SHORT COMMUNICATION

Establishment of the Campania Oncology Network (Rete Oncologica Campana, ROC): a paradigm shift in oncological care and real world research in the Campania region

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The effective management of cancer patients necessitates a robust organizational framework to facilitate timely diagnosis and treatment. This paper examines the development and impact of the Campania Oncology Network (Rete Oncologica Campana, ROC) in tackling critical challenges in cancer care throughout the Campania region in southern Italy. Established to address high cancer mortality rates and systemic inefficiencies, the ROC integrates various health care facilities, including specialized multidisciplinary oncology groups, local health authorities, and general practitioners, promoting a collaborative approach to patient management. Since its initiation in 2016, further enhanced by the launch of a digital platform in 2018, the ROC has streamlined patient pathways by reducing care fragmentation and diagnostic delays, ensuring the integration of home care services and access to innovative diagnostic testing. This paper presents findings from the ROC digital platform (a real world database that compiles data from ∼95 000 patients) demonstrating the ROC's pivotal role in generating evidence-based clinical guidelines and enhancing health care quality. By facilitating the systematic implementation of multidisciplinary care and longitudinal monitoring of patient outcomes, the ROC has significantly expanded its capacity to manage new cancer cases, showcasing the effectiveness of a well-organized oncology network in improving patient care outcomes. These insights emphasize the critical need for strategic health care models to address regional disparities in cancer care management effectively.

Key words: oncology network, cancer care, multidisciplinary oncology groups, digital health platform, real world data

Managing cancer patients requires an organized system for timely diagnosis and treatment. A strong oncological network coordinates oncology centers, community health facilities, and home care services to support patients throughout their journey. In Italy, the health system is regionally managed. The Campania region, with 6 million residents and 33 000 new cancer cases annually,[1] faces challenges such as high cancer mortality and patient mobility for care.[2] Factors include limited prevention efforts and socioeconomic issues such as low income and high unemployment.[3] In 2018, the National Agency for Regional Health Services (Agenzia Nazionale per i Servizi Sanitari Regionali, AGENAS) highlighted the inefficiency of the Campania Oncology Network (Rete Oncologica Campana, ROC), prompting reform.[4] This paper discusses the development of the ROC model and its digital platform, showing how it improved cancer care by introducing a multidisciplinary approach and reducing fragmentation of care.

THE CREATION OF THE ROC AND ITS CURRENT ORGANIZATION

The Campania region established the ROC in September 2016 to ensure equitable access to treatments, diagnostics, and integrated care, aiming to reduce mortality. The ROC operates as a comprehensive cancer care network (CCCN), including specialized multidisciplinary oncology reference centers (Centri II livello o Centri Oncologici di Riferimento Polispecialistici, CORP), and regional reference centers with specific activities in the oncology field (Centri di Riferimento Regionali con attività specifica in campo oncologico, CORPUS) and seven local health authorities (Aziende

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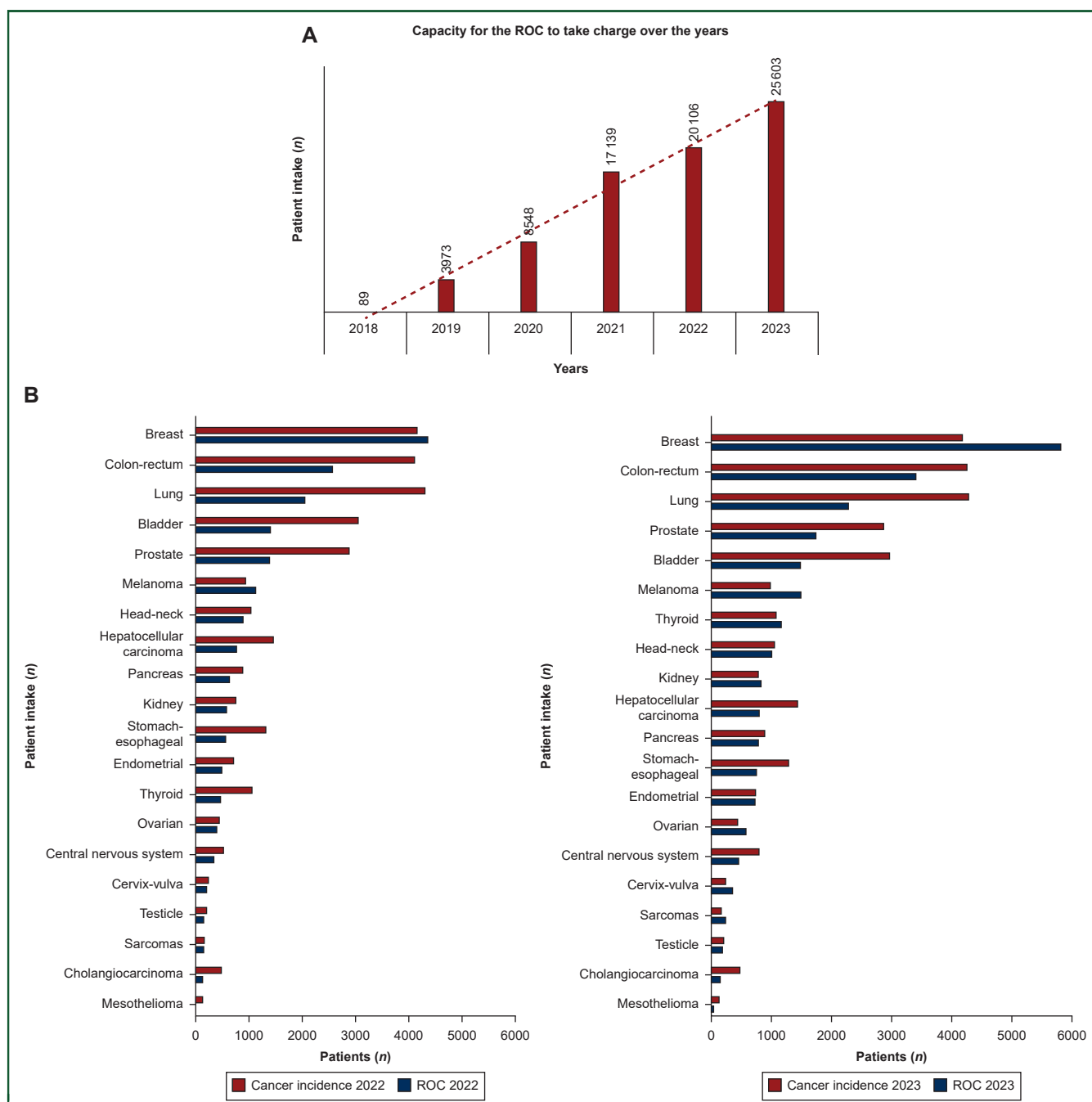
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Figure 1. (A) The patient intake of the Campania Oncology Network (ROC) from 2018 to 2023. (B) The patient intake of the ROC in 2022 and 2023 by multidisciplinary oncological group (GOM) compared with annual regional cancer-specific incidence. The regional incidence estimates for 20 solid neoplasms have been considered excluding non-melanoma skin cancers, uveal melanoma, and neuroendocrine tumors, as these are not included in the regional cancer incidence rates.

Sanitarie Locali, ASLs). Each center created cancer-specific multidisciplinary oncological groups (Gruppi Oncologici Multidisciplinari, GOMs) responsible for patient care, and clinical decisions based on regional diagnostic and therapeutic guidelines (Percorsi Diagnostici Terapeutici Assistenziali, PDTAs),[5] affecting ~90% of the cancer population, along with three pathway PDTAs and 11 technical documents. The ROC promotes multidisciplinary care, which has been shown to improve treatment outcomes,[6] and the continuity of care through connections among GOMs, general practitioners (medici di medicina generale, MMGs), and ASLs. From September 2023 to September 2024, 974 patients (3.3%) were referred to GOMs via the ROC platform by their MMGs, with this proportion steadily increasing. This model helps prevent diagnostic and therapeutic delays, known risk factors for poor cancer outcomes,[7] as patients are managed within 7 days.

The ROC digital platform: a tool for monitoring clinical and assistance activities and a source of real world data

The ROC platform is a centralized modular web-based system used across all hospitals within the ROC, designed to optimize referral for newly diagnosed oncology cases to
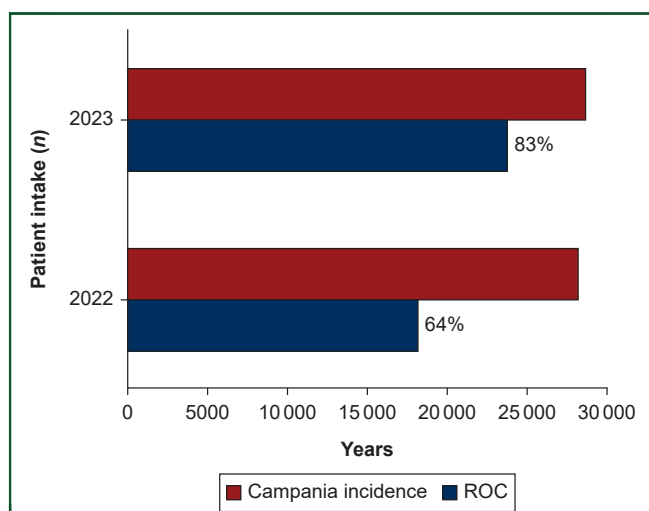
Figure 2. The patient intake of the Campania Oncology Network (ROC) compared with annual regional cancer incidence in 2022 and 2023. The regional incidence estimates for 20 solid neoplasms have been considered excluding non-melanoma skin cancers, uveal melanoma, and neuroendocrine tumors, as these are not included in the regional cancer incidence rates.

cancer-specific GOMs, intake, therapeutic decision-making, and service coordination throughout the patient's journey. The GOM pathway starts with patient referral by MMGs or health care professionals, followed by intake by a cancer-specific GOM. The ROC platform allows health care professionals to access a registry of hospitals affiliated with GOMs, with the choice based on factors including patient preference and proximity. Once a GOM is selected, the case manager—a health care professional within the GOM responsible for patient pathways within the ROC—integrates the patient into a multidisciplinary discussion in which the GOM makes a diagnostic and therapeutic decision. This process concludes with the creation of a detailed GOM report, uploaded to the ROC platform, formally closing the patient's case file. The report includes the GOM's findings, and recommendations including treatment options such as surgery, oncologic treatment, radiotherapy, and follow-up. After this, each hospital uses its internal software to manage the patient's journey. Additionally, the ROC platform provides many services promoting comprehensive patient care and integration between hospital and community services. Among these, hospital-at-home care (Assistenza Domiciliare Integrata, ADI) is crucial to ensure

continuity of care for cancer patients, especially those who are not self-sufficient and/or who are unable to travel for treatment. In addition, the ROC platform facilitates the pathway for patients with hereditary—familial cancers, and serves as the sole prescriptive tool for innovative tests—such as oncogenic testing in breast cancer—ensuring equitable access to these critical services, also for patients coming from the periphery of the region. Overall, ADI is the most requested service ($n = 13\,566$), followed by hereditary cancer screenings ($n = 5328$) and oncogenic tests for breast cancer ($n = 1127$). Finally, the ROC supports clinical research by facilitating patient eligibility assessments for experimental trials, including phase I studies. A clinical trials service has been integrated into the platform to streamline this process. Patients requiring evaluation for experimental therapies are referred to other cancer-specific GOMs, where their clinical features are reviewed for eligibility within 5 days. If the patient does not meet the inclusion criteria, the request is redirected within the network for consideration under alternative protocols or standard care from other GOMs. If the patient is potentially eligible, a screening consultation is scheduled within 5 days by the case manager.

The ROC platform includes >95 000 patients across 664 GOMs, enabling periodic monitoring of data on quantitative, economic, diagnostic, and therapeutic factors affecting care. Patient data, except for demographics (linked to the regional registry), are entered by case managers into the appropriate sections of the patient's record or by attaching relevant medical reports. Data can be extracted in aggregate (e.g. total patients managed)—this approach was employed in the present article. As a source of real world data (RWD), the platform can generate real world evidence, enhancing clinical guidelines and research with a large sample size for robust statistical analysis.

Based on these considerations, in November 2022, the ONCOCAMP research protocol was developed as a retrospective—prospective, observational, multicenter study to record data from the ROC platform, monitor ROC performance, and create a registry of patients within the ROC. Approved by all local ethical committees, ONCOCAMP aims to enhance the appropriateness, effectiveness, and safety of diagnostic and therapeutic pathways, clinical strategies, and procedures. RWD from the ROC platform

Table 1. Evolution of the ValPeROC project from phase I to V					
Phase of the project	Periods monitored	ROC cancer centers involved in the project, n	Cancer-specific GOM for each cancer center involved in the project, n	Cancer type	Sample of ROC patients involved, n
I	6 months	3	3	Lung, ovarian, and colon	89
II	6 months	5	4	Lung, ovarian, colon, and prostate	227
III	6 months	7	5	Lung, ovarian, colon, prostate, and bladder	515
IV	6 months	7	5	Lung, ovarian, colon, prostate, and bladder	512
V[a]	12 months	9	6	Lung, ovarian, colon, prostate bladder, and breast	674

GOM, Gruppi Oncologici Multidisciplinari; ROC, Rete Oncologica Campana.
[a]In phase V (specifically from September 2022 to October 2023), the analysis also involved four accredited nursing homes.
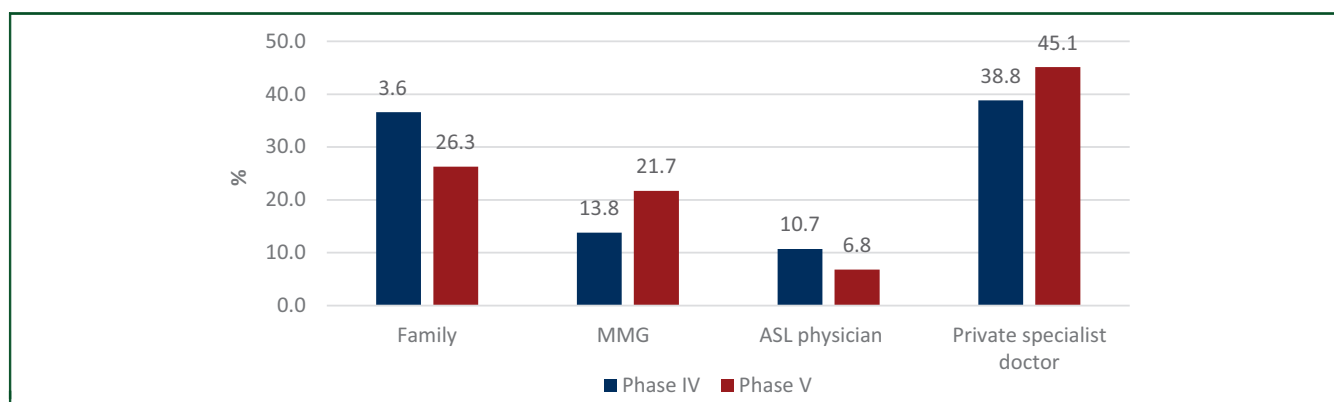
Figure 3. Type and percentage of health care professionals who suggest the Campania Oncology Network (ROC) path (from phase IV to V) of the ValPeROC project. ASL, local health authority; MMG, general practitioner.

also has potential for identifying prognostic factors and health determinants specific to the Campania population.

Figure 1A shows a steady increase in patient intake from 2018 to 2023, measured by the annual number of patients evaluated by a GOM. Focusing on 2022 and 2023, there was an increase in patient intake numbers by the GOMs for all the cancer types with a specific PDTA, with a high proportion of new cases discussed in a multidisciplinary team compared with expected regional incidence (Figure 1B). The proportion of cases diagnosed and discussed within the GOMs continues to rise as the network improves and all facilities, including those in peripheral areas, become interconnected.

Figure 2 shows the overall statistically significant increase in patient intake compared with the cancer incidence in the region for 2022 and 2023 (from 64% to 83%, respectively, $P < 0.05$).

The number of cases extracted from the ROC platform and discussed within the GOM should not replace incidence estimates, as some may be prevalent cases needing further examination. However, this metric is a valuable indicator of the ROC's effectiveness in managing cancer care. Comparing these figures with regional incidence helps assess the ROC's progress over time.

One of the first experiences in monitoring both the clinical and economic performance of the ROC is represented by the evaluation of the ROC pathway (Valutazione Percorso ROC, ValPeROC) multicenter project.[8] The project has developed key performance indicators to measure the multidisciplinary approach; adherence to PDTAs (in terms of continuity, timeliness, and adequacy of health care services, overcoming territorial disparities and achieving service standardization); and resource utilization (i.e. number and types of appropriate and inappropriate diagnostic tests). The project involves periodic surveys tracking diagnostic, therapeutic, sociodemographic, and clinical data to identify potential risk factors. Over time, the number of both ROC cancer centers and cancer-specific GOMs has increased, along with the data collection (Table 1). The last two phases also focused on the engagement of MMGs and other health care professionals in referring patients to the ROC network. The percentage of MMGs referring patients directly to a

GOM through the ROC platform has increased from 13.8% (phase IV) to 21.7% (phase V) (Figure 3). Moreover, preliminary data indicate that the ROC has significantly reduced diagnostic times, highlighting the positive impact of establishing a regional network on key prognostic factors, such as diagnostic and therapeutic timelines.

CONCLUSIONS

This paper highlights how an efficient regional network can improve cancer care in a population of 6 million with significant sociodemographic challenges. We discussed the ROC's evolution and its increased capacity for managing cancer patients through a multidisciplinary approach, demonstrating the model's effectiveness. A key goal of the ROC is to ensure each patient is discussed in a specific GOM at diagnosis. The establishment of a unified digital platform has facilitated the integrated application of multidisciplinary care across the Campania region, enabling ongoing performance monitoring. The growing volume of data collected has the potential to generate scientific evidence to improve patient management. ONCOCAMP contributes by creating a registry to analyze various aspects of oncology care in the region. In conclusion, the ROC and its digital platform represent a major advancement in cancer care, promoting better management, teamwork, and research, while offering a model that could be applied in other regions facing similar challenges.

DISCLOSURE

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