prof. Richard Hrubý, M.D., PhD., MBA, MPH

Mária Višňovská, M.D.

Tatiana Stančoková, M.D.

SCHS Supervisory Board in 2023

Juraj Beniak, M.D.

Aurélia Mojzešová, M.D.

Eleonora Pihuriková, M.D.

We currently have 78 members. In December 2022, Prof. Vladimír Krčméry, M.D., DrSc. died suddenly, which meant an exceptional loss for SCHS. The creativity and support of SCHS education have weakened significantly. Even though life goes on, in 2023 we did not manage to elect a new president. SCHS definitively canceled the publication of the professional journal Acta chemotherapeutica. The activity of the SCHS in 2023 continued only by supporting the education of long-term prepared professional conferences. We assume that in 2024, the committee will succeed in gradually resuming the activities of the SCHS to the full extent. Assoc. Prof. Mária Wagnerová, M.D., CSc. after 12 years as Chairwoman, remained Honorary Chairwoman of SCHS.

4.3. Slovak Society of Pediatric Oncologists and Hematologists

Main areas of activity

- Qualifying for entering into international clinical trials throughout the Slovak Republic
- Updating protocols and standards of diagnostic and treatment procedures
- Financing expensive diagnostic procedures (molecular diagnosis of subgroups of CNS tumors, genomic analysis of resistant and relapsing tumors, etc.)
- Innovating diagnostic procedures for CNS tumors, added methylation

- Innovative treatment
- Drafting joint procedure for treatment abroad

Committee in 2023

President: prof. Alexandra Kolenová, M.D., PhD.

Members:

Eva Bubanská, M.D., PhD.

Ivana Fedoráková, M.D.

Ladislav Deák, M.D.

Viktória Halušková, M.D.

Andrea Hrašková, M.D.

Peter Švec, M.D., PhD.

4.4. Slovak Society of Radiation Oncology

The Slovak Society of Radiation Oncology, which brings together specialists focusing on treatment with ionizing radiation, was founded in 1990 under the original name Society of Radiation Oncology, Radiobiology and Radiophysics (SROBF) as part of the Slovak Medical Society. In 2011, it changed its name to the Slovak Society of Radiation Oncology (SSRO). Its approximately 120 members are mainly radiation oncologists and physicists who work in radiation oncology departments.

Since 2012, SSRO has been holding professional conferences for its member societies at biannually. The Committee sessions focus pri-

marily on the technological background of treatment, performance evaluation in radiotherapy, the concept of the field, education, and quality control of treatment.

SSRO Committee in 2023:

Chairman: Assoc. Prof. Pavol Dubinský, M.D., PhD, MHA

(term of office: 2023 – 2027)

Vice-Chairman: Pavol Lukačko, M.D.

Science secretary: Jozef Grežďo, M.Sc., PhD.

Members:

Branislav Bystrický, M.D., PhD., MPH

Zuzana Dolinská, M.D.

Martin Chorváth, M.D., PhD., MPH

Dr. Martin Jasenčák

Marek Lafférs, M.D.

Dávid Lederleitner, M.Sc.

SSRO supervisory board in 2023:

Chairwoman: Dr. Gabriela Illitová

Members:

Anna Križanová, M.Sc., PhD.

Monika Šandorová, M.D.

Information on SSRO activities is continuously updated on the website: www.radiacnaonkologia.sk.

4.5. Slovak Society of Palliative Medicine and Institute for Education in Palliative Medicine (IEPM)

The Slovak Society of Palliative Medicine (SSPM) is part of the Slovak Medical Society. The Institute for Education in Palliative Medicine (IEPM) is an NGO that aims to promote the development of palliative medicine in Slovakia. The association organizes and supports educational activities for physicians, nurses, psychologists, social workers, and other healthcare and helping professionals involved in the care of patients with incurable, progressive, life-threatening diseases.

IEPM also supports the development of mobile hospices, hospices, palliative teams, and departments in hospitals. It encourages the participation of physicians and nurses in educational events in Slovakia and abroad and provides financial and material support to mobile hospice teams. Training for community nurses focused on nursing care for dying patients at home is planned for the future.

Since 2016, SSPM and IEPM regularly hold annual conferences. On 10th November 2023, the already 7th conference was held, which was devoted not only to legislative changes in palliative medicine but also to obtaining funding sources and a wider spectrum of palliative medicine - the role of palliative medicine in acute and specific situations, psychology, spirituality, and analgesia.

We are continuing the tradition of holding an annual conference also in 2024 - the date of the 8th SSPM and IEPM conference is set for 8th November 2024. The conference, held on the 2nd anniversary of the adopted legislation regarding palliative care will be held on 20 June 2024 in the National Council of the Slovak Republic.

4.6. Cooperative Groups

4.6.1. Slovak Cooperative Oncology Group

The Slovak Cooperative Oncology Group (SCOG) was established on 14th June 2019 as a working group within the National Oncology Institute. SCOG, with its current 25 members, is a formal association of oncology departments cooperating in the implementation of academic and industry-initiated oncology clinical trials in the Slovak Republic.

SCOG's mission is to connect academic workplaces, other oncology clinical workplaces, and pharmaceutical and biotechnological companies with the aim of implementing coordinated oncological research in Slovakia aimed at improving the care of oncology patients in Slovakia.

2023 activity report

From January 2023, the Articles of Association were changed, within which the conditions of full and associate membership were defined. Interest in continued membership in SCOG according to the new Statutes was expressed by 12 oncology workplaces, and clinical trial centers, of which 8 centers met the requirements to become full and 4 centers associate members.

In 2023, an international, multicentre, academic clinical trial was started in collaboration with the French Cooperative Group for Genitourinary Malignancies (GETUG), PEACE-6, namely the PRESTO trial branch at the National Cancer Institute. It is a phase III academic

clinical trial using stereotactic radiotherapy in the treatment of patients with oligometastatic hormone-sensitive prostate cancer, and the preparation of another trial branch, PEACE-Unfit, titled "Randomised phase III trial evaluating the efficiency and safety of androgen deprivation therapy +/- darolutamide in men with de novo metastatic prostate cancer with fragile functional capacity". The opening of this second trial branch is planned at the National Cancer Institute in 2024.

In 2023, in cooperation with SCOG, the following activities of Action Plan 4 of the NOP for 2021 - 2025 were fulfilled:

Activity 7: Setting up the possibility of cooperation within the network of SCOG sites participating in clinical trials (CT). In this context, one of the important activities was the development of documents for the possibility of referrals to clinical trials within the NOI Clinical Trials Register as another tool to facilitate the recruitment of patients to ongoing clinical trials.

Activity 14: Strengthening the functional infrastructure of existing and potential academic clinical research in the form of support for the coordination of clinical research directly in the clinical trial centers and their networking, specifically in the East Slovakia Oncology Institute in Košice, Teaching Hospital with Policlinic Prešov, Teaching Hospital with Policlinic Trnava, Teaching Hospital with Policlinic Trenčín, Military Hospital in Ružomberok, POKO Poprad, but also in Pediatric Oncology Departments, National Childrens Disease Institute Bratislava, and Children's Oncology Clinics in Košice and Banská Bystrica.

SCOG Committee in 2023:

Chairwoman: Mária Rečková, M.D., PhD.

Secretary: Timea Farkašová, M.Sc.

Members:

Assoc. Prof. Igor Andrašina, M.D., PhD.

Branislav Bystrický, M.D., PhD., MPH

Juraj Beniak, M.D.

Bibiana Brezinová, M.D.

Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM

Jozef Chovanec Jr, M.D.

Miriám Drahokoupilová, M.D.

Klaudia Gočárová, M.D., PhD.

Peter Konkolovský, M.D.

Valér Kováč, M.D., PhD.

Jaroslava Lešková, M.D., PhD.

Prof. Michal Mego, M.D., D.Sc.

Prof. Stanislav Špánik, M.D., PhD.

Marián Streško, M.D., PhD.

SCOG Member database:

Workplace	Diagnosis/area for Clinical trials	Main feasibility contact	E-mail	SCOG Membership
Trnava Teaching Hospital, Oncology Clinic A. Žarnova 11 917 75 Trnava	Breast carcinoma, Pancreatic carcinoma, Colorectal carcinoma, Stomach carcinoma, Bladder carcinoma	Biomedical Research Dept. PharmDr. Veronika Mitašová, MBA	veronika.mitasova@fntt.sk	full
J.A. Reiman Faculty Hospital with Policlinic Prešov, Clinical Oncology Department J. Hollého 14 081 81 Prešov	Breast carcinoma, Ovary carcinoma, Colorectal carcinoma, Lung carcinoma	Clinical Trials Department Katarína Kožuchová, M.Sc.	kozuchova@fnsppresov.sk	full
Teaching Hospital with Policlinic Trenčín, Oncology Clinic Legionárska 28, 911 71 Trenčín	Breast carcinoma, Gynaecological malignities, Gastrointestinal malignities, Urological malignities, CNS tumors	Clinical Trials Department PharmDr. Ľubomíra Hírešová	luboslava.hiresova@fntn.sk	full

Workplace	Diagnosis/area for Clinical trials	Main feasibility contact	E-mail	SCOG Membership
National Cancer Institute Klenová 1 833 10 Bratislava II. Oncology Clinic of the Faculty of Medicine of Comenius University and National Cancer Institute	Solid tumors Hemato-oncological malignancies, infectious diseases in oncology patients, lymphomas, multiple myeloma, leukemia	Clinical Trials Department Head of Department: Dr. Daniela Světlovská, PhD. National Oncology Institute / National Cancer Institute Clinical Trials Coordinator Timea Farkašová, M.Sc. Phase I Clinical Trials Coordinator Jana Spišáková, M.Sc.	daniela.svetlovska@nou.sk timea.farkasova@noisk.sk jana.spisakova@nou.sk	full
St. Jacobs Hospital with Polyclinic, Bardejov, Clinical Oncology Clinic ul. Sv. Jakuba 21 085 01 Bardejov	Breast carcinoma, Pancreatic carcinoma, Colorectal carcinoma, Lung carcinoma	Juraj Chovanec, M.D.	jurajchovanec@nsp-bardejov.sk	associate
St. Elizabeth Cancer Institute Internal Clinic of the Healthcare and Social Work College and St. Elizabeth Cancer Institute Heydukova 10 812 50 Bratislava	Solid tumors Breast carcinoma Solid tumors, Preferential tumors of the gastrointestinal tract	Zuzana Zamutovská, M.Sc.	zuzana.zamutovska@ousa.sk	full
Teaching Hospital with Polyclinic Milosrdní bratia (LLC), Clinical Oncology Department, Námestie SNP 10, 814 65 Bratislava	solídne malignity	Miriám Drahokoupilová, M.D.	miriamdrahokoupilova@gmail.com mdrahokoupilova@milosrdni.sk	associate

Workplace	Diagnosis/area for Clinical trials	Main feasibility contact	E-mail	SCOG Membership
General Hospital with polyclinic Levoča (JSC), Oncology Clinic Probstnerova cesta 2/3082 054 01 Levoča	Solid malignities	Valér Kováč, M.D., PhD.	valer.kovac1@gmail.com	associate
East Slovakia Oncology Institute (JSC) Radiotherapy and Oncology Clinic, Rastislavova 43 041 91 Košice	Solid tumors, radiotherapy	Dr. Miroslava Fecková, PhD. Dr. Jana Koperdáková, PhD.	feckova@vou.sk koperdakova@vou.sk	full
POKO Poprad (LLC) Mnoheľova 842/2 Poprad 058 01	Solid malignities	Gabriela Kroupová, MSc.	gabika.kroupova@gmail.com	full
Hospital and Polyclinic Trebišov (JSC), Clinical Oncology Department SNP 76 07 501 Trebišov	Breast carcinoma, Pancreatic carcinoma, Colorectal carcinoma, Lung carcinoma, Ovarian carcinoma	Bibiána Brezinová, M.D. Katarína Mrocek	bibiana.brezinova@svetzdravia.com katarina.mrocek@svetzdravia.com	full
Zdravspol (LLC) Komárno, Clinical Oncology Clinic Senný trh 799/6 945 01 Komárno	Breast carcinoma, Malignant melanoma, Colorectal carcinoma, Kidney carcinoma, Prostate carcinoma, Ovarian carcinoma	Peter Konkolovský, M.D.	peter.konkolovsky@gmail.com	associate

Challenges for 2024

- Active participation in the fulfillment of AP 4 NOP activities in clinical research, including more intensive cooperation between SCOG centers
 - Ongoing cooperation with GETUG
 - Forming a platform for cooperation with other international oncology cooperative groups, for example, the Hoosier Oncology Group
- Information on SCOG members and activities can be found at: <https://www.noisk.sk/lekar/vyskum-a-vyvoj/slovenska-kooperativna-onkologicka-skupina>

4.6.2. Slovak Lymphoma Group (NGO)

The Lymphoma Group of the Slovak Republic (LySK) is an interdisciplinary association of physicians, other university-educated specialists, and mid-level health workers who deal with research, diagnosis, and treatment of lymphoproliferative diseases. The aim of LySK is to unify diagnostic criteria and standardize the treatment of malignant lymphomas (ML), introduce new knowledge from diagnosis and therapy of ML into clinical practice, ensure registration of patients with ML, cooperate in organizing clinical trials focused on ML, participation in undergraduate and postgraduate education healthcare workers and education of the lay public in ML. In 2007, the first edition of the publication Strategy for the Treatment of malignant lymphomas was published, which contains the principles of classification, diagnosis, and treatment of malignant lymphomas.

In 2018, the 3rd updated edition of the recommendations was published in electronic form (<https://lysk.sk/wp-content/uploads/2018/11/strategia-liecby.pdf>), and in 2020 the chapter on Hodgkin's lymphoma was revised.

One of the other key activities of the association is the registration of patients with ML and subsequently the analysis of trends in incidence and prevalence, as well as the evaluation of the effectiveness of the therapy used in the treatment of ML in Slovakia. For this purpose, the Slolymp project was created, which collects and analyses data on patients with ML in Slovak centers. Since 2004, the Lymphoma Group of Slovakia has been holding regular expert meetings dealing with the diagnosis and treatment of lymphoproliferative diseases, the Lymphoma Forum (www.lyfo.sk). In 2023, the 18th forum was held on the topic of News in the diagnosis and treatment of malignant lymphomas. LySK has traditionally prepared 2 blocks for the agenda of national events – Banská Bystrica Hematology Days and Controversies in Oncohematology.

On its updated website (<https://lysk.sk/>), the association also provides phone consultations and online counseling to patients with ML, as well as to the general public with an interest in the issue of ML, enters into contact with payers and regulatory authorities with the aim of enforcing the availability of medicines for patients in Slovakia. LySK cooperates intensively with a patient organization bringing together patients with ML – Lymphoma and Leukemia Slovakia (www.lyl.sk). The group is also actively involved in international clinical trials that

investigate new medicines or new ways of treating patients with ML. We managed to present the result of the LySK grant – prognostically and predictively relevant stratification of large-cell lymphomas of B-origin using FISH diagnostics, and the publication output of the analysis of the treatment of patients with primary CNS lymphoma in Slovakia is being prepared.

LySK comprises the Board of Trustees and the Supervisory Board.

LySK Board of Trustees in 2023:

Chairman: Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM

Members:

Prof. Lukáš Plank, M.D., PhD.

Milena Surová, M.D.

Assoc. Prof. Peter Szépe, M.D., PhD.

Andrej Vranovský, M.D., PhD.

Alexander Wild, M.D., PhD.

LySk Supervisory Board in 2023:

Tomáš Balhárek, M.D., PhD.

Eva Králiková, M.D.

Martin Petrilák, M.D.

Challenges for 2024

- Regular update of recommendations for diagnosis and treatment of ML, chapter DLBCL, and Follicular lymphoma in preparation

- Introduction CAR-T cell treatment in other centers in the Slovak Republic - so far the approved and certified center is in the NCI in Bratislava
- Continue with the Slolymp project, make data collection more professional
- Continuation of the project of prognostically and predictively relevant stratification of large cell lymphomas of B-origin using FISH diagnostics at the Consultation Centre for Bioptic Diagnostics of Hematopoietic Diseases at the Pathologic Anatomy Institute of the Jessenius Faculty of Medicine of the Comenius University and the Teaching Hospital Martin (funded from the LySK grant)
- 19th Lymphoma Forum, topic: Large cell lymphomas

4.6.3. Slovak Head and Neck Tumours Cooperative Group

The Slovak Head and Neck Tumours Cooperative Group was established in April 2018. The goal of the group is the multidisciplinary cooperation of individual experts dealing with the treatment of head and neck tumors. The bodies of the association are the member assembly and the committee. The Committee is a governing body of the association that manages the activities of the association and reports to the member assembly. The committee has 5 members elected for a 5-year term.

Committee in 2023:

Chairman: Patrik Štefanička, M.D., PhD., Otorhinolaryngology, Head

and Neck Surgery Clinic, Faculty of Medicine of the Comenius University and Teaching Hospital, Bratislava

Vice-Chairman: Assoc. Prof. Pavol Dubinský, M.D., PhD, MHA, Radiation Oncology Department, EOI, Košice

Members:

Milan Almáši, M.D., PhD., Otorhinolaryngology Department, EOI, Košice

Klaudia Gočárová, M.D., PhD., Internal Clinic of the Healthcare and Social Work College and St. Elizabeth Cancer Institute, Bratislava

Andrea Ligačová, M.D., Radiation Oncology Clinic of the Slovak Medical University and the St. Elizabeth Oncology Institute

Current Situation

In 2023, the association had 22 regular members. Information about the activities of the association is published at <https://kooperativnaskupina.sk>, and presentations from past conferences are also available for members.

On 9th and 10th February 2023, under the auspices of the association, the 4th conference of the Slovak Head and Neck Tumours Cooperative Group was held in Liptovský Mikuláš with the participation of Czech colleagues. The conference followed up on the previous year with the aim of building a tradition of inter-professional cooperation. The event is intended for all physicians and specialists who deal with the diagnosis and treatment of patients with head and neck tumors, with the aim of promoting mutual communication and cooperation between individual departments.

Objectives and Challenges for 2024

- Support the activities of multidisciplinary teams within individual hospitals with the aim of improving the diagnosis and treatment of patients with head and neck tumors
- Continue and develop cooperation with the Czech Cooperative Group for Head and Neck Tumours
- Provide the option for professional consulting
- Inform the professional public of new knowledge

4.6.4. Leukemia pediatric group

The Leukaemia Pediatric Group (LPG) brings together physicians, university-educated specialists, and mid-level health professionals involved in the research, diagnosis, and treatment of childhood leukemia. The goal of the LPG is to unify diagnostic criteria and standardize the treatment of childhood leukemia, introduce new knowledge in diagnostics and therapy into clinical practice, ensure the registration of children with ALL, AML, and CML in the pediatric oncology registry, and introduce and manage clinical trials for childhood leukemia.

Since 2010, LPS has been meeting once or twice a year at the nationwide “Blastshow” seminar. During the meeting, every single newly diagnosed patient treated for ALL or AML, leukemia relapses, transplant patients, deaths in induction, remission, and disease progression is analyzed. Since 2010, the task of LPG has been monitoring quality control and establishing the fulfillment of diagnostic and

therapeutic criteria that ensure entry into international academic clinical trials. Since 2012, diagnosis of ALL and AML has been centralized (morphology, flow cytometry, cytogenetics, molecular genetics) in Bratislava.

In 2013, LPG was accepted by the international AML BFM group, under the leadership of Prof. Dirk Reinhardt. Since 2016, LPG has also been accepted by the ALL BFM/AEIOP group, under the leadership of Prof. Martin Schrappe, thanks to the cooperation with the Czech Republic, with the laboratory within the Department of Pediatric Hematology and Oncology at Teaching Hospital Motol - Childhood Leukemia Investigation Prague, where minimal residual disease is investigated as part of the monitoring of patients with ALL. Thanks to acceptance by international groups, patients with ALL and AML can be registered and treated in international academic trials.

Challenges fulfilled in 2023

- Continuation of the patient recruitment for the academic clinical trial for T ALL (Blinatumomab trial) with the administrative support of SLOVACRIN financed for this purpose from the funds of the National Oncology Program
- Concluding the academic clinical trial for B ALL
- Ongoing – coverage of the minimum residual illness from health insurance for patients with ALL
- Continuation of the academic clinical trial for LBL with the administrative support of SLOVACRIN financed for this purpose from the funds of the National Oncology Program

- Update of AML diagnosis and treatment
- ERN Paedcan

Challenges for 2024

- Introducing RNA sequencing into ALL and AML diagnostics
- Participation in the Interfant international clinical trial for children under 1 year
- Participation in the international clinical trial for children with ALL relapse
- Publishing the analysis of the results of treatment of relapses in ALL patients.
- Presenting results on the annual ALL AEIOP/BFM group meeting

5. National Oncology
Institute

5.1. Activity Report for 2023

The main mission of NOI is to serve as a clinical-research, academic, and educational platform for cooperation in the provision of activities supporting the fulfillment of the National Oncology Program in the following five areas: epidemiology; science and research; prevention and screening; diagnosis and treatment; supportive care. 2023 was rich in development in three dominant areas, namely professional coverage and coordination of oncology screening programs, research, development and education, and involvement in pan-European projects.

The advisory body for the activities of NOI is the Scientific Council of NOI, which assesses fundamental scientific issues in research, development, and education, oncology care clinical and radiation oncology, as well as in other interdisciplinary fields. It participates in the updating of the National Oncology Program and concepts of oncology care in the Slovak Republic and proposes priority areas of clinical research in Slovakia for consideration. It also reviews applications

for the award of NOI grants for short-term foreign internships at renowned oncology sites around the world. The Council has its own statute (<https://www.noisk.sk/o-nas/vedecka-rada-noi>)

As of 1st January 2023, the members of the NOI Scientific Council received appointment decrees according to the new statute of the NOI Scientific Council, which entered into force on 14th December 2022. According to the results of the per rollam vote, Prof. Michal Mego, M.D., D.Sc. was elected Chairman, as expected.

At the 2023 NOI Scientific Council Meetings, issues related to the Articles of Association of the Slovak Cooperative Oncology Group (SCOG), the possibility of monitoring cancer patients after remission in VDL outpatient clinics, and the need to establish a Phase I Clinical Trial Clinic and an Outpatient Clinic - Post-treatment patient care for monitoring late of toxicity in the NCI within the I. Oncology Clinic of the Faculty of Medicine of the Comenius University and NCI. The NOI Scientific Council also dealt with NOI's participation in important international projects, such as CraNE-JA, to build a pan-European

network of comprehensive cancer centers, the ECHoS project to create National Cancer Mission Hubs, and the project of the Ministry of Health of the Slovak Republic with the International Agency for Research on Cancer (IARC) called Improving cancer care coordination and screening in Slovakia (ICCS), aimed at improving the screening “dataflow” and increasing population participation in oncology screening programs.

NOI Scientific Council in 2023:

Chairman:

Prof. Michal Mego, M.D., D.Sc.

Main Expert for Clinical Oncology of the Ministry of Health of the Slovak Republic

Secretary:

Dr. Soňa Čierniková, PhD.

Research and Education project coordinator, NOI

Members:

Branislav Bystrický, M.D., PhD., MPH, Vice-Chairman of SCOG
Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM, Chairman of the NCI Scientific Council

Assoc. Prof. Pavol Dubinský, M.D., PhD., MHA, Chief Expert of the Ministry of Health of the Slovak Republic for Radiation Oncology
Assoc. Prof. Dr. Daniela Kallayová, PhD., MPH, Ministry of Health of the Slovak Republic, nominee

Prof. Alexandra Kolenová, M.D., PhD., Chief Expert of the Ministry of Health of the Slovak Republic for Children’s Oncology

Prof. Dr. Silvia Pastoreková, D.Sc., Director, BMC SAS

prof. Juraj Pechan, M.D., PhD., Chief Expert of the Ministry of Health of the Slovak Republic for Surgery (until May 2023)

Prof. Lukáš Plank, M.D. PhD., Chief Expert of the Ministry of Health of the Slovak Republic for Pathology

Prof. Stanislav Špánik, M.D. PhD., President of the Slovak Oncology Society

After several years in the NOI Scientific Board, prof. Lukáš Plank, M.D., CSc. resigned from his office in the NOI Scientific Board with effect from 1 September 2023.

Oncological screening programs

The main goal of population screening is to reduce mortality from selected oncological diseases. A pre-condition of recommendations for the relevant oncology screening program is the existence of medical evidence on the benefit of the given procedure with a clearly defined target population, screening test, and screening performance. However, a necessary condition is sufficient participation, ideally over 75% of the target population, including efficient organization of screening, high-quality screening processes, monitoring, and evaluation with subsequent updating of screening programs.

In oncology screening programs, NOI serves as a professional platform for the development and updating of professional methodologies used in screening and cooperates in the creation and updating

of standard procedures for individual screenings not only in the general population but also in the at-risk population. It closely cooperates with the Ministry of Health of the Slovak Republic as a national governing body, especially with the Department of Public Health, Screening, and Prevention of the Ministry of Health of the Slovak Republic, the communication department of the Ministry of Health of the Slovak Republic and other stakeholders, such as health insurance companies, professional societies, the National Centre of Health Information (NCZI) and patient organizations.

An important task of NOI is to evaluate screenings and submit the outputs to the Ministry of Health of the Slovak Republic. In cooperation with health insurance companies and NCZI, we will submit the report for 2023 only after the complete closure of the year and based on clinical data from screening mammography centers. However, it will still not be possible to evaluate the quality assessment indicators in full scope, as there has been a long-term absence of effective screening data collection that would serve as a basis for the screening register.

The Committee of the Ministry of Health of the Slovak Republic for the screening of selected oncological diseases in the Slovak Republic, headed by Prof. Stanislav Špánik, M.D., PhD., serves as an advisory body to the Ministry of Health of the Slovak Republic. One of its main tasks is to prepare the conditions for ensuring the continuous functioning of national oncological disease screening programs in the Slovak Republic. There are currently 6 working groups within this committee.

Breast carcinoma screening working group:

Prof. Jana Slobodníková, M.D., PhD., Head of the Working Group

Colorectal carcinoma screening working group:

Prof. Tibor Hlavatý, M.D., PhD., Head of the Working Group

Cervix carcinoma screening working group:

Oliver Sadovský, M.D., PhD., Head of the Working Group

Lung carcinoma screening working group:

Dominik Juskanič, M.D., EDiNR, Head of the Working Group

Screening media support working group:

Dr. Tatiana Kmecová, Communication Department, Ministry of Health of the Slovak Republic

Data working group:

NCZI representative

As part of the legislative changes, already at the turn of 2021/2022, NOI experts, in cooperation with the Ministry of Health of the Slovak Republic and members of working groups for individual oncology screenings, began amending the wording of Act No. 577/2004 Z.z. to more clearly define and harmonize the part concerning primary and secondary prevention with facts based on medical evidence. The approval of the Act in the National Council of the Slovak Republic, which is preceded by an internal comment procedure and subse-

quent interdepartmental comment procedure, was influenced and suspended in 2023 by pre-election activities and also by the elections themselves, which pushed back the effort to amend this very important Act, on the basis of which it will be possible to continue updating existing or newly created standard procedures and professional methodologies.

2023 also saw the finalization of the two-year **ICCCS** (Improving Cancer Care Coordination and Screening) project **in cooperation with the international organization IARC** (International Agency for Research on Cancer), which is part of WHO (World Health Organization).

The project set three key goals:

1. Implement the strategic plan for the improvement of the quality of screening programs
2. Introduce an information system aimed at collecting data and information from screening programs
3. Prepare and implement a communication strategy for individual target groups so that they are fully aware of the benefits of screening for selected cancer diseases

After several visits to Slovakia, meetings with stakeholder organizations, online meetings, and the fulfillment of a number of tasks resulting from the project and after a thorough familiarisation with the Slovak screening environment, IARC experts developed and presented recommendations for 8 areas in January 2024: Management and legislation, Screening test and diagnostics, Guidelines and pro-

ocols, Organisation, Funding and staff, Invitations and communication with screeners, Data and IT system, Quality assurance, Awareness improvement, Research.

It is expected and the project implies that the current leadership of the Ministry of Health of the Slovak Republic and the relevant authorities will take these recommendations as a commitment to their implementation and the subsequent real results of the exceptional project will help to increase the level of screening programs in Slovakia, which will more effectively lead to a reduction in mortality from selected oncological diseases.

In 2023, there were three organized screening programs - for breast cancer, cervical cancer, and colorectal cancer. **Breast cancer screening** by means of screening mammography is intended for asymptomatic women between the ages of 50 and 69. It can only be performed at verified screening mammography workplaces, which ensure high-quality and effective comprehensive management of detected malignancies at a high professional level, in accordance with the requirements of the valid Standard Procedure for the implementation of medical radiation and for the performance of prevention - screening mammography.

There are currently 23 certified screening mammography facilities which were verified by the working group commissioned by the Committee of the Ministry of Health of the Slovak Republic for quality assurance in radiodiagnostics, radiation oncology, and nuclear

medicine. Workplaces record results monthly through the Mamolight and Mamonet software. In 2022, it was specially developed for the purposes of recording and statistical collection of selected data from screening mammography examinations performed at verified screening mammography workplaces in the Slovak Republic. In addition to several functions, the software enables the complete management of a data audit of mammographic screening at the workplace.

The working group agreed, as part of the amendment of the wording of Act No. 577/2004 Z.z., to propose a **change in the age limit of the target population for mammographic screening from the current 50 - 69 years to 45 - 75 years** in line with the latest European recommendations and agreed to **eliminate breast ultrasonography (USG) once every 2 years as part of a gynecological examination**. This is a medically redundant examination unless it is a follow-up to screening mammography, and such a procedure is recommended not to be used based on EUSOBI (European Society of Breast Imaging), as it does not bring sufficient medical benefit and, on the contrary, can lead to iatrogenisation of women. Methodical instructions for reporting performance codes and diagnoses for health care providers were also prepared.

Cervical cancer screening is intended for asymptomatic women aged 23 - 64. It is performed as part of a preventive gynecological examination in the scope established by Act No. 577/2004 Z.z. In 2023, the narrower professional part of the working group developed professional guidelines of the Ministry of Health of the Slovak Republic

for the performance of expert colposcopy for cervical cancer screening in the Slovak Republic, which is awaiting approval and publication in the Journal of the Ministry of Health of the Slovak Republic. It is related to the provision of a **sufficiently wide, high-quality network of Health facilities where expert colposcopy can be performed**. There have also been several discussions about a new form of screening test, where the effort is to introduce a **screening hrHPV DNA test** that would be performed in women aged 35 - 45, while the cytological test would be intended for women aged 23 and over in a three-year interval. The HPV test will continue to be performed as a triage test in case of unclear cytological findings. The introduction of this form of screening will, among other things, require the creation of a new performance code for the screening and triage of HPV tests and continued sufficient education, especially for the interested professional public.

Colorectal cancer screening is performed in a target population of men and women aged 50 - 75 every two years using the test for occult bleeding in the stool. A positive test result is followed by a screening colonoscopy. Another option for the prevention of colorectal cancer is a primary screening colonoscopy without previous tests for occult bleeding in the stool in the target population of men and women without increased risk from the age of 50, once every 10 years, and it is also performed in people with an increased risk of the disease according to standard recommendations defining age and time interval. **Currently, 150 certified gastroenterology workplaces perform screening colonoscopies in Slovakia.**

As with the other two screenings, the health insurance company invites to this screening the methodology of inviting insured persons who have not had a preventive check-up with a general practitioner for more than two years and, as part of it, a test for occult bleeding in the stool. The invitation is accompanied by a qualitative test without further specification, which is often not accepted by general practitioners who use their own test methods. According to data from health insurance companies, in 2022, only 22.9% of insured persons who were approached completed an examination based on an invitation. It is, therefore, necessary to reevaluate the method of invitation, the overall organization, and the alignment of the test method with a clear definition of the test used, since it is exceedingly difficult to implement an adequate assessment of the screening and its correct setting when different methods are used.

An important part leading to a reduction in mortality from colorectal cancer is an increase in adherence to colonoscopy. In 2022, less than half of people underwent a colonoscopy after reporting a positive test result. **The introduction of full reimbursement of analgosedation by health insurance companies during this procedure**, reduction of waiting time at gastroenterology workplaces, improvement of their availability, increased awareness, but also education in correct coding of procedures, which are important for their correct evaluation, **can help**.

Lung cancer screening

In 2023, the entire team within the working group, the NOI, and the Ministry of Health of the Slovak Republic developed many activities

within the preparatory phase of the pilot implementation of lung cancer screening of risk groups, primarily focused on effective technical security of data collection.

It was possible to approve the Standard procedure for the performance of lung cancer prevention by the method of screening risk groups - lung cancer screening, developed by the team under the leadership of Prof. Viera Lehotská, M.D., PhD. It is another of the standard procedures dedicated to preventive medicine, which has the potential to save public resources, and we believe that it will be an important basis for efforts to implement lung cancer screening in Slovakia.

However, in addition to secondary prevention per se (screening), it is crucial to create options for quitting smoking and adequate, effective primary prevention steps regarding the risk factors, of tobacco smoking. Within this comprehensive approach to smoking prevention and nicotine addiction treatment, which are an integral part of efforts to implement lung cancer screening, the Standard Procedure for the Management of Nicotine Addiction was approved by the team under the leadership of Ľubomír Okruhlica, M.D., PhD.

An important pillar is efforts to automate data collection at the NCZI with the possibility of sharing aggregated data for the performance and quality audit of the screening program by NCZI and NOI analysts, as well as for the committee of the Ministry of Health of the Slovak Republic for quality assurance in radiology, radiation oncology, and nuclear medicine. Data surveillance is a vital part of the pilot project, as it will enable continuous monitoring and improvement of the

screening program. In addition, it can serve as a valuable data input for a screening registry.

Prostate cancer screening should be initiated by creating a working group whose task should be to develop a pilot phase of prostate cancer screening with a thorough understanding of all possible risks and to develop a Standard Procedure for the performance of prostate cancer prevention. In 2023, several discussions were held on the given topic with the chairman of the Slovak Urological Society, Assoc. Prof. Ivan Minčík, M.D., PhD.

Research, development, and education

In January, the head II. of the Oncology Clinic of the Faculty of Medicine of the Comenius University and NCI, prof. Michal Mego, M.D., DrSc. and the director of NOI, Mária Rečková, M.D. PhD. visited the French Gustave Roussy Institute Comprehensive Cancer Center in Paris with the aim of getting to know the organization and implementation of phase I clinical trials.

In April 2023, the NOI Director attended workshops at the Indiana University Simon Comprehensive Cancer Centre (IU-SCCC) in Indianapolis, IN, and at the James Comprehensive Cancer Centre, Ohio State University (OSU) in Columbus, OH. The business trip was aimed at mapping the possibilities of cooperation between NCI, NOI, and U.S. comprehensive cancer centers, while with IU-SCCC, it was primarily about developing existing cooperation based on the signed Memorandum of Academic Cooperation from July 2022, and with OSU about finding opportunities for potential cooperation. The meeting at OSU

was followed by a visit of colleagues from OSU at NCI in May 2023 and subsequently the signing of a Memorandum of Cooperation on 23 August 2023 with the expressed support of the Slovak Ambassador to the USA, Radovan Javorčík, and the Honorary Consul in the USA, Stephen Zlatos. More information about NOI's international cooperation can be found at: www.noisk.sk/en.

In 2023, NOI announced two calls to obtain an **NOI grant**, which is intended for short-term foreign internships for physicians and, from January 2023, also for non-medical health workers who provide health care at clinical oncology workplaces in Slovakia. The aim is to support the opportunity to obtain and subsequently share current medical knowledge in oncology, to support research and development, and the establishment of international cooperation. **In total, the NOI has announced ten calls and 16 applicants have been awarded since 2019.** In 2023, the institute announced the 9th and 10th calls for NOI grants in sequence, in which four applicants were successful:

Dominika Dóczyová, M.D.

Bone Marrow Transplantation Unit, Department of Pediatric Haematology and Oncology, Faculty of Medicine of the Comenius University and the National Children's Diseases Institute, Limbová 1, 833 40 Bratislava

NOI Grant No.: 2023o426/SVKNOI/13

Topic: Haploidentical transplantation of hematopoietic cells in children in Slovakia

Facility: Great Ormond Street Hospital, Great Ormond Street, London WC1N 3JH, UK

Supervisor: Giovanna Lucchini, M.D.

Peter Leško, M.D.

II. Oncology Clinic, Faculty of Medicine of the Comenius University, National Cancer Institute, Bratislava

NOI Grant No.: 20230426/SVKNOI/14

Topic: Clinical internship at the Memorial Sloan Kettering Cancer Centre

Facility: Memorial Sloan Kettering Cancer Centre, 1275 York Avenue, New York, NY 10065, USA

Supervisor: Susan F. Slovin, M.D., PhD.

Miroslava Dobroňová, M.Sc.

Radiation Oncology Department, National Cancer Institute, Bratislava
NOI Grant No.: 20230929/SVKNOI/15

Topic: Predicting the movement of a cancer patient during radiation on a linear accelerator using artificial intelligence

Facility: Arthur G. James Cancer Hospital and Richard L. Solove Research Institute, Ohio State University Comprehensive Cancer Centre, Columbus, Ohio 43210, USA

Supervisor: Prof. Arnab Chakravarti, M.D., Fastro, Facro

Věra Novotná, M.D., PhD.

Internal clinic of the Healthcare and Social Work College and St. Elizabeth Cancer Institute, Bratislava

NOI Grant No.: 20230929/SVKNOI/16

Topic: Management of genitourinary malignancies with a focus on prostate cancer in a high-volume center - treatment stratification

Facility: Institute Gustave Roussy, rue Edouard - Vaillant, 94 805, Villejuif Cedex, Paris, France

Supervisor: Prof. Karim Fizazi, M.D., PhD.

Complete information on **NOI grants**, current calls, and awarded grants with reports on short-term and long-term benefits are available on the NOI website www.noisk.sk/en, in the section Professional public/Research, development, education/NOI grants.

In 2023, NOI once again closely cooperated with the committee of the Slovak Oncological Society (S.O.S) and actively participated in the preparation of the ASCO News and Bratislava Oncology Days professional events. NOI representatives presented results and participated in expert panel discussions at many conferences: Gastroforum 2023, Continuum of patient-oriented scientific research, Current grant Opportunities for Health in the Horizon Europe scheme, V4 + IARC online expert meeting Improving Cancer Care Coordination and Screening (ICCCS project), XV. SGPS Cervical Pathology and Colposcopy Section Conference, XLIII. Slovak Radiological Congress, 28th SEKCAMA S.O.S. SLS 2023 international conference, LX. Bratislava Oncology Days, GLOBSEC 2023 - EU's Beating Cancer Plan: closing the gap in cancer care in CE and Baltics, Young Oncologist days, Bardejov Oncology Days, Official Conference on the 20th Anniversary of the East Slovak Oncology Institute and the Clinical Pharmacy Symposium.

An important event in 2023 was the organization of the 2nd professional symposium as part of the collaboration between the Indiana University Simon Comprehensive Cancer Centre (IU-SCCC) in Indianapolis, USA, and the National Cancer Institute in Bratislava. The professional event **Conversations about Oncological Critical Care – Focus on Testicular Cancer Patients**, organized by the NOI, was held in a hybrid form on 8th November 2023 under the auspices of NCI/NOI, IU-SCCC, and S.O.S. Renowned international experts Assoc. prof. Cairiona A. Buckley and prof. Roberto F. Machado and online also their colleagues Assoc. Prof. John W. Wolfe and Assoc. Prof. Yar Juan Yeap of IU-SCCC.

At the event, selected topics were also presented and discussed by recognized Slovak experts in clinical oncology, prof. Michal Mego, M.D., PhD, Assoc. Prof. Katarína Rejleková, M.D., PhD. and Assoc. prof. Michal Chovanec, M.D., PhD., from surgery prof. Daniel Pindák, M.D., DrSc. and Kristýna Kozáková, M.D. shared the anaesthesiologist's view. Another important conference that the NOI covered professionally and organizationally was the **NOI forum**, which took place on 19th October 2023 at the Ministry of Health of the Slovak Republic. It was the first professional conference with international participation dedicated to oncological screening programs with a focus on mammographic screening for breast cancer.

In clinical trials, NOI continued its educational activities related to clinical trials in a systematic and dominant manner, especially for clinical trial coordinators. At the end of the year, materials were pre-

pared for e-learning in clinical trials, which is planned to be launched in 2024. On 27th and 28th April 2023, a **Workshop on clinical trials** was held at the Ministry of Health of the Slovak Republic and NCI, held by NOI, which drew attention to the necessary support for maintaining clinical research in Slovakia, as clinical trials often provide the only access for cancer patients to innovative treatment, or new treatment and diagnostic approaches. The workshop also made it possible for the coordinators to establish contacts with the sponsors and the possibility of further training in clinical trials in the following period.

In 2023, meetings initiated by NOI with patient organizations and sponsors of clinical trials were held repeatedly with the aim of a joint search for solutions to increase participation and awareness of clinical trials among the general and professional public. Methodical instructions for work and procedures in clinical trials for NCI were being prepared by NOI, they were also provided as an example to other cooperating workplaces in Slovakia that showed interest in the given materials.

During the year, the financial support of CT coordinators and the training of coordinators, which were covered by the coordinator of CT coordinators in NOI, continued. Support activities for the establishment of the Phase I CT Clinic at NCI continued. Two meetings of the created Platform of Ministry of Health experts involved in clinical trials were held in 2023, in which NOI was assigned the task of managing CT coordinators, which it has practically been covering since 2022 as one of the important activities in **supporting the CT infrastructure** in Slovakia. In 2023, the clinical trials **website was updated**, as well as the net-

work of SCOG sites. Current information from the CT area was also distributed in the form of a Newsletter to all collaborating entities, institutions, and organizations. A concept for clinical and translational research was developed, which was published in the Journal of the Ministry of Health of the Slovak Republic. Academic clinical trial support continued in collaboration with the French Genitourinary Group (GETUG), PEACE-6.

A significant support in strengthening participation in CT and improving awareness is the regularly updated **Register of Oncological Clinical Trials of NOI**, which in 2023 will celebrate five years of operation. The list of oncology clinical trials is available for physicians and patients at www.noisk.sk/en in the professional and general public section under the tab: Clinical trials. Regular updating of the register is supported by active communication and feedback from CP workplaces, as well as members of AIFP (Association of Innovative Pharmaceutical Industry) and SACROP (Slovak Association of Clinical Research Organisations and Employees).

Overall state of oncological CTs in the NOI register from the recruitment perspective as of 18th January 2024

Disease	Recruitment opened	Recruitment closed	Completed	Awaiting the opening
COVID 19		1		
Germinative testicular cancer		3	1	
Hodgkin lymphoma			2	

This year, NOI, in cooperation with members of SCOG, introduced a new product for professional public-patient **referral between CT workplaces**. It is the option of simple referral of a patient to a CT by any oncologist at a specific workplace where said trial is taking place (and which has given consent to the referral), directly through the web application in the register. The possibility of reporting is available directly through the Register of Oncology Clinical Trials on the NOI website in the section: Professional public/Clinical trials (www.noisk.sk/en). A simple procedure is also available in this section. Also new is the **Contact Form** for the Register of Oncology CTs intended for applicants and CT workplaces. Its task is to help update the NOI CT register by simply filling in information about the commencement/end of CT (or opening/closing of the recruitment centers), which can contribute to increasing the timeliness of the information provided to the professional public and patients about available trials. The form is available at: Clinical trials | www.noisk.sk.

Anal tract cancer				
Pancreatic cancer			1	
Lung cancer	1	4	8	4
Prostate cancer	3	1	6	3
Breast cancer	6	2	4	
Ovary cancer		1		
Stomach and gastroesophageal junction cancer		1		
Colorectal cancer	4	3	1	
Leukaemia	5	3	1	
Lymphoma		1		3
Melanoma	1	1	2	
Multiply myeloma		2		
Tumors	6	4	6	1
Head and neck diseases			1	
Non-Hodgkin lymphoma	1	2	2	
Sarcoma	1		1	
Ureteral cancer		4		
Grand Total	28	33	36	11

NOI also published its **Informational Newsletter** in 2023 to support patient organizations and members of SCOG on the state of oncology CTs in Slovakia.

In diagnostics and treatment, NCI/NOI participates in the important pan-European project with the acronym **CraNE-JA**, which represents the joint activity of 25 competent institutions and 21 affiliated entities from 25 EU member states. The project is co-funded from EU funds within the EU4Health scheme and reflects Main Initiative 5 in Europe's Beating Cancer Plan. This initiative defines that by 2025, the European Commission will create a European network connecting Comprehensive Cancer Centers (CCC) in each member state, and 90% of eligible patients will have access to comprehensive oncology care by 2030.

CraNE-JA was launched on 1st October 2022 with the aim of preparing the necessary prerequisites regarding administration and professional assurance to support the creation of new CCCs in European countries and their integration into the emerging European EUnetCCC network, together with already existing and established CCCs. In 2023, there was intensive cooperation between NCI/NOI representatives and members of the NOI SC during physical and online meetings on the preparation of documents for the creation of consensus quality standards for research, innovation, prevention, and education within the CCC, which will be part of the EUnetCCC. NOI representative, Dr. Soňa Čierniková, PhD. was nominated to the expert working group within the 5th work package for task WP5 5.3.1 within the CraNE-JA project, the aim of which was to define activities to support

cooperation within the European CCC network to improve care, education and oncology research.

The working group consisted of 18 selected experts in oncology from 10 different EU countries, led by representatives of Oslo University Hospital CCC and Alleanza contro il cancer (Alliance Against Cancer). The outputs of the working group include, in addition to establishing a common view on the content of EUnetCCC activities, the preparation of a guide to relevant specific areas of activities, and the creation of final documents that will be included among the outputs of the CraNE-JA project.

The Slovak Republic has expressed its commitment to improve cancer control by approving the National Oncology Program (NOP), including updated Action Plans for the years 2021 – 2025. Based on Action Plan 3, it is **necessary to complete the finalization of the National CCC** at the National Cancer Institute (NCI) in Bratislava and the subsequent comprehensive care at the St Elisabeth Oncology Institute (OÚSA) in Bratislava and the East Slovak Oncology Institute (EOI) in Košice, as well as a network of comprehensive cancer centers with the aim of improving access to adequate and innovative diagnosis and treatment of oncological diseases for all patients in Slovakia. The development of pediatric oncology needs to be ensured at the National Institute of Children's Diseases (NÚDCH) in connection with NCI.

In 2023, NOI was actively involved in the implementation of Action Plan 3 and ensured the **visit of the Director of Quality and Accred-**

itation at the Organisation of European Cancer Institutes (OECI), Dr. Simon Oberst, on the grounds of NCI, connected with a tour of individual departments. OECI accredits CCC not only in Europe but also outside the European area. **By obtaining accreditation, the National CCC in Slovakia would join prestigious CCCs** such as the Karolinska Comprehensive Cancer Centre or the Gustave Roussy Institute in Paris. It is also an opportunity to provide comprehensive oncological care for Slovak patients within the center, which would connect medical care with research and education. NOI initiated the meeting of Dr. Simon Oberst, representatives of the NOÚ and experts in oncology care with the then Minister of Health of the Slovak Republic in July 2023, where the steps that must be supported by the Ministry of Health of the Slovak Republic to ensure comprehensive oncological care in Slovakia were presented.

The issue of creating the National CCC in Slovakia resonated in NOI activities even at the end of 2023. NOI representatives actively participated in the organization of the **Stakeholder Forum** professional event within the Crane JA project with the key topic: **Integration of clinical care, research, innovation, and education within the network of comprehensive cancer centers in Europe. Current status and challenges for Slovakia**. This exceptional meeting of leading experts in health policy making, health care provision, research, development, and education in oncology, as well as representatives from patient organizations was held on **15th December 2023 at the Ministry of Health of the Slovak Republic under the auspices of the President of the Slovak Republic and with the participation**

of the Minister of Health. The event analyzed the current situation and challenges for Slovakia in the creation of the National CCC and its connection to the CCC network in Europe, with the aim of improving care and accessibility for all patients within Slovakia, facilitating the introduction of modern diagnostic and treatment procedures and connecting clinically oriented research and education not only of physicians and healthcare workers but also patients and their relatives.

Among the lecturers was Prof. Tit Albrecht – CraNE-JA scientific coordinator, Dr. Per Magnus Mæhle - Director General Cancer Centre Board at Oslo University Hospital CCC, Dr. Hugo Soares, co-coordinator of the ECHoS project and Dr. Olga Sapožnikov - head of the accreditation section from the Department of International Accreditations at the Masaryk Oncology Institute CCC in Brno. The event included panel discussions by experts and state secretaries from the Ministry of Health of the Slovak Republic and the Ministry of Education, Science, Research and Sports of the Slovak Republic, the State Secretary to the Deputy Prime Minister of the Slovak Republic for the Recovery and Resilience Plan and EU Funds, the Chairman of the Health Committee of the National Council of the Slovak Republic, directors and representatives of the main oncology centers in Slovakia, the main experts of the Slovak Ministry of Health for clinical, radiation and pediatric oncology, the president of the S.O.S., the director of the NCZI, the president of the SAS, the general director of the SAS Biomedical Centre, V.V.I., deans and representatives of the Medical Faculties of the UC, UPJŠ, and SMU, as well as representatives of patient organizations. In the end, a draft of the **Declaration of the Slovak Republic: Consen-**

sus recommendations for the establishment of a comprehensive cancer center in Slovakia was presented, in which the main results of the Stakeholder Forum were defined. It is an important supporting material for the creation of a comprehensive cancer center in Slovakia.

UpToDate is a database of current medical knowledge, the availability of which can contribute to quick orientation in recommended procedures and news and significantly contribute to high-quality daily clinical practice. To support the education of cancer care professionals, the National Oncology Institute also ensured access to the UpToDate database in 2023 for managers at oncology inpatient workplaces responsible for clinical decisions, chief and regional experts of the MoH of the Slovak Republic for Clinical, Radiation, and Pediatric Oncology, and healthcare professionals at the National Cancer Institute, since the National Cancer Institute is the coordinator of oncology care in the Slovak Republic.

As part of cooperation in fulfilling the goals of Europe's Beating Cancer Plan, NOI participates in another strategically important European project **ECHoS: Establishing of Cancer Mission Hubs: Networks and Synergies**. The second partner in the project from Slovakia is the Slovak Cancer Research Foundation (SCRF), therefore SCRF and NOI **co-organized the patient-focused Continuum of Scientific Research conference**, which took place on 7 March 2023 at the Slovak Scientific and Technical Information Centre in Bratislava. The event resonated with interesting topics in oncology research, as well as opportunities for active participation and current

events in the EU Cancer Mission. The aim of the ECHoS project is to coordinate research, innovation, and health care in oncology and to link these activities with the creation of policies dealing with oncology care and research.

The Research Consortium brings together the expertise of 58 leading organizations from the government, health, research, academic, and non-profit sectors from 28 countries, which will provide capacity to member states and associated countries for **the gradual creation of National Cancer Mission Hubs**. Their aim will be to involve a wide range of stakeholders from the public and private sectors in joint initiatives and political dialogues on oncological diseases at the national, regional, and local levels. The initial meeting of the project was held at the beginning of May 2023 in Lisbon with the participation of the coordinator for research and educational projects of NOI, Dr. Sonia Čierniková, PhD. During 2023, the **Dissemination and Communication Plan** was created, the website was established, and the **first general meeting of the project took place**.

The joint activity was the mapping of existing and potential institutions that could serve as National Cancer Mission Hubs in individual European countries and lists of stakeholders and partners were drawn up. The possibilities of synergies with other European projects were also explored, and at the end of 2023, meetings aimed at a common view of the organizational structure, financial and personnel security, and the degree of autonomy were held for the development of potential models for national hubs.

In **education and spreading awareness about the prevention of oncological diseases**, NOI considers the education of children and young people in the prevention of oncological diseases to be extremely important. In 2023, NOI became a member of the HPV coalition, which was established at the Ministry of Health of the Slovak Republic with the aim of raising awareness of HPV vaccination in the Slovak population, focusing mainly on the recommended age groups of boys and girls, their parents, teachers, physicians, and medical personnel.

The effort of NOI, in cooperation with other stakeholders, is to gradually lead to the systematic building of a generation of young people with an active and responsible approach to their health. From the first negotiations on the possibility of free vaccination with the most modern nanovalent vaccine against the HPV virus, NOI representatives were part of expert discussions of a wide range of experts, especially from the ranks of pediatricians, immunologists, experts from the Ministry of Health of the Slovak Republic and NCZI, representatives of health insurance companies, regions, and patient organizations. The result was the introduction of free HPV vaccination in May 2022 for boys and girls aged 13 and mass dissemination of knowledge about the prevention of HPV-associated oncological diseases through vaccination. In 2023, the joint efforts of all interested parties continued, and, through gradual steps, it was possible to push through **the extension of full reimbursement of HPV vaccines from 1st December 2023 for girls and boys even at 14 and 15 years of age**.

NOI serves as a **professional, educational platform**. An important task also in 2023 was the updating of the NOI website in Slovak and English, where experts can find the necessary information, whether about planned conferences (available in the events calendar on the front page), but also links to various treatment recommendations and aids. In cooperation with the II. Oncology Clinic of the Faculty of Medicine of Comenius University and NCI, NOI prepared information and individual modules intended for **the School of Oncology** on its website in the section: Physician. The mission of the School of Oncology is to increase the quality of specialized studies in Clinical Oncology. The goal is continuous teaching during the entire course of study in the form of educational modules.

The NOI website is created not only for professional education but also for the education of the **general public**. In the section: Patient, general information about risk factors for oncological diseases is available, including a link to the European Code against Cancer. In the section: Patient/diagnosis and treatment, **ESMO patient brochures** are available in online format, the Slovak translation of which is being prepared in cooperation with ESMO and patient organizations. A separate section on the NOI website is dedicated to oncology screening with up-to-date information, especially for the professional and lay public, including evaluation annual reports.

NOI regularly distributes a monthly **Informational Newsletter** to oncologists with updates from important areas of oncology, including new oncology drug indications registered by the EMA and cate-

gorized by the Ministry of Health of the Slovak Republic. The institute updates this information **monthly** in collaboration with InovaHealth s.r.o. on the website www.onkoportal.sk.

5.2. Challenges for 2024

- The biggest challenges for NOI will be to continue the started activities and ensure their development at the same time.
- The main area of activity will continue to be the **coordination of organized screening programs** and within it cooperation with all interested organizations and institutions, including international cooperation. In this area, it is important to improve the quality of already existing oncological screening programs and also to implement new oncological screening programs in accordance with European recommendations.
- In 2024, NOI will continue to raise the quality of secondary oncological prevention, as well as support **primary and tertiary prevention**. In the field of primary prevention, this is planned ongoing cooperation in educational activities, such as participation in the activities of the HPV coalition, or support for the activities of non-governmental organizations working in the field of oncology prevention. In the field of tertiary prevention, NOI plans to continue participating in the development of activities aimed at supporting the care of surviving cancer patients.
- In **research, development, and education**, NOI will continue supporting the education of the professional and general public

by updating the web platform, including technical support for the School of Oncology and the e-learning School of Clinical Trials. NOI will continue to create various forms of information materials, ensure the availability of the Up-To-Date database, support internships at prestigious oncology workplaces abroad in the form of NOI grants, organize professional conferences, including providing a platform for connecting various interested parties, build cooperation with foreign workplaces such as Indiana University Simon Comprehensive Cancer Center, Ohio State University, Masaryk Oncology Institute, Gustave-Roussy Institute.

- An important task is also the ongoing support of clinical trials in the form of updating the Register of Oncology Clinical Trials, as well as the support of the infrastructure of oncology clinical trials (CTs) within the framework of support for coordination directly in the CT centers, as well as participation in the development of the Slovak Cooperative Oncology Group.
- An important challenge also in 2024 is **involvement in European projects** within the framework of fulfilling the European plan to fight cancer. This is primarily the CraNE-JA project and its follow-up projects EUnetCCC JA, EchoS, and JA EUCanScreen, which enable the institute to build international cooperation and participate together with other European partners in a healthier Europe, in which Slovakia has a definite place. Participating in joint European activities has a supporting role for Slovakia in improving quality or introducing new oncology screening programs. In the same way, European cooperation is helpful in creating a network of complex oncology care in Slovakia with the aim

of ensuring high-quality health care with links to high-quality research and education. The main goal is, in accordance with Europe's Beating Cancer Plan, to ensure comprehensive oncological care for all citizens of Slovakia who require this care, including ensuring cross-border cooperation.



6. Research
and Development



6.1. NOI Activities in Research and Development

NOI activities in research and development implemented in 2022 are listed in the previous chapter and relate to the updating of the Register of Oncology Clinical Trials, financial support for administrative costs associated with academic clinical trials in cooperation with SLOVACRIN, support of the coordination of clinical trials directly at clinical trial centers, two calls during one calendar year for awarding NOI grants for short-term foreign internships and covering the existence and development of the activities of the Slovak Cooperative Oncology Group (SCOG).

An important activity of NOI is also participating in the European CraNE-JA project, whose task is to set standards for Comprehensive Cancer Centers in Europe and their networking, while the standards also concern research, development, and education, and their connection with the provision of health care. Another important activity is the participation in the ECHoS (Cancer Mission Hubs) European project, which aims to improve the implementation of the Cancer Mission in the EU member states.

6.2. Translational Research

The Translational Research Unit (TRU) is a specialized workplace of the II. Oncology Clinic of the Faculty of Medicine of the Comenius University and NCI, whose mission is translational research, i.e. application of knowledge of basic research into clinical practice as well as reverse solution of clinically significant problems in oncology using experimental approaches in vitro and in vivo on TRU animal models. More information is available at: www.fmed.uniba.sk/pracoviska/klinicke-pracoviska/ii-onkologic-ka-klinika-lf-uk-a-nou
www.nou.sk/jednotka-translacneho-vyskumu-lfuk-a-nou

In 2023, the Translational Research Unit cooperated with the Cancer Research Institute of the SAS BMC (Biomedical Research Centre of the Slovak Academy of Sciences), Faculty of Medicine (Comenius University), and OÚSA (St. Elisabeth's Oncology Institute), with a focus on testicular tumors from germ cells, breast cancer, colon cancer, pancreatic cancer, and bladder tumors. Intensive cooperation also took place with foreign workplaces.

Work on the expansion of the project-oriented Biobank, including its instrument retrofitting, continued at NCI. The biobank continues to function as a highly organized programmed system of collection, processing, and subsequent long-term storage of biological material at extremely low temperatures (-80 / -196 °C). The latter is obtained from patients with various diagnoses and is significantly involved in the development of research.

The most significant results achieved relate to testicular tumors from germ cells, primarily in identifying new therapeutic targets, testing of new medicines in vitro and on animal models, as well as research on late toxicity (see the publication activity chapter).

From 1st September 2023, a joint workplace of TRU Faculty of Medicine of Comenius University and National Cancer Institute and Cancer Research Institute BMC SAS was established to expand cooperation between these two institutions, primarily aimed at the development of translational research in oncology.

6.3. Research in experimental and translational oncology in Slovakia

Current situation

There are several academic and research facilities in Slovakia working with scientific research in experimental and translational oncology, including the Faculty of Medicine of Comenius University in Bratislava, Jessenius Faculty of Medicine Comenius University in Martin, Faculty of Medicine of Pavol Jozef Šafárik University (PJSU), and Slovak Medical University in Bratislava. Clinical facilities such as the National Cancer Institute and St. Elisabeth Cancer Institute also participate in research projects in experimental oncology. Research facilities of the Slovak Academy of Sciences contribute significantly to cancer research, especially **institutes of the Biomedical Research Center of the SAS** which is a member of OECE (Organization of European Cancer Institutes). In research activities, it cooperates with University and Clinical partners within the Slovak Republic, especially with NCI, St. Elisabeth Cancer Institute, the Faculty of Medicine of Comenius University in Bratislava, and the Jessenius Faculty of Medicine of the Comenius University in Martin.

It has been focusing on research in experimental oncology for a long time, particularly on the following research topics.

Cancer Research Institute, BMC SAS:

Molecular mechanisms of cancer diseases, tumor genetics and epigenetics, DNA damage repair and mechanisms of anticancer drug resistance, properties and therapeutic use of stem cells, tumor microen-

vironment, identification of biomarkers for diagnostics, prediction of treatment effectiveness and patient stratification, development of diagnostic approaches using modern technologies, translation of findings to oncology practice.

Institute of Virology BMC SAS:

Molecular mechanisms of adaptation to hypoxia and acidosis in tumor microenvironment, tumor metabolism, mechanisms of metastasis, development of new anticancer strategies.

Institute of Experimental Endocrinology BMC SAS:

Communication between the nervous system and tumor tissue, the influence of physical activity and nutrition on the health and quality of life of cancer patients within tertiary prevention, and the contribution of hormonal pathways to cancer development and progression.

Institute for Clinical and Translational Research BMC SAS:

Signaling pathways in tumor cells are regulated by ion transport and small molecules (such as hydrogen sulfide). BMC SAS employs several internationally renowned top experts who coordinate and conduct research in experimental and translational oncology.

Projects of Biomedical Research Center of SAS (BMC SAS) within cancer research

International projects

Strategies to strengthen scientific excellence and innovation capacity for early diagnosis of gastrointestinal cancer - VISION

Project type:	
Principal investigator:	Alena Gábelová
Project duration:	1. 10. 2019 / 30. 6. 2023
Project registration No.:	Horizon 2020 857381
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS
Co-investigating institutions:	4 - Germany: 1, Spain: 1, Greece: 1, Norway: 1, Slovakia: 0

Comprehensive Cancer Infrastructure 4 Europe

Project type:	
Principal investigator:	Marína Cihová
Project duration:	1. 5. 2023 / 30. 4. 2026
Project registration No.:	Horizon Europe 101103746
The organization is the project coordinator:	no
Coordinator:	Organisation of European Cancer Institutes OEI

Translational control in Cancer European Network

Project type:	
Principal investigator:	Dana Jurkovičová
Project duration:	4. 10. 2022 / 3. 10. 2026
Project registration No.:	CA21154
The organization is the project coordinator:	no
Coordinator:	Université Claude Bernard Lyon

Identification of biological markers for prevention and translational medicine in pancreatic cancer

Project type:	
Principal investigator:	Božena Smolková
Project duration:	11. 10. 2022 / 10. 10. 2026
Project registration No.:	CA21116
The organization is the project coordinator:	Nie
Coordinator:	German Cancer Research Center (DKFZ)

Cancer Nanomedicine – from the bench to the bedside

Project type:	
Principal investigator:	Monika Šramková
Project duration:	28. 9. 2018 / 27. 3. 2023
Project registration No.:	CA17140
The organization is the project coordinator:	no
Coordinator:	University of Lodz

A Coordination and Support Action to prepare [UNCAN.eu](https://uncan.eu) platform

Project type:	
Principal investigator:	Miroslav Chovanec
Project duration:	1. 9. 2022 / 30. 11. 2023
Project registration No.:	Horizon Europe 101069496
The organization is the project coordinator:	no
Coordinator:	Institut National de la Sante et de la Recherche Medicale INSERM

Precision medicine in biliary tract cancer

Project type:	
Principal investigator:	Dana Jurkovičová
Project duration:	9. 10. 2023 / 8. 10. 2027
Project registration No.:	CA22125
The organization is the project coordinator:	no
Coordinator:	University of Salamanca Campus Miguel Unamuno

Modelling immunotherapy response and toxicity in cancer

Project type:	
Principal investigator:	Božena Smolková
Project duration:	2. 11. 2022 / 1. 11. 2026
Project registration No.:	CA21135
The organization is the project coordinator:	Nie
Coordinator:	Fundació Institut d' Investigació Germans Trias i Pujol

Molecular Markers for Biological Dosimetry in Radiation Oncology, Cancer Risk, Assessment and Optimizing Cancer Therapy

Project type:	
Principal investigator:	Igor Beliaev
Project duration:	19. 9. 2017 / 9. 7. 2023
Project registration No.:	IAEA Research Agreement No: 22259/R0
The organization is the project coordinator:	no
Coordinator:	International Atomic Energy Agency

Co-investigating institutions:	26 - Australia: 0, Brazil: 1, Canada: 1, France: 2, Great Britain: 1, Chile: 1, Indonesia: 2, India: 2, Israel: 3, Japan: 2, Lithuania: 1, Russia: 1, Saudi Arabia 1, Singapore: 1, Thailand: 2, Ukraine: 1, Uruguay: 1, USA: 2, Vietnam: 1
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Resistance under treatment in breast cancer

Project type:	
Principal investigator:	Marína Cihová
Project duration:	1. 8. 2020 / 31. 5. 2024
Project registration No.:	ID: 39
The organization is the project coordinator:	no
Coordinator:	University of Oslo, Institute of Basic Medical Sciences
Co-investigating institutions:	27 - Belgium: 6, Germany: 6, France: 5, Norway: 10

Early detection of esophageal squamous cell carcinoma with the Cyto-sponge coupled with molecular biomarkers and machine learning

Project type:	
Principal investigator:	Miloslav Karhánek
Project duration:	1. 9. 2023 / 31. 8. 2026
Project registration No.:	TRANSCAN-3/2022/655/ANGELA
The organization is the project coordinator:	no
Coordinator:	Centre of Postgraduate Medical Education

Establishing an algorithm for the early diagnosis and follow-up of patients with pancreatic neuroendocrine tumors

Project type:	
Principal investigator:	Božena Smolková
Project duration:	1. 9. 2019 / 31. 3. 2023
Project registration No.:	NExT-0711
The organization is the project coordinator:	no

Coordinator:	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Institute for Biomedical Engineering IBMT; Germany
Co-investigating institutions:	19 - Germany: 2, Spain: 6, Greece: 6, Latvia: 5

In silico and in vitro investigation of novel nuclear retinoid X receptor RXR ligands as potential anti-tumor agents

Project type:	
Principal investigator:	Július Brtko
Project duration:	1. 5. 2020 / 30. 4. 2023
Project registration No.:	2019-10-15-009
The organization is the project coordinator:	no
Coordinator:	Institut für Pharmazie. Abteilung Pharmazeutische und Medizinische Chemie
Co-investigating institutions:	1 - Austria 1

A4L_ACTIONS Efficacy of 5-fluorocytosine metabolic conversion by extra-cellular vesicle-mediated gene therapy

Project type:	
Principal investigator:	Verona Buociková
Project duration:	1. 11. 2022 / 31. 10. 2023
Project registration No.:	Alliance4Life_ACTIONS No. 013822
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

A4L_ACTIONS Immune checkpoint molecules in hematologic malignancies

Project type:	
Principal investigator:	Katarína Lopušná
Project duration:	1. 11. 2022 / 31. 10. 2023
Project registration No.:	Alliance4Life_ACTIONS No. 012922

The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

A4L_ACTIONS Post-Transcriptional Oncogenic Modifications and their Consequences

Project type:	
Principal investigator:	Miroslava Matúšková
Project duration:	1. 3. 2023 / 29. 2. 2024
Project registration No.:	Alliance4Life_ACTIONS
The organization is the project coordinator:	no
Coordinator:	Vilnius University

Role of the CA IX ectodomain in tumor growth and metastasis

Project type:	
Principal investigator:	Silvia Pastoreková
Project duration:	11. 11. 2014 / 31. 12. 2023
Project registration No.:	George Schwab and Leona Lauder Foundation
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

EU Structural Fund Projects

Systemic public research institution - biobank for cancer and rare diseases

Project type:	
Principal investigator:	Daniela Gašperíková, Miroslav Chovanec
Project duration:	1. 6. 2020 / 30. 6. 2023
Project registration No.:	313011AFG5
The organization is the project coordinator:	no
Coordinator:	Comenius University in Bratislava - Jessenius Faculty of Medicine in Martin

Integrative strategy in the development of personalized medicine of selected malignant cancer diseases and its effect on the quality of life

Project type:	
Principal investigator:	Miroslav Chovanec
Project duration:	1. 9. 2019 / 30. 6. 2023
Project registration No.:	313011V446
The organization is the project coordinator:	no
Coordinator:	Comenius University in Bratislava - Jessenius Faculty of Medicine in Martin

Long-term strategic research of prevention, intervention, and mechanisms of obesity and its comorbidities

Project type:	
Principal investigator:	Silvia Pastoreková
Project duration:	1. 9. 2019 / 28. 2. 2023
Project registration No.:	313011V344
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

National APVV projects

Only oncology-related projects in which the SAS Biomedical Centre the SAV and recipient of grant funds are listed.

Preclinical validation of an innovative antisense platform for CML

Project type:	
Principal investigator:	Andrea Babelová
Project duration:	1. 7. 2020 / 30. 6. 2024
Project registration No.:	APVV-19-0070
The organization is the project coordinator:	no
Coordinator:	Comenius University in Bratislava - Faculty of Medicine

Suicide gene therapy mediated by mesenchymal stromal and pancreatic tumour cell-excreted extracellular vesicles in the treatment of pancreatic ductal adenocarcinoma

Project type:	
Principal investigator:	Marína Čihová
Project duration:	1. 7. 2021 / 30. 6. 2025

Project registration No.:	APVV-20-0143
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Nanomedical approach to fight pancreatic cancer via targeting tumor-associated carbonic anhydrase IX

Project type:	APVV
Principal investigator:	Lucia Csáderová
Project duration:	1. 7. 2021 / 30. 6. 2025
Project registration No.:	APVV-20-0485
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Carbon dioxide in cancer glucose metabolism: an overlooked Achilles' heel of cancer

Project type:	APVV
Principal investigator:	Tereza Goliaš
Project duration:	1. 7. 2023 / 30. 6. 2027
Project registration No.:	APVV-22-0341

The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Harnessing the immunological mechanisms in various subtypes of B cell lymphoma

Project type:	APVV
Principal investigator:	Dana Cholužová
Project duration:	1. 7. 2020 / 30. 6. 2024
Project registration No.:	APVV-19-0212
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS
Co-investigating institutions:	2 - Slovakia: 2

Bacterial Lon protease as an emerging tool for multiple myeloma treatment

Project type:	APVV
Principal investigator:	Jana Jakubíková
Project duration:	1. 7. 2022 / 30. 6. 2026
Project registration No.:	APVV-21-0215

The organization is the project coordinator:	no
Coordinator:	Comenius University In Bratislava, Faculty of Natural Sciences

Cancer immunoeediting in multiple myeloma: immune checkpoints and clinical significance

Project type:	APVV
Principal investigator:	Jana Jakubíková
Project duration:	1. 8. 2021 / 30. 6. 2025
Project registration No.:	APVV-20-0183
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS
Co-investigating institutions:	0

Is HIF-1a a master regulator of DNA repair capacity and chemotherapy response in testicular germ cell tumors?

Project type:	APVV
Principal investigator:	Dana Jurkovičová
Project duration:	1. 7. 2020 / 31. 12. 2023
Project registration No.:	APVV-19-0286
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Preparation of new antibiotics and antitumor agents by manipulations of secondary metabolite genes and synthetic biology methods

Project type:	APVV
Principal investigator:	Ján Kormanec
Principal investigator in the SAS organization:	Jana Jakubíková
Project duration:	1. 7. 2020 / 30. 6. 2024
Project registration No.:	APVV-19-0009
The organization is the project coordinator:	no
Coordinator:	SAS Institute of Molecular Biology

Interactions of calcium transport systems in carcinogenesis

Project type:	APVV
Principal investigator:	Oľga Križanová
Project duration:	1. 7. 2021 / 30. 6. 2025
Project registration No.:	APVV-20-0176
The organization is the project coordinator:	yes
Coordinator: Biomedical Research Center of the SAS	Biomedicínske centrum SAV, v. v. i.
Co-investigating institutions:	0

Identification of new treatment options in refractory testicular germ cell tumors

Project type:	
Principal investigator:	Lucia Kučerová
Project duration:	1. 7. 2021 / 30. 6. 2025
Project registration No.:	APVV-20-0158
The organization is the project coordinator:	no
Coordinator:	Comenius University In Bratislava, Faculty of Medicine

Molecular mechanisms of trialkyl-/triaryltin isothiocyanates' and carboxylates' antitumor properties - novel ligands of nuclear retinoid X receptors in rat mammary gland carcinomas and human tumor cell lines

Project type:	
Principal investigator:	Dana Macejová
Project duration:	1. 7. 2021 / 30. 6. 2025
Project registration No.:	APVV-20-0314
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Identification of novel biomarkers linked to the relapse of metastatic colorectal cancer after metastasectomy

Project type:	
Principal investigator:	Miroslava Matúšková
Project duration:	1. 7. 2022 / 30. 6. 2026
Project registration No.:	APVV-21-0296
The organization is the project coordinator:	no
Coordinator:	Comenius University In Bratislava

Disclosure of the molecular mechanism of spontaneous tumor regression followed by the development of a novel prognostic tool

Project type:	
Principal investigator:	Lenka Minichová
Project duration:	1. 7. 2019 / 30. 6. 2023
Project registration No.:	APVV-18-0340
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Cell-in-cell phenomena as microevolutionary processes in cancer progression: a role for hypoxia-induced carbonic anhydrase IX

Project type:	
Principal investigator:	Silvia Pastoreková
Project duration:	1. 7. 2020 / 30. 6. 2024
Project registration No.:	APVV-19-0098
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

The Effect of Physical exercise and Nutrition on Gut Microbiome and Quality of Life in childhood cancer survivors

Project type:	
Principal investigator:	Adela Penesová
Project duration:	1. 7. 2023 / 30. 6. 2027
Project registration No.:	APVV-22-0047
The organization is the project coordinator:	no
Coordinator:	Biomedical Research Center of the SAS

Reprogramming pancreatic ductal adenocarcinoma microenvironment toward immunotherapy

Project type:	
Principal investigator:	Božena Smolková
Project duration:	1. 7. 2022 / 30. 6. 2026
Project registration No.:	APVV-21-0197
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS
Co-investigating institutions:	4 - Slovakia: 4

Multidrug resistance of leukemia cells - Phenotype caused by interference of multimodal molecular reasons

Project type:	
Principal investigator:	Zdena Sulová
Principal investigator in the SAS organization:	Július Brtko
Project duration:	1. 7. 2020 / 30. 5. 2024

Project registration No.:	APVV-19-0093
The organization is the project coordinator:	no
Coordinator:	SAS Bioscience Center – Institute of Molecular Physiology and Genetics

Cytokine profiling together with carbonic anhydrase IX immunotargeting as a promising tool in the diagnostics and treatment of pancreatic cancer)

Typ projektu:	APVV
Principal investigator:	Eliška Švastová
Project duration:	1. 7. 2021 / 30. 6. 2025
Project registration No.:	APVV-20-0480
The organization is the project coordinator:	yes
Coordinator:	Biomedical Research Center of the SAS

Identification and validation of biomarkers and underlying molecular pathways of late toxicity of curative treatment in testicular germ cell tumors

Typ projektu:	APVV
Principal investigator:	Barbara Ukropcová
Project duration:	1. 7. 2020 / 30. 6. 2024
Project registration No.:	APVV-19-0411

The organization is the project coordinator:	no
Coordinator:	Comenius University In Bratislava, Faculty of Medicine

International scientific events in 2023 (organized or co-organized by BMC)

Several expert events, invited lectures, and training for young scientific workers and students were organized in the framework of the European VISION project. All these events took place online due to the unfavorable pandemic situation. They were co-prepared by the partners of the project.

- The Fraunhofer Institute for Biomedical Engineering IBMT Germany
- Hospital Universitario Ramón y Cajal Spain
- The First Department of Propaedeutic Surgery of the Medical School of National and Kapodistrian University of Athens Greece
- Health Effects Laboratory NILU z Norwegian Institute for Air Research, Norway

In 2023, the Cancer Research Institute of the Biomedical Research Center of the SAS participated in the organization of the international conference Joint International Scientific Conference VISION and International Network of Young Scientists Conference at the SAS Congress Center in Smolenice. The participants of the conference were 50 scientists and doctoral students from partner organi-

zations of the VISION project consortium, members of the Scientific Advisory Board, and invited guests. The conference was the final activity of the VISION project. On 12/06/2023 – 15/06/2023, the Cancer Research Institute, Biomedical Research Center of the SAS was the co-organizer of the bilateral Czech-Slovak conference Genetic Toxicology and Cancer Prevention in the SAS Congress Center in Smolenice. The conference was held under the auspices of the Czech and Slovak Society for Environmental Mutagenesis, at the Czechoslovak Biological Society.

As part of the activities of the VISION project, 2 online invited lectures were given. Pantelis Hatzis, M.D., Ph.D. presented the use of NGS (Next-generation sequencing) technology in the research and diagnosis of GI oncological diseases, and Carolina De La Pinta, M.D. presented the possibilities of radiomics and radiogenomics in the diagnosis of oncological diseases.

Other activities of the Biomedical Research Center in research, development, education, and popularization of oncology

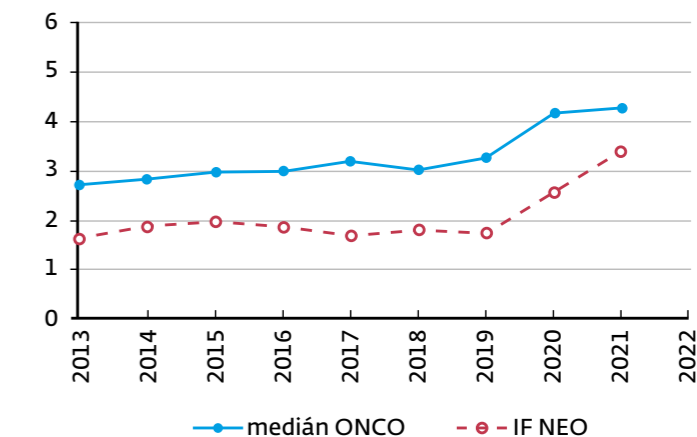
Cooperation with Slovak Cancer Research Foundation (Nadácia Výskum rakoviny, NVR)

NVR promotes and supports projects concerning cancer research, cooperation, participation of experts in specialist conferences, and public awareness about the goals and results of oncology research; it also tries to improve the level of education and skills of young scientists

in oncology through competitions and grants. Since 2016, it has been cooperating with Biomedical Research Center SAS as an individual legal entity, and its activities promote and support the Cancer Research Institute of BMC SAS, as well as, the scientific results of its employees. The foundation also financially supports the efforts to update the laboratory and diagnostic equipment of the institute. NVR in cooperation with BMC SAS organizes an annual national cycle of popularization-education seminars for high school students called Scientific Workshops – Oncology (Vedecké dielne – onkológia) www.nvr.sk.

Editing of international scientific journal

The Editorial Board of NEOPLASMA journal, which functions under the Institute of Experimental Oncology of BMC SAS, publishes scientific papers in the field of experimental and clinical oncology. In 2023, the NEOPLASMA journal included 74 published papers in 6 issues.



6.4. Report of the Institute of Research and Development of the Ministry of Health of the Slovak Republic

Translational and clinical research, including (academic) clinical trials (CTs), plays an important role in the improvement of therapeutic, diagnostic, and preventive options and contributes to the broadening of human knowledge. Patients who receive standard treatment are thus able to access potentially more effective innovative therapeutic or diagnostic procedures and products. Currently, the integration of clinical and translational research in normal clinical practice in established oncological centers around the world is a natural part of the process. These centers are also associated with university institutions as well as other scientific research facilities.

The cooperation of the Ministry of Health of the Slovak Republic, the Institute of Research and Development, the National Oncology Institute, the National Cancer Institute, the Clinical Trials Department, and the national partner SLOVACRIN (member of the pan-European organization ECRIN dedicated to the development of international clinical research) is reflected – also by the National Oncology Program – in the creation of a platform for **systemic support of biomedical clinical research**.

SLOVACRIN is included in the key national document titled **Roadmap of Research Infrastructures** (SK VI Roadmap 2020 - 2030) and its 1st Action Plan (approved by the Government Council for Science, Technology and Innovation on 30th January 2023), processed in a complementary relationship to European research infrastruc-

tures associated in within the framework of the European Strategic Forum for Research Infrastructures (ESFRI). SLOVACRIN supports all types of clinical research (clinical trials of human products and medicaments, clinical trials of medical devices, validation of treatment methods, and observational studies), especially where **innovative medicaments and approaches** are needed, such as in oncology or rare diseases. Therefore, Slovak patients have a unique opportunity to get much earlier access to innovative treatment methods as well as medicaments that are not commonly available. Innovative treatment is often expensive, so another benefit is significant savings for Slovak health insurance companies. This approach primarily improves the quality of Health provision, but also the prestige and internationalization of Slovak biomedical (academic) clinical research.

The continuity of cooperation between the Ministry of Health of the Slovak Republic / Institute of Research and Development, NCI/NOI, and SLOVACRIN is also reflected in the implementation of the new NOP Action Plan 4: “Research, development and education” (approved by the Slovak Government on 21 July 2021).

One of the main goals is to **increase the number and quality of academically initiated CTs** in Slovakia, using the available capacity and expertise of the participating facilities and with a guarantee of compliance with regulatory, legislative, and ethical requirements related to the implementation of clinical research. Based on the request, in 2023 the Ministry of Health of the Slovak Republic supported the activities of SLOVACRIN in the total amount of EUR 100,000,

through the National Cancer Institute / National Oncology Institute, from funds allocated for the implementation of the National Oncology Program activities (2021-2025) of the 4th Action Plan (Activity 4), aimed at ensuring and strengthening the activity of the medical infrastructure for academic clinical research (project management and related services for AKS with prioritization of clinical studies in oncology).

On 15th May 2023, the Ministry of Health of the Slovak Republic / Institute of Research and Development organized a Correct Clinical Practice Course in cooperation with SLOVACRIN, the State Institute for Drug Control (ŠÚKL) and the Association of Innovative Pharmaceutical Industry (AIFP). The course was designed for investigators and coordinators to support systematic training in clinical trials, to guide the starting departments of clinical trials and coordinators, and to mutually share acquired knowledge and experience. The following day, 16th May 2023, the Ministry of Health of the Slovak Republic / Institute of Research and Development organized the International Day of Clinical Trials in cooperation with SLOVACRIN, ŠÚKL, and AIFP. The central topic was the implementation of clinical trials from different perspectives.

On the International Day of Clinical Trials, an initiative was created to create a Working Group of the Ministry of Health of the SR for Clinical Trials, which will define the main, but removable, obstacles to increasing the number of CTs in the Slovak Republic and increasing their benefit for the entire population. It will be represented by all stakeholders involved in the implementation of CTs in Slovakia - the

Ministry of Health of the Slovak Republic, representatives of contractors from the commercial sphere (AIFP, Slovak Association of Organisations and Clinical Research Employees – SACROP), the academic sector (SLOVACRIN infrastructure), representatives of the national regulator – ŠÚKL, Ethical commissions of the Ministry of Health of the Slovak Republic, professional institutions (NOI), representatives of medical facilities in which CTs take place, as well as representatives of physicians and patient organizations.

Ministry of Health of the Slovak Republic (gov.sk)
SLOVACRIN and FoM UPJŠ in Košice

As part of the establishment of the Working Group for Clinical Trials, two informal meetings were subsequently held on the grounds of the Ministry of Health of the Slovak Republic - on 19 June 2023 as a physical meeting and on 8 November 2023 in a hybrid format with the participation of representatives of medical facilities.

In 2019, priority areas of research and development in Slovak oncological healthcare were reflected in a **public call** for applications for grants awarded by the Ministry of Health of the SR in healthcare research and development, so-called **ONKO Call 2019, amounting to EUR 400,000 in total for one year** (up to EUR 100,000 per project, with the duration of 3 years maximum). Six research projects were supported in the call (SAS, Jessenius Faculty of Medicine of Comenius University in Martin, MultiplexDX s.r.o.), focusing mainly on innovative diagnostic and treatment procedures and personalized/precision medicine products for oncological diseases determined in the 5th Ac-

tion Plan (NOP 2018 – 2020) which were prepared based on Mission Statement of the Government of the Slovak Republic for 2016 – 2020. Apart from this support of oncological research, **two other projects have had complementary funding amounting to EUR 335,750 in total for 3 years via the Public Call for Applications** for Grants Under the Authority of the Ministry of Health of the Slovak Republic for Healthcare Research and Development, so-called **General Call 2019**.

All applications were evaluated by the expert Scientific Council of the Ministry of Health of the Slovak Republic, which is an advisory body to the Ministry in terms of research and development in healthcare (especially biomedicine) according to its statutes and Act No. 525/2010 Z.z. on Financial Subsidies within the authority of the MoH SR and consists of top domestic and international experts. **Due to the lack of funds, no new Ministry of Health of the Slovak Republic “ONKO Challenge” was not announced even in 2023** (4th Action Plan of the National Oncology Plan, Activity 10).

Biobanking, which represents a sophisticated, highly organized system of long-term storage of biological material with relevant clinical-pathological, epidemiological, and biomolecular information, **is also a prerequisite for high-quality oncological biomedical research and development**, including the acquisition of information about disease biomarkers and the discovery of new target molecules - the so-called targets in the development of innovative medicines. The absence of a biobank infrastructure limits the quality of biomedical research and development due to the lack of high-quality and vali-

dated samples of biological material, crucial for this type of research. This initiative in 2023 in oncology is reflected (new 4th Action Plan of the National Oncology Plan (Activity 9)) by the support of the Ministry of Health of the Slovak Republic / the Institute of Research and Development **in the amount of EUR 48,000 for the further development of the National Cancer Institute biobank**, which was continuously implemented in 2019. The strategy of financing from national sources creates synergy with two complementary projects aimed at building a national biobank at Jessenius Faculty of Medicine of the Comenius University in Martin titled “Systemic public research infrastructure - biobank for cancer and rare diseases” and “Creation of a digital biobank to support systemic public research infrastructure”, which are funded from European Structural and Investment Funds (ESIF) within the operational program: Integrated infrastructure (in the program period 2014 - 2020) **in a total amount of approximately EUR 29,600,000:**

1. Systemic public research infrastructure - biobank for cancer and rare diseases:
(<https://www.health.gov.sk/?Projekt-EU-biobanka>)
2. Creating a digital biobank to support systemic public research infrastructure
(<https://www.health.gov.sk/?Projekt-EU-digi-biobanka>)

The Ministry of Health of the Slovak Republic, through the Institute of Research and Development, together with the National Cancer Institute, is one of the key partners in these projects, the expected implementation of which will take place by the end of December 2024. As

part of the activities of the Ministry of Health of the Slovak Republic, through the Institute of Research and Development **was preparing Slovakia to join the pan-European biobank consortium BBMRI-ERIC (allocations have not yet been set aside) as well as the legislative amendment of Acts 576/2004 Z.z. and 578/2004 Z.z.** in the context of biobanking (changes based on ISO 20387:2023 and comments resulting from the meeting of the Working Group for Biobanking of the Office of the Government of the Slovak Republic were implemented).

The Ministry of Health of the Slovak Republic, through the **Institute of Research and Development as the manager of the domain of intelligent specialization 4: Healthy Society**, which is part of the strategic document of the updated RIS3 (so-called SK RIS3 2021+, approved by RVVTAI in November 2021), **identified research and development projects in oncology as one of the main topics within its 3 priority areas in the transformation maps of this domain, which are to be financed by EU Funds in the programming period 2021-2027 in the new EDP** (the so-called enterprise determination process).

Links:

Welcome – slovacrin.sk

Ministry of Health of the Slovak Republic (gov.sk)

We are fine-tuning the last details. The first national biobank is almost ready

The National Biobank in Martin will help to get to know cancer and rare diseases better

Visit to the Biobank with project partners

The biobank for cancer and rare diseases will soon be commissioned

The biobank for cancer and rare diseases will soon be commissioned

The 2023 Annual report drafted by SLOVACRIN

6.5. Missions in Horizon Europe

The Cancer mission, which is part of the Horizon Europe scheme, aims to unite countries with the aim of reducing the EU's cancer-related burden and improving patients' quality of life. The mission-based approach represents the integration of innovative approaches and research into public health, data sharing, digital policies, and citizen engagement. Together with Europe's beating Cancer Plan, the Cancer Mission aims to improve the lives of more than 3 million people by 2030 through prevention, treatment, and for those affected by cancer, including their families, to ensure longer and better survival.

Last year, Slovak Republic was actively involved in selected projects within the Cancer Mission. The National Oncology Institute and the Cancer Research Foundation have become part of the **ECHoS** (Establishing of Cancer Mission Hubs: Networks and Synergies) project, the aim of which is to support the activities of the Cancer Mission in all member states and associated countries through the establishment and development of the so-called National Cancer Mission Hubs. Their goal is to involve a wide range of stakeholders from the entire “oncological ecosystem”, from individual citizens to institutions from the public

and private sectors in joint initiatives and political dialogues about oncological diseases at the national, regional, and local levels. The joint integration into the European network of National Cancer Mission Hubs will ensure a coherent procedure, which will be in line with Europe's Beating Cancer Plan. The broad scope of ECHoS seeks to ensure that the dialogue on cancer and policy goes beyond research and innovation and health systems to include other relevant areas of control and support such as employment, education, and socio-economic aspects.

The Biomedical Research Center of the SAS participated in the CSA of the [4.UNCAN.eu](#) project in 2023, which served as a supplier output for the [UNCAN.eu](#) initiative with the final results of the project being presented at the end of 2023. The global ambition of the [UNCAN.eu](#) initiative is to achieve further progress in the understanding of cancer mechanisms with the aim of improving prevention, early diagnosis, and treatment, which will provide the basis for saving lives. The creation of a joint European center of distributed data in cancer research (European Federated Cancer Research data hub) should also serve this purpose. Another project from the Horizon Europe Cancer Mission program, in which the Biomedical Research Center of the SAS actively participated in 2023, was the **CCI4EU** (Comprehension Cancer Infrastructure for Europe) project. The aim of the project is to build capacities for member states and associated countries in an effort to support them in the improvement and development of existing or future comprehensive infrastructure important in solving the issue of oncological diseases and to help European countries develop their capacities in research and innovation.

In 2023, the Slovak Republic was also involved in the **CPW** (Cancer Prevention at Work) project, in which the Regional Public Health Office Banská Bystrica, F.D. Roosevelt Teaching Hospital with Polyclinic in Banská Bystrica and Železiarne Podbrezová are actively participating. CPW is an initiative that investigates the cost-effectiveness and societal aspects of including the prevention of oncological diseases associated with *Helicobacter pylori*, hepatitis C virus, and human papillomavirus (HPV) in current primary workplace health screening programs.

In April 2023, the European Commission announced 4 calls for cancer proposals under the Horizon Europe Mission on Cancer.

- Addressing poorly understood tumor-host interactions to enhance immune system-centered treatment and care interventions in childhood, adolescent, adult, and elderly cancer patients:** The aim of the call is to better understand the tumor process and the interactions between the tumor, the host, and the immune system that support the development and progression of the disease, including advanced and metastatic disease.
- Enhance primary cancer prevention through sustainable behavioral change:** The purpose of this call is to support projects aimed at the development, testing, and effective evaluation of innovative programs for the primary prevention of oncological diseases using new and digital solutions for different groups of the population.
- Pragmatic clinical trials on minimally invasive diagnostics:** Supported projects are to design and conduct randomized prag-

matic clinical trials for effective evidence-based mini-invasive diagnostic procedures, taking into account molecular characteristics, sex, age, and disease stage.

- Establish best practices and tools to improve the quality of life for childhood cancer patients, survivors, and their families in European regions:** The result is to increase the quality of life of pediatric cancer patients and their families through better supportive care, personalized approaches, and affordable digital tools.

6.6. Research and Development – Challenges for 2024

Research and Development: Prioritization for 2022 – 2025 (also in the context of the 4th Action Plan)

- Geographic prioritization** with the direct support of the Ministry of Health of the Slovak Republic and the Ministry of Education, Science, Research and Sport of the Slovak Republic
 - in university healthcare facilities in cooperation with faculties of medicine (Bratislava, Martin, Košice)
 - in specialized cancer healthcare facilities (NCI, NICD, SECI, ESIOI)
 - in research facilities (SAS, Comenius University Science Park in Bratislava, Biomed in Martin, Medipark in Košice, innovative micro, small, and medium enterprises (MSME) including start-ups, spin-offs, and others)

2. Prioritization according to diagnoses:

- based on society-wide severity in terms of incidence (breast cancer, prostate cancer, lung cancer, colorectal cancer)
- based on specific severity in Slovakia (pancreatic cancer)
- Based on a long tradition of research in the area (testicular cancer, CNS, malignant lymphomas)

3. Priority topics:

- innovative diagnostics
- innovative therapeutic products, processes, and methods
- Resistance to treatment
- quality of life after cancer treatment, including survivorship care for children and young adults

Other challenges:

- Broaden and strengthen international cooperation
- Implement the concept of clinical and translational research and its gradual implementation in real practice
- Continue supporting the creation of a functional infrastructure of academic clinical research in Slovakia in the form of systemic support for the coordination of clinical research directly in academic clinical trial centers
- Support science and research-related education
- Build a network of biobanks
- Participate in the European project EU4Health, CraNE-JA (Joint Action on EU Network of Comprehensive Cancer Centres), and the subsequent EUNetCCC implementation project

- Participate in the European EU4Health, JA-CanScreen project
- Participate in the European project Horizon Europe, ECHoS (Establishing Cancer of Mission Hubs: Networks and Synergies)

7. Accreditation of Study Programs and Education

7.1. Accreditation of the Clinical Oncology Study Program

Professional Guarantor of the Study Program

prof. Michal Mego, M.D., D.Sc.

Lecturers for theoretical subjects:

Silvia Capíková, M.Sc. et MSc., PhD.

Assoc. Prof. Ľuboš Drgoňa, M.D., PhD, MHA, FECMM

Eva Chandogová, M.D., PhD., MPH

Assoc. Prof. Michal Chovanec, M.D., PhD.

Peter Kasan, M.D.

Assoc. Prof. Jozef Mardiak, M.D., PhD.

Prof. Michal Mego, M.D., D.Sc.

Assoc. Prof. Eva Morovicsová, M.D., PhD., MPH

Prof. Dalibor Ondruš, M.D., D.Sc.

Assoc. Prof. Vojtech Ozorovský, M.D., PhD.

Tomáš Šálek, M.D.

Prof. Stanislav Špánik, M.D., PhD.

Jozef Šufliarsky, M.D., PhD.

Lecturers for practical subjects:

Assoc. Prof. Michal Chovanec, M.D., PhD.

Assoc. Prof. Ľuboš Drgoňa, M.D., PhD, MHA, FECMM

Milada Veselá, M.D.

Prof. Viera Lehotská, M.D., PhD.

Assoc. Prof. Jozef Mardiak, M.D., PhD.

Prof. Michal Mego, M.D., D.Sc.

Assoc. Prof. Patrik Palacka, JUDr., M.D. PhD., MPH, MBA, LL.M.

Margita Pobijáková, M.D., PhD.

Štefan Pörsök, M.D.

Jana Obertová, M.D., PhD.

Iveta Oravcová, M.D., PhD.

Assoc. Prof. Katarina Rejleková, M.D., PhD.

Tomáš Šálek, M.D.

Jozef Šufliarsky, M.D., PhD.

Andrej Vranovský, M.D., PhD.

Committee for Board-certification

Chair:

Prof. Michal Mego, M.D., D.Sc., FMCU Bratislava

Committee Members:

Assoc. Prof. Ľuboš Drgoňa, M.D., PhD., MHA, FECMM, FMCU Bratislava

Assoc. Prof. Michal Chovanec, M.D., PhD.

Assoc. Prof. Jozef Mardiak, M.D., PhD., FMCU Bratislava

Prof. Michal Mego, M.D., D.Sc., FMCU Bratislava

Prof. Dalibor Ondruš, M.D., D.Sc., FMCU Bratislava

Tomáš Šálek, M.D., NCI Bratislava

Prof. Stanislav Špánik, M.D., PhD., FMCU Bratislava

Jozef Šufliarsky, M.D., PhD., FMCU Bratislava

Assoc. Prof. Mária Wagnerová, M.D., PhD., ESOI Košice

7.1.1. List of Associate Professors and Professors of Oncology

Assoc. Prof. Ľuboš Drgoňa, M.D., PhD, MHA, FECMM

Assoc. Prof. Lýdia Heľpianska, M.D., PhD.

Assoc. Prof. Michal Chovanec, M.D., PhD.

Assoc. Prof. Jozef Mardiak, M.D., PhD.

Prof. Michal Mego, M.D., D.Sc.

Prof. Dalibor Ondruš, M.D., D.Sc.

Assoc. Prof. Patrik Palacka, JUDr., M.D. PhD., MPH, MBA, LL.M.

Assoc. Prof. Katarína Rejleková, M.D., PhD.

7.1.2. Board-certified Physicians in 2023

I/ 2023

Katarína Bahnová, M.D., F.D. Roosevelt Hospital Banská Bystrica

Mária Bohunčáková, née Bizeová, M.D., F.D. Roosevelt Hospital Banská Bystrica

Erika Bese Jóbová, M.D., Agel Hospital Komárno

Peter Ondrejko, M.D., Ľubovňa Hospital, NGO

Anna Remišová, M.D., University Hospital Bratislava

Júlia Slezáková, née Popálená, M.D., Rimavská Sobota Hospital

II/ 2023

Kristína Lepeyová, M.D. Hospital with Policlinic Topoľčany, Topoľčany

Daniela Madzinová, M.D. Hospital with Policlinic, Prešov

Alžbeta Kačeriaková, M.D., Teaching hospital, Martin

Zuzana Mináriková, M.D., NCI, Bratislava

7.1.3. Finished Post-graduate, Habilitation, and Inaugural Proceedings in 2023

Jozef Chovanec, M.D., PhD., NCI, Bratislava

Gabriela Chowaniecová, M.D., PhD., St. Svorad Specialised Hospital,

Zobor, Nitra

Ján Slopovský, M.D., PhD., NCI, Bratislava

Finished habilitation studies in the Oncology Specialty:

Assoc. Prof. Patrik Palacka, JUDr., M.D. PhD., MPH, MBA, LL.M., NCI,

Bratislava

Assoc. Prof. Katarína Rejleková, M.D. PhD., NCI, Bratislava

7.2. Accreditation of the Pediatric Hematology and Oncology Study Program

Professional Guarantor of the Study Program:

Prof. Alexandra Kolenová, M.D., PhD.

Lecturers for theoretical subjects:

Prof. Alexandra Kolenová, M.D., PhD.

Prof. Michal Mego, M.D., D.Sc.

Assoc. Prof. Martin Mistrík, M.D., PhD.

Lecturers for practical subjects:

Andrea Hrašková, M.D.

Assoc. Prof. Alexandra Kolenová, M.D., PhD.

Prof. Viera Lehotská, M.D., PhD.

Prof. Michal Mego, M.D., D.Sc.

Margita Pobijáková, M.D., PhD.

Judita Puškáčová, M.D., PhD.

Peter Švec, M.D., PhD.

Board-certified Physicians in 2023:

Jana Árvai, M.D., CTH Banská Bystrica

Lucia Žilinčanová, M.D., CTH Banská Bystrica

Finished Post-graduate, Habilitation, and Inaugural Proceedings in 2023

Sine

7.3. Accreditation of the Radiation Oncology Study Program

Radiation Oncology Clinic of the Faculty of Medicine of Comenius University and St. Elisabeth Cancer Institute provides postgraduate education in the field of Radiation Oncology. The Head of the Clinic, where Elena Bolješiková, M.D., PhD., Monika Šandorová, M.D., and Katarína Kozmonová - a specialist instructor work, has been Martin Chorváth, M.D., PhD., MPH, since 1st of July, 2021.

The structure of postgraduate education in EU member states should follow the document prepared by the European Union of Medical Specialists (UEMS). This document covers all aspects of the 5-year specialization training and knowledge verification and was also published in the journal "Radiotherapy and Oncology" in December 2019. The European Union of Medical Specialists has approved a new core curriculum for specialized training in Radiation Oncology.

Professional Guarantor of the Study Program:

Martin Chorváth, M.D., PhD., MPH

Lecturers for theoretical subjects:

Elena Bolješiková, M.D., PhD.

Jozef Greždo, M.Sc., PhD.

Branislav Bystrický, M.D., PhD., MPH

Dr. Igor Doboš, JUDr., PhD., MBA

Assoc. Prof. Pavol Dubinský, M.D., PhD., MHA

Martin Chorváth, M.D., PhD., MPH

Dr. Pavol Kádek, PhD.

Dr. Karol Kleimann, PhD.

Andrea Ligačová, M.D.

Pavol Lukačko, M.D.

Dr. Zuzana Mičková, PhD.

Monika Šándorová, M.D.

Prof. Stanislav Špánik, M.D., PhD.

Monika Švantnerová, M.D.

Martina Vorobjov, M.D.

Lecturers for practical subjects:

Elena Bolješiková, M.D., PhD.

Jozef Greždo, M.Sc., PhD.

Martin Chorváth, M.D., PhD., MPH

Andrea Ligačová, M.D.

Pavol Lukačko, M.D.

Margita Pobjaková, M.D., PhD.

Monika Šándorová, M.D.

Monika Švantnerová, M.D.

Martina Vorobjov, M.D.

Committee for Board-certification

Chair:

Martin Chorváth, M.D., PhD., MPH

Members:

Elena Bolješiková, M.D., PhD.

Jozef Greždo, M.Sc., PhD.

Monika Šándorová, M.D.

Prof. Stanislav Špánik, M.D., PhD.

Board-certified Physicians in 2023:

Miroslava Oravcová, M.D., CMMH SNP HwP Ružomberok

7.4. Specialization in Palliative Medicine

Specialization in Palliative Medicine is done at the Slovak Medical University in Bratislava, and the teaching base is the Department of Clinical Oncology F – Palliative Medicine at the 1 Oncology Clinic of the Faculty of Medicine of Comenius University and National Cancer Institute. The department had been led by Kristína Križanová, M.D., since its establishment until January 1st, 2019, when she was replaced

by Andrea Škripeková, M.D., PhD. The pedagogic team at the department got a new member in 2021, Peter Stachura, M.D., as well as one in 2022, Lucia Dzurillová, M.D.

The specialization course begins with an academic year according to the study plan. It consists of both theory and practice; most of the education is practical. The specialization course is finished by an exam in front of a commission, which includes a Thesis defense. As of 2022, the written thesis comprises of preparing 10 casuistics. In 2021 and 2022, we proposed a change in the minimum standard and an expansion of medical specializations, which can be followed by a specialization study in the specialist field of palliative medicine.

Education in palliative medicine at the Department of Palliative Medicine should be based on three principles:

1. High-quality theoretical education

A 4- to 5-day certification course in three modules is held twice a year. The modules are defined in the time-thematic plan, which is part of the department's accreditation.

2. Mentoring during practical education

Mentoring during practical education. It consists of an individual approach to individual case studies, considering the personality, particularity, and autonomy of the patient as a human being in a serious clinical situation where death is a medically relevant outcome of the given clinical situation. It creates a symbiosis with high demands on medical honesty and the provision of medical information to patients and their relatives. It determines the boundaries between medical and ethical decision-making in dif-

ficult clinical situations. It takes into account a multi-professional approach when, after physical difficulties have been alleviated, other domains of human suffering are revealed (existential, social, spiritual distress, etc.), and thus a team cooperation of health workers and helping professions (psychologist, nutritional therapist, spiritual, special or healing pedagogue, etc.).

3. Creating a community environment for specialists with the aim of knowledge and experience sharing

The lead idea is to ensure a multidisciplinary approach to the patient throughout their treatment.

With the adoption of legislative changes in Slovakia and a change in the emphasis on the need to implement palliative care into the health system in the perception of political elites and the Ministry of Health of the Slovak Republic, we anticipate an increase in interest in this specialization. However, due to the implementation problems of the legal changes, it is not possible to assume that the increase will be similar to that in Germany. So far, 27 physicians have passed the specialization exam, while in 2022, a record-breaking 8 physicians were certified. In 2023, a further 5 physicians were certified. In the course of 2022, 24 physicians were enrolled in the specialization, that is, 66 physicians are still enrolled. However, only a part of the 32 certified physicians work in the health system, mainly due to the situation and payment conditions for palliative care.

Due to the understaffing of physicians in palliative medicine, a transitional period (until the end of 2026) was adopted to support palliative medicine through these legislative changes, during which

a physician enrolled in training in the specialized field of palliative medicine can provide specialized palliative health care.

	Specialization study graduates	Enrolled specialization study participants
2016	0	5
2017	1	5
2018	1	5
2019	2	12
2020	0	3
2021	5	3
2022	8	9
2023	5	24

Mandatory elective classes

From the summer semester of the 2023/2024 academic year, a one-semester mandatory optional class (hereinafter referred to as MCC) titled “Introduction to Palliative Medicine” was introduced at the II. The Oncology Clinic of the Faculty of Medicine of the Come-

nus University and NCI for students of the 4th and 5th year of the Faculty of Medicine of the Comenius University (both in the Slovak and English study programs). The teaching will consist of a theoretical part, where the basic principles, procedures, and situations in Palliative Medicine will be covered, after passing the theoretical part, practical teaching will follow at the Department of Clinical Oncology F (Department of Palliative Medicine) within the II. Oncology Clinic of the Faculty of Medicine of Comenius University in Bratislava and NCI. The emergence of this MCC was due to an increasing interest in palliative medicine on the part of the students of the Faculty of Medicine, as well as the objective need to bring knowledge about palliative medicine to students. A total of 50 students are registered for the MCC in the summer semester of the 2023/2024 academic year. Education within the MCC is covered by Andrea Škripeková, M.D., PhD., Head of the Department of Clinical Oncology F (Department of Palliative Medicine) within the II. Oncology Clinic of the Faculty of Medicine of Comenius University in Bratislava and NCI.

7.5. Education

7.5.1. Domestic Expert Events supervised by SOS, SSRO, Slovak Society of Hematology, and LySK in 2023:

Date	Event	Place
3. 2. – 4. 2. 2023	Current Developments in Hematology	Bratislava
9. 2. – 10. 2. 2023	4th Slovak Head and Neck Tumor Cooperative Group Conference	Jánošík Hotel, Liptovský Mikuláš
8. 4. – 9. 4. 2023	XXV. meeting of pediatric hematologists, transfusiologists, and oncologists	Bratislava
23. 6. 2023	15th annual ASCO news	Park Inn Hotel, Bratislava
3. 3. 2023	The importance of spirituality with patients	National Cancer Institute, Bratislava
7. 3. 2023	Patient-centric continuum of scientific research	CVTI SR, Bratislava / ONLINE
31. 3. – 1. 4. 2023	18th Lymphoma Forum 2023	Park Inn by Radisson Danube, Bratislava / ONLINE
27. 4. – 28. 4. 2023	Workshop related to oncological clinical trials	National Cancer Institute, Bratislava
25. 5. – 26. 5. 2023	28th International Work Conference – SEKCAMA SOS SLS	Bratislava Hotel, Bratislava
14. 6. – 16. 6. 2023	Bardejov Oncology Day 2023	Bardejov spa
21. 9. – 23. 9. 2023	Banská Bystrica Hematology and Transfusiology days (BBHaTD)	Banská Bystrica
21. 9. – 23. 9. 2023	19th Young Oncologist Days	Grandhotel Praha, Tatranská Lomnica
4. 10. – 6. 10. 2023	LX. Bratislava Oncology Days	Saffron Hotel, Bratislava
6. 10. – 7. 10. 2023	VII. Oncohaematology controversies	Trenčín
19. 10. 2023	Statistical audit of Mammography screening experience for 2022	MoH SR, Bratislava
8. 11. 2023	Conversation about Oncological Critical Care - Focus on Testicular Cancer Patients	National Cancer Institute, Bratislava
10. 11. 2023	7. Slovak Palliative Medicine conference	Senec Hotel, Slnečné jazerá – north, Senec
8. 12. 2023	Oncopathology biennale	National Cancer Institute, Bratislava
15. 12. 2023	Stakeholder Forum in Slovakia under the auspices of the President of the Slovak Republic	MoH SR, Bratislava

7.5.2. Selected International Events in 2023:

Date	Event	Place
19. 1. – 21. 1. 2023	ASCO Gastrointestinal Cancer Symposium	San Francisco, USA
25. 1. – 27. 1. 2023	14. Prague Interdisciplinary Oncology Colloquium	Prague, Czech Republic
16. 2. – 18. 2. 2023	ASCO Genitourinary Cancer Symposium	San Francisco, USA
10. 3. – 13. 3. 2023	EAU 2023	Milan, Italy
30. 3. – 1. 4. 2023	XXVII. South Czechia Oncology Days 2022	Jízdárna, Český Krumlov
23. 4. – 26. 4. 2023	EBMT Annual Meeting 2023	Paris, France
2. 6. – 6. 6. 2023	ASCO Annual Meeting	Chicago, USA
8. 6. – 11. 6. 2023	EHA2023 Congress	Frankfurt, Germany
9. 9. – 12. 9. 2023	World Lung Cancer Conference	Singapore
20. 10. – 24. 10. 2023	ESMO Annual Meeting 2023	Madrid, Spain
1. 11. – 3. 11. 2023	46th Annual Brno Oncology Days	Brno, Czech Republic
15. 11. – 16. 11. 2023	European Cancer Summit 2023	Brussels / ONLINE
5. 12. – 9. 12. 2023	San Antonio Breast Cancer Symposium (SABCS)	San Antonio, USA
5. 12. – 6. 12. 2023	7th PREVON conference	Don Giovanni HOTEL, Prague, Czech Republic
9. 12. – 12. 12. 2023	Annual American Society of Hematology (ASH) Conference	San Diego, USA / ONLINE

7.5.3. Domestic and International Expert Events in Pediatric Oncology in 2023:

Date	Event
16. 1. - 17. 1. 2023	Meeting of the ALL International Leukemia Group
20. 1. - 21. 1. 2023	Seminar of the Transplantation unit KDHO Bratislava - Prague
24. 1. 2023	CHOP, USA / ONLINE videoconference
12. 2. 2023	ALL/AEIO/BFM centers ONLINE meeting
13. 3. - 15. 3. 2023	Seminar: Palliative care, Senec
31. 3. 2023	Slovak Pediatric Hematology, Oncology, and Transfusiology meeting, Bratislava
24. 4. - 26. 4. 2023	Employee education Senec - Basal Stimulation – 2nd Advanced course
April 2023	Blastshow seminar
23. 4. - 26. 4. 2023	EBMT, Paris, France
8. 5. - 12. 5. 2023	SIOP Europe conference, Valencia, Spain
15. 5. - 16. 5. 2023	Central Eastern Europe Workshop with CHOP USA, Bratislava
1. 6. - 3. 6. 2023	CLEAR, meeting – acute toxicity at ALL, Copenhagen, Denmark
16. 6. - 18. 6. 2023	Midsummer Meeting, Poland
21. 6. - 23. 6. 2023	Renal tumour group, Wroclaw, Poland
20. 9. - 22. 9. 2023	29. th PanCare meeting
19. 10. - 21. 10. 2023	Czechoslovak conference of pediatric oncologists and hematologists, Ostrava, Czech Republic
11. 10. - 15. 10. 2023	SIOP, Ottawa, Canada
December 2023	ASH, USA
January, March, June, October, December 2023	CHOP, USA / ONLINE videoconference

7.5.4. Other Opportunities for Education

Masterclass in Clinical Oncology

Approximately 60 participants, a free interactive workshop about clinical oncology, and an overview of oncology lectured by world-renowned experts; participants must send their CV, motivation letter, case study, and recommendation from their supervisor; travel expenses are not reimbursed.

More information at: www.eso.net

ESMO Masterclass

approximately 40 participants, focused on traditional research

More information at: www.esmo.org

Methods in Clinical Cancer Research (previously Flims Protocol Development Workshop)

approximately 80 participants, a paid workshop focused on clinical research in oncology; participants must send their CV, motivation letter, protocol proposal, and recommendation from their supervisor; travel expenses are included in the registration fee

www.event.eortc.org, www.esmo.org

Salzburg Oncology Seminar

one-week-long oncology seminar; participants must send their CV, motivation letter, and recommendation from their supervisor

www.nos.sk

ESMO fellowships

applications can be sent several times per year for fellowships of different durations and focus. More information at: www.esmo.org

UICC fellowships

applications can be sent several times per year for fellowships of different durations and focus

www.uicc.org/what-we-do/capacity-building/grants/fellowships

NOI grant

intended for short-term fellowships abroad; calls are open twice a year (January-March, June-August), grants are awarded in a competition based on evaluation by independent NOI Scientific Council; applicants must send a motivation letter, CV, recommendation from their home institution, and acceptance letter from the receiving institution with specified dates when the fellowship will take place

NOI grants | www.noisk.sk

Education in Oncohematology

Slovak hematology portal (www.hematology.sk)

www.lyfo.sk, www.lysk.sk

Education and Radiation Oncology

There are now more ESTRO courses offered, covering several aspects of radiation oncology, most of the specialization curriculum, and representing an important source of information for CME. ESTRO website offers a few dozen courses, mainly online, for the time being, link: ESTRO - School

7.6. Challenges for 2024

7.6.1. Planned Domestic Expert Events supervised by SOS and SSRO in 2024:

Date	Event	Place
31. 1. – 1. 2. 2024	Current Topics in Hematology	Bratislava
8. 2. – 9. 2. 2024	5th conference of the Slovak Head and Neck Cancer Cooperative Group	Jánošík Hotel, Liptovský Mikuláš
9. 2. – 11. 2. 2024	15th annual Young Hematologists	Dolný Kubín
22. 3. – 23. 3. 2024	19th Lymphoma Forum 2024	Park Inn by Radisson Danube, Bratislava
12. 4. 2024	XXVI. meeting of Pediatric hematologists, Transfusiologists, and Oncologists	Bratislava
26. 4. – 28. 4. 2024	State of Art in oncology, 1st year	Grandhotel Starý Smokovec
15. 5. 2024	Workshop Entry to SBRT era	Bory Hospital – Penta Hospitals Bratislava
16. 5. – 17. 5. 2024	6th Conference of the Slovak Radiation Oncology Society	Saffron Hotel, Bratislava
23. 5. – 24. 5. 2024	29th International Conference – SEKCAMA SOS SLS	Lindner Hotel Bratislava
7. 6. – 8. 6. 2024	Banská Bystrica Oncology Days 2024	Sitno Hotel, Vyhne

21. 6. 2024	16th ASCO news	Park Inn Hotel, Bratislava
19. 9. – 21. 9. 2024	20th Young Oncologist Days	Grandhotel Praha, Tatranská Lomnica
2. 10. – 4. 10. 2024	LXI. Bratislava Oncology Days	Saffron Hotel, Bratislava
2. 10. 2024	XXXIV. National Oncology Nurses	Saffron Hotel, Bratislava
24. 10. – 26. 10. 2024	Slovak Hematology and Transfusiology days	Bratislava
14. 11. – 15. 11. 2024	1 st Congress of Section for Lung Cancer	Tenis Hotel, Zvolen

7.6.2. Planned International Events in 2024:

Date	Event	Place
18. 1. – 20. 1. 2024	ASCO Gastrointestinal Cancer Symposium	San Francisco, USA
24. 1. – 26. 1. 2024	15th Prague Interdisciplinary Oncology Colloquium	Prague, Czech Republic
25. 1. – 27. 1. 2024	ASCO Genitourinary Cancer Symposium	San Francisco, USA
4. 4. 2024	8th PREVON conference	Praha, Benedictine abbey of the Virgin Mary and St. Hieronymus in Emmaus
5. 4. – 8. 4. 2024	EAU 2024	Paris, France

14. 4. – 17. 4. 2024	EBMT Annual Meeting 2024	Glasgow, UK
24. 4. – 26. 4. 2024	XXIX. South Czechia Oncology Days	Český Krumlov castle staples, Czech Republic
3. 5. – 7. 5. 2024	ESTRO 2024	Glasgow, UK
13. 6. – 16. 6. 2024	EHA2024 Hybrid Congress	Madrid, Spain
31. 5. – 4. 6. 2024	ASCO Annual Meeting	Chicago, USA
7. 9. – 10. 9. 2024	World Lung Cancer Conference	San Diego, USA
13. 9. – 17. 9. 2024	ESMO Congress 2024	Barcelona, Spain
29. 9. – 2. 10. 2024	ASTRO 2024	Washington D.C., USA
23. 10. – 25. 10. 2024	47 th Brno Oncology Days	Brno, Czech Republic
20.-21.11.2024	European Cancer Summit 2023	Brussels, Belgium
7. 10. – 10. 12. 2024	Annual American Society of Hematology (ASH) Conference	San Diego, USA

7.6.3. Planned Domestic and International Expert Events in Pediatric Oncology in 2024:

Date	Event
29. 1. – 31. 1. 2024	ALL International Leukemia Working Group Meeting
12. 1. – 13. 1. 2024	Transplantation unit of KDHO Bratislava – Prague seminar
17. 1. a 20. 3. 2024	CHOP videoconference, USA/ONLINE
7. 3. – 8. 3. 2024	ESPERO course, communication in demanding situations, Senec
13. 3. – 15. 3. 2024	Advances in pediatric oncology seminar, Senec
12. 4. 2024	Slovak Conference of Pediatric Haematologists, Oncologists, and Transfusologist
22. 4. – 24. 4. 2024	Personnel education – How not to burn out and improve one's resilience
1x monthly 2024	Neurooncologist Board Leukemia Board
14. 4. – 17. 4. 2024	EBMT, Glasgow
13. 5. – 17. 5. 2024	SIOP Europe Conference, Milan, Italy
jún 2024	Midsummer Meeting, Poland
október 2024	Czech – Slovak Pediatric Oncologists and Hematologists conference, Olomouc, Czech Republic
17. 10. – 20. 10. 2024	SIOP, Honolulu, Hawaii
december 2024	ASH, San Diego, USA

8. Publication Activity in 2023

8.1. In extenso Publications in Foreign Journals with Impact Factor

	Publications <i>in extenso</i>	Abstracts at international conferences
Genitourinary malignancies	10	5
Breast cancer	3	0
Hematologic malignancies	4	0
Lung malignancies	1	0
Others	7	1
Gastrointestinal malignancies	4	1

Publications in Foreign Journals Registered in Pubmed/ Medline Database

Clinical oncologist	First / last author	Co-author	Total
Andrašina I	0	2	2
Bystrický B	1	2	3
Chovanec M	2	7	9
Chovanec J Sr	0	2	2
De Angelis V	0	2	2
Drgoňa Ľ	1	5	6
Leško P	2	1	3
Mardiak J	0	2	2
Mego M	8	6	14
Miškovičová M	0	2	2
Obertová J	0	3	3
Országhová Z	0	3	3
Palacka P	0	2	2
Pindák D	0	2	2
Rejleková K	0	3	3
Syčová-Milá Z	0	2	2

*Author/co-author of at least 2 papers

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- Antonelli L, Ardizzone D, Ravi P, Bagrodia A, Mego M, Daneshmand S, Nicolai N, Nazzani S, Giannatempo P, Franza A, Heidenreich A, Paffenholz P, Saoud R, Eggener S, Ho M, Oswald N, Olson K, Tryakin A, Fedyanin M, Naoun N, Javaud C, Fizazi K, King JM, Adra N, Douglawi A, Cary C, Sweeney C, Fankhauser CD. Risk of residual cancer after complete response following first-line chemotherapy in men with metastatic non-seminomatous germ cell tumour and International Germ Cell Cancer Cooperative Group intermediate/poor prognosis: A multi-institutional retrospective cohort study. *Eur J Cancer*. 2023 Mar;182:144-154. doi: 10.1016/j.ejca.2022.12.032. Epub 2023 Jan 20. PMID: 36787661. IF 8.4
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Abstracts from conferences published in foreign journals with impact factor

1. Chovanec, M., A. Mlcakova, Z. Sestakova, K. Kalavska, J. Obertova, P. Palacka, K. Rejlekova, Z. Sycova, V. D. Angelis, Z. Orszaghova, P.

Lesko, K. Sekaninova, D. Svetlovska, B. Mladosevicova, J. Mardiak and M. Mego (2023). „Peripheral blood immune cell profiling in survivors of testicular germ cell tumors.“ *Journal of Clinical Oncology* 41(6_suppl): 417-417.

2. Chovanec, M., K. Kalavska, J. Obertova, P. Palacka, K. Rejlekova, Z. Sycova-Mila, V. D. Angelis, Z. Orszaghova, P. Lesko, D. Svetlovska, B. Mladosevicova, J. Mardiak, B. Vlkova, M. Pastorek, P. Celec and M. Mego (2023). „Chemotherapy induced peripheral neuropathy (CIPN) and biomarkers of gut microbial translocation in long-term survivors of testicular germ cell tumors.“ *Journal of Clinical Oncology* 41(16_suppl): e17032-e17032
3. Lesko, P., B. Vlkova, K. Kalavska, V. D. Angelis, J. Obertova, Z. Orszaghova, P. Palacka, K. Rejlekova, Z. Sycova-Mila, J. Mardiak, M. Chovanec, P. Celec, V. Miskovska and M. Mego (2023). „Association of plasma vitamin D with outcomes in patients with germ cell tumour.“ *Journal of Clinical Oncology* 41(6_suppl): 429-429.
4. Mego, M., R. Danis, J. Chovanec, S. Jurisova, B. Bystricky, S. Porsok, P. Konkolovsky, V. Vaclav, M. Wagnerova, M. Stresko, B. Brezinova, M. Reckova, D. Sutekova, N. Pazderova, M. Novisedlakova, E. Zomborska, S. Ciernikova, D. Svetlovska and L. Drgona (2023). „Randomized double-blind, placebo-controlled multicenter phase III study of prevention of irinotecan-induced diarrhea by a probiotic mixture containing Bifidobacterium, BB-12 and Lactobacillus rhamnosus, LGG in colorectal cancer patients: The Probio SK

006-Slovak cooperative oncology group trial.“ *Journal of Clinical Oncology* 41(16_suppl): e24109-e24109.

5. Palacka, P., E. Svastova, L. Csaderova, M. Chovanec, K. Rejlekova, J. Obertova, P. Lesko, Z. Orszaghova, V. D. Angelis, J. Slopovsky, A. Holickova, J. Roska, E. Orasova, B. Nociar, M. Mego, J. Mardiak and M. Chovanec (2023). „Identification of prognostic biomarkers in plasma of patients with metastatic urothelial carcinoma (mUC)“ *Journal of Clinical Oncology* 41(16_suppl): e16564-e16564.
6. Rejlekova, K., P. Celec, B. Vlkova, K. Kalavska, N. Hapakova, M. Makovnik, M. Chovanec, V. D. Angelis, J. Obertova, P. Palacka, Z. Sycova-Mila, J. Mardiak and M. Mego (2023). „Prognostic value of circulating cell-free DNA in association with choriocarcinoma syndrome development in patients with germ cell tumors.“ *Journal of Clinical Oncology* 41(6_suppl): 424-424.
7. Slopovsky, J., S. Cingelova, A. Svobodova, L. Skokanova-Krempaska, K. Rejlekova, R. Babela, L. Drgona, M. Mego, M. Vulganova, J. Pechan and P. Palacka (2023). „Efficacy of BNT162b2 vaccine and its correlation with serum vitamin D in staff at the national comprehensive cancer center in slovakia.“ *Journal of Clinical Oncology* 41(16_suppl): e24037-e24037.

8.2. In extenso Publications in Foreign Journals – Pediatric Oncology/Hematology

	<i>in extenso</i> publications	Abstracts at international conferences
Pediatric Oncology / Hematology	7	21

Publications in foreign journals registered in Pubmed/ Medline database

Pediatric Oncologist / Hematologist*	First / last author	Co-author	Total
Kolenová A	1	5	6

*Author/co-author of at least 2 papers

1. Campbell M, Kiss C, Zimmermann M, Riccheri C, Kowalczyk J, Felice MS, Kuzmanovic M, Kovacs G, Kosmidis H, Gonzalez A, Bilic E, Castillo L, Kolenova A, Jazbec J, Popa A, Konstantinov D, Kappelmayer J, Szczepanski T, Dworzak M, Buldini B, Gaipa G, Marinov N, Rossi J, Nagy A, Gaspar I, Stary J, Schrappe M. Childhood Acute Lymphoblastic Leukemia: Results of the Randomized Acute Lymphoblastic Leukemia Intercontinental-Berlin-Frankfurt-Münster 2009 Trial. *J Clin Oncol.* 2023; 41(19):3499-3511. doi: 10.1200/JCO.22.01760. PMID: 37141547. IF 45,4
2. Förster A, Davenport C, Duployez N, Erlacher M, Ferster A, Fitzgibbon J, Göhring G, Hasle H, Jongmans MC, Kolenova A, Kronnie G,

Lammens T, Mecucci C, Mlynarski W, Niemeyer CM, Sole F, Szczepanski T, Waanders E, Biondi A, Wlodarski M, Schlegelberger B, Ripperger T. European standard clinical practice - Key issues for the medical care of individuals with familial leukemia. *Eur J Med Genet.* 2023; 66(4):104727. doi: 10.1016/j.ejmg.2023.104727. PMID: 36775010. IF 1,9

3. Füssiová M, Švec P, Horáková J, Sedláček P, Rohoň P, Celec P, Boďová I, Adamčáková J, Sýkora T, Dobšinská V, Pozdechová M, Dóczyová D, Vargová S, Kolenová A. The Importance of New EBMT Criteria on the Diagnosis of Venous-Occlusive Liver Disease in Children. *J Clin Med.* 2023; 12(3):826. doi: 10.3390/jcm12030826. PMID: 36769475; PMCID: PMC9918163. IF 3,9
4. Kalmykova A, Mosaieby E, Kacerovská D, Baranovska-Andrigo V, Martínek P, Smahová S, Michal M, Michal M. MITE::CREM-rearranged tumor: a novel group of cutaneous tumors with melanocytic differentiation. *Virchows Arch.* 2023 Oct;483(4):569-575. doi: 10.1007/s00428-023-03621-7. Epub 2023 Aug 8. PMID: 37550584. IF 3,5
5. Raghuram N, Hasegawa D, Nakashima K, Rahman S, Antoniou E, Skajaa T, Merli P, Verma A, Rabin KR, Aftandilian C, Kotecha RS, Cheuk D, Jahnukainen K, Kolenova A, Balwierz W, Norton A, O'Brien M, Cellot S, Chopek A, Arad-Cohen N, Goemans B, Rojas-Vasquez M, Ariffin H, Bartram J, Kolb EA, Locatelli F, Klusmann JH, Hasle H, McGuire B, Hasnain A, Sung L, Hitzler J. Survival outcomes of children with relapsed or refractory myeloid

leukemia associated with Down syndrome. *Blood Adv.* 2023 Nov 14;7(21):6532-6539. doi: 10.1182/bloodadvances.2022009381. PMID: 36735769; PMCID: PMC10632607. IF7,6

6. Salek M, Mueller A, Alanbousi I, Cepowska Z, Dutkiewicz M, Earl J, Evseev D, Kizyma R, Kliuchkivska K, Kolodrubiec J, Matczak K, Nogovitsyna Y, Oszer A, Pogorelyy M, Raciborska A, Rasul S, Sokolowski I, Sopilnyak A, Vinitsky A, Wlodarski MW, Wobst N, Yakimkova T, Rodriguez-Galindo C, Wise PH, Mlynarski W, Agulnik A; SAFER Ukraine Collaborative. Development of a centralised triage centre for children with cancer and blood disorders in response to the humanitarian crisis in Ukraine. *Lancet Oncol.* 2023 Dec;24(12):1315-1318. doi: 10.1016/S1470-2045(23)00456-4. PMID: 38039989. IF51,1
7. Sardzikova S, Andrijkova K, Svec P, Beke G, Klucar L, Minarik G, Bielik V, Kolenova A, Soltys K. High Diversity but Monodominance of Multidrug-Resistant Bacteria in Immunocompromised Pediatric Patients with Acute Lymphoblastic Leukemia Developing GVHD Are Not Associated with Changes in Gut Mycobiome. *Antibiotics (Basel).* 2023 Nov 27;12(12):1667. doi: 10.3390/antibiotics12121667. PMID: 38136701; PMCID: PMC10740403. IF 4,8

8.3. Publication Activities of BMC SAS in Oncology in 2023

Scientific monographs published in national publishing houses

1. ČIERNIKOVÁ, Soňa - MEGO, Michal. Targeting the gut microbiome in cancer treatment. Reviewers: T. Buchler, P. Fedoročko, M. Wagnerová. Bratislava: Comenius University, 2023. 65 s. Available: https://stella.uniba.sk/texty/LF_CM_crevny_mikrobiom_liecba_onkolog.pdf. ISBN 978-80-223-5614-5

Chapters in scientific monographs published in foreign publishing houses

2. BUJŇÁKOVÁ MLYNARČÍKOVÁ, Alžbeta - SCSUKOVÁ, Soňa. The Role of the Environment in Hormone-Related Cancers. In *Environmental Endocrinology and Endocrine Disruptors : Endocrine and Endocrine-targeted Actions and Related Human Diseases.* - Switzerland AG : Springer Nature, 2023, s. ISBN 978-3-030-39043-3. ISSN 2510-1927. Dostupné: https://link.springer.com/referenceworkentry/10.1007/978-3-030-38366-4_17-1

College school books published in national publishing houses

1. MLADOSIEVIČOVÁ, Beata - ČIERNIKOVÁ, Soňa - MEGO, Michal. Molekulové mechanizmy patogenézy nádorov. Recenzenti: I. Tonhajzerová, Ľ. Harvanová. 3. dopln. a preprac. vyd. Bratislava : Univerzita Komenského, 2023. 98 s. Dostupné: https://www.fmed.uniba.sk/fileadmin/lf/sluzby/akademicka_kniznica/PDF/Elektro-nicke_knihy_LF_UK/Mladosievicova_-_Molekulove_mechanizmy_-_ONLINE.pdf. ISBN 978-80-223-5675-6

Scientific papers in foreign current content journals with impact factor

1. AMIRI, Ali - KRUMPOLEC, Patrik - MEGO, Michal - UKROPCOVÁ, Barbara - CHOVANEC, Michal - UKROPEC, Jozef**. Habitual physical activity modulates cardiometabolic health in long-term testicular cancer survivors. In Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer, 2023, vol. 31, no. 9, art. no. 539. (2022: 3.1 - IF, Q1 - JCR, 0.984 - SJR, Q2 - SJR). ISSN 0941-4355. Dostupné: <https://doi.org/10.1007/s00520-023-08000-1>
2. ANNUŠOVÁ, Adriana** - LABUDOVIČOVÁ, Martina - TRUCHAN, Daniel - HEGEDŮŠOVÁ, Veronika - ŠVAJDLENKOVÁ, Helena - MIČUŠÍK, Matej - KOTLÁR, Mário - PRIBUSOVÁ SLUŠNÁ, Lenka - HULMAN,

Martin - SALEHTASH, Farnoush - KÁLOSI, Anna - CSÁDEROVÁ, Lucia - ŠVASTOVÁ, Eliška - ŠIFFALOVÍČ, Peter - JERGEL, Matej - PASTOREKOVÁ, Silvia - MAJKOVÁ, Eva. Selective Tumor Hypoxia Targeting Using M75 Antibody Conjugated Photothermally Active MoOx Nanoparticles. In ACS Omega, 2023, vol. 8, no. 47, p. 44497-44513. (2022: 4.1 - IF, Q2 - JCR, 0.694 - SJR, Q1 - SJR). ISSN 2470-1343. Dostupné: <https://doi.org/10.1021/acsomega.3c01934>

3. ČERNÁČKOVÁ, Alena - TILLINGER, Andrej - BIZIK, Jozef - MRAVEC, Boris - HORVÁTHOVÁ, Ľubica. Dynamics of cachexia-associated inflammatory changes in the brain accompanying intra-abdominal fibrosarcoma growth in Wistar rats. In Journal of Neuroimmunology, 2023, vol. 376, art. no. 578033. (2022: 3.3 - IF, Q3 - JCR, 0.919 - SJR, Q2 - SJR). ISSN 0165-5728. Dostupné: <https://doi.org/10.1016/j.jneuroim.2023.578033>
4. ČIERNIKOVÁ, Soňa** - ŠEVČÍKOVÁ, Aneta - ŠTEVURKOVÁ, Viola - MEGO, Michal. Diet-driven microbiome changes and physical activity in cancer patients. In Frontiers in Nutrition, 2023, vol. 10, art. no. 1285516. (2022: 5.0 - IF, Q2 - JCR, 0.875 - SJR, Q1 - SJR). ISSN 2296-861X. Dostupné: <https://doi.org/10.3389/fnut.2023.1285516>
5. ČIERNIKOVÁ, Soňa** - ŠEVČÍKOVÁ, Aneta - DRGOŇA, Ľuboš - MEGO, Michal. Modulating the gut microbiota by probiotics, prebiotics, postbiotics, and fecal microbiota transplantation: An emerging trend in cancer patient care. In Biochimica et Biophysica Acta. Reviews on Cancer, 2023, vol. 1878, no. 6, art. no. 188990. (2022: 11.2

- IF, Q1 - JCR, 2.657 - SJR, Q1 - SJR). ISSN 0304-419X. Dostupné: <https://doi.org/10.1016/j.bbcan.2023.188990>

6. DURDÍK, Matúš* - MARKOVÁ, Eva* - KOŠÍK, Pavol - VIGAŠOVÁ, Katarína - GULATI, Sachin - JAKL, Lukáš - VROBELOVÁ, Katarína - FEKETE, Marta - ZAVACKÁ, I. - POBIJAKOVÁ, Margita - DOLINSKÁ, Zuzana - BELYAEV, Igor. Assessment of Individual Radiosensitivity in Breast Cancer Patients Using a Combination of Biomolecular Markers. In Biomedicines, 2023, vol. 11, no. 4, p. 1122. (2022: 4.7 - IF, Q1 - JCR, 0.897 - SJR, Q1 - SJR). ISSN 2227-9059. Dostupné: <https://doi.org/10.3390/biomedicines11041122>
7. CHALOVIČOVÁ, Petra - ŤAŽKÝ, Anton - ŠKULTÉTY, Ľudovít - MINICHOVÁ, Lenka - CHOVANEC, Michal - ČIERNIKOVÁ, Soňa - MIKUŠ, Peter - PIEŠŤANSKÝ, Juraj**. Determination of short-chain fatty acids as putative biomarkers of cancer diseases by modern analytical strategies and tools: a review. In Frontiers in Oncology, 2023, vol. 13, 27 June, art.no 1110235. (2022: 4.7 - IF, Q2 - JCR, 1.138 - SJR, Q2 - SJR). ISSN 2234-943X. Dostupné: <https://doi.org/10.3389/fonc.2023.1110235>
8. CHOLUJOVÁ, Dana - BEKE, Gábor - HUNTER, Zachary R. - HIDESHIMA, Teru - FLORES, Ludmila - ZELENIKOVA, Tatiana - HARRACHOVA, Denisa - KLÚČÁR, Ľuboš - LEIBA, Merav - DRGOŇA, Ľuboš - TREON, Steven P. - KASTRITIS, Efstathios - DORFMAN, David M. - ANDERSON, Kenneth C. - JAKUBÍKOVÁ, Jana**. Dysfunctions of innate and adaptive immune tumor mi-

croenvironment in Waldenström macroglobulinemia. In International Journal of Cancer, 2023, vol. 152, no. 9, p. 1947-1963. (2022: 6.4 - IF, Q1 - JCR, 2.259 - SJR, Q1 - SJR). ISSN 0020-7136. Dostupné: <https://doi.org/10.1002/ijc.34405>

9. JAKUBECHOVÁ, Jana - SMOLKOVÁ, Božena - FURDOVÁ, Alena - DEMKOVÁ, Lucia - ALTANEROVÁ, Uršula - NICODEMOU, Andreas - ŽELEZNÍKOVÁ, Tatiana - KLIMOVA, Daniela - ALTANER, Čestmír**. Suicide-Gene-Modified Extracellular Vesicles of Human Primary Uveal Melanoma in Future Therapies. In International Journal of Molecular Sciences, 2023, vol. 24, no. 16, art. no. 12957. (2022: 5.6 - IF, Q1 - JCR, 1.154 - SJR, Q1 - SJR, karentované - CCC). (2023 - Current Contents). ISSN 1422-0067. Dostupné: <https://doi.org/10.3390/ijms241612957>
10. JAKUBÍKOVÁ, Jana** - CHOLUJOVÁ, Dana - BEKE, Gábor - HIDESHIMA, Teru - KLÚČÁR, Ľuboš - LEIBA, Merav - JAMROZIAK, Krzysztof - RICHARDSON, Paul G. - KASTRITIS, Efstathios - DORFMAN, David - ANDERSON, Kenneth C. Heterogeneity of B cell lymphopoiesis in patients with premalignant and active myeloma. In JCI Insight, 2023, vol. 8, no. 3, art. no. e159924. (2022: 8 - IF, Q1 - JCR, 3.277 - SJR, Q1 - SJR). ISSN 2379-3708. Dostupné: <https://doi.org/10.1172/jci.insight.159924>
11. KALINKOVÁ, Lenka - ŠEVČÍKOVÁ, Aneta - ŠTEVURKOVÁ, Viola - FRIDRICHOVÁ, Ivana - ČIERNIKOVÁ, Soňa**. Targeting DNA Methylation in Leukemia, Myelodysplastic Syndrome, and Lym-

phoma: A Potential Diagnostic, Prognostic, Therapeutic Tool. In *International Journal of Molecular Sciences*, 2023, vol. 24, no. 1, art. no. 633. (2022: 5.6 - IF, Q1 - JCR, 1.154 - SJR, Q1 - SJR, karentované - CCC). (2023 - Current Contents). ISSN 1422-0067. Dostupné: <https://doi.org/10.3390/ijms24010633>

12. KLIMOVA, Daniela** - JAKUBECHOVÁ, Jana - ALTANEROVÁ, Uršula - NICODEMOU, Andreas - STYK, J. - SZEMES, Tomáš - REPISKÁ, V. - ALTANER, Čestmír. Extracellular vesicles derived from dental mesenchymal stem/stromal cells with gemcitabine as a cargo have an inhibitory effect on the growth of pancreatic carcinoma cell lines in vitro. In *Molecular and Cellular Probes*, 2023, vol. 67, febr., art. no. 101894. (2022: 3.3 - IF, Q2 - JCR, 0.552 - SJR, Q3 - SJR). ISSN 0890-8508. Dostupné: <https://doi.org/10.1016/j.mcp.2023.101894>

13. KOKLESOVÁ, Lenka - JAKUBÍKOVÁ, Jana - CHOLUJOVÁ, Dana - SAMEC, Marek - MAZURÁKOVÁ, Alena - ŠUDOMOVÁ, Miroslava - PEC, Martin - HASSAN, Sherif T. S. - BIRINGER, Kamil - BUSSELBERG, Dietrich - HURTOVÁ, Tatiana - GOLUBNITSCHAJA, Olga - KUBATKA, Peter. Phytochemical-based nanodrugs going beyond the state-of-the-art in cancer management-Targeting cancer stem cells in the framework of predictive, preventive, personalized medicine. In *Frontiers in Pharmacology*, 2023, vol. 14, mar, art. no. 1121950. (2022: 5.6 - IF, Q1 - JCR, 1.064 - SJR, Q1 - SJR). ISSN 1663-9812. Dostupné: <https://doi.org/10.3389/fphar.2023.1121950>

14. KOŇARIKOVÁ, Katarína - GIRAŠKOVÁ, Mária - ŽITŇANOVÁ, Ingrid - DVOŘÁKOVÁ, Monika - ROLLEROVÁ, Eva - SCSUKOVÁ, Soňa - BIZIK, Jozef - JANUBOVÁ, Mária - MUCHOVÁ, Jana. Biological analyses of the effects of TiO₂ and PEG-b-PLA nanoparticles on three-dimensional spheroid-based tumor. In *Physiological Research*, 2023, vol. 72, no. 3, p. 257-266. (2022: 2.1 - IF, Q3 - JCR, 0.479 - SJR, Q3 - SJR). ISSN 0862-8408. Dostupné: <https://doi.org/10.33549/physiolres.935152>

15. KOŠÍK, Pavol - ŠKORVAGA, Milan - BELYAEV, Igor**. Preleukemic Fusion Genes Induced via Ionizing Radiation. In *International Journal of Molecular Sciences*, 2023, vol. 24, no. 7, art. no. 6580. (2022: 5.6 - IF, Q1 - JCR, 1.154 - SJR, Q1 - SJR, karentované - CCC). (2023 - Current Contents). ISSN 1422-0067. Dostupné: <https://doi.org/10.3390/ijms24076580>

16. LIŠKOVÁ, Veronika - CHOVANCOVÁ, Barbora - BABULA, P. - REŽUCHOVÁ, Ingeborg - PAVLOV, Kristína - MATÚŠKOVÁ, Miroslava - KRIŽANOVÁ, Olga**. Cystathionine β-synthase affects organization of cytoskeleton and modulates carcinogenesis in colorectal carcinoma cells. In *Frontiers in Oncology*, 2023, vol. 13, 07 July, art. no. 1178021. (2022: 4.7 - IF, Q2 - JCR, 1.138 - SJR, Q2 - SJR). ISSN 2234-943X. Dostupné: <https://doi.org/10.3389/fonc.2023.1178021>

17. MAKOVICKÝ, Peter - BOLGAC, Peter - MAKOVICKÁ, Mária - KAJO, Karol - KRCHNÍKOVÁ, Zuzana - POKORADI, Jaroslav - MAKOVICKÝ, Pavol - STANOVÁ, Zuzana - VASKOVÁ, Kristína

- RIMÁROVÁ, Kvetoslava**. Histopathology and indicators of borderline ovarian tumours with microinvasion in bitches. In *Veterinárna medicína*, 2023, vol. 68, no. 4, pp. 175-183. (2022: 0.7 - IF, Q3 - JCR, 0.238 - SJR, Q3 - SJR). ISSN 0375-8427. Dostupné: <https://doi.org/10.17221/103/2022-VETMED>

18. MEGO, Michal - DANIŠ, Radoslav - CHOVANEC, J. - JURIŠOVÁ, Silvia - BYSTRICKÝ, Branislav - PÖRSÖK, Štefan - KONKOLOVSKÝ, Peter - VÁCLAV, Vladimír - WAGNEROVÁ, Mária - STREŠKO, Marián - BREZINOVÁ, Bibiana - REČKOVÁ, Mária - SUTEKOVÁ, Dagmar - PAZDEROVÁ, Natália - NOVISEDIAKOVÁ, Mária - ZOMBORSKÁ, Eva - ČIERNIKOVÁ, Soňa - SVETLOVSKÁ, Daniela - DRGOŇA, Ľuboš. Randomized double-blind, placebo-controlled multicenter phase III study of prevention of irinotecan-induced diarrhea by a probiotic mixture containing Bifidobacterium BB-12®Lactobacillus rhamnosus LGG® in colorectal cancer patients. In *Frontiers in Oncology*, 2023, vol. 13, art. no. 1168654. (2022: 4.7 - IF, Q2 - JCR, 1.138 - SJR, Q2 - SJR). ISSN 2234-943X. Dostupné: <https://doi.org/10.3389/fonc.2023.1168654>

19. MIKOLÁŠKOVÁ, Iveta - CRNOGORAC-JURCEVIC, Tatjana - SMOLKOVÁ, Božena - HUNÁKOVÁ, Ľuba. Nutraceuticals as Supportive Therapeutic Agents in Diabetes and Pancreatic Ductal Adenocarcinoma: A Systematic Review. In *Biology-Basel*, 2023, vol. 12, no. 2, art. no. 158. (2022: 4.2 - IF, Q2 - JCR, 0.779 - SJR, Q1 - SJR). ISSN 2079-7737. Dostupné: <https://doi.org/10.3390/biology12020158>

20. PLAVÁ, Jana** - ČEHÁKOVÁ, Michaela - KUNIAKOVÁ, Marcela - TRNKOVÁ, Lenka - CIHOVÁ, Marína - BOHÁČ, Martin - DANIŠOVIČ, Ľuboš. The third dimension of tumor microenvironment-The importance of tumor stroma in 3D cancer models. In *Experimental Biology and Medicine*, 2023, vol. 248, no. 15, p. 1347-1358. (2022: 3.2 - IF, Q3 - JCR, 0.771 - SJR, Q2 - SJR). ISSN 1535-3702.

21. PUZDEROVÁ, Barbora - BELVONČÍKOVÁ, Petra** - GROSSMANOVÁ, Katarína - CSÁDEROVÁ, Lucia - LABUDOVIČOVÁ, Martina - FEČÍKOVÁ, Silvia - PASTOREK, Jaromír - BARÁTHOVÁ, Monika. Propranolol, Promising Chemosensitizer and Candidate for the Combined Therapy through Disruption of Tumor Microenvironment Homeostasis by Decreasing the Level of Carbonic Anhydrase IX. In *International Journal of Molecular Sciences*, 2023, vol. 24, no. 13, art. no. 11094. (2022: 5.6 - IF, Q1 - JCR, 1.154 - SJR, Q1 - SJR, karentované - CCC). (2023 - Current Contents). ISSN 1422-0067. Dostupné: <https://doi.org/10.3390/ijms241311094>

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9. International Cooperation

9.1. Current situation

2023 was enriched with new emerging projects within the framework of international cooperation. It was possible to complete foreign internships and establish new cooperations with other foreign workplaces. The 2nd Oncology Clinic of the Faculty of Medicine of the Comenius University in Bratislava and NCI collaborated with the **University of Texas, MD Anderson Cancer Centre** in Houston, Texas, USA regarding the research on circulating tumor cells in breast cancer. In germinal testicular tumors, the collaboration with **Erasmus MC, University Medical Centre** in Rotterdam, Netherlands, aiming to identify new biomarkers, treatment targets, and mechanisms of resistance to chemotherapy, continued. In this area, cooperation also took place with the **Institute Scientifico Romagnolo per lo Studio e la Cura dei Tumori (IRST)** in Meldola.

Cooperation with the **Melvin and Bren Simon Comprehensive Cancer Centre, Indiana University, Indiana, USA (IU)** also continued in testicular tumor research. The cooperation with this institution is aimed at the transfer of knowledge, for which IU and NCI are

obliged to sign a joint memorandum. Pursuant to the memorandum, the 2nd International Symposium on the topic of testicular tumors was held, where leading experts from IU gave lectures. Zuzana Országhová, M.D. from NCI, completed an internship at IU with a focus on education in genitourinary malignancies and late toxicity of treatment, thanks to the awarded NOI Grant.

Cooperation with the **Memorial Sloan Kettering Cancer Centre, New York, USA** continued in testicular tumors with a very unfavorable prognosis. The preparation of a multicentre study to identify biomarkers of lung damage in choriocarcinoma syndrome continued, where several workplaces from all over the world promised to participate in the multicentre study. Cooperation in genitourinary malignancies with the **Hillman Cancer Centre at the University of Pittsburgh Medical Centre, USA**, also continued. The international cooperation project in the **International Germ Cell Cancer Collaborative Group (IGCCCG)** consortium also continued.

The National Cancer Institute joined the European Oncology Institute (OEI) EuonQoL project, the aim of which is to develop a standardized questionnaire battery for assessing the quality of life of cancer patients. 18 countries participated in the project. The forthcoming project of validation of cognitive impairment in survivors after treatment for germinal tumors in an international multi-institutional study led by NCI will bring together 10 workplaces from Europe and the US. Academic cooperation with the **RECETOX laboratory at Masaryk University in Brno** continued. The goal is in-depth analyses of the mechanisms of late toxicity of treatment in germinal tumors. Cooperation with the **Masaryk Memorial Cancer Institute (MMCI)** is strengthened by signing a memorandum. MOÚ significantly assists in the organizational concept in the effort for OEI accreditation for the Comprehensive Cancer Center, for which NOÚ will apply. For this purpose, a "Stakeholder Forum" was organized on the grounds of the Ministry of Health of the Slovak Republic with foreign participation, where the infrastructure needs for a Comprehensive Cancer Center were discussed.

We also established cooperation with the **Urological Clinic in Cologne**, Germany, where a short internship is planned for the transfer of knowledge regarding the surgical treatment of testicular tumors. We also plan to cooperate with this workplace in late toxicity in testicular tumors.

In 2023, the National Oncology Institute continued the joint initiative **CRANE-JA** to create a network of comprehensive cancer centers in Europe, the ECHoS project with the aim of creating nodes for fulfilling the Cancer Mission, and an international project funded by the European Commission and implemented by IARC (International

Agency for Research on Cancer), ICCCS (Improving Cancer Care Coordination and Screening) in Latvia and Slovakia and continued to actively collaborate with experts from the **Institute of Biostatistics and Analyses of the Masaryk University** in Brno in the implementation of oncology screening programs.

In 2023, we applied for and were accepted into the EORTC (European Organisation for Research and Treatment of Cancer) cooperative groups for quality of life and genitourinary malignancies.

In 2023, 4 scientific research stays supported by NOI grants intended to support educational stays abroad took place. These were performed at the Institut Gustave Roussy in Paris (France), Great Ormond Street Hospital in London (England), Indiana University Cancer Centre in Indianapolis (USA), and Memorial Sloan Kettering Cancer Centre, New York, USA

In 2023, another NOI grant was awarded for an educational stay in 2024, which will take place at the Ohio State University Comprehensive Cancer Center, Ohio, USA.

9.2. Challenges for 2024

- Strengthening ongoing existing and initiated new cooperation with foreign workplaces
- Supporting short-term foreign internships (1 – 3 months) by means of a NOI grant
- Support international multidisciplinary seminars in the form of virtual transmissions

- Supporting international foreign projects with the aim of strengthening the establishment of a place for research and education in oncology, including the participation of foreign experts in Slovak domestic educational events
- Active participation in international expert working groups within EORTC, CRANE-JA, OEI, MAGIC, and others

9.3. International Cooperation – Pediatric Oncology/Hematology

- Cooperation with the Czech Republic (regular annual conferences with Czech oncologists, diagnosis of minimal residual disease)
- Cooperation with Austria: St. Anna Kinderspital, Vienna, joint solutions for complicated patients in the form of "tumor board" meetings
- Cooperation with the Children's Hospital of Philadelphia, USA: on a bimonthly basis, a videoconference in the form of a "tumor board", once a year a workshop for young physicians in training for Pediatric Hematology and Oncology
- Cooperation with Princess Maxima Centre for Children's Oncology in the Netherlands, officially signed a Memorandum of Cooperation
- Cooperation at the level of SIOPE - European Society for Pediatric Oncology
- Cooperation with IBFM - International Society for the Treatment of Leukaemia and Lymphoma
- Cooperation with COG – Children Oncology Group, USA
- Collaboration with Pediatric Oncology and Surgery, Paris, France

9.4. International Cooperation – Palliative Medicine

The Slovak Society of Radiation Oncology participates in communication with the European Society of Radiation Oncology regarding various projects focused on the infrastructure of radiotherapy, the quality of healthcare provision, clinical audits, and specialized education. Cooperation with the IAEA continues in workshops, webinars, and foreign stays, focused in the 2024-2025 program period on the implementation of clinical audits, and the quality of radiotherapy and stereotactic radiotherapy. A joint project of the St. Elisabeth Oncology Institute, east Slovakia Oncology Institute, and IAEA aimed at training clinical physicists in radiology and implementing clinical audits in radiation oncology was approved.

The Slovak Society of Radiation Oncology cooperates with the Turkish Society of Radiation Oncology (TROD), with which a Memorandum of Cooperation was signed. The possibility of organizing study stays at the James Cancer Center in Columbus, Ohio was opened.

9.5. International Cooperation – Palliative Medicine

Due to the small team of palliative specialists in Slovakia, the disproportionate workload of these doctors in ensuring the availability of palliative health care, foreign cooperation in palliative medicine is conducted to a minimal extent.

10. National Oncology
Program of the Slovak
Republic and Europe's
Beating Cancer Plan

The National Oncology Program (NOP) of the Slovak Republic is a public health, healthcare, and patient security plan whose primary objective is to reduce cancer incidence and mortality and improve the quality of life of cancer patients through the systematic and fair implementation of evidence-based strategies focused on prevention, diagnostics, treatment, supportive, palliative and end-of-life care, as well as research focused on innovative solutions and assessment of results.

NOP is based on the needs and conditions in Slovakia and complies with the objectives and tasks of the World Health Organization (WHO) and the European Commission. In July 2021, the government of the Slovak Republic approved **updated National Oncology Program Action Plans (AP) for 2021 – 2025**, which are divided into five areas:

1. Primary prevention
2. Secondary prevention, i.e. screening
3. Diagnostics and treatment, including supportive and end-of-life care

4. Research, development, education
5. Health data and information

The primary objective of the National Oncology Plan (NOP) is to reduce the incidence and mortality of cancer diseases and improve the quality of life of cancer patients by systematic implementation of evidence-based strategies. NOP also aims to improve quality of life, rationalize expenses, optimize the development and implementation of new findings in practice as well as increase health literacy. The NOP is based on the needs and conditions in Slovakia and complies with the objectives and tasks of the World Health Organization (WHO) and the European Commission.

Europe's Beating Cancer Plan – 2024 principles, activities and opportunities

Europe's Beating Cancer Plan is a political commitment to turn around cancer and a stepping stone to a strong European Health Un-

ion, a safer, better prepared, and more resilient EU. According to the latest estimates published in the European Cancer Information System[1], based on incidence trends in previous years, more than 29,000 newly diagnosed cancer cases were expected in Slovakia in 2022. The main types of cancer in men are estimated to be prostate cancer (23%), colorectal cancer (16%), and lung cancer (12%). Among women, breast cancer (27%), colorectal cancer (13%), and uterine cancer (9%) are the most common. The estimated incidence of oncological diseases in Slovakia is higher than the EU average, and the cancer mortality rate is also among the highest in the EU.[2] Thus, prevention and control of cancer still remain a challenge in Slovakia.

In 2023, the Commission and the Organisation for Economic Cooperation and Development (OECD) presented the first oncology profiles of individual countries[3]. The profiles are published in the framework of the European Register of Inequalities in oncological diseases, available for all EU member states, Norway, and Iceland. The profiles serve as a tool to identify inequalities in cancer prevention and cancer care. They highlight key achievements, challenges, and differences in each country. Within them, findings regarding individual countries are also compared with the situation in the EU as a whole. This tool can support policymakers and help guide investments and interventions at the national and EU levels under Europe's Beating Cancer Plan.

As part of the main initiatives of Europe's Beating Cancer Plan, the Commission has also presented a draft Council Recommendation on vaccine-preventable cancers and is preparing a draft update of the

2009 Council Recommendation on smoke-free environments to increase citizens' protection from tobacco to create a tobacco-free generation, with less than 5% of the population using tobacco by 2040.

The new Council recommendation on cancer screening adopted in December 2022 is a key element of the new cancer screening system for the coming years. The recommendation introduces a new approach to improve cancer screening in Europe that reflects the latest available scientific developments and evidence and replaces recommendations that have been used for 20 years. The recommendation expands the target group for breast cancer screening to include women aged 45 to 74 (compared to the current age group of 50 to 69); recommends that women aged 30 to 65 be tested for human papillomavirus (HPV) every 5 years to detect cervical cancer, taking into account HPV vaccination status; calls for colorectal cancer triage in people aged 50–74 years by quantitative fecal immunochemical test (FIT), which is considered the preferred immunochemical screening test for occult fecal bleeding and subsequent resolution by colonoscopy. It is also proposed to increase the total number of screenings and to expand organized screening programs to include screening for lung cancer, prostate cancer, and, under certain circumstances, stomach cancer (if the country has a high incidence and mortality)[4].

Within the framework of the EU4Health program, several projects in cancer prevention were funded in 2023, focusing on healthy lifestyles and improving health literacy, including projects in early detection, promoting equal access to cancer screening, data management, and

improving the quality and coverage of screening programs in Europe. Together, these projects contribute to cancer prevention efforts with the ultimate goal of reducing cancer incidence, reducing inequities in cancer screening, and improving overall public health. Financial support from the EC was available for the introduction of new recommendations as part of the EU4Health program also in 2023[5]. The work program for the year 2023 allocated 187.3 million EUR to the topic of cancer. Additional support was also provided from European regional, cohesion, and social funds.

On 5th December 2023, the Commission adopted an executive decision on the financing of the EU health activity program ("EU4Health program") and the adoption of the work program for 2024[6] with a budget of 752.4 million EUR. The program will provide funding to address important health-related issues across the EU. From the total annual budget, 117.6 million EUR was earmarked for beating cancer.

1 European cancer information system <https://ecis.jrc.ec.europa.eu>, online 5th January 2024

2 OECD/European Observatory on Health Systems and Policies (2023), Slovakia: Country Health Profile 2023, State of Health in the EU, OECD Publishing, Paris, <https://doi.org/10.1787/98f25a9b-en>

3 <https://cancer-inequalities.jrc.ec.europa.eu/country-cancer-profiles>

4 [https://eur-lex.europa.eu/legal-content/SK/TXT/PDF/?uri=CELEX:32022H1213\(01\)](https://eur-lex.europa.eu/legal-content/SK/TXT/PDF/?uri=CELEX:32022H1213(01))

5 https://health.ec.europa.eu/publications/2023-eu4health-work-programme_en

6 https://health.ec.europa.eu/publications/2024-eu4health-work-programme_en

11. Identification of Main Problems in Oncology in Slovakia

11.1. Main Problems in Clinical Oncology

This annual report maps the actual situation and activities in Slovak oncology for the previous year. In 2023, an important task in oncology in Slovakia was once again fulfilling the goals of the National Oncology Program (NOP) with its action plans for the years 2021 - 2025, thus contributing to the reduction of morbidity and mortality from oncological diseases.

Our priorities have not changed, and the need for teamwork, proactive cooperation, and the principles of understanding that work is a joint effort and not an individual endeavor continue to resonate strongly. In this context, it is crucial to involve other supporting professions more intensively in the care of oncology patients, primarily psychologists, rehabilitation workers, nutritional therapists, and spiritual guides, and ideally also navigators during the entire journey from prevention, through diagnosis and treatment, to the care of survivors and to also engage in international cooperation. Attention should also be paid to socioeconomic issues in the case of cured oncology patients based on the principle of "The Right to Be Forgotten",

which will allow survivors in remission to fully integrate into society without the stigma of an oncology patient.

Due to the increasing prevalence of oncological diseases, it is necessary for patients in remission who do not require oncological follow-up to set clear procedures for taking over further care from general practitioners for adults, thus creating space for oncologists to prioritize patients in need of active medical care, or patients in specific oncological risk, including greater scope to include patients in innovative procedures within clinical trials. The key is to respect evidence-based medicine, and where it is known that medical procedures do not bring benefit, abandon the given procedures and systematically replace them with procedures that bring medical benefit.

The means of digitization and artificial intelligence bring new challenges, and it is important to use them wisely, with the aim of facilitating work and saving human resources, but not with the result of increased complexity or loss of human contact where it is necessary in the process of diagnosis and treatment.

In the context of the National Oncology Program with five action plans, it is possible to define the following challenges for the near future:

1. Proceed within the framework of a unified concept of **primary prevention**, which will be feasible and effective, with the active participation not only of the health sector but also of the Ministry of Education, Research, Development and Youth of the Slovak Republic, the Ministry of Social Affairs, Labour, and Family of the Slovak Republic, as well as the Ministry of the Environment of the Slovak Republic. In Slovakia, the challenge is to **continue to strengthen existing cooperation**, for example, within the created HPV coalition or the creation of general education programs for schools, and to create new cooperation where it is not yet fully developed. As part of a unified concept, it is essential to create conditions for a healthy lifestyle from early childhood to form daily habits of a healthy lifestyle and, at the same time, to form correct habits through continuous education throughout our society.
2. Increase the quality of organized **oncology screening programs** at all levels, also in the context of the recommendations of the two-year ICCCS (Improving Cancer Care Coordination and Screening in Latvia and Slovakia) project, bring innovative procedures to existing programs and implement new oncology screening programs in accordance with European recommendations based on medical evidence. In Slovakia, we have a challenge for the near future to

develop a proposal for the establishment of a **National Oncology Screening Center**, which would be a coordinating center for oncology screening programs, with the aim of ensuring uniform invitations, quality at all levels of the screening program, monitoring, evaluation, but also education of professionals and lay people and research activities.

3. Use all available options to ensure the availability of **innovative oncological diagnostics and treatment**, so that patients in Slovakia can also be treated according to European and world standard recommendations. In addition to the availability of adequate treatment, a clearly visible path of the patient in the system without unnecessary time loss, as well as adequate supportive care in the sense of psychological care, nutritional therapy, and rehabilitation, also play an important role in successful treatment. Ensuring adequate palliative treatment and end-of-life care, but also care focused on the so-called survivors, i.e. people with a diagnosis of oncological disease, either in active treatment or those who have already completed it. Within Slovakia, the challenge for the near future is the building of a **comprehensive oncology infrastructure** that integrally connects healthcare with research and education and is based on the existing role of the **National Cancer Institute as the main coordinator for oncology care in Slovakia**. However, the task is to build a network with one coordinator but a **network of other healthcare, research, and education providers connected to it**, which will ensure the oncology patient's journey, as well as research and education throughout Slovakia.

4. In **research, development, and education**, further build and strengthen the infrastructure of clinical and translational research, creating conditions not only for commercial but also for academic clinical research and international cooperation. In education, ensure and increase the educational level of all those involved in preventive programs, diagnostics, and treatment, as well as research and development in oncology. We consider the quantitative increase in the number of **clinical trials** to be key in this area, as well as qualitative changes with a shift from phase III CTs implemented by pharmaceutical companies to phase II and I CTs and to academic CTs. Another aspect is the low number of patients included in CTs and the low awareness of patients and professionals about the possibility of treatment within CTs. An important aspect of the implementation of phase I CTs is the completion of such a clinic within the National Cancer Institute.
5. **In health data and information, revitalize the National Oncology Register** so that it provides basic epidemiological data on cancer diseases without a significant time lag and ensures the publication of other important data, such as survival in individual oncological diseases. For the proper evaluation of oncology screening programs, **it is necessary to establish a National Screening Register**, which would enable the collection of relevant data, including clinical data, which is currently not available in the NCZI but is necessary for the evaluation of screening programs. It is also necessary to solve the provision of collected data for NOI experts for the purpose of their evaluation and correct interpretation.

6. An important aspect is still the issue of **follow-up care - palliative care** and **care for patients in remission after treatment**, where we still lag behind in this area.

11.2. Main Problems in Pediatric Oncology

- Pathological diagnosis of rare tumors, classification of subgroups (CNS tumors) – methylation – fulfilled for CNS tumors, important to ensure in 2024 for all pediatric patients with CNS tumors in the Slovak Republic
- Inclusion of children's hematology and oncology – departments in the intermediate care group, increase of personnel capacities within nursing care
- Second opinions on pathological findings as a standard procedure
- Molecular diagnostics of rare tumors
- Financing of diagnostics of rare examinations abroad
- Radiology second opinion as a standard procedure
- Financially demanding innovative treatment/immunotherapy
- Administrative and financial support for academic clinical trials
- Inadequate financial remuneration in DRG
- Funding the education of physicists (foreign internships)
- Multidisciplinary committees: leukemia, CNS, solid tumors as a standard procedure

Challenges for 2024 – Pediatric Oncology

- Development of financing models for financially demanding innovative oncological treatment with the aim of improving its availability for patients
- Qualifying for entry into international clinical trials - solid tumors, CNS tumors
- International accreditation of pediatric oncology centers (ERN fulfilled)
- Development of scientific and research activities within international cooperation
- Qualification for cell therapy of childhood leukemia

11.3. Main problems in Radiation Oncology

Thanks to the new technology, all patients have access to modern radiotherapy, which can be administered without excessively extending the time between its indication and the first fraction of radiation. Moderate hypofractionation, as well as stereotactic extreme hypofractionation (irradiation in 1-5 fractions), was not implemented in all workplaces, despite the recommendations of international professional societies. New procedures of cranial and extracranial stereotactic radiotherapy were included in the ambulatory scorecard.

In 2021, the technology for radiotherapy in Slovakia became comparable to any country in the EU. In addition to the optimal geographic availability of standard radiotherapy, patients can undergo

stereotactic cranial radiotherapy at the St Elisabeth Oncology Institute, East Slovakia Oncology Institute, and the Bory Hospital – Penta Hospitals and spinal radiosurgery at the East Slovakia Oncology Institute. It is still necessary to supplement technologies for cranial and spinal radiosurgery in at least two other workplaces, preferably in NCI and in the Roosevelt Hospital in Banská Bystrica.

Main issues in the field:

- Lack of information on the quality of care provided using clinical and dosimetry workplace audits
- low reimbursements for radiotherapy, which cannot ensure adequate service and the creation of a fund for technology renewal at individual providers
- Insufficient service contracts for linear accelerators that do not ensure the smooth operation of technologies

Challenges for 2024

The immediate challenge remains to be the provision of optimal quality radiotherapy for all patients in Slovak hospitals. In 2024, the main task will be the organization and implementation of clinical audits at individual workplaces associated with their evaluation, aimed at technological security and compliance with the standards and international recommendations for radiotherapy planning. The Commission for Quality Control in Radiology, Radiation Oncology, and Nuclear Medicine should coordinate clinical audits. A dosimetry audit of the entire process of planning and administering radiotherapy will take also place. The ultimate goal is to ensure radiotherapy in a reasonable time and quality for each patient. In 2024, the project of

the Ministry of Health of the Slovak Republic should be completed regarding the selection process for the supplier of technology for the auto-segmentation of risk organs for 12 departments of radiation oncology in the Slovak Republic

11.4. Main problems in Palliative Medicine

Palliative Medicine (PM) is, like pediatrics, geriatrics, genetics, or intensive care medicine, a cross-sectional medical specialization. Its focus is, according to the definition of the International Association for Hospice and Palliative Care, to improve the quality of life of patients and their families who are facing a potentially fatal illness by using all means to prevent and alleviate suffering. Early diagnosis, evaluation, and precise treatment of pain and other problems are applied: physical, psychosocial, and spiritual. A potentially fatal disease means that death is a relevant outcome of the given clinical situation after an honest medical evaluation.

Defining a palliative patient is the basis for admitting patients to specialized palliative care. A palliative patient is a patient with an incurable progressive disease, high intensity, and/or complexity of symptoms, while the goal of treatment is to alleviate suffering. Palliative Medicine was based on the concept of the hospice movement, which arose as a reaction to dying associated with severe symptoms, a feeling of indignity, and psychological, existential, and spiritual suffering expressed in each patient to a different degree. Psychosocial,

existential, and spiritual suffering has become a challenge for PM, which is revealed when physical suffering is removed, and it is also possible to minimize it. This is also one of the reasons why PM has become a medical specialty in the USA and in many European countries, including Slovakia.

However, the implementation of Palliative Medicine in the health-care system is very slow in Slovakia for several reasons:

1. Identifying a palliative patient in the system is not a standard part of medical thinking in Slovakia
2. Prognostication of a terminally ill patient and especially communication of prognosis is difficult and is not identified (and covered) as an important medical aid
3. Palliative care capacities are not available, even if the patient is correctly identified and communicated.

Changes in the concept of Palliative Medicine

A milestone in 2022 was the approval of Act No. 267/2022 Z.z., in which the legislative definition of palliative care was published as health care provided to a person with an incurable and progressive disease, which usually leads to his death, with the aim of alleviating suffering and preserving the quality of life of this person. (Section 2, (39)). The following was also published in this law: – legislative definition of a multidisciplinary team (Section 2, (36))

- general and specialized palliative care (Section 10e)
- amended referral of patients into specialized palliative care (Section 6ba)

- legislative definition of the multidisciplinary approach in palliative care (Section 4 (9-10))

Part of the amendment was implementing regulations with changes in the financing of palliative care with a 400% increase in payments for a visit to a mobile hospice from 12 EUR to the current 60 EUR and a bed day in a brick-and-mortar hospice from 67 EUR to the current 100 EUR.

Slovak Republic Recovery and Resilience Plan

Long-term care is also part of the Recovery and **Resilience Plan of the Slovak Republic**, approved by the European Commission in 2021, especially component 13 (Affordable and high-quality long-term social and health care). The adoption of the legislative milestone of the Recovery and Resilience Plan made funds available for financing the material and technical equipment of Palliative care capacities: in 2022-2023, more than 2.3 million EUR was released for mobile hospices and 14.5 million EUR for brick-and-mortar hospices, more information is available at www.ivpm.sk

National Improving long-term care project

In 2022 and 2023, a project from the Human Resources Operational Program was implemented, where 1.7 million EUR was paid to mobile hospices. More information is available at: www.ivpm.sk

Priorities and objectives in palliative care for the forthcoming period:

1. Continue acquiring resources and form legislation in such a way that **fair financing of specialized palliative care capacities is achieved.**
 - a. Brick-and-mortar hospices, where funding shall come from three sources:
 1. Bed day, which is to be calculated from the decree on personnel capacities. Currently, even the increased bed day rate does not meet the needs defined in Decree No. 44/2008 on material, technical, and personnel capacities of medical facilities.
 2. Medicines and specialized medical equipment must be paid for beyond the bed-day rate.
 3. Social resource - it must be included in the upcoming amendment on social services, which should apply from 2026.
 - b. Mobile hospices: increase in payments per visit, resolve the concurrence of ADOS and mobile hospices in health insurance companies (HIC), the way of keeping services registered in HIC.
 - c. Launch the "continuation of REACT", i.e. the new National Project to Support Human Resources in Palliative Care. The planned start is June 2024.
 - d. Ensure multi-professionalism when working in palliative medicine, which will perceive all dimensions of suffering.

2. **Setting work quality and data collection indicators** so that data collection correlates with quality indicators and is provided via a patient care documentation system.
3. In the case of outputs of the National Project, points of connection between health and social system were identified, which need to be changed so that the patient can survive the end of life according to their values, preferences, and wishes. So, a person with an incurable disease can be in their natural environment as long as possible. **Redirect palliative care to social facilities.**
4. **High-quality education.** Expand the education of physicians to include the education of nurses and promote education in systems other than palliative capacities so that the patient can remain in the natural environment as long as possible.
5. **Change the perception of Palliative care by the general public.** For example, in June 2024, the book "So that it doesn't hurt so much. The Story (ies) of Slovak Palliative Care." (page 44 in the Slovart Publishing Catalogue https://www.slovart.sk/katalog.html?page_id=9591)



12. Currents Trends
in Oncology Around
the World



1. Ensure preventive measures, including recommended population screening programs and specific prevention procedures in at-risk populations.
2. A holistic approach to the patient and their environment - where a person is perceived and understood from a bio-psycho-social-spiritual point of view.
3. A personalized approach in the diagnosis and treatment of oncological diseases and fair provision of standard recommended treatment approaches across different populations.
4. Ensuring a multidisciplinary approach wherever indicated in diagnostic and therapeutic management decisions.
5. Ensuring supportive care at every level of care for the sick or cured person and their surroundings, including help for the inclusion

of survivors in an active life and ensuring the principle of destigmatisation of oncology patients, i.e. The Right to Forget Cancer.

6. Creating a motivating work environment and education for health-care workers, teamwork within individual workplaces, but also inter-professionally.
7. Education of the lay public regarding oncology from the point of view of all its diverse aspects, from prevention through research, development, diagnosis, and treatment, including supportive care and care for long-term survivors or care at the end-of-life
8. Access to current data with the aim of regular ongoing control and evaluation of clinical-epidemiological or cost aspects of oncology care. In this context, **big data**, i.e. the existence of vast amounts of real-world data, enables the analysis and learning of artificial intelligence. The vast amount of data is leading to

a "**panomic**" of cancer, with the potential to better understand the complex combination of genes, proteins, molecular pathways, and unique patient characteristics identified within oncological diseases, thus supporting the development of personalized strategies for prevention, diagnosis, and treatment.

9. Applying the principle of reasonable use of funds in terms of **providing medical value** in a world with unsustainable cost increases.

Annual Report for 2023

State of Oncology in Slovakia

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