National Cancer Control Programme

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

National Cancer Control Programme

Systemic Anti-Cancer Therapy Model of Care

DRAFT – Consultation document

1. Summary

Cancer has been recognised as a major health concern in Ireland since the establishment of the first Cancer Consultative Council by the Irish Government in 1948 (1). In the past 20 years in particular, Government policy has placed a particular emphasis on the need to properly plan for the growing incidence and prevalence of cancer, with the publication of three national cancer strategies, in 1996, 2006 and 2017 (2-4). In 2007, the National Cancer Control Programme was established in the Health Service Executive to lead on the implementation of cancer policies in the health services and to improve the performance and patient outcomes in cancer services. The ongoing patient safety and quality improvement agenda in the health service has also benefitted cancer programmes and patient outcomes, as has health promotion and disease prevention initiatives.

The role of systemic anti-cancer therapy (SACT) in the treatment of cancer has continued to grow, leading to the establishment of the Systemic Therapy Programme in the NCCP in 2012. This programme works on fulfilling the recommendations for the development of medical oncology and haematology from the National Cancer Strategy 2017-2026 (4), including developing this model of care.

As the needs of our population change, our focus on the way in which cancer care is designed and delivered is evolving. The National Cancer Strategy 2017-2026 recommended the development of a model of care for cancer[1] (4). This approach to organisation of care is supported by Sláintecare as well as other international healthcare systems. A model of care for SACT aims to provide the architectural framework for SACT care to be provided in what should be a flexible and responsive delivery system (5).

The NCCP are acutely aware of the historic and current challenges that exist in SACT services nationally. This patient-centred SACT Model of Care has been developed in order to address these issues and to also provide a strategy for the future of SACT services nationally.

1.1 Findings and recommendations summary

There are 25 recommendations from this SACT Model of Care. These recommendations aim to address the gaps in SACT services identified through the comparisons between current SACT services and international evidence available. Please find the 25 recommendations in Table 1.

[1] The NCCP will further develop the model of care for cancer to achieve integration between primary care and hospital settings at all stages of the cancer continuum, from diagnosis to post treatment care.

Table 1 Summary of the recommendations from the SACT Model of Care

Rec.	Recommendation	Responsibility	Section
1	All SACT services should ensure patients are involved in decisions relating to their care	All SACT services	Patient Experience
2	Each patient must have a SACT treatment plan recommended by the consultant medical oncologist or haematologist and agreed by the patient and their carer(s), as appropriate	All SACT services	Patient Experience
3	The NCCP will define focused cancer patient experience surveys to incorporate treatment and survivorship in line with the National Cancer Strategy	NCCP	Patient Experience
4	All SACT services will be organised and delivered in line with the Type detailed in Figure 5 • Type 1 and 2 SACT hospitals must have adequate bed numbers in dedicated in-patient wards for patients receiving SACT and for the management of SACT associated toxicities. • All SACT hospitals should have formalised links to relevant MDMs to enable discussion of patients as appropriate. • SACT hospitals should establish SACT outreach services	NCCP/HSE All SACT services	Organisation of services
5	Certain SACT services should be devolved to Type 3 and 4 depending on the complexity of the SACT regimen and associated supports required.	NCCP, HSE, All SACT services	Organisation of services
6	Certain specialist, low volume, often in-patient, complex SACT regimens should be centralised in a limited number of Type 1 or 2 SACT hospitals. This includes specialist haemato-oncology services.	NCCP, HSE	Organisation of services
7	The governance of all SACT services is based on the governance structure as demonstrated in **Error! Reference source not found.**6. The establishment and structure of any new SACT services should align to this governance.	DoH, HSE, NCCP, NCCP Cancer Control Networks, all SACT services	Governance
8	Each location providing SACT cancer service be a part of a NCCP Cancer Control Network	NCCP Cancer	Governance

	NCCP Cancer Control Networks should have a nominated cancer services team including a clinical lead and should be supported by a nursing lead, a pharmacy lead and a business lead.	Control Networks, All SACT services	
9	Type 1-3 SACT hospitals should have a nominated clinical lead for their SACT service to oversee the coordinated approach to SACT delivery and service planning. Type 4 SACT services must have clear governance arrangements in place from community to hospital.	All SACT services	Governance
10	All SACT services and the NCCP will be responsible for maintaining a quality and safe service and will be monitored and evaluated regularly. PPPGs will be developed and adhered to in all SACT services, as appropriate to that service, to support a quality and safe service.	All SACT services, NCCP	Quality and Safety
11	The NCCP will lead on the development of all national KPIs and quality indicators in SACT services.	NCCP	Quality and Safety
12	All SACT services should be supported by a national information system such as NCIS • Electronic prescribing of parenteral SACT should be in place in all SACT services by 2025, and expanded to include other areas such as OAMs and supportive care once available	All SACT services, NCCP, HSE	Quality and Safety
13	All SACT services should have a data and information management strategy document	All SACT services	Data and information management
14	The NCCP will engage with the emerging eHealth strategy to optimise the use of SACT services data	NCCP	Data and information management
15	New therapeutics and diagnostics in SACT should be rapidly implemented following the recommendation of the NCCP and the HSE	NCCP, HSE	Innovations in SACT services
16	All patients should have access to a clinical trial where clinically appropriate	HSE/NCCP, all	Clinical Trials

	Clinical trial services should be enhanced/developed in SACT services to support the availability of trials to all patients undergoing SACT	SACT services	and Research
17	The SACT pathway should follow the steps as outline in X. This will need development of each of the steps as outlined.	NCCP, All SACT services	SACT pathway
18	All staff involved in the provision of care to SACT patients should operate to the appropriate competencies and standards as relevant to the SACT service being delivered.	HSE, All SACT services	SACT pathway
19	Type 4 SACT services will be developed and expanded where appropriate, in a standardised manner.	NCCP/HSE	SACT pathway
20	The design and layout of haematology and medical oncology ambulatory day units will be aligned with the NCCP Guidance on the Built Environment and updated as required to encompass infection control and prevention advice together with public health guidance.	NCCP/HSE	SACT pathway
21	Telehealth solutions should be utilised in SACT service delivery Use of telehealth should be supported by appropriate PPPGs	HSE, All SACT services	SACT pathway
22	National guidance should be developed to support acute oncology services. A validated telephone triage tool should be used in all SACT hospitals and staffed appropriately. Contact details should be given to patients. All SACT services should have local PPPGs in place for management of unscheduled care of SACT patients.	NCCP, All SACT services	Acute Oncology
23	All SACT hospitals should establish an acute oncology service supported by the relevant local PPPGs. • Staff should receive training as appropriate, to the service to be provided, noting that this may include staff outside the cancer service, e.g. emergency medicine.	All SACT services All non-SACT hospitals	Acute Oncology
24	Type 3 SACT hospitals and non-SACT hospitals with an emergency department should have processes in place for the assessment, rapid referral and transfer of patients to an acute SACT hospital in a timely manner.	Type 3 SACT hospitals and non-SACT hospitals	Acute Oncology

25	Adequate staffing should be in place to support a safe and quality SACT service as detailed in the Workforce Planning Chapter 7. The National Cancer Strategy 2017-2026 Recommendation 50 on workforce planning should be progressed to further identify the needs of the full SACT service.	NCCP, All SACT services	Workforce Planning

2. Background

Cancer is not a single disease. It includes many diseases that can affect various parts of the body. The number of cancers diagnosed annually in Ireland is increasing, mainly due to a growing and aging population. According to the NCRI, the cumulative lifetime risk of being diagnosed with an invasive cancer[2] is approximately 1 in 2 for both men and women (6). It is estimated that the number of patients receiving SACT for the treatment of their cancer will grow by 42-48% between 2015 and 2025 (7). Survival rates from cancer are also significantly improving according to the NCRI (6). This may be attributable to improvements in the prevention, screening and treatment of cancer.

SACT services operate within the wider context of cancer control programmes, including prevention, screening, diagnosis, treatment and survivorship under the guidance of the National Cancer Control Programme. The National Cancer Strategy, 2017-2026 describes cancer care as a continuum (Figure 1). SACT is a component of the treatment section of this continuum. Other treatment modalities for cancer include surgery and radiotherapy. Figure 2 illustrates the broader cancer care pathway that a patient may follow.

Figure 1 Cancer Care Continuum

[2] Excluding non-melanoma skin cancer.

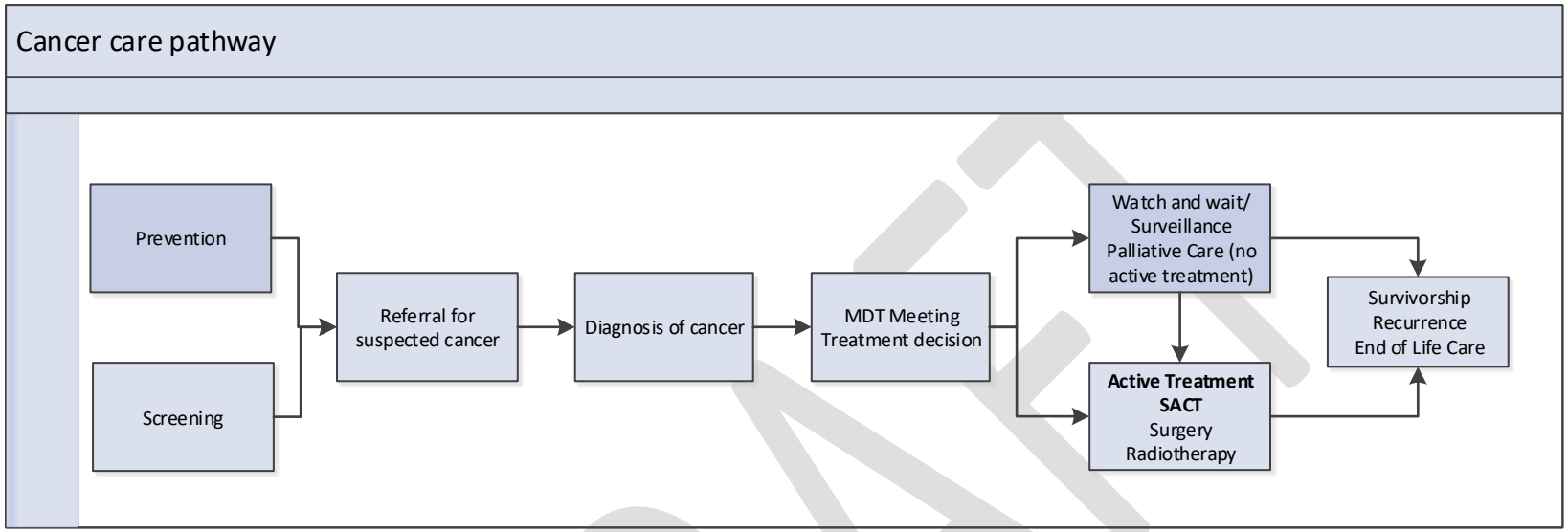


Figure 2 Patient Cancer Care Pathway

2.1 SACT as a treatment for cancer

SACT involves the systemic treatment of cancer including, but not limited to chemotherapy, targeted therapies and immunotherapies. SACT can be used on its own or in combination with other cancer treatment modalities such as surgery and radiotherapy and may be given at various points throughout a patient's cancer journey. SACT can be administered in a variety of ways including parenterally, orally, topically or other routes, such as limb infusion. SACT has led to improved overall survival for many cancers in both the curative and palliative settings (8). SACT is often accompanied by supportive medications aimed at the prevention and treatment of side effects of the SACT. Such supportive medications include anti-emetics, growth factors and preventative antibiotics.

SACT falls under the medical specialities of medical oncology, for the treatment of solid tumours such as breast and prostate cancer and haematology, for the treatment of haematological malignancies such as leukaemia and myeloma. A subdivision of haematology, haemato-oncology relates to the treatment of malignant or pre-malignant blood cancers. Both Medical Oncologists and Haematologist may treat lymphoma.

Cancer may be referred to as a chronic illness for many patients, resulting in patients receiving long term or lifelong SACT. While this has improved the treatment outcomes for patients, it does increase the challenges facing SACT service delivery.

SACT is primarily delivered in 26 publically funded hospitals as a day patient or in-patient. 9 of these are NCCP designated cancer centres including 1 paediatric cancer centre. See Figure 3 for a map of these hospitals. There are also a limited number of community based SACT providers. The private sector also plays an important role for the provision of SACT in Ireland.

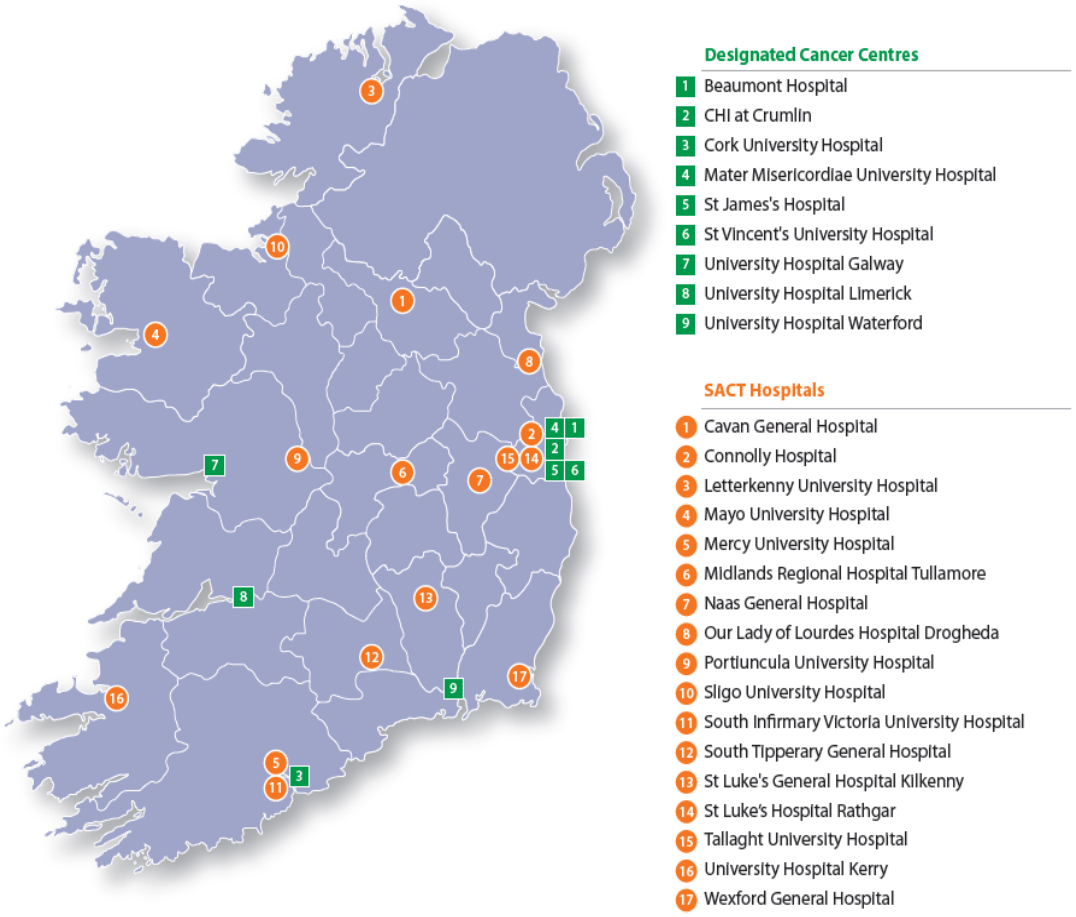


Figure 3 Map of Ireland with the name and location of the 26 publically funded SACT hospitals.

2.2 Drivers of change for SACT services in Ireland

There are many challenges facing SACT services in Ireland. The main drivers to these challenges include:

1. increasing patient numbers due to population growth and an ageing population
2. increasingly complex treatments
3. increased costs of new treatments
4. out dated treatment facilities with inadequate capacity

2.2.1 Incidence and Prevalence

The incidence and prevalence of cancer are growing and the number of cancer cases in 2045 is expected to be double that in 2015 (9). It is estimated that approximately 36,907 invasive cancers were diagnosed annually between 2018-2020 (6). In 2014, it was estimated that 33,000 people receive SACT annually with an acknowledgement that this number will grow (10). This may be an underestimation as the NCRI data is gathered for the first 12 months' post diagnosis and the treatment of some cancers can be far longer than 12 months.

Survival rates from cancer have improved, with five-year survival increasing from 45% to 61% in the past decade and five year survival for breast cancer now at 82% (4). These improved patient outcomes often require patients to receive longer-term SACT or receive subsequent treatment for a recurrence of their cancer or new cancers, which has increased the demand for SACT in Ireland. Some hospitals in Ireland have predicted up to a four-fold increase in day ward attendances by 2020 on 2010 levels (11).

2.2.1.1 Population growth and changing demographics

Projected increases in the size and average age of the Irish population in Ireland over the next 30 years have significant implications for the number of cases of cancer, as cancer is predominantly a disease of the elderly. This SACT Model of Care must remain adaptable and responsive to the changing demographics of the population, including consideration for the increase in urban population and the increasing age of patients.

2.2.2 Planning and resourcing of services

SACT services have developed over time, in an effort to keep up with the evolving role of SACT in the treatment of many cancers. However, the development of SACT services has largely been local, with individual hospitals advocating for change in a climate of competing priorities across healthcare. There is a need for a focus on structured national or regional planning of these services and, with the notable exception of funding for high-cost drugs, SACT services have been historically under-resourced, particularly in terms of staffing and facilities (12).

Acknowledging the growth in the number of patients with cancer and the use of SACT in their treatment, defining a SACT Model of Care to ensure a comprehensive approach to provide staffing and facilities for a safe and high quality service for both staff and patients alike, is paramount.

2.3 Policy direction

The environment within which SACT services are provided is constantly evolving and some of these changes and reforms will have an impact on how services are structured and delivered. Table 2 provides the background to historical policies and reports that have contributed to organisation of SACT services in Ireland today.

Table 2 Policy direction for the SACT Model of Care

Policy direction	
Guidance on the Provision of Parenteral Systemic Anti-Cancer Therapy and Supportive Care in Community Services (2020) (13)	A key focus of the National Cancer Strategy 2017-2026 (4) is attaining an integrated continuum of care for patients through primary, secondary and tertiary care. Central to this is the provision of appropriate cancer care services in the community, including SACT. This is an overarching guidance document for the establishment and provision of community based SACT services.
Guidance on the built environment of a haematology/oncology day ward (2020) (14)	This guidance was developed in response to Recommendation 9 of the Oncology Medication Safety Review Report (2014) to develop nationally agreed guidelines on the optimum requirements of the built environment of a haematology/oncology day ward. This report specifically considers the following in terms of the design of a haematology and/or medical oncology day unit: - minimising the risks to patients and staff due to the use of cytotoxic drugs - minimising risk of infection in a vulnerable population - respecting the dignity and comfort needs of patients - providing care in a safe and secure environment - facilitating efficient processes and optimising use of staff time - adherence to relevant legislative requirements and national policies
Oral Anti-Cancer Medication Model of Care (2018) (15)	The National Cancer Strategy 2017-2026 recommended the development of a model of care for OAM (Recommendation 23). The publication of the NCCP OAM Model of Care Recommendations represents a significant advance in patient safety for cancer care. The recommendations of this report focus on ensuring a safe OAM model of care. They incorporate the OAM recommendations of the 2014 Review and the National Cancer Strategy 2017-2026. These recommendations, when implemented in conjunction with the existing recommendations of the NCCP Oncology

	Medication Safety Review, seek to establish a safer OAM model of care
Sláintecare (16)	The Report by the Dáil Committee on the Future of Healthcare (2017) (16) aims to deliver a health and social care service that meets the future needs of our population. Over a ten-year period, it aims to deliver a universal health service that offers the right care, in the right place, at the right time, with a priority focus on developing primary and community services within a national policy context. The development of appropriate locations for the SACT services, in line with this Model of Care, aligns with the overall vision of Sláintecare.
National Cancer Strategy 2017-2026 (4)	The publication of the National Cancer Strategy 2017-2026 included a number of conclusions and recommendations relevant to SACT, including: - Development of a comprehensive model of care for SACT, to provide a roadmap to facilitate the implementation of the Strategy over its target period of 10 years - Capital developments for day care services and pharmacy capacity - A significant increase in staffing to provide SACT services, including medical oncologists and haematologists, advanced nurse practitioners, medical oncology and haematology nurses, pharmacists and health and social care professionals (HSCPs) - A comprehensive workforce plan for all cancer services - Appropriate MDM, centralisation and treatment arrangements to meet the diverse needs of patients with haematological cancers - A model of care for oral anti-cancer medicines - Equitable access to most advanced treatments available - Implementation of the National Cancer Information System (NCIS) - Centralisation of services for acute haematological malignancies - Appropriate facilities for the treatment of adolescents and young adults with cancer and joint appointment of

	medical oncologists and haematologists for adolescent/young adult care between the National Centre for Child and Adolescent Cancer and other cancer centres - Develop a framework for the delivery and location of molecular diagnostics - Protected time for research for consultants & ANPs and cancer research staff fully integrated into care delivery A range of key performance indicators and healthcare indicators
NCCP Oncology Medication Safety Review 2014 (17)	The NCCP Oncology Medication Safety Review Report assessed the oncology medication policies and practices in the 26 hospitals in Ireland involved in the administration of SACT from a patient safety and quality perspective. This report made 93 recommendations to improve the provision of SACT services in the 26 hospitals. Since its publication, work has progressed on the implementation of the report, through local implementation in hospitals and through national groups to develop guidelines and policies. Many of the outstanding recommendations from the Oncology Medication Safety Review Report are dealt with in this Model of Care. The following guidance documents, which are relevant to the SACT Model of Care were developed to fulfil the recommendations of this 2014 review: - Guidance on Intrathecal Chemotherapy - Guidance on Neurotoxic Drugs - Guidance on the Built environment of a haematology and oncology day ward - Consent form for SACT - Minimum personnel for Day Wards
NCCP Report on the Implementation of the 2006 Strategy (2014) (10)	In 2014, the NCCP published a report outlining the progress it had made on the implementation of the 2006 Cancer Strategy. The report outlined that since the 2006 Strategy, the role of SACT had changed significantly and now plays a much more prominent role in curing and controlling cancer. The NCCP formally established national programmes for medical oncology and haemato-oncology (collectively known as the “Systemic Therapy Programme”) in late 2012.

	These programmes provide a framework for national oversight and audit of oncology drug use, adherence to protocols and oncology drug expenditure. Activities include the development of chemotherapy protocols, publication of the Medical Oncology Safety Review and the establishment of the Technology Review Committee for new drugs or expanded indications for existing drugs. Separately, the National Plan for Radiation Oncology set out the national model of care for radiation oncology and progress was made on the centralisation of diagnosis, treatment planning and surgical oncology.
The Establishment of Hospital Groups as a transition to Independent Hospital Trusts (2013) (18)	This report, often called the O'Higgin's Report, resulted in the establishment of the Hospital Groups. Each Hospital Group was recommended to have a NCCP Cancer Centre. This report noted that these Hospital Groups should not be in conflict with existing NCCP arrangements and did not propose to dismantle any of the existing NCCP centres. This report specifically highlighted the existing nature of Cancer Control Networks and the importance of maintaining these linkages.
National Cancer Strategy 2006: a Strategy for Cancer Control in Ireland Evaluation Panel Report (12)	The external review by Warde et al (12) of the Cancer Strategy 2006 (3), identified significant deficits in the SACT service, which were highlighted in the National Cancer Strategy 2017 (4). Principal amongst these deficits were: - The design of SACT day-care facilities; there is a need to improve pharmacy facilities, day-ward capacity and patient experience and to ensure that appropriate facilities are available for the management of acutely unwell patients requiring review. - 24/7 cancer care so that no cancer patient requiring emergency care related to their treatment is required to access that care through the Emergency Department. - Better links with general practitioners. - Nursing staff shortages, which were recognised as being "a major concern as regards patient safety". The lack of ANPs in Ireland was described as "startling". - A severe lack of health and social care professionals

	- A shortage of pharmacists, to the point of raising patient safety concerns. - A minimum of 60 consultant medical oncologists. A review of staffing needs in medical oncology, particularly in areas outside Dublin.
National Cancer Strategy 2006 (3)	The 2006 Strategy had a strong focus on prevention and research, as well as major structural changes to the organisation and delivery of cancer services. These included the establishment of managed cancer networks and the designation of cancer centres. Other key recommendations from the strategy were the development of care pathways, the establishment of specialised teams for the management of site-specific cancers and the organisation of specialised care, including surgical services, into cancer centres. SACT services were then a relatively smaller part of the approach to cancer treatment. In order to support the implementation of the strategy in the HSE, the National Cancer Control Programme was subsequently established in 2007.
Cancer Services in Ireland, a National Strategy, 1996 (2)	This strategy outlined the need for A National Cancer Strategy to build upon the steps taken under Shaping a Healthier Future and to ensure that Ireland has a high quality cancer service throughout the country. One of the key principle was to ensure that those who develop cancer receive the most effective care and treatment and that their quality of life is enhanced to the greatest extent possible.

3. Scope and Methodology

3.1 Scope

The scope of the SACT model of care includes all aspects of the medical oncology and haemato-oncology care of **adult** patients from the time that a decision to treat with SACT is made at the multidisciplinary team (MDT) meeting and includes related areas along the patient SACT pathway. These areas include the following:

- Patient experience
- Organisation of services
- Governance
- Quality and safety
- Data and information management
- Innovations in SACT
- Clinical trials
- SACT pathway
- Acute Oncology
- Workforce planning

This SACT Model of Care focuses on the SACT pathway as detailed in Figure 2. Key components of the overall cancer pathway may be referenced in this Model of Care, however they are considered out of scope as they are broader than the SACT pathway. Areas that are outside the scope of this document include:

- Paediatric and Child, Adolescent and Young Adult (CAYA) systemic therapy.
    - A National Model of Care for Paediatric Healthcare Services in Ireland is in place (19)
    - A National Model of Care for CAYA Cancer Services is in the process of being developed by the NCCP CAYA Programme.
- Surgery
- Radiation oncology
- Diagnostics other than key diagnostics relative to the SACT pathway, for example, companion diagnostics predictive for choice of SACT
- Haematology services relating to anything other than malignant and pre-malignant haematological conditions
- Survivorship and psycho-oncology
    - Models of Care for Psycho-oncology (22) and survivorship are currently in place (20, 21)
- MDT meetings

3.2 Methodology

3.2.1 Steering Group

A Steering Group was established by the NCCP in 2015, to include representation from a range of service provider bodies including medical, nursing, pharmacy and health and social care professionals (HSCPs), as well as patient representation, the Department of Health and NCCP management. The Steering Group was responsible for key decision making in relation to project scope, guiding principles and key priorities including the overarching structure of this report as informed by the literature review. The terms of reference and membership of the group are provided at **Error! Reference source not found.**. The Group met a total of X times. The Steering Group membership is in Appendix X.

3.2.2 Literature review

A literature review of international evidence of SACT models of care and other relevant areas was undertaken, along with a review of current services and local policies and guidelines relevant to the SACT services in Ireland. A gap analysis of the current SACT services in Ireland compared to the international literature was carried out to formalise the recommended changes to the current services.

3.2.3 Data collection

Available data was utilised to provide evidence to this SACT Model of Care. Where specific information was unattainable, the NCCP liaised with relevant stakeholders in a standardised manner. This included the Haematologist's and the pharmacist's workforce planning survey.

3.2.4 Consultation

The draft SACT Model of Care went out to public consultation on the NCCP website. Targeted consultation to key stakeholders was also undertaken with an open invitation information session provided. An information session for the National Cancer Strategy Patient Forum was also provided.

3.2.5 Approval

TBC

4. Overall Vision and Principles

In determining the overall vision and principles to guide the development of the SACT Model of Care, the SACT Model of Care Steering Group considered the international models for SACT service delivery as well as the objectives of relevant health service strategies in Ireland, including the National Cancer Strategy 2017-2026 (4). This has also been informed by the HSE's core values of care, compassion, trust and learning, along with Sláintecare's National Framework and Principles for the Design of Models of Care (2019) (5).

4.1 Overall Vision

The overall vision for SACT is that patients with cancer will receive a safe, high quality, patient-centred service that is accessible and appropriate to their needs. Patients will receive a timely and equitable service that reflects their individual needs and will be supported in accessing supportive care.

4.2 Principles

The SACT Model of Care Steering Group identified core values that underpin this SACT model of care. This has led to the development of the 6 guiding principles for the SACT Model of Care, outlined below. These principles are presented alongside the relevant principles from the Sláintecare Model of Care Principles in Table 3.

Table 3 SACT Model of Care Guiding Principles and correlating Sláintecare Model of Care Principles

Principle number	Principle	Key points	Sláintecare Model of Care Principles
1	**Patient-centred care**	• The patient's experience during the SACT pathway is paramount • The patient has a key role in their own care, including self-care and self-management along with deciding on the SACT plan with their consultant and other relevant health care professionals • The patient has a key role in informing the design of the SACT Model of Care	Principle 2: Person-centred, Principle 3: Health and wellbeing, Principle 5: Coordination of care Principle 6: Self-care and self-management
2	**Access to Services**	• Equity of access to services • Timely access SACT services nationally	Principle 1: Population health perspective Principle 4: Equity
3	**Multi-Disciplinary Approach**	• A multi-disciplinary team approach to the care of patients must be a core objective of the SACT Model of Care in order to provide the best outcomes for patients • An appropriate range of disciplines are available for assessment, treatment and management of patients	Principle 7: Top of licence practice and teamwork
4	**Evidence Based Practice**	• SACT services must be based on the best evidence available in order to provide the highest quality of care to patients • Clinical trials are an integral component of SACT services and should be available to patients, where appropriate	Principle 7: Top of licence practice and teamwork Principle 9: Quality and safety
5	**Safe Service**	• Safe care is fundamental to the provision of SACT services • Safety of the SACT services ranges from expertly trained staff and continuous professional development along with the SACT regimens	Principle 9: Quality and safety

		or drugs used • Measurable safety measures must be available and reported in order to ensure safety standards are met	
6	**Resources**	• Resources vital to SACT services include staff, IT and infrastructure • These resources must be provided at each point of the SACT pathway in order to provide the right care in the right place at the right time by the right person	Principle 2: Person-centred Principle 8: Supported by technology

5. International Approach to Models of Care

As outlined in Chapter 1, models of care are increasingly being used to set out the type of care that patients can expect to receive for a particular condition or illness. Models of care are not static but subject to change over time, therefore must be flexible. The World Health Organisation (WHO) recognises redesigned models of care as an innovation that can contribute to addressing the challenges facing health systems (23). This chapter reviews international practice that has influenced the design of a model of care for SACT in Ireland.

5.1 Patient Experience

The patient experience of their cancer care journey is recognised internationally as a fundamental component of a model of care (24, 25). In the UK, patients and families when confronted with a cancer diagnosis are faced with fragmented care, gaps in provider communication, emotional distress and potential or realised socioeconomic issues (26). This description of cancer care could be compared to many healthcare systems, including Ireland. A number of key considerations exists in current literature to address these multifactorial issues that may occur during the patients SACT pathway. These considerations include the following:

5.1.1 Communication

Improved communication with patients is recognised as a key component of improving the patient experience (24, 27). Clinical staff should ensure that patients, families and carers understand the condition, nature, potential benefits and risks of proposed treatment and future lifestyle requirements and limitations (24). According to the 2018 UK Cancer Patient Experience Survey, variations existed on side effects being explained to patients in an understandable way (28). The information provided should always be at a level and in a format appropriate to the patient's and carer's understanding (24).

5.1.2 Patient Choice

Further to simply understanding the information being provided, it is reported internationally that the patient should play an active role in decision making during their SACT care, in particular the agreement of the SACT treatment plan with their consultant (24, 29-31). This is often referred to as "No decision about me, without me." Patients should be informed of all possible treatment options and outcomes at all stages of their treatment to ensure shared informed decision-making (24, 31). The Achieving World Class Cancer Outcomes, a strategy for England 2015-2020 paper states that patients should have access to all their test results and treatment records online (25). Patients should feel empowered to be equal partners in decisions around their care.

5.1.3 Seamless pathway

The patient pathway through cancer services should be seamless (24, 25, 32). Patients should not notice their transition between organisations in the provider network. They should not feel that they have been abandoned when their care is transferred from a specialist centre to their local hospital or primary care (24). Patients should be made aware that SACT may not always be delivered where the decision making process with the consultant occurs. Patients should be assured that one entity has the accountability and responsibility for their experience across the entirety of the pathway and that SACT will be delivered in a setting that is most appropriate for their individual SACT treatment plan (24).

All healthcare workers have a responsibility to ensure smooth transitions of care for patients (33). It is acknowledged that policies and procedures are required to ensure that the transfer of patients to a more local SACT service does not cause delays for patients, nor a break in the continuity of their care. Prompt electronic data transfers, clear arrangements and key contact person support are said to be key to achieving the seamless transfer of patients (25).

5.1.4 Digital communication

Patients report that they often have to tell their clinical history to different clinicians who don't have access to their records and have expressed frustration with sporadic and often impenetrable access to information about their diagnosis and treatment or about research opportunities (25). Digital communication has a fundamental role in improving communication and empowering patients with the information that they need to aid the informed decision making process (25). A number of countries are developing digital tools to aid the patient through their cancer care. These countries include Sweden who are developing a digital 'My Care Plan' and NHS England. These digital tools would essentially be a clinical data application that a patient would be able to access all their relevant health records (24, 30).

5.1.5 Carers considerations

Carers (professionals, relatives and friends) should be acknowledged as partners in patients care and should be appropriately communicated with and supported with information and professional help as needed and in line with the patient's wishes. It should be noted that carers have information needs that can be different to the patients' needs. As SACT services rely on carers understanding and reinforcing key messages, supporting the carer is vital (34). It is also important to ensure, rather than assume, that these people are willing and able to help (24).

5.1.6 Patient Assessment

The importance of understanding the need for physical, psychological, social, spiritual and financial support for people with cancer and their carers is recognised internationally (35, 36). Having a system

for routine assessment offers an opportunity for health care professionals to understand and respond to patients' specific needs and improve the overall patient experience during their cancer care (27, 37). Another benefit of a regular patient assessment is to help people with cancer to make choices and to self-manage their condition on a day-today basis, hence minimising the risk of a crisis which can lead to an emergency or unplanned admission (36).

5.1.7 Designated key contact person or team

A designated key contact person or team is seen as a solution to many of the key issues that arise for patients during their cancer journey and as a result many countries have integrated them into the SACT multidisciplinary team. They are viewed as crucial to achieving a seamless care pathway for patients by reducing barriers as well as improving outcomes for patients and the wider SACT multidisciplinary team (26, 38-40). A designated key contact person or team can act as a point of contact for advice and reassurance both within the acute setting and most importantly when the patient returns home and during follow-up care.

Currently, there is no consensus on the scope of practice, qualifications and competencies for key contacts (26). The qualification to become a member of the key contact team varies internationally and therefore their roles and responsibilities also vary considerably (26). A variety of papers report lay people, cancer services administrative personnel, social workers and nurses all doing the duties of a key contact person or team (26, 38, 39).

Roles and responsibilities carried out by the designated key contact team members in a SACT service include coordinating services, scheduling tests, scheduling appointments, patient education, patient assessment, compliance and engagement, identification of patients specific needs, identifying barriers, locating resources and financial assistance while working within the culture and customs of the local community (26, 41). Many of the roles and responsibilities undertaken often require a highly specialised set of skills and disease specific knowledge necessary to provide patient centred care throughout the cancer care continuum, including SACT and promote positive outcomes for patients (26).

5.2 Organisation of Services

SACT services are organised in a variety of ways internationally. Many services have developed in response to their population needs rather than in a prospectively planned manner for the future needs of the country and their patient population. A number of themes for organising SACT services exists in international models of cancer care including the levels of services available in particular locations.

5.2.1 Levels/Types of SACT services

Internationally, cancer services approach their organisation of SACT services in a manner that best suits their population. A common feature of the organisation of cancer services internationally is the use of levels or types to organise the service (42, 43).

The Levels/Types tend to be based on the complexity and type of service provided. Consensus appears to exist that the most complex SACT regimens, often requiring in-patient care, must be provided in an acute hospital or designated cancer centre with the expertise, infrastructure and staff required to safely administer this complex care. The majority of international SACT services define this as Level/Type 1. The other end of the spectrum is the lowest risk and lowest level of complexity of care. The lowest Level or Type of care can be provided in the community, including primary care facilities and the home. See Table 4 for further details.

Defining the Levels or Types of SACT services is multifactorial. Factors include, tumour type, treatment intent, vesicant/non vesicant drugs, patient risk/co-morbidities, intensity and complexity of SACT, risk of chemotherapy-induced neutropenia, patient understanding of treatment goals and side effects and staff expertise.

The levels or Types defined by each health service also accounts for their particular population needs. Both centralisation and devolvement of SACT is necessary in the majority of health care services included in this review. The predicted increase in patients receiving SACT and predicted increase in the need for complex SACT results in the growing need for centralisation of specific, more complex services to Level or Type 1 hospitals. Hence, the growing need for devolvement of less complex services away from the Level or Type 1 and 2 hospitals towards Level or Type 3 and 4 services in order to manage the overall increase in capacity (30).

SACT outreach is another model used by health services to both enable care closer to the patient's home and to devolve certain aspects of lower complexity SACT service away from the SACT hospitals (44, 45). For example, The Christie NHS Foundation Trust has a large network of outreach SACT services including a mobile chemotherapy unit, primary care centres and a hospice day unit[3]. These outreach services remain governed and staffed by the SACT hospital while being in an offsite location.

Other considerations are taken into account when defining Levels or Types of SACT services. Some countries include the affiliation with an academic institute and their responsibility to research, clinical trials and training to their defined Levels/Types (30, 46). Level or Type 1 hospitals may also play a role

[3] https://www.christie.nhs.uk/about-us/about-the-christie/the-christie-international/specialist-oncology-advice-and-assurance/systemic-anti-cancer-therapy-sact-advice

in the governance structure of the lower Levels/Types e.g. producing nationally agreed guidelines, defining the level or structure of the region (30).

Table 4 Commonalities per Level/Type of SACT services in International Evidence

Levels/ Types	SACT service location	Common themes
1	Cancer centres	• Highest complexity of care • Research • Teaching • Skilled expertise • Multidisciplinary case management • Accreditation standards (47) • SACT outreach services
2	Acute SACT Hospital	• Medium to high complexity of care • SACT services provided under the direct supervision of an on-site medical oncologist or haematologist • Limited teaching and research responsibilities • SACT outreach services
3	Acute SACT Hospital/Satellite	• Low to medium complexity of care • SACT service provided with a visiting medical oncologist or haematologist or no medical oncologist or haematologist and is a nurse-led unit • Formalised links to a higher Level/Type hospital • Limited teaching and research responsibilities • Ambulatory facilities (no in-patient beds) • SACT outreach services
4	Primary/Community Care including SACT at home	• Low-risk complexity of care • Clear governance structure including patient pathways • Patient selection criterion is important • Generally, nurse-led or patient-led • Patient choice

5.2.2 The growing need for community SACT/Type 4 SACT services

Internationally, SACT services in the community are growing and need to be developed further. Reasons for this include; the drive for less in-patient SACT services where clinically appropriate (24, 25, 48), the patients' needs and desires to have SACT closer to home or in their home (48) and the growing use of oral anti-cancer medicines in SACT regimens (29). The North of Scotland Cancer Network (NOSCAN) acknowledge that the overall SACT service could be expanded to benefit increased capacity via careful planning of community SACT services (49).

Community SACT includes SACT services provided in the community via primary care centres, public health facilities, dedicated community infusion clinics, general practitioners as well as in the patient's home. Due to the very nature of providing SACT services away from an acute hospital setting, defining the patient population eligible to avail of these services is essential, as seen in many countries approach (25).

Variations in areas of patient selection criteria, patient choice, access, patient experience, education and support, community provider education and training resulted in a recommendation for standardisation of care in the community in both Canada and the North of Scotland Cancer Network (29, 49). The lack of a formalised process for sharing information and communication between the acute hospitals and community services was seen as a key component of the shortcomings of community SACT services (29) and highlighted as a necessity by the North of Scotland Cancer Network (49).

The North of Scotland Cancer Network outlined their community SACT services are set up as a shared care model with the cancer centres with treatment initiation, support and expert advice given from the cancer centres (local to them) with all aspects of care fully compliant with quality standards (49, 50). Other links with the cancer centres were outlined by the North of Scotland Cancer Network including contingency arrangements and opportunities for training and updates to maintain essential competencies, learn new skills, and develop close working relationships with the wider SACT team (49).

Alternative methods of delivery of care may be required for community SACT services to work effectively, for example, pre-SACT blood tests taken more locally by a General Practitioner (GPs) or community SACT service and pre-SACT assessment via the phone for patients living at a distance from the SACT service (49). As noted by Southern Health, Australia, GPs could play a bigger role in care of patients during SACT but education would be a vital component of this expansion (48).

5.2.2.1 Community pharmacy services

The development of SACT in the community, in particular OAMs, has highlighted the importance of the role of the community pharmacist (51). Cancer Care Ontario, Canada describe community pharmacists as an integral component of the community SACT service (29). Internationally, concerns associated with OAMs dispensed in the community is cited, including lack education on SACT, patient information, time and staff in the community pharmacy setting (51, 52). A number of actions to improve the community SACT service via community pharmacists are discussed in literature. These include, continuous education on relevant SACT for community pharmacists, an information and communication technology-based system for sharing patient information and a community

pharmacist-led telephone follow-up for assessment of patients on OAMs (51). Furthermore, close collaboration among community pharmacists, oncology pharmacists, nurses and physicians can lead to safe medication and improved clinical outcomes for patients (51).

5.2.3 Drugs funding

There is a variety of drug funding models in place internationally with no consensus on the best approach. However, patient-based funding models where essentially the money follows the patient and all patients have equal access to clinically appropriate drugs is a common aim in these drug funding models (29).

Cost effective drugs is another common theme arising from drugs funding models with fair pricing of SACT drugs being cited as an ongoing challenge (53). NHS Scotland have acknowledged the need to consider whether new medicines deliver the value that has been shown in clinical trials and are supporting a project on the clinical effectiveness of cancer medicines in a real life setting (53). The introduction of biosimilar medicines is one example of obtaining value for money (54).

The Scottish Government also stated that there is currently no comprehensive approach to assessing repurposed off-patent medicines that have the potential to be a more effective treatment for particular diseases that the available licenced drugs (53). They specify that they need to undertake work to establish improvements to their current approach in this area (53).

5.3 Governance

For those countries who define their SACT services per Level or Type of SACT Service, one clear governance structure tends to be defined through those same identified Types of SACT service (48). South Australia clearly defines the governance roles of cancer services as overseeing and endorsing formal links and memorandums of understanding within and across health regions in order to maximise the provision of speciality and support services as close to home as safely as possible and to enable timely access to distant services when required (32). The governance also includes oversight of the continuous development and implementation of standardised policies, procedures and guidelines. In the UK, the National Chemotherapy Advisory Group (NCAG) report in 2009 also recommended the development of specific protocols and policies to be adhered to (55). NHS England provide a clear governance structure diagram to demonstrate their governance structure (25).

Governance pertaining to community SACT services, in particular state that the satellite services should be set up and linked to a central unit in the provider network, for example a cancer centre (30, 42, 43, 49, 56) . The provider network as a whole should ensure governance of quality and safety through protocols and pathways and enable standardised care and smooth transfer across settings (30, 42, 43).

5.4 Quality and Safety

Quality and safety pertains to every part of a healthcare system and this is a guiding principle underpinning many international Models of Care for cancer (29, 30, 57-59) (60, 61).

Standardisation of SACT services is cited as an effective method to produce a quality and safe service (29, 42, 43). Standardisation of SACT services is complex in itself and requires work on every level of the service. The standards, based on evidence, provide a tool for organisations to embed accreditation and quality improvement activities into their daily operations and are said to support the delivery of healthcare (58).

5.4.1 Policies, procedures, protocols and guidelines (PPPGs)

Evidence based policies, procedures, protocols and guidelines (PPPGs) are often included in the quality standards. They are to be adhered to in order to achieve and maintain the quality and safety standards set out (57, 58).

Many of the PPPGs particular to SACT care tend to be on the safe handling, administration and disposal of cytotoxic and systemic therapy consumables (30, 42, 43, 55). It is also specifically acknowledged that the prescribing and dispensing of oral chemotherapy must be carried out to the same service standards as for parenteral chemo (42, 43).

5.4.2 Monitoring and evaluating

The need for effective monitoring and evaluation of SACT care is recognised as a key method of ensuring the system remains safe, efficient and high quality (29). There are a number of tools utilised to monitor and evaluate SACT care and many utilise PPPGs as a standard to measure against. Methods to monitor and evaluate SACT services include but are not limited to the following:

- Key performance indicators
- Risk assessment and management of all procedures
- Incident reporting
- Patient feedback and satisfaction surveys
- Strategic planning
- Clinical indicator data to satisfy accreditation
- Clinical indicator data to satisfy other statutory obligations
- Training and competency records
- Clinical audit

5.4.3 Electronic prescribing

Electronic prescribing systems have been internationally acknowledged as a vital component of any safe SACT service, including both hospital-based and community-based services (35). Electronic prescribing of all cancer medicines has been mandatory for providers of SACT in the UK since 2006 because of the clear and well evidenced implications for patient safety of manual prescribing (25).

Electronic prescribing is said to overlap with quality and safety for out of hours care (53), as well increasing the ability for remote patient management which is key for patients in more rural areas (49).

5.5 Data and Information Management

The majority of healthcare systems have a data and information management policy which they adhere to including a policy on General Data Protection Regulation (GDPR). The highest performing healthcare systems are supported by data sharing, often in real time, improvement programmes, performance management and research (53). Accurate and systematic recording of data is fundamental to improving patient outcomes (53).

5.6 Innovations in SACT

Recent years have seen many innovations in SACT including the development of immunotherapy, new molecular targets for personalised medicines and advanced therapy medicinal products. As well as providing improving outcomes for patients, these innovations are often associated with significant costs.

5.6.1 Targeted therapy and immunotherapy

Advances in the understanding of the molecular pathways that drive the development and progression of human cancers, novel targeted therapies have become an exciting new development for anti-cancer medicine (62). These targeted therapies act to block the growth of cancer cells by specifically targeting molecules required for cell growth and tumorigenesis (62). Due to their specificity, these new therapies are expected to have better efficacy and limited adverse side effects when compared with other treatment options, including hormonal and cytotoxic therapies (62).

5.6.2 Molecular testing and personalised medicines

Cancers that arise in the same part of the body and appear the same by conventional pathology may have highly heterogeneous prognoses, determined by specific molecular changes in the individual patient cells (25). Molecular testing in cancer care involves the use of molecular biomarkers in the diagnosis, prognosis, disease monitoring and treatment stratification (53, 63). Molecular testing in terms of SACT treatment stratification can play a crucial role in improving patient outcomes. Recent evidence suggests that diagnostic precision may be increased by more than 20% using molecular techniques compared to cytogenetics (64).

Molecular testing to guide treatment for solid tumours in England has increased by an average of 51% per year since 2011 (25). NHS Scotland devised a robust framework for national molecular testing in order to meet specific quality standards such as safe, equitable, efficient, effective, person centred and timely care (63). Specific recommendations on molecular testing, including cohorts of patients that should be tested were made by the NHS, further stating that where applicable, positive tests should guide decisions on the most clinically and cost effective prevention interventions of treatments (25).

5.6.3 Advanced Therapy Medicinal Products (ATMPs)

Advanced therapy medicinal products constitute an innovative class of heterogeneous research driven biopharmaceuticals. This class encompasses gene therapy medicinal products, somatic cell therapy medicinal products, tissue-engineered products and combined products (65). There are currently hundreds of advanced therapy medicinal product clinical trials underway and almost one quarter of those are focused on the treatment of cancer (65). This alone illustrates the potential for a new wave of SACT in the near future. An example of an advanced therapy medicinal product in clinical use is chimeric antigen receptor T-cell (CAR-T) Therapy.

5.6.3.1 CAR-T Therapy

Chimeric Antigen Receptor-T Cell Therapy (CAR-T therapy) is a new class of adoptive cellular immunotherapy that involves ex vivo genetic modification of T cells to incorporate engineered CARs specific for particular tumour targets (66). The reprogrammed CAR-T cells are then infused into the patient, where they initiate targeted immune responses against cells expressing the corresponding antigen (66). CAR-T therapies have demonstrated improved remission rates compared with standard chemotherapies among adult patients with relapsed/refractory malignancies but is associated with unique acute toxicities. Intensive monitoring, accurate grading, and prompt management of toxicities with aggressive supportive care, anti-IL-6 therapy, and/or corticosteroids for severe cases are required to reduce the associated morbidity and mortality (66, 67).

In order to implement a CAR-T therapy programme in a healthcare system, there are a number of requirements including meeting regulatory and accreditation requirements along with technical and logistical requirements (66). Clinical considerations include the location of the service, the multi-disciplinary team available and the specialised training of staff (66).

5.6.4 Radiopharmaceuticals

Unstable isotopes and their capacity to provide the targeted delivery of ionizing radiation for a determined duration has resulted in their use for both curative and palliative treatment for cancer (68). It is said that a promising era of novel malignancy specific radiopharmaceuticals, including

radioimmunotherapy, is actively emerging and has the potential to improve the management and outcomes for cancer patients (68).

5.6.5 Cytogenetics

Chromosomal abnormalities are found mostly in haematological malignancies. Hence, cytogenetics plays an important role in guiding SACT options, monitoring response to treatment and also as a prognostic marker in these diseases (64). Cytogenetics testing is becoming more refined, more affordable and more accessible (69). The development of the Cancer Genome Atlas is expected to lead to further improvements in understanding the genetic basis of cancer (69).

5.6.6 Automated compounding technology

Automated compounding technology has the potential to reduce compounding errors, reduce costs, allow for significant productivity gain and higher service level (70, 71). The potential benefits of automated compounding devices would lead to increased SACT resilience for hospital pharmacies. However, it is cited that the potential benefits is highly dependent on the type of automation device in use (70). Further research into this relatively new technology is required in order to produce evidence-based recommendations (70, 71).

5.6.7 Pharmacist prescribers

Internationally, non-medical prescribers (NMP) are established in SACT services, including nursing and other HSCPs. Oncology pharmacists have also the training and expertise that places them in an optimal position to provide evidence-based care to patients with cancer (72). In some countries, pharmacists who have completed an accredited prescribing course and registered their qualification with their regulatory body are able to prescribe medications, including SACT. A non-medical prescribing pharmacist may assume the professional responsibility for performing patient assessments, ordering drug therapy-related laboratory tests, administering drugs and selecting, initiating, monitoring, continuing and adjusting drug regimens under a defined protocol (72).

Non-medical prescribing pharmacists in the NHS are said to improve patient care without compromising on patient safety by making it easier for patients to get the medicines they need and allowing more flexible team working (73). In Scotland, the aim is that all pharmacists providing NHS pharmaceutical care will be pharmacist-independent prescribers by 2023 (74). It may be deciphered from the NHS actions that the role for pharmacists in the future is evolving and may be an approach to take to meet future service demands.

5.7 Research and Clinical Trials

Treatment on a clinical trial is regarded internationally as the gold standard of care. Clinical trials are vital for improving and advancing cancer treatments and for licencing of drugs. Many healthcare

systems set standards in order to enhance their clinical trial programmes including recommendations such as patients should be enrolled into and treated on a clinical trial, where a clinical trial for their particular cancer is available (25, 53, 64). There is evidence to suggest that the outcomes for patients treated within the context of clinical trials is superior to those outside formal trials (64).

5.8 SACT Pathway

5.8.1 SACT Treatment Plan

As said in section 5.1.1, patient choice and being active in the decision making process of their SACT care is fundamentally important to the overall patient experience. Information on the SACT treatment plan should include possible treatment options, the aim of the treatment plan being recommended, possible side effects and how to manage them, the expected outcomes, also the outcome of not proceeding with treatment need to be given (34). Other considerations include any appropriate clinical trials.

5.8.1.1 Patient Baseline Education and Assessment

A pre-initial treatment review or baseline assessment could improve the introduction of patients to the SACT service while ensuring the patients are well informed, have consented to their SACT treatment plan and may also relieve some of the stress patients feels when attending for their first SACT treatment (49). This appointment gives patients and carers the opportunity to ask further questions before commencing SACT after digesting the information provided to them by their consultant and nurse.

This baseline assessment should include educating patients and carers on important points including how to take medication, for example OAMs, what to do in the event of specific side effects, for example, neutropenic sepsis and other oncological emergencies (20). There is a need for local information in the SACT treatment plan such as parking, information centres, pharmacy services and support groups (28).

A referral for prehabilitation should also be considered as required (75). Prehabilitation interventions should start as early as possible and in advance of any cancer treatment (76). Prehabilitation provides an opportunity to improve the physiological function and psychological wellbeing of patients, thereby improving resilience to the effects of cancer treatments and enhancing quality of life before, during and after treatment.

5.8.1.2 Patient SACT Assessment

Pre-SACT assessment occurs before each cycle of SACT is administered. The purpose of this review is to identify any toxicities experienced in the previous cycle, assess the individual's fitness to continue and implement any planned changes to the SACT treatment plan as necessary (34, 77). Monitoring at

set intervals during the patients SACT therapy plan is also recommended to assess the response to the SACT and recommend any changes to the plan that is required (34, 77).

5.8.1.3 Completion of SACT

It is acknowledged that the completion of SACT can be a vulnerable time for patients as they are uncertain about their future (53). Providing support at this point of the SACT pathway is important. Educating the patient about follow up reviews, any tests that may be required, what signs and symptoms to look out for and how to contact the team if required are important. It is cited that the ultimate goal is to ensure patients have the knowledge, understanding, confidence and skills to live well on their own terms and with the health conditions they have (53).

In the UK, the Macmillan recovery package is completed and given to the patient and a copy sent to their GP on completion of SACT (78). This approach is also supported by the Scottish Government (53).

It is recognised that not all patients receiving SACT will come to the point of completion. Many patients will receive SACT indefinitely and this is outlined further in section 5.8.1.6.

5.8.1.4 SACT Follow Up

SACT follow up care plays a vital role in caring for patients who are often concerned about recurrent disease, having ongoing expertise of specialist advice and faster access to tests (79, 80). However, there is debateable value for follow up for many cancers in terms of early diagnosis of recurrence, improved survival and meeting people's needs (53, 79, 80). With the growing number of cancer patients surviving, the focus of follow up care is shifting towards the management of a chronic condition and hospital-based follow up places a significant burden on hospital out-patient's clinics and is described as unsustainable (79, 80).

Primary care follow up, nurse-led follow up, facilitated by telehealth follow up or a combination of these could be options to avoid the acute hospital setting and to enhance the follow up care of patients closer to home (79). A personalised follow up care pathway is another alternative follow up model as trialled in England, Northern Ireland, Australia and being adaption by the United States and Scotland (80). This involves a risk stratification process that triages patients to different care depending on their care needs and has been shown to improve patient outcomes, to be a more efficient use of the healthcare system and reduce costs (80). The risk stratification is based on several factors, including risk of recurrence, subsequent cancers, late effects, the severity of ongoing treatment sequelae, functional ability, psychosocial issues, health literacy and the ability to self-manage (80).

5.8.1.5 Discharge

It is common practice internationally that all patients that have received SACT and are discharged from the care of the medical oncologist or haematologist should receive a summary of the diagnosis, details on the treatment they received along with guidance on post-treatment management. The patient and the patient's primary care provider should also receive a copy of the treatment summary. A treatment summary is said to improve the transition of care from oncology to primary care settings and has been welcomed by GPs in the UK (81).

Onward referral to health and social care professionals (HSCPs) should also be considered at this point (82). The personalised treatment and support provided by HSCP's can have a significant impact on recovery, improving the health and wellbeing of a person after cancer treatment (82).

5.8.1.6 Long Term SACT/Chronic Malignancies

Many cancers can now be referred to as chronic malignancies. Increasingly, a number of cancer types are requiring long-term and even lifelong systemic therapy which has important implications for each patient (8). The needs and experiences of these patients are likely to differ to those on SACT for definitive periods of time or those that are at the end of their life (83). Psychological burden remains high in the chronic phase of cancer and patients report ongoing difficulties in accessing support and services (83). Younger patients who have been ill for longer and those who have less social support are cited as particularly vulnerable (83).

5.8.2 Telehealth

Telehealth, also known as telemedicine, refers to the remote delivery of healthcare services by health and social care professionals using information and communication technologies (84). An array of technologies can be used including, but not limited to, telephone, video or audio conferencing, electronic messaging, digital photography and instant messaging. Prior to the COVID-19 pandemic, telehealth had not consistently been employed in health care systems to deliver routine service. According to the WHO, 40% of the European Region reported having a telehealth policy (84). The absence of an international legal framework, a lack of policies that govern patient privacy and confidentiality and the risk of medical liability for health professionals were cited as just some of the barriers to embracing telehealth (84).. Furthermore, the WHO report that governance, policy or strategy, scientific development and evaluation as factors that can facilitate telehealth development (84).

Supported by the WHO (84), the use of telehealth in SACT care should be maintained, for example to facilitate care at home and in the community and in particular for patients receiving long-term or life-long SACT.

5.9 Acute Oncology

As highlighted by the NHS, emergency cancer care places an enormous pressure on the urgent care services and is frequently associated with poor patient experience and poor outcomes (85). As reported by Cancer Care Ontario, almost half of all colon cancer and breast cancer patients who receive adjuvant chemotherapy regimens visit the emergency department or are admitted to hospital at least once within 4 weeks of receiving chemotherapy, and about half of those patients visit a second or third time (29). A lack of preparation and alternative strategies for dealing with SACT toxicity magnifies the problem and results in added use of emergency departments and in-patient beds (29). A number of healthcare systems cite proactive and standardised strategies to try and avoid the need for emergency department presentation and if emergency department presentation is necessary, how to manage the patient at that point (35).

5.9.1 Patient Education

For the majority of patients undergoing SACT that present at an emergency department, it is because of side effects from treatment, for example neutropenia, infection and fever (29). Many of these drug-related side effects are predictable, may be preventable, such as mucositis and should be taken into account in setting individual SACT treatment plans and in planning appropriate system resourcing to care for these patients during treatment (34).

Urgent complications tend to start in the patient's home and often patients need assessment, advice and treatment for side effects and complications (34). By appropriately educating the patient on their SACT therapy plan on the potential side effects or complications that may arise during their care, patients may act on symptoms at an earlier stage and may avoid emergency department evaluations (41). Timely interventions and advice for grade 1+2 toxicities can sometimes prevent escalation of symptoms and consequent morbidity (34).

5.9.2 Telephone Triage

Telephone triage is an essential component of acute oncology care in many healthcare systems (24). The NHS state that patients undergoing SACT must have access to a 24-hour helpline (24 hours a day, seven days a week) for urgent advice about side effects or symptoms of infection from chemotherapy (35). A 24-hour telephone line can reassure patients and keep them at home or fast track them into hospital, as necessary (34). Roe and Lennan (2014) reported the presence of a 24-hour telephone triage system resulted in a reduction in mean length of stay from 10 days to 6.5 days, suggesting a 35% reduction in SACT-related emergency admissions was achieved (34).

The helpline must be answered by healthcare professionals with expertise in SACT side effects who will be able to give advice. Those giving the advice should have access at least to basic information about a patient's condition and treatment. They should also actively manage the pathway of care if an

acute assessment is required. Processes should be in place to track or follow up any actions that occur following the call. This should be subject to regular audit of the effectiveness of the advice. Telephone advice and triage services should operate at least to the standards described in the UKONS (UK Oncology Nursing Society)[4].

5.9.3 Acute Oncology Service (AOS)

The 2009 NHS National Chemotherapy Advisory Group report and NHS England recommended that all hospitals with emergency departments must establish an acute oncology service to bring together the necessary expertise from emergency medicine, general medicine and oncology (55). The NHS state that an effective acute oncology service (AOS) will enhance patient experience and clinical effectiveness and ensure that equitable, safe, high quality emergency cancer care is consistently provided for non-elective/emergency adult patients (55). AOSs have been rolled out across England since the NCAG 2009 report (55). However, as identified by the NHS, a more standardised approach to the roll out of AOS should have been employed (25).

The NCAG report specified that policies and procedures must be in place for the oncological assessment of cancer patients at an emergency department (55). These protocols must be readily accessible and cover managing complications seen in the emergency department, for example, neutropenic sepsis. Processes for rapid referral and assessment by a medical oncology or haemato-oncology team, including treat and transfer where appropriate, must be in place. This may require training for more junior doctors (35, 55).

[4] https://www.ukons.org/site/assets/files/1134/oncology_haematology_24_hour_triage.pdf

6. Current Provision of SACT Services

As detailed above, SACT services are provided in 26 public hospitals. The manner in which these services are currently provided considering the existing policies and reports is detailed in the relevant sections below.

6.1 Patient Experience

Patient input, engagement and feedback needed to be strengthened (12). The National Cancer Strategy 2017-2026 sets out that the experience of patients can inform improvements in models of care (4). The National Cancer Survivorship Needs Assessment: 'Unmet needs of cancer survivors in Ireland: A scoping review 2019' also provides evidence of the need to take patients' needs into account (86). Improvements in this area have been made such as NCCP patient engagement, patient representation on groups, the DoH Cancer Patient Advisory Group.

While the HSE implemented a patient experience survey in 2015[5], there is no formal recording of patient experience on a national basis in SACT or wider cancer services.

6.1.1 SACT treatment plan

As reported in the 2014 Oncology Medication Safety Review Report, a SACT treatment plan is in place for the majority of patients (17). The report recommends what must be included in this plan and this is based on the patient's therapy plan.

Some patients may receive a copy of communication pertaining to aspects of their care including their SACT treatment plan at frequent intervals, for example, GP or primary care correspondence. However, variation exists nationally.

6.2 Organisation of Services

6.2.1 Managed Cancer Control Networks for SACT services

The 2006 Strategy resulted in the formation of 4 Managed Cancer Control Networks, 1 per Regional Division at that time (3). SACT services are a component of the Cancer Control Networks. The original aim of the Managed Cancer Control Networks was to facilitate the provision of care which is fully integrated between primary care, hospitals, palliative care, psycho-oncology and supportive care. It was also stated that the Managed Cancer Control Networks must feature the sharing of patients, expertise and resources (3). There is variation in how the Cancer Control Network's currently operate.

[5] https://www.hse.ie/eng/services/list/2/primarycare/patient-experience-survey/

The Strategy also identified an evidence based requirement to establish specialist Cancer Centres, each serving a minimum population of 500,000. Hence, eight Cancer Centres were established. This was originally 2 Cancer Centres per Cancer Control Network (3).

The O'Higgins Report (18), which recommended the development of the Hospital Groups, specifically highlighted the existing nature of Cancer Control Networks and the importance of maintaining these linkages. However, with the establishment of the Hospital Group structure, the Cancer Control Networks have evolved over time and there are now 7 Cancer Control Networks, one per Hospital Group. The SACT hospitals within these Cancer Control Networks broadly align to the Hospital Group structure, however variation exists.

The delivery of SACT services in Ireland was and still is provided in a "hub and spoke" configuration within the Managed Cancer Control Network. This includes the NCCP designated cancer centres, with full time consultant staff as well as other SACT hospitals, often with a part-time consultant commitment. These services developed around the sessional commitments of consultant medical oncologists and haematologists, where posts often encompassed sessions in two or more hospitals within a geographical area.

'Hub' hospitals manage the care of more complex SACT regimens and have designated in-patient beds and often take the lead in treatment planning decisions. Less complex SACT is often delivered in a 'spoke' hospital closer to the patient's home in accordance with the specific SACT treatment plan and taking into account the patient's preferences. However, the delivery of services in these hub and spoke configurations varies.

6.2.2 Hospital Group Structures

The current Hospital Group structure for acute services in the HSE was established in 2013 resulting in 6 Hospital Groups with the Children's Hospital Group becoming Children's Health Ireland at the start of 2019. Each of the Hospital Groups has an associated Cancer Control Network.

As noted in the Report on the implementation of 'A Strategy for Cancer Control in Ireland 2006', the structure of the Hospital Groups had a varying impact on the existing structure of medical oncology and haemtato-oncology services (10).

6.2.3 Organisation of acute medicine services

There are four generic hospital models in the organisation of acute medicine services. The purpose of these models is to provide a clear delineation of hospital services based upon the safe provision of patient care within the constraints of available facilities, staff, resources and local factors. These

models are hierarchical in nature from Model 1 which includes community/district hospitals up to Model 4 where the hospitals can admit undifferentiated acute medical patients (87).

6.2.4 Where patients receive SACT

The location where the patient receives their SACT is dependent on the disease type, the treatment required and the type and complexity of the SACT treatment plan they are prescribed. The patient's condition and distance from the hospital may also be taken into account when making the decision of where to administer SACT. The location of where SACT is delivered is detailed in Table 5. Notably, there are currently no SACT outreach services.

Cancer services are also provided in several private hospitals and it is estimated that 30% of cancer care occurs in private hospitals (12). Very limited data is available on private hospital activity

Table 5 Location of SACT services

SACT service	Details	Corresponding references
In-patient wards	• A number of SACT hospitals have designated SACT in-patient beds. • Patients receiving complex SACT regimens may need to be admitted as an in-patient for close observation or isolation during their treatment. • Other patients who may be unable to travel long distances on a daily basis may require admission in order to receive their SACT.	(17)
Ambulatory day units	• The majority of patients requiring SACT receive their treatment in a treatment space in an ambulatory day unit setting. • Ambulatory day units tend to be located on the site of, or in an acute hospital. • Many ambulatory day units have a combined medical oncology and haemato-oncology service. A number of hospitals have separate medical oncology and haemato-oncology units and others have a service for just medical oncology or haemato-oncology. • Ambulatory day units typically operate Monday to Friday, 8am-6pm, however variants on this exist. • A day unit usually consists of an open plan room with multiple reclining chairs.	(4, 12, 15, 88)
Community SACT services	• Parenteral SACT services in the community are limited at the moment, however supportive SACT is offered in a variety of community SACT services. • Community pharmacy services including dispensing of OAMs. Examples of community SACT services currently in operation include: • The NCCP Community Oncology Nursing Programme which enables community nurses to deliver some aspects of care to oncology patients in their community. • Community infusion clinics providing services for oncology patients such as low-risk infusions, pre-SACT blood tests and supportive care for SACT patients. • The provision of SACT directly to patients by third party/private providers under contract with the hospitals/HSE.	(13, 15, 89)

Specialist referral centres	Several of the SACT hub hospitals act as referral centres on a regional or national basis for specialist and often highly complex SACT regimens. The profile of the patients catered for by SACT hospitals therefore varies depending on referral pathways. Examples of a specialist referral pathway includes the allogeneic stem cell transplant service and neuro-oncology service. The management of these patients may be in combination with the referring hospital to facilitate the care of patients closer to home.	(4)

6.2.5 Drug funding

SACT is currently funded through three separate funding streams in the Irish public healthcare system;

1. The community drug schemes of the Primary Care Reimbursement Services (PCRS) (including the high tech arrangements, the GMS and DPS) for drugs self-administered by patients at home.
2. Hospital base budgets for drugs administered in hospitals.
3. The Oncology Drug Management System (ODMS) for specific high-cost drugs administered in hospitals. The drugs/indications included in the ODMS are listed on the NCCP website here.

There has been a standard HSE assessment process in place for new drugs, and new indications for existing drugs, since the implementation of the IPHA 2012 agreement between the DOH, HSE and the pharmaceutical industry, and the subsequent 2016 IPHA agreement (90, 91). This is underpinned by the Health (Pricing and Supply of Medical Good) Act 2013 (92). This process ensures that there is transparency in the pricing and reimbursement application process. All cancer drugs which have been approved for reimbursement since 2012 have gone through this process.

6.2.5.1 The NCCP continue to support the uptake of best value biological products such as biosimilar products into the healthcare market in Ireland. Biosimilar and generic products represent some of the ways forward to obtain sustainability and maximise the funding for new medicines to be made available for patient treatment (93).

6.3 Governance

The NCCP was established in 2007 following the publication of the National Cancer Strategy 2006 (3) and is responsible for the planning, organisation and delivery of cancer services in 26 hospitals in Ireland that provide cancer care. The NCCP's National Programme for Systemic Therapy was established in late 2012, with the aim of organising and developing medical oncology and haematology services. This national programme is responsible for developing the quality and safety of SACT services, through the development of national protocols and guidelines, audits, the support of expensive oncology drugs, implementation of quality and enabling systems and the development of national plans for the future of systemic therapy services including the implementation of the National Cancer Information System (NCIS).

Governance of SACT services in Ireland is centred around the existing Cancer Control Networks. In many cases, this is also aligned with Hospital Groups structure, however variation exists. While it is clear that the management of the patient is the responsibility of the individual consultant medical oncologist or haematologist, in overall terms, there is scope for more clearly setting out the governance structure for SACT services.

The NCCP published the Guidance on the Provision of Parenteral Systemic Anti-Cancer Therapy and Supportive Care in Community Services in 2020 (13). This outlines the governance arrangements for community services. More broadly, the HSE Governance structure is outlined below in Figure 4.

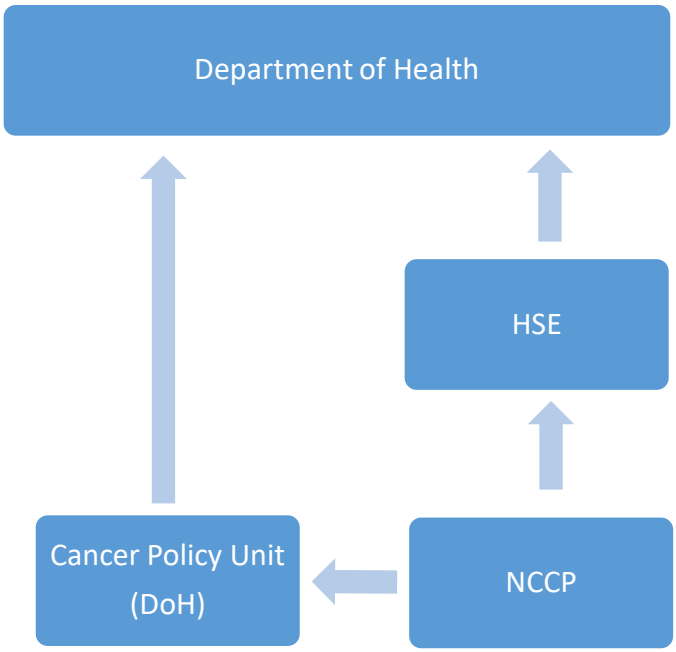


Figure 4 HSE Governance Structure

6.4 Quality and Safety

SACT services operate within the overarching quality and safety frameworks and guidance documents[6] including HIQA standards and quality[7] (94)**.** In addition, the NCCP has agreed a number of quality and safety initiatives for SACT services as detailed in Appendix X. While the majority of services have implemented the recommendations as appropriate to their services, there are some variations nationally.

6.4.1 NCIS

The National Cancer Information System (NCIS) is a clinical information system that supports the care of oncology and haemato-oncology patients across Ireland. NCIS is highlighted in the National Cancer Strategy 2017-2026 (4) and HSE Service Plan 2020. This system will be used in all SACT hospitals.

NCIS has a number of key functionalities which will be used by various health care professionals including;

[6] https://www.hse.ie/eng/about/who/qid/framework-for-quality-improvement/framework-for-improving-quality-in-our-health-service.html

[7] www.HIQA.ie

- electronic prescribing
- electronic medication administration records
- support for aseptic compounding
- MDM documentation and reporting
- access to a patient's longitudinal cancer record. This will ensure that all relevant healthcare providers will have access to the patients' data in an appropriate and timely manner
- enhanced medicines governance
- improved communication with the patient
- improved communication of patient information
- support for effective data recording and report generation
- integrated clinical decision support and alerts to support safe prescribing
- optimised use of drugs using evidence-based medicine

The roll-out of the National Cancer Information System across 25 SACT hospital within scope is in progress with three sites live to date.

6.5 Data and Information Management

Hospitals currently have varying data and information management policies. There have been recent improvements in management of data and information in Ireland in recent years with the publication of the eHealth Strategy for Ireland (95) and developments such as HealthLink, PACS, and NIMIS. Some key projects specific to cancer care and SACT include the NCCP Cancer Intelligence Programme with KPIs and performance data collection and drugs audit.

All SACT services must abide by the General Data Protection Regulation (GDPR) which came in to force in 2018[8].

6.6 Innovations in SACT

The use of SACT is constantly evolving and there are continuing innovations in for example, the development of new drugs and new uses for existing drugs as well as new molecular targets. Innovations in recent years have included the growing use of immunotherapy drugs and molecularly targeted therapies.

Where a new innovation has service development requirements, this is considered through the national service planning process. This may be the requirement for the availability of a companion diagnostic test e.g. PD-L1 testing or BRCA testing to inform SACT options or the establishment of a new service such as CAR-T.

[8] https://www.hse.ie/eng/gdpr/hse-data-protection-policy/hse-data-protection-policy.pdf F

6.6.1 Molecular testing and Personalised Medicine

In terms of SACT there are a limited number of drugs with dedicated molecular targets which are approved for reimbursement by the HSE. The HSE has ensured that the required companion molecular diagnostic tests, to identify those patients who may or may not benefit from treatment, are available to those patients attending publically funded hospitals providing cancer services. Additional molecular testing may be used to stratify a patient's treatment plan, however availability of this varies. This system does not cover treatment of patients in a Private Hospital. The NCCP established a group in 2017 to advise on relevant cancer molecular diagnostic testing requirements that are predictive for drug treatment.

6.6.2 Additional innovations

Recent innovations being considered through these processes, as appropriate, include targeted therapy and immunotherapy, Advanced Therapy Medicinal Products, Radiopharmaceuticals, PRRT, cytogenetics.

Automated computed technology in hospital pharmacies for SACT is not currently widely used in Ireland. However, there are a number of SACT hospitals undertaking pilots with automated devices who aspire to incorporate this technology into their service. There are also no pharmacist prescribers in Ireland currently.

6.7 Research and Clinical Trials

Clinical trials may be sponsored by a cooperative and collaborative clinical trial research group, may be academically led or industry led. The largest collaborative cancer research infrastructure in Ireland is the HRB funded National Cancer Clinical Trials Research Network. Currently fulfilled by Cancer Trials Ireland[9], which was established in 1996 and which operates a hub and spoke model supporting clinical trials units in each of the cancer centres. Its establishment put formal structures in place to ensure strong links with international cancer research groups and to facilitate Irish patients to participate in a wide variety of internationally led clinical trials. Since then, 15,000 patients have taken part in more than 350 cancer trials. A key recommendation of the National Cancer Strategy 2017-2026 is to increase the number of cancer patients on clinical trials from 3% to 6% (4).

There are clearly defined governance and training requirements that are a pre-requisite of a trial protocol including of Good Clinical Practice and mandated consenting protocols. Many hospitals have dedicated cancer clinical trial units on site or will have close links to one in line with their hub and spoke.

[9] https://www.cancertrials.ie/

6.8 SACT Pathway

Currently there are a number of distinct processes that the majority of patients requiring SACT will undergo. The patient will typically attend an appointment with their consultant medical oncologist or haematologist to discuss their diagnosis and agree a SACT treatment plan. Consent for the SACT treatment plan may also be obtained at this point. The SACT treatment plan agreed will vary widely and depend on a number of elements such as type of disease, the treatment options available, the condition the patient is in and the wishes of the patient.

6.8.1 Treatment with SACT

Many hospitals have the same processes in place for the treatment of SACT as outlined in Table 6. Assessment and education recommendations from previous reports are fulfilled through these processes (15, 17). However, variation exists nationally. Variation also exists for referrals to HSCPs as required, for example, referral for prehabilitation.

Table 6 Current SACT pathway

SACT Pathway point	Description
Baseline Assessment	Patient education is completed as a component of their baseline assessment. Patients are assessed for an array of issues, for example, co-morbidities, social support, oral hygiene, fertility. They also receive education on their SACT therapy plan. A standardised baseline assessment form has been developed to support hospitals
Pre-SACT Assessment	Assessment of the patient before each cycle of SACT is administered to ensure they are fit for their treatment. Analysis of the blood results and any other tests required
SACT administration	This can be done in a variety of ways depending on the type of SACT prescribed. It can also be administered in a variety of locations as outlined in Table 5.
Treatment monitoring/restaging	Review of the patient to assess response to SACT including toxicities and efficacy of the treatment. Restaging investigations may be requested and the SACT therapy plan may be altered depending on the outcome of this review.
Follow up	The frequency a patient is reviewed post-SACT will depend on the individual tumour type and the patient's response to treatment. Currently, follow-up care typically takes place in the out-patients department in the hospital the SACT was administered in.
Discharge	Patients who have completed their course of SACT and follow up will be discharged from the care of their medical oncologist or haematologist. The National Cancer Strategy 2017-2026 recommended that all hospitals should offer patients a patient treatment summary and care plan as part of their support (4). Many hospitals will provide a discharge summary letter to the patient and the patient's GP, however variation exists with the discharge process. Some patients will have access to a self-management programme for example, the NCCP Cancer Surviving and Thriving Programme[10]

6.8.2 Long-term SACT/Chronic Malignancies

Patients with particular chronic malignancies may often remain under the care of a haematologist or medical oncologist for an extended period and often the rest of their lives.

6.8.3 Telehealth

[10] https://www.hse.ie/eng/services/list/5/cancer/profinfo/survivorship-programme/cts.html

While the use of telehealth solutions in SACT care in Ireland has been limited to date, interest in this area of working has increased in recent years driven by the eHealth Strategy for Ireland (95), improved technology and its acceptance by staff and patients.

During the COVID-19 pandemic, there was an increase in the use of telehealth facilities to reduce the requirement of patients to attend hospitals. To support this, there is a HSE Procedure for the Management of Virtual Outpatient Clinics[11] and a patient information leaflet[12] developed by the NCCP.

6.9 Acute Oncology

Similar to international reports, emergency cancer care places a burden on the HSE in Ireland. There is an emphasis on prevention of SACT related side effects though careful planning of SACT treatment plans, along with education of patients and having timely access to advice from relevant staff in order to empower patients to deal with side effects at home or get reviewed when necessary.

However, the education that patients receive can be varied as highlighted by the Oncology Medication Safety Review (17). Access to advice in Ireland can vary also. The majority of SACT hospitals can provide a contact number for patients to call during normal ambulatory day unit working hours. However, after hours, inconsistencies exist. The Oncology Medication Review Report recommended that all SACT hospitals should utilise telephone triage protocols, using evidence based scoring/assessment, to facilitate accurate and standardised patient assessments (17). This has been implemented in the majority of SACT hospitals, but not all.

AOS in Ireland were considered in the International Panel Report and the National Cancer Strategy 2017 (4, 12). Work is progressing on establishing an AOS in Ireland, including the identification of education needs for nurses. As an initiative of the NCCP in 2020, there is currently an acute oncology CNS position in each of the 26 SACT hospitals. An NCCP AOS nursing forum has been established to provide strategic leadership and to develop a peer to peer supportive structure. Quality metrics have been defined and collected nationally. Template PPPGs have been developed to support nurses in these roles.

[11] https://www.ehealthireland.ie/National-Virtual-Health-Team/Resources-and-Documents/Procedure-for-the-Management-of-Virtual-Outpatient-Clinics-Scheduled-Care-Transformation-Programme-August-2020.pdf

[12] https://www.hse.ie/eng/services/list/5/cancer/patient/leaflets/virtual%20health%20clinic%20%20web.pdf

7. Workforce Planning

It is accepted internationally that in order to provide safe, high quality SACT services that meet the needs of patients, a highly trained and appropriately resourced workforce with a multidisciplinary approach is required (25). The SACT workforce in Ireland comprises of a highly trained and experienced group of healthcare professionals across a range of disciplines. The NCCP, HSE and in the Department of Health are working towards improvements in workforce planning.

Workforce planning must consider factors such as the specific occupations and grades including an assessment of the required skills and competencies, part-time work, male to female ratios, retirements and minimum staffing levels to ensure a safe and quality service can be provided. SACT services workforce planning should also consider education and specialist training requirements, sub-speciality, rarer cancers, SACT service location and the changing patterns of care in medical oncology and haematology. The detailed site by site workforce planning will need to take into account the development of specialisation of disciplines within the broader MDM, for example ANPs and other Non-Medical Prescribers (NMPs). The staffing ratios for consultants[13] in this chapter may change in the future depending on the availability of these specialist disciplines within the MDM.

As a recommendation in the National Cancer Strategy 2017-2026, the NCCP are undertaking an overarching cancer services workforce plan and many of the considerations highlighted will be included in this work. This Model of Care refers to workforce planning at a high level for the following; Consultant Medical Oncologists, Consultant Haematologists, SACT nursing, SACT pharmacy and palliative care services. It is acknowledged that many other disciplines are vital to the patients SACT pathway and they are expected to be included in the wider cancer services workforce plan. All disciplines within the SACT MDM should be adequately supported by administrative and other support staff.

7.1 Medical Oncology Consultants

The model for delivery of medical oncology care varies significantly worldwide. The specialty of medical oncology has developed significantly in Ireland and the demand on the medical oncology service is growing resulting in a need for greater numbers of Consultant Medical Oncologists. This demand is driven by increased patient numbers, increasing survival rates, the development of new

[13] The staffing ratios for Consultant Medical Oncologists and Consultants Haematologists are population based for the Republic of Ireland and do not reflect the private sector SACT services operating currently.

drugs, technologies and treatment opportunities with more treatment interactions with patients (4, 10, 96).

Consultant Medical Oncologist's are responsible for the management of their patients throughout their SACT treatment plan. This includes the care of patients receiving their SACT in all SACT services.

7.1.1 Recommended minimum staffing for Consultant Medical Oncologists

There have been a number of reports identifying the need to increase the number of Consultant Medical Oncologists in this country considering the population based requirements. See Table 7 for more details.

Table 7: Reports citing the requirement to increase the numbers of Consultant Medical Oncologist's in Ireland

Report	Consultant Medical Oncologist WFP comment
National Cancer Strategy 2006 (A Strategy for Cancer Control in Ireland) Evaluation Panel Report (12) (2014)	34 Consultant Medical Oncologist's in place in 2014. • Approximately 60 Consultant Medical Oncologists at a minimum is required
Report of the National Task Force on Medical Staffing (97) (2003)	45 Medical Oncologists by 2013 to achieve a 1 Medical Oncologist per 87,000 population ratio or 1.15 per 100,000
NDTP: Demand for Medical Consultants and Specialists to 2028 and the Training Pipeline to Meet Demand (98) (2020)	41 Consultant Medical Oncologist posts in place n 2020 i.e. the equivalent of 1 Medical Oncologist per ~100,000 population in Ireland • By 2028, a further 58 Medical Oncologists are required • A total of 99 Medical Oncologist's is required by 2028

There are variations in the international recommendations for benchmarking and therefore can be difficult to directly apply to Ireland. For example, Australia report an optimal workload of 150 new patients per consultant per annum, equating to 1.84 per 100,000 populations[14] (99), while an ASCO survey reported that 3.5 Medical Oncologist per 100,000 populations would be required in the USA by 2005 (100, 101). It is reported that NHS England have a 0.7 Consultant Medical Oncologist's per 100,000 populations and NHS Scotland have 0.5 per 100,000 (98).

There is currently **46.98 WTE** Consultant Medical Oncologist posts throughout SACT hospitals. The current population of the Republic of Ireland is 4.9m with an annual increase of 0.8%[15]. This is the equivalent of 0.96 consultants per 100,000 populations. While it must be noted that there are

[14] Based on 2014 population of Australia.

[15] https://www.cso.ie/en/media/csoie/newsevents/documents/census2016summaryresultspart1/Census2016SummaryPart1.pdf

variances in the model for delivering medical oncology internationally, when comparing the Irish ratio to international benchmarks, it is clear that this discipline is understaffed.

Taking the NDTP (98) recommendation and accounting for the expected increase in population, by 2028 and a population of 5.2m, 99 Medical Oncologists are required which is the equivalent of **1.9 per 100,000 populations**. This is an increase of 52 WTE Consultant Medical Oncologists by 2028.

7.2 Haemato-Oncology Consultants

Similar to Medical Oncology, the specialty of haemato-oncology has also developed significantly in recent years and the demand on the haemato-oncology service is growing resulting in a need for greater numbers of Consultant Haematologists. There are 2 important distinctions regarding Haematology. The first is that Haematology is a speciality of pathology with Consultants having laboratory and clinical commitments, with many working approximately 50:50 across both elements of the discipline, however variation exists. The second is that Haematologists may work in malignant, non-malignant and transplant sub-specialities. A recent survey[16] of Consultant Haematologists working in malignant services indicates that an average of 62% (5%-100% range) of their time is spent on malignant work and 30% (5%-95%) on non-malignant work. For Consultants working in a hospital with a transplant service, an average of 19% of their overall time is on this service.

Consultant Haematologist's are responsible for the management of their patients throughout their SACT treatment plan. This includes the care of patients receiving their SACT in all SACT services.

7.2.1 Recommended minimum staffing for Consultant Haematologists with a malignant speciality

It has been reported that there is a need for additional Consultant Haematologists in Ireland. See Table 8 for more details.

Table 8: Reports citing the requirement to increase the numbers of Consultant haematologist's in Ireland

Report	Consultant Haematologist WFP comment
Report of the National Task Force on Medical Staffing (2003)	There should be 45 Haematologists employed by 2013 to achieve a 1 Haematologist per 58,000 population ratio. This report did not distinguish between malignant and non-malignant work in the haematology numbers. It also did not include some subspecialty posts such as transfusion centre posts.

[16] Self-reported data. Consultants with a commitment to malignant services have been included in this data.

NDTP: Demand for Medical Consultants and Specialists to 2028 and the Training Pipeline to Meet Demand (2020)	The NDTP report does not specify haemato-oncology alone. This discipline is included in the pathology numbers supplied so cannot be directly interpreted. However, the NDTP report that for all pathology disciplines, a further 50% increase in workforce is required to meet the estimated needs of the population by 2028.

International ratios and benchmarks for haematology in general, and haemato-oncology in particular, are difficult to apply given the variations in practice in different jurisdictions (47, 102-106). New Zealand reported having 70 Haematologist's in 2016 equating to 1.49 per 100,000 populations, with Australia having 2.4 per 100,000 populations in 2009 (102). The Royal College of Physicians (UK) estimated that the total number of haematologists required to deliver a high quality service at 1,250 (headcount) in 2013 (105). Based on the 2013 UK population[17], this equates to 1.95 Consultant Haematologist's (headcount) per 100,000 population.

There are currently **54.24 WTE** Consultant Haematologists working throughout SACT hospitals with the percentage malignant work each consultant haematologist undertakes varying. The current population of the Republic of Ireland is 4.9m with an annual increase of 0.8%[18]. Therefore, 54.24 is the equivalent of 1.10 WTE Consultant Haematologist per 100,000 populations in the Republic of Ireland.

Taking the NDTP recommendation of a 50% increase and accounting for the expected increase in population, by 2028 and a population of 5.2m, 81 Consultant Haematologists are required which is the equivalent of 1.56 WTE per 100,000 populations. These Consultant Haematologist's may possibly have a malignant and non-malignant workload.

7.3 SACT Nursing

A highly skilled and experienced SACT nursing workforce is key to providing a safe and high quality SACT service in the medical oncology and haemato-oncology disciplines. Where SACT services are nurse led, they are delivered under the guidance and protocols agreed for the service. There are specific roles within the SACT services where nurses can enhance the quality of care to patients. As well as inpatient and ambulatory day care, there are also roles in patient coordination, patient education, follow up and review, and links to survivorship programmes. Other nursing roles include acute oncology, prehab clinics and medication management.

[17] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland

[18] https://www.cso.ie/en/media/csoie/newsevents/documents/census2016summaryresultspart1/Census2016SummaryPart1.pdf

There are many different avenues for career development and advancement for SACT nurses, including Clinical Nurse Specialists (CNSs), Advanced Nurse Practitioners (ANPs), clinical facilitators and cancer clinical trial nurses. Please see Appendix X for more details on the grades and roles of nurses that are involved in SACT services.

7.3.1 Challenges with SACT nurse staffing

It is known that there can be challenges in nurse staffing in Ireland, particularly in filling vacancies. Nursing staffing levels in ambulatory day units was noted as a concern in the International Panel Report (12) including a reliance on agency nurses.

There is also a deficit in the use of more specialised nursing roles such as ANPs and CNSs in SACT services. As reported in the Achieving World Class Outcomes report, there is an urgent need for investment in cancer specialist nursing roles, particularly for rarer cancers and certain geographies (25). The Evaluation Panel Report noted the low number of ANPs across the cancer service compared with other jurisdictions and comments that this impacted on their ability to significantly contribute to the management of patients receiving SACT (12). Since their report, the number of ANPs in cancer services nationally has now increased to 53 and additional candidates are working towards registration[19]. The integration of ANPs in oncology and haematology teams provides a multitude of benefits as outlined in Appendix X.

The advancement of nursing practice provides an opportunity to redefine parameters for practice between nursing, medicine and related professions on the healthcare team. There is also a need for additional skills and support for nurses providing services to patients with cancer in the community.

Feedback from ambulatory day units in Ireland is that recruitment and retention is also a challenge. Options for how to recruit more nurses into oncology and haematology must be considered, including appropriate supports for nurses moving into cancer services, as well as retaining highly experienced nurses. Rotation of nursing staff between ambulatory day units and SACT in-patient wards is one such option and has been successfully implemented in a number of SACT hospitals. The potential to rotate hospital nursing staff to affiliated community SACT services should also be considered. The clinical facilitator role is also an important component of the support system for nurses as they contribute to the development, evaluation and maintenance of nursing standards as outlined in A strategy and Educational Framework for Nurses Caring for People with Cancer in Ireland (107).

7.4 SACT Pharmacy

[19] Correct at March 2021

Hospital pharmacy cancer services are an essential component of the SACT pathway. The competencies necessary for pharmacists working in cancer services are detailed in the NCCP National Competency Framework for Pharmacists Working in Cancer Care (108). The NCCP recognise specialisation of hospital pharmacists as key to supporting the safe delivery of hospital pharmacy cancer services as well as increasing efficiencies in aseptic compounding units, enhancing job satisfaction for pharmacists working in cancer services and improving the SACT service for patients.

There is a recognised need for additional pharmacy staffing in SACT services in Ireland, including new ways of responding to challenges such as medicine safety and supply. The International Panel Report identified shortages of pharmacists as one of the important workforce issues. The NCCP developed a Hospital Pharmacy Cancer Services Workforce Planning Framework in 2019, together with a subgroup of the SACT Resilience working group. The core elements of a pharmacy SACT service are detailed in this Framework which should be used to identify the workforce requirements in each hospital in a standardised manner.

The workforce planning data from the hospitals using this Framework have indicated that there are ~77 pharmacists and ~78 pharmacy technicians in cancer services in public SACT hospitals[20] in Ireland. Additionally, using this agreed Framework, the hospitals have reported a deficit of 36 pharmacists and 9 pharmacy technicians.

Non-medical prescribing (NMP) has been in practice internationally for a number of years. In Ireland nurses and midwives are the only non-medical profession with legislative authority to prescribe. The Pharmaceutical Society of Ireland (PSI)'s "Future Pharmacy Practice in Ireland" document supports the development of pharmacist NMP as part of the evolving role of the pharmacist (109). This also aligns with the principles of Slaintecare (110) and is supported by ISMO and IHS.

The establishment of non-medical pharmacist prescribers in SACT services is also supported by the NCCP as it would enhance service efficiencies where patient pathways could be further improved, for example in the management of patients requiring OAMs. The progression of NMPs would also enhance the role of the pharmacist in the MDM and provide additional job satisfaction.

7.5 Palliative care services

Palliative care services are intrinsically linked with cancer services as a large proportion of patients accessing palliative care services have a cancer diagnosis. As in cancer services, nurses and HSCPs are an integral part of the palliative care service and the deficits in these cohorts need to be addressed (111).

[20] Self-reported data from 21 of 25 Adult SACT hospitals.

Deficits also exist for Palliative Care Consultants. According to the National Doctors Training and Planning (NDTP) report in 2017, there were 0.8 consultants (headcount) per 100,000 populations (112). The National Clinical Programme for Palliative Care recommends that by 2026, Ireland requires between 1.1 and 2.2 Consultants (headcount) per 100,000 populations (112).

8. Findings and Recommendations

The finding and recommendations of this section pertain only to the gaps identified between the existing Systemic Anti-Cancer Therapy (SACT) service and best practice as identified in the literature review (Chapter 5) and the guiding principles (Section 4.2). The aim of the following recommendations is to ensure the provision of a safe and quality SACT service for all service users.

The integration of these recommendations with recommendations from existing national guidance and strategy documents will inform a SACT Service Specification. This Service Specification will then form the structure and operation of SACT services going forward.

There are also a number of overarching recommendations which cross the continuum of cancer care and do not pertain only to SACT services. These are not included in the recommendations below but are acknowledged as key to a quality and safe service.

8.1 Patient Experience

As identified in international literature and further highlighted in the National Cancer Strategy 2017-2026 and the Evaluation Panel Report (2014), healthcare services need to be patient centred (4, 12). Communication with the patient and their carers, empowering the patient and carers through education and identifying the specific needs of each individual patient is key to the design of a patient centred model of care.

Each patient must have a SACT treatment plan recommended by the consultant medical oncologist or haematologist and agreed with the patient and their carer(s) as appropriate. The SACT therapy plan is a component of the SACT treatment plan. Further information on the detail of a SACT treatment plan is available in section 8.8 (SACT pathway).

Creating a seamless pathway in SACT care through the coordination of services and gaining access to them in an effective and efficient manner is essential to improving the patient experience. Enablers to this seamless pathway, as seen in the international literature, would include a regular patient assessment (as addressed in section 8.8 through a baseline assessment and a pre-SACT assessment) and a designated point of contact for each patient. These enablers would enhance the patient experience during their SACT treatment plan. They would also support the patient's carer(s) who often play a key role in the patients' cancer journey.

Further to the NCCP Guidance of the Built Environment of a Haematology/Oncology Day Ward (14), other facilities for patients within SACT services should be considered, for example, access to free

WiFi. Other technological advancements that may enhance the patient experience should also be incorporated in line with the eHealth Strategy for example, digital communication.

No one individual designated contact person is currently assigned to each patient throughout their entire cancer continuum. SACT services should formally assign a designated point of contact to each patient that will be their single point of contact throughout their SACT treatment plan, regardless of where their SACT is delivered. This person or team would aid the coordination of the patient's planned SACT pathway. The roles and responsibilities of this designated contact person or team can be locally defined to best suit the patient needs and the service.

It is important to attain feedback from patients and carers in order to improve cancer services. The National Cancer Strategy 2017-2026 recommended[21] that a nationally defined patient experience survey is developed (4). The NCCP has engaged with HIQA and other relevant stakeholders in the development of this survey to ensure cancer services, including SACT services, are incorporated.

Table 9 Patient experience recommendations

	Recommendation	**Lead**
1	All SACT services should ensure patients are involved in decisions relating to their care	All SACT services
2	Each patient must have a SACT treatment plan recommended by the consultant medical oncologist or haematologist and agreed by the patient and their carer(s), as appropriate	All SACT services
3	The NCCP will define focused cancer patient experience surveys to incorporate treatment and survivorship in line with the National Cancer Strategy	NCCP

8.2 Organisation of Services

8.2.1 SACT services Types

In Ireland currently, there are commonalities in the organisation of SACT services across jurisdictions, however, variations also exist. These variations are typically due to a range of factors, such as geography, population, patient numbers and infrastructure. The need for a clearly defined organisation of SACT services is required.

[21] National Cancer Strategy rec 35: The NCCP will define focused cancer patient experience surveys to incorporate treatment and survivorship in line with HIQA's standard approach for the National In-Patient Acute Care Patient Experience Survey

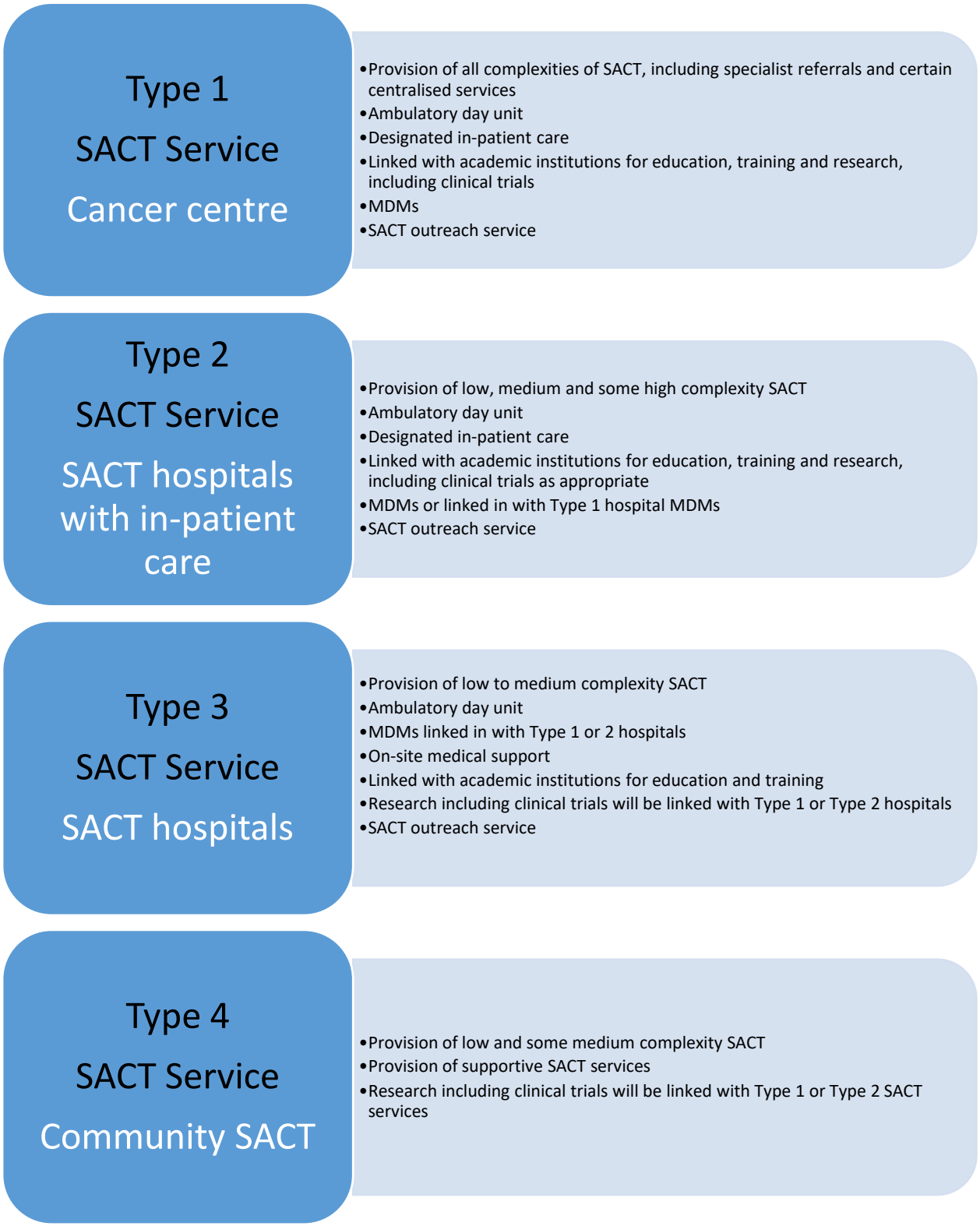
The use of Levels/Types to organise SACT services is utilised by a number of international healthcare systems as an effective way to identify where it is clinically appropriate to deliver SACT. Considering this approach and in order to ensure a clear delineation from the current model structure utilised by the acute hospitals, it is recommended that the organisation of SACT services in Ireland is defined by Types, ranging from Type 1 as the highest complexity to type 4 as the lowest. These Types define where SACT can be delivered as appropriate to the complexity of the drugs and specific needs of the patient's SACT treatment plan irrespective of their other cancer treatments e.g. surgery. Figure 5 describes the recommended structure for the organisation and delivery of SACT services in Ireland.

Devolvement of less complex SACT regimens away from Type 1 and 2 SACT hospitals to Type 3 and 4 SACT services, as appropriate, is recommended in order to improve capacity throughout Ireland and provide care closer to the patient's home. Further to this, Type 1-3 SACT hospitals should establish SACT outreach clinics to enable care closer to the patient's home as well as to create capacity within the SACT hospital campus.

SACT outreach services differ to Type 4 community SACT services as they are an extension of Type 1-3 hospitals from an offsite location. SACT outreach services are resourced by the Type 1-3 SACT hospital, including staffing, medicines and other supplies. Services are provided in line with the hospitals PPPGs. These services may include delivering low to medium complexity SACT and other supportive medications, as well as phlebotomy, OAM clinics, patient assessments and education and follow up appointments. In the development of outreach SACT services, consideration must be given to the staffing resources required noting that there may be challenges where staff work across a number of sites.

Certain specialist, low volume, often in-patient, more complex SACT regimens may need to be centralised in a limited number of Type 1 and 2 SACT hospitals and is recommended to improve patient outcomes. This centralisation approach is also in line with the National Cancer Strategy 2017-2026 (4).

Figure 5 Recommended Types of SACT facilities



The re-organisation of hospital and community services into integrated Regional Health Areas and the further development of community services under Sláintecare will provide a platform for the development of SACT services as set out above.

Table 10 Organisation of SACT services recommendations

	Recommendation	Lead
4	All SACT services will be organised and delivered in line with the Types detailed in Figure 5 • Type 1 and 2 SACT hospitals must have adequate bed numbers in dedicated in-patient wards for patients receiving SACT and for the management of SACT associated toxicities. • All SACT hospitals should have formalised links to relevant MDMs to enable discussion of patients as appropriate. • SACT hospitals should establish SACT outreach services	NCCP/HSE All SACT services
5	Certain SACT services should be devolved to Type 3 and 4 depending on the complexity of the SACT regimen and associated supports required.	NCCP, HSE, All SACT services
6	Certain specialist, low volume, often in-patient, complex SACT regimens should be centralised in a limited number of Type 1 or 2 SACT hospitals. This includes specialist haemato-oncology services.	NCCP, HSE

8.3 Governance

It is recommended that a single governance system is established for SACT services in Ireland in line with the guiding principles of this report and the National Cancer Strategy 2017-2026 (4). A single governance system will enhance the transparency of SACT services and aims to provide a quality and safe SACT service for patients and staff alike. The single governance structure for all SACT services is demonstrated in Figure 6. The governance system is hierarchical in nature.

8.3.1 NCCP

The NCCP will retain its national governance functions for SACT services. This includes the reporting of KPIs, audits and a continuation of its role in the development of national guidance and standard templates for local adoption as relevant to SACT services. These may include PPPGs, national SACT regimens, position papers and other resources. Where recommendations are made in relation to SACT, all SACT services are expected to implement and ensure adherence to such recommendations.

8.3.1 NCCP Cancer Control Networks for SACT services

The O'Higgins report established the Hospital Groups in 2013 which resulted in 7 Hospital Groups (including CHI), each with an associated Cancer Control Network (18). This report noted that these Hospital Groups should not be in conflict with existing NCCP arrangements and did not propose to dismantle any of the existing NCCP centres (18).

Each NCCP Cancer Control Network is responsible for the governance of a SACT hospital in their NCCP Cancer Control Network along with the Type 4 community SACT services in their locality. They are also responsible for the governance of MDMs in their NCCP Cancer Control Network, including the availability of the MDMs to all SACT hospitals in their NCCP Cancer Control Network. It is acknowledged that these NCCP Cancer Control Networks have evolved over the lifetime of the National Cancer Strategy 2017-2026 (4) and may continue to evolve.

Currently, there are some situations where SACT spoke hospitals are not aligned to the same Hospital Group and NCCP Cancer Control Network. Particular attention is required where this misalignment occurs to define the governance of SACT services and for the provision and availability of MDMs. It is anticipated that the establishment of RHAs and ongoing work in Sláintecare will result in a more cohesive alignment of NCCP Cancer Control Networks, in particular Type 2 and 3 SACT hospitals and Type 4 community services.

The NCCP Cancer Control Network's governance ensures that SACT services are in line with any legislative requirements as well as with national NCCP guidance and recommendations. The NCCP Cancer Control Network is also responsible for the distribution of all SACT services in their Network to ensure capacity for the provision of SACT is utilised efficiently and effectively. This includes the devolvement of patients away from Type 1 and 2 SACT hospitals to utilise capacity, where available, in Type 3 and 4 SACT services. This may ensure patients are treated as close to home as possible, that waiting times for patients receiving SACT are effectively managed and KPIs are met.

Each NCCP Cancer Control Network is expected to have a nominated cancer services team that will contribute to service planning within their NCCP Cancer Control Network, including service planning for SACT services. This team will comprise of a Clinical Lead who should be supported by a nursing lead, a pharmacy lead and a business manager lead. There are a number of these NCCP Cancer Control Network teams already established or in development.

8.3.2 Type 1-4 SACT services

All SACT services must operate in line with the organisation of services in this Model of Care and have a responsibility to abide by legislative requirements and national PPPGs governing SACT. All SACT services must report, as required, to the NCCP Cancer Control Network and the NCCP.

All Type 1-3 SACT services should have a nominated clinical lead for their SACT service to oversee the coordinated approach to SACT delivery and service planning.

The service delivery of community SACT services will be determined and aligned with national HSE governance arrangements. In most cases this will be through governance arrangements for community services. The governance arrangements will include funding and procurement arrangements including the supply and dispensing of medication. Where a third party service is contracted to provide SACT services in the patient's home, a service level agreement with the HSE must be in place which clearly outlines the governance structures in place.

8.3.3 Clinical governance

The responsibility for the management of the patient is with their primary treating consultant medical oncologist or haematologist, regardless of which Type of SACT service they are attending.

Clinical governance structures for SACT must be integrated into organisational governance functions with clear lines of accountability and responsibility for all clinical governance functions. Each SACT service irrespective of Type, will be responsible for adhering to this governance structure.

Figure 6 HSE SACT Services Governance Structure

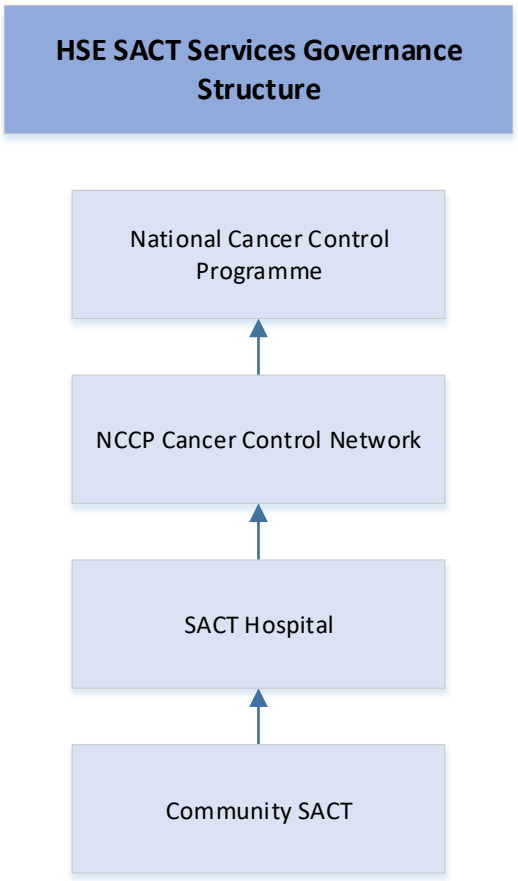


Table 11 Governance recommendations

	Recommendation	Lead
7	The governance of all SACT services is based on the governance structure as demonstrated in **Error! Reference source not found.**6. The establishment and structure of any new SACT services should align to this governance.	DoH, HSE, NCCP, NCCP Cancer Control Networks, all SACT services
8	Each location providing SACT cancer service be a part of a NCCP Cancer Control Network • NCCP Cancer Control Networks should have a nominated cancer services team including a clinical lead and should be supported by a nursing lead, a pharmacy lead and a business lead.	NCCP Cancer Control Networks, All SACT services
9	Type 1-3 SACT hospitals should have a nominated clinical lead for their SACT service to oversee the coordinated approach to SACT delivery and service planning. Type 4 SACT services must have clear governance arrangements in place from community to hospital.	All SACT services

8.4 Quality and Safety

A quality and safe SACT service is underpinned by a number of components including standardisation of SACT services, a nationally implemented information system as well as clear patient information and communication throughout the SACT service. The NCCP play a key role working with cancer services stakeholders to develop and agree national guidance to ensure quality and safe SACT services are in place. Future developments in this area may include an NCCP approved accreditation process or quality framework.

8.4.1 Standardisation of SACT services

Standardisation of SACT services is key to the development of a quality and safe service. Standardisation of all aspects of SACT care is to be addressed through the recommendations made in this Model of Care. There are a number of components to standardising SACT services, including;

8.4.1.1 Policies, procedures, protocols and guidelines (PPPGs)

Evidence based policies, procedures, protocols and guidelines (PPPGs) will be developed by all SACT services to achieve and maintain the quality and safety standards in a particular location. PPPGs may be local, regional, national or other. These PPPGs should adhere to the HSE PPPG framework[22] and

[22] https://www.hse.ie/eng/about/who/qid/use-of-improvement-methods/nationalframeworkdevelopingpolicies/

should include, at a minimum, the PPPGs indicated in the 2014 OMS review. Where national policies are in place, local protocols should adhere to them,

8.4.1.2 Monitoring and evaluating

SACT services will be monitored at hospital, regional (NCCP Cancer Control Networks) and national level as per the above governance structure. This will include, but may not be limited to:

- Key Performance Indicators
- Quality Indicators
- Audit of cancer services locally and nationally e.g.
    - Clinical audit
    - National Drug usage audits
    - Audits of number of patients being discussed at MDM
- Monitoring of overall service improvements in line with funding and service developments
- Incident reporting in line with HSE and local requirements
- Reporting requirements to support accreditation
- Environmental monitoring of aseptic compounding units
- Patient and service user feedback should be incorporated where appropriate

8.4.2 NCIS

NCIS has the ability to support and improve a quality and safe SACT service through enhanced medicines governance, improved communication of patient information, support for the safe and efficient delivery of SACT, a shared record for patients attending for SACT and support for the effective data recording and report generation. It is recommended that all SACT hospitals implement NCIS to achieve and strengthen a quality and safe SACT service.

SACT outreach services, Type 4 SACT services and community pharmacies should also be considered when implementing e-health solutions such as a national electronic patient record system or shared-care record in order to support their service and ensure safe transitions of care. Remote electronic prescribing of SACT may also need to be considered.

Table 12 Quality and safety recommendations

	Recommendation	**Lead**
10	All SACT services and the NCCP will be responsible for maintaining a quality and safe service and will be monitored and evaluated regularly. PPPGs will be developed and adhered to in all SACT services, as appropriate to that service, to support a quality and safe service.	All SACT services, NCCP

11	The NCCP will lead on the development of all national KPIs and quality indicators in SACT services.	NCCP
12	All SACT services should be supported by a national information system such as NCIS • Electronic prescribing of parenteral SACT should be in place in all SACT services by 2025, and expanded to include other areas such as OAMs and supportive care once available	All SACT services, NCCP, HSE

8.5 Data and Information Management

Data and information management and quality and safety are intrinsically linked. Data and information management systems can facilitate a safe and quality SACT service and aid reporting mechanisms.

It is recommended that each SACT service should have an explicit data and information management strategy document in place that considers the following from a provision of SACT perspective;

- Types of data
- Quality of data
- Data protection and confidentiality
- Accessibility
- Transparency
- Analysis of data and information
- Use of data and information
- Dissemination of data and information
- Risks

The implementation of NCIS will support many aspects of data and information management in hospitals. Where possible, a shared patient record should be in place to facilitate the sharing of patient records between hospitals and primary care. This would be to support the seamless management of patients throughout the entire continuum of cancer care. There are a number of ongoing ehealth projects (eHealth Ireland) such as the national ePR, national patient portal, shared care record. The NCIS is aligned to those as relevant.

Table 13 Data and information management recommendations

	Recommendation	**Lead**
13	All SACT services should have a data and information management	All SACT services

	strategy document	
14	The NCCP will engage with the emerging eHealth strategy to optimise the use of SACT services data	NCCP

8.6 Innovations in SACT services

8.6.1 Advances in SACT and diagnostics

New SACT and new indications for existing SACT, as well as new molecular tests continue to become available resulting in additional treatment options with reduced toxicity and improved patient outcomes.

Advances in diagnostics, such as molecular testing, that inform decisions on SACT are now an essential component in the management of patients with cancer. These new innovations should be assessed by the NCCP and recommended for implementation, as appropriate[23]. Once recommended, all new SACT and diagnostics that inform decisions on SACT should be implemented in a timely manner to ensure that the treatment of patients in Ireland keeps up to date with these advances.

8.6.2 Advances in hospital pharmacy cancer services

Although much work has been done in the area of pharmacy cancer services in Ireland, there are areas where innovations are ongoing that may enhance these services. Resilience in aseptic compounding units is key to ensuring these services can continue to safely provide SACT in hospitals. The development of automated computed technology has the potential to support this safe service, increase efficiencies in aseptic compounding units, as well as improving the SACT service for patients through improved turnaround times and efficiency gains.

Table 14 Innovations in SACT recommendation

	Recommendation	**Lead**
15	New therapeutics and diagnostics in SACT should be rapidly implemented following the recommendation of the NCCP and the HSE	NCCP, HSE

8.7 Research and Clinical Trials

It is acknowledged worldwide that clinical trials are the gold standard of care. Research and clinical trials are also pivotal to the advancement of SACT therapies. It is essential that all patients have access to clinical trials where clinically appropriate. In order to accomplish this, the workforce needs must be addressed to ensure there is adequate numbers and skill mix in the workforce to support research and clinical trials in SACT services, as appropriate to the service provided.

[23] In line with standard HSE processes

All research and clinical trials carried out in hospitals should align to the Types as detailed in the organisation of services referred to in Section 8.2.

Table 15 Research and clinical trials recommendation

	Recommendation	Lead
16	All patients should have access to a clinical trial where clinically appropriate Clinical trial services should be enhanced/developed in SACT services to support the availability of trials to all patients undergoing SACT	HSE/NCCP, all SACT services

8.8 SACT Pathway

SACT services form part of the overall pathway of care for many cancer patients as demonstrated in Figure 2. The SACT pathway is detailed in

Figure 77. In addition, many other services support the SACT pathway such as acute oncology and psycho-oncology. Not all patients will require these services but clear referral pathways and the ability to make available these services is vital for a patient-centred model of care.

As outlined in chapter 6, the components of the SACT pathway are already in place. However, variation exists in how these components are undertaken. The patient experience recommendation is intrinsically linked to the SACT pathway and must be incorporated.

Figure 7 SACT Pathway

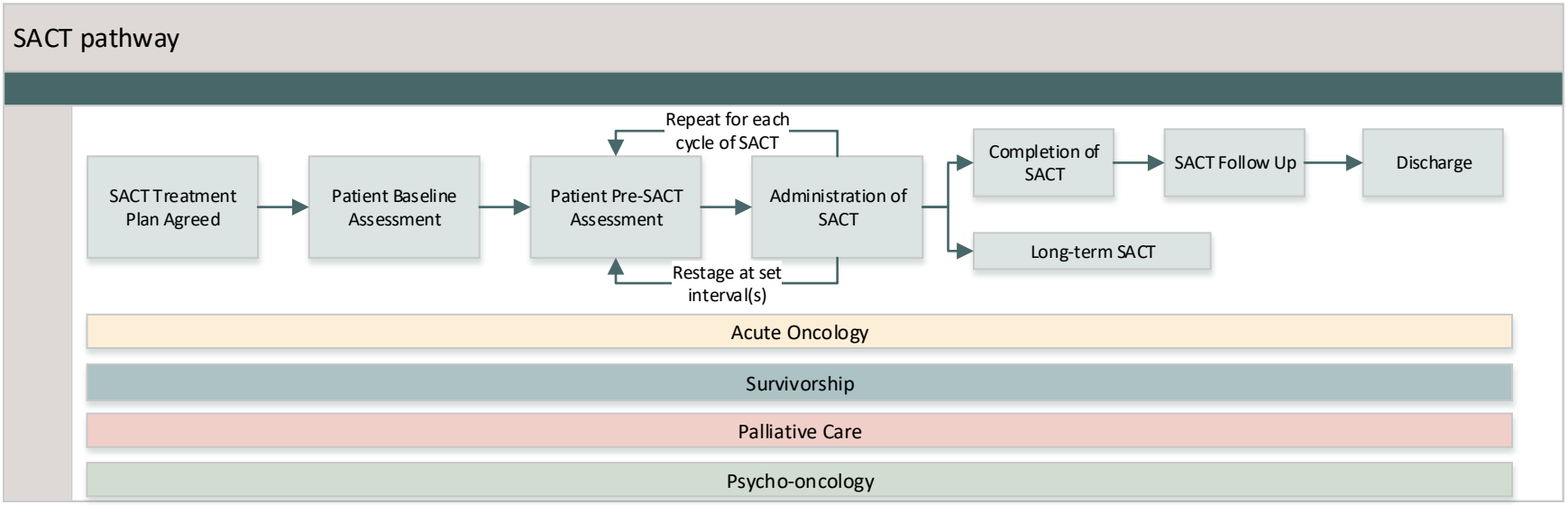


Table 16 SACT pathway* requirements

***This pathway begins once there is agreement that a patient is to receive SACT

SACT Pathway	
SACT treatment plan	The patient's treatment plan should include the following information at a minimum: • Diagnosis and staging according to an internationally recognised staging system • Performance status and co-morbidities • Treatment intent • Treatment regimen/SACT therapy plan • Pre-treatment investigations where required • Planned numbers of cycles • Frequency and method of assessment if appropriate including restaging • Any deviation from treatment regimen/ SACT therapy plan and rationale for deviation • Patient's preferences • Patient consent • Location of where the SACT is delivered taking into consideration any devolution or centralisation of services, as appropriate.
Baseline assessment	Each patient should undergo a baseline assessment which includes an assessment of the patients physical, social, psychological, emotional and spiritual needs and standardised education as relevant to the patients' SACT treatment plan. A nationally standardised baseline assessment template is available at (website link). Patients should also be referred for prehabilitation as required.
Pre-SACT assessment	Prior to each cycle of SACT, all patients should have a pre-SACT assessment carried out as relevant to the patients' needs and SACT treatment plan. A nationally standardised pre-SACT assessment template is available at (website link). A pre-SACT blood test may be required as part of the patients SACT treatment plan. Where a two-day treatment model is in place, consideration should be given to the utilisation of phlebotomy services in Type 4 services and SACT outreach services to facilitate care as close to the patients home as possible and minimise visits to Type 1-3 SACT hospitals.
Treatment monitoring/restaging	The SACT treatment plan defines the scheduled treatment monitoring/restaging intervals. Restaging may include investigations such as physical exams and diagnostics including blood tests and imaging. Access to these investigations must be available in a timely manner to inform the continuing appropriate treatment of the patient. The outcome of these investigations may result in a change to the SACT treatment plan and will be communicated appropriately to the patient and their carer(s).
Completion of SACT	Relevant information must be given to each patient and the patient's GP and any other primary care facility that the patient is linked with.

Follow up care	A personalised follow up care plan should be provided to each patient. This care plan must be based on a risk assessment of the patient's needs and risk of recurrence.
Discharge	Each patient should be given a summary of their diagnosis, the treatment they have received and relevant post-treatment information. A copy of this should also be sent to the patient's GP and any other primary care facility that the patient is linked with. Onward referral to relevant HSCPs should be completed as appropriate to the patient's needs.
Long-term and life-long SACT	Continual assessment of this cohort of patients' needs and benefit of treatment is essential to ensure patient-centred care is provided throughout their lives.

8.8.1 Location of SACT delivery

SACT can be delivered in an in-patient ward, ambulatory day unit, SACT outreach clinic or in the community including the patients home. The following points must be considered:

- It is essential that staff are competent in the care of SACT patients.
- The delivery of SACT may be devolved or centralised as detailed in the organisation of services section X.
- An ambulatory day unit encompasses the following which should be co-located:
    - out-patient's departments
    - haematology and medical oncology day wards
    - ancillary spaces e.g. dedicated space for patient assessment including triage and acute assessment, patient education, OAM clinics, offices, procedure rooms, clinical trials space and high cost, short shelf life SACT preparation where appropriate

  These ambulatory day units should also be supported by:
    - adequate staffing of the SACT MDT
    - dedicated services e.g. phlebotomy
    - IT supports e.g. NCIS, NIMIS, Laboratory information system access (LIS), MeDLis
    - support staff e.g. portering, administration, cleaning
    - Pharmacy preparation for oncology drugs/aseptic compounding units[24]
    - PPPGs as previously outlined
- There is a need to improve the built environment of many existing locations of where SACT is delivered including patient segregation and isolation facilities.
    - "The NCCP Guidance on the built environment of a haematology/oncology day ward" should be adhered to when developing SACT day unit facilities.
- It is recommended that Type 4 SACT services and SACT outreach services should be expanded. A seamless pathway between the hospital and the community SACT service should be established. The patient's treatment pathway should remain the same, with any medical oncologist or haematologist reviews, scans, phlebotomy appointments occurring as would be the case had the patient opted for treatment in a hospital setting.

[24] ACUs may also be co-located with the ambulatory day unit

- There is an increasing role for telehealth solutions in SACT services as it provides a virtual location for providing patient care.

Table 17 SACT pathway recommendations

	Recommendation	Lead
17	The SACT pathway should follow the steps as outline in X. This will need development of each of the steps as outlined.	NCCP, All SACT services
18	All staff involved in the provision of care to SACT patients should operate to the appropriate competencies and standards as relevant to the SACT service being delivered.	HSE, All SACT services
19	Type 4 SACT services will be developed and expanded where appropriate, in a standardised manner.	NCCP/HSE
20	The design and layout of haematology and medical oncology ambulatory day units will be aligned with the NCCP Guidance on the Built Environment and updated as required to encompass infection control and prevention advice together with public health guidance.	NCCP/HSE
21	Telehealth solutions should be utilised in SACT service delivery • Use of telehealth should be supported by appropriate PPPGs	HSE, All SACT services

8.9 Acute Oncology

Standardisation of education to patients as outlined in the SACT pathway in section 8.8 should be implemented in order to assure safe use, promote adherence and ensure early recognition of side effects and to prevent emergency SACT-related episodes. A validated tool for telephone triage such as the UKONs 24-hour telephone triage system should be utilised in all SACT services and the contact details given to the patient.

Acute oncology service refers to the service supporting the unplanned complications of patients with cancer. All unscheduled care of patients should be managed through the acute oncology service. For all SACT hospitals, an acute oncology service should be developed. This service must be supported by PPPGs for the assessment of patients with cancer at an emergency department and the management of common complications of SACT e.g. neutropenic sepsis. Further training may be required to implement an acute oncology service.

Type 3 and 4 SACT services and non-SACT hospitals should have PPPGs in place detailing the agreed pathways for the rapid referral and assessment by a medical oncology or haematology team, including “treat and

transfer"[25] in a timely manner where required. PPPGs should detail the appropriate steps including the referral processes and the governance. These may be supported by national guidance where appropriate.

Table 18 Acute oncology recommendations

	Recommendation	Lead
22	National guidance should be developed to support acute oncology services. A validated telephone triage tool should be used in all SACT hospitals and staffed appropriately. Contact details should be given to patients. All SACT services should have local PPPGs in place for management of unscheduled care of SACT patients.	NCCP, All SACT services
23	All SACT hospitals should establish an acute oncology service supported by the relevant local PPPGs. • Staff should receive training as appropriate, to the service to be provided, noting that this may include staff outside the cancer service, e.g. emergency medicine.	All SACT services All non-SACT hospitals
24	Type 3 SACT hospitals and non-SACT hospitals with an emergency department should have processes in place for the assessment, rapid referral and transfer of patients to an acute SACT hospital in a timely manner.	Type 3 SACT hospitals and non-SACT hospitals

8.10 Workforce Planning

The details of the workforce plan for SACT services is in Chapter 7.

Table 19 Workforce planning recommendation

	Recommendation	Lead
25	Adequate staffing should be in place to support a safe and quality SACT service as detailed in the Workforce Planning Chapter 7. The National Cancer Strategy 2017-2026 Recommendation 50 on workforce planning should be progressed to further identify the needs of the full SACT service.	NCCP, All SACT services

[25] Treat and transfer includes management on site and rapid referral/transfer to the appropriate SACT hospital

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10. Appendices

Appendix 1. Steering Group membership and Terms of Reference

Appendix 2. NCCP Quality and Safety Measures for SACT services

Quality and safety in SACT	Available at the following links
• NCCP Oncology Medication Safety Review (17) • NCCP Guidance on the Safe Use of Intrathecal Chemotherapy in the Treatment of Cancer • NCCP Guidance on the Safe Use of Neurotoxic drugs (including Vinca Alkaloids) in the Treatment of Cancer • Oral Anti-cancer Medicines Model of Care Recommendations (15)	https://www.hse.ie/eng/services/list/5/cancer/profinfo/medonc/sactguidance/ https://www.hse.ie/eng/services/list/5/cancer/profinfo/medonc/safetyreview/oam%20model%20of%20care%20recommendations.pdf
Nationally agreed chemotherapy regimens	https://www.hse.ie/eng/services/list/5/cancer/profinfo/chemoprotocols/
KPIs	Currently one KPI
National Cancer Information System (NCIS)	Electronic prescribing programme for SACT, currently live in 3 hospitals with the roll-out ongoing
Other resources as detailed and linked below;	

Guidance Documents

NCCP Guidance on the use of Biosimilars in Cancer Treatment
NCCP Guidance on the Provision of Parenteral SACT and Supportive Care in the Community
NCCP Guidance on bevacizumab Rapid Infusion Rate
NCCP Guidance on riTUXImab Rapid Infusion Rate
NCCP Oncology Medication Safety Review
NCCP Guidance on Intrathecal Chemotherapy
NCCP Guidance on Neurotoxins (including Vinca Alkaloids)
NCCP Guidance on Dose Banding for SACT
NCCP Guidance: Making Best Use of SACT Aseptic Compounding Capacity
NCCP Guidance Document for Off Site Transportation of Products from Hospital Pharmacy
NCCP Guidance: Pharmacy Benchtop preparation of monoclonal antibodies (mAbs) used in the treatment of cancer
NCCP Guidance for Medical Radioisotopes Facilities and Services in the event of Brexit
NCCP Guidance: Patient selection for the use of immunoglobulin replacement therapy in cancer patients with secondary immunodeficiency

Documents

NCCP Position Paper on the use of Tall Man Lettering
Sample pro-forma for non-approved protocols
Template SOP for SACT Transportation

Resources

NCCP Olaparib Tablets Communication to Pharmacists
BRCA Testing (Olaparib)
NCCP Quality Assurance Resources for Hospital Pharmacy Cancer Services

- NCCP Template ACU Business Case
- NCCP Template SOP 101 Handwashing
- NCCP Template SOP 102 Gowning
- NCCP Template SOP 103 Spraying in Tray Transfer Procedure
- NCCP Template SOP 104 Tray Preparation and Check
- NCCP Template SOP 105 Pharmacy Bench Top Preparation of Monoclonal Antibodies (mAbs) used in the treatment of cancer

NCCP Extravasation Classification of Systemic Anti-Cancer Therapy
NCCP Capacity Planning for Parenteral SACT (Pharmacy)
NCCP Hospital Pharmacy Cancer Services Workforce Planning Framework
NCCP Recommendation on Preparation of Reduced Dose BCG;
NCCP SACT regimens
Dose Banding for Systemic Anticancer Therapy
List of approved drugs for reimbursement
NCCP Guidance on the Retention and Disposal of SACT Prescriptions and Compounding Worksheets
Education and Training
NCCP Evidence Reviews

Patient Assessment Forms

Patient Assessment Forms

Appendix 3 Organisation of SACT services per Type, including the 26 SACT hospitals

Type 1 SACT Service	Type 2 SACT Service	Type 3 SACT Service	Type 4 SACT Service
CHI at Crumlin (Paediatrics and AYA)	Tallaght University Hospital	University Hospital Kerry	Community infusion clinics
Beaumont Hospital	Sligo University Hospital	Portiuncula University Hospital	Primary care centres
Cork University Hospital	Letterkenny University Hospital	St Luke's Hospital Rathgar	GPs
University Hospital, Limerick	Midlands Regional Hospital, Tullamore	Mayo University Hospital	Home
University Hospital Waterford	Mercy University Hospital	South Tipperary General Hospital	
St James's Hospital		Cavan General Hospital	
Mater Misericordiae University Hospital		St Luke's General Hospital, Kilkenny	
St Vincent's University Hospital		Wexford General Hospital	
University Hospital Galway		Naas General Hospital	
		Connolly Hospital	
		Our Lady of Lourdes Hospital, Drogheda	
		South Infirmary Victoria University Hospital	

Appendix 4 SACT nursing roles

Nursing Grade/Title	Role in provision of SACT
Staff nurse	The majority of staff nurses provide direct patient care involving the delivery of complex SACT regimens and the management of the side effects of treatment or disease. This incorporates telephone triage, patient assessment, education and an in-depth knowledge of treatment regimens to ensure SACT is administered safely and side effects are managed promptly. Staff nurses are challenged on a daily basis to deal with the numerous symptoms patients may experience as a result of their SACT or disease. They triage patient problems and assist in the evaluation of symptoms and the initiation of interventions. A staff nurse working in this specialist area is rrequired to expand skills and competencies to perform venepuncture, cannulation, care and management of care and management of central venous access devices, SACT administration and deliver nurse led services. There is an expectation that the staff nurse completes local, national and postgraduate specialist programmes to enhance their clinical skills. All staff nurses who are naïve in the administration of SACT are expected to undertake the National SACT Competency Programme having worked in the area of cancer care for a minimum of three months. This will ensure that cancer patients benefit from high-quality nursing care, which focuses on the delivery of SACT safely to the patient, and supports the patient both physically and psychologically with the debilitating side-effects that are associated with SACT.
Clinical Trial Nurses	The clinical trials nurse is involved in implementing and monitoring a clinical trial. Their responsibility is to ensure that the rights and well-being of the research participants are protected and to advance scientific knowledge by ensuring that data generated by the trial is accurate and verifiable. They are involved in direct care, education, data collection and coordination of care. They must adhere to Good Clinical Practice (GCP) which is an international ethical and scientific set of standards for the design and conduct of research involving humans including: protocol design, conduct, performance, monitoring, auditing, recording, analyses, and reporting. They take a leading role in recruitment of participants, securing informed consent, ensuring the integrity of protocols are maintained and reporting adverse events.
Clinical facilitators	Assists staff by providing support and guidance in the orientation of new staff, working with experienced staff in further developing the necessary skills and competencies needed to care for and manage cancer patients. They engage directly in clinical practice, therefore, the role can be embedded in the clinical team, working alongside front line staff. They contribute to the development, evaluation and maintenance of nursing standards, policies, protocols and guidelines. They act as the clinical facilitator for partner programmes with higher institutes of education to ensure the quality of clinical placements as well as developing and delivering education programmes locally. Their function is to ensure that the staff have the required and appropriate clinical care skills and competencies to effect timely patient care and intervention.

Clinical Nurse Manager (CNM)	The post of CNM is a pivotal role in service planning, co-ordinating, and managing activity and resources within the clinical area. The main responsibilities are quality assurance, resource management, staff and practise development, performance management, facilitating communication, professional / clinical leadership. The role exists in all SACT services. Cancer coordinators (CNM 2 grade) also have a role in providing education, identifying concerns and referring patients and their families to available resources.
Clinical Nurse Specialist (CNS)	They are generally categorised as haematology or oncology CNS's with various roles including care and management of in-patients, co-ordination and management of both Consultant and nurse led clinics and sometimes involvement in the telephone triage service. They are expert practitioner who has attained, at a minimum, a post graduate qualification in their specialist area of practice. The role is defined under 5 core competencies - clinical, education, consultation, advocacy and audit. The CNS is often the main point of contact for patients throughout their treatment. They coordinate the patients care from the time of referral to their service. The CNS has the primary responsibility for educating the patient/carer in relation to potential side effects of therapy and the management of toxicities if they occur. The CNS reviews the treatment plan with the Consultant, is aware of expected outcomes and possible complications, and assesses the patient's general physical and emotional status. The CNS is expected to be aware of the results and general implications of all relevant laboratory, pathology, and imaging studies. Assessment of the patient's understanding of the disease and proposed treatment is fundamental in allaying anxiety and formulating a therapy plan. The CNS should be assigned to care for patients according to tumour sites.
Advanced Nurse Practitioner (ANP)	Advanced level of clinical nursing practice educated to Master's Degree Level or higher and having completed specialist training in oncology/haematology to become an ANP. ANPs have four core competencies which define their role: Autonomy in Clinical Practice: Responsible for clinical decision-making at advanced practice level through patient caseload management. Performs health assessments, plans and initiates care and treatment to achieve patient-centred outcomes and evaluates their effectiveness, initiating and terminating a care episode. Expert Practice: Performs health assessment, plans and initiates care and treatment to achieve patient-centred outcomes and evaluates their effectiveness, initiating and terminating a care episode. Professional and Clinical Leadership: Clinical leaders who initiate and implement innovation and change in their healthcare service in response to patient/client need and service demand.

	Research: They identify, initiate and integrate nursing research in their area of the healthcare environment that can incorporate best evidence-based practice to meet patient/client and service need. They are required to carry out nursing research which contributes to quality patient/client care and which advances nursing and health policy development, implementation and evaluation. The role of ANP's is well established in oncology and haematology in the acute services. New ANP roles have been approved in recent years in other areas including Psycho-Oncology, Geriatrics and as a candidate ANP in oncology in the Community.
Nurse prescribing: radiological	The standards and requirements for education programmes for nurse authority to refer persons for medical radiological and other imaging ionising radiation procedures (113) recognise that a registered nurse who has successfully completed an approved education programme and the necessary training in radiation protection can refer for medical radiological and other imaging procedures. When referring for a medical radiological or other imaging procedure, the nurse adheres to their scope of practice, the speciality within which they practice and the person's care pathway, relevant to their role. The current legislation (SI 256) requires appropriate continuing education and training after qualification including relevant radiation protection requirements. The clinical governance arrangements, to which local health care teams are accountable for the quality, safety and satisfaction of a person in the care they deliver, must have supporting structures in place. This expanded role function is used in a variety of care areas i.e. day care, OPD, referral for restaging scans.
Nurse prescribing: medicinal	Medicinal prescribing is an expansion of a registered nurse's scope of practice. Clinical governance arrangements are put in place to support safe and professional practices for the implementation of nurse prescribing. The registered nurse prescriber is required to prescribe within their scope of practice and must continue to maintain and demonstrate their competency while fulfilling their role (114). The nurse prescriber must also undertake audit of their prescribing practices as determined by their local health service provider's audit process for prescribing and medicines management. The result of the audit of prescribing practice must be documented and reported to the person who has the overall responsibility and authority for the governance of the registered nurse prescriber. The introduction of nurse prescribing has created opportunities to enhance cancer services care delivery.