



ACHIEVING EXCELLENCE IN CANCER CARE: A Vision for 2022



THE NATIONAL CANCER FRAMEWORK
2017-2022

Acknowledgements

We extend our thanks to all of those who supported the development of this framework. Representatives from organizations across the patient pathway have provided their expertise and knowledge to advise this document. For all of your hard work, effort and contributions, we commend you.

*With thanks to Hamad Medical Corporation and Primary Health Care Corporation for images supplied.



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Foreword - Her Excellency, The Minister of Public Health, Dr. Hanan Mohamed Al Kuwari

It has been extremely encouraging to watch the development of cancer services in Qatar. Qatari culture is first and foremost, about families. The close-knit nature of our society means that everyone has a friend or relative whose life has been impacted by cancer.

The National Cancer Strategy 2011-2016 was a significant step on our country's journey to delivering excellence in all aspects of cancer services. The achievements of this strategy and the improvements in care delivered have been well documented, but I would like to draw attention in particular to improvements in engagement with our patients. By improving our understanding of the needs of our patients, we are delivering care that is high quality, and has a meaningful and positive impact on people's lives. This is not to say that new technologies and performance monitoring are not important. They are important, however there is much more we can do to improve patient experience.

This Framework represents the next stage in our journey. It signifies an ambition to achieve, and a clear definition of where the system needs to focus its efforts and activities over the next six years to deliver further improvements. I would like to firstly thank His Highness the Emir Sheikh Tamim bin Hamad Al-Thani and Her Highness Sheikha Moza Bint Nasser for their enduring leadership and vision.

I would also like to thank the National Cancer Committee that is chaired by Lord Darzi with membership from across the health sector, for driving the development of this Framework and for their dedication and support. These leaders have collaborated across organizational boundaries to deliver tangible improvements in care. I would also like to thank all the staff at Hamad Medical Corporation, Primary Health Care Corporation and the Ministry of Public Health for delivering cancer care reform. Their appetite to continue the improvements we have started, working with patients and families, is truly commendable.

Through implementation of the programs set out in this Framework, cancer services in Qatar have the opportunity to become among the best in the world. It is important that the whole system is clear in its commitment to come together and work with a common purpose to deliver the quality of services and experience that our families, friends and communities deserve.



Foreword - National Cancer Committee Chairman, Professor the Lord Darzi of Denham

It has been a tremendous honor to Chair the National Cancer Committee for the past three years. During this time I have had the pleasure of watching a health system coalesce around a very important issue, and work together to improve the quality of care provided to their patients. The improvements I have personally witnessed in cancer care in Qatar have been amazing, and are due in large part to the relentless passion of many of the doctors, nurses, allied health care professionals and managers across the health economy.

I and the committee would like to thank Her Excellency Dr. Hanan Mohamed Al-Kuwari, who has been unwavering in her support for improving cancer care. I would also like to give thanks to my National Cancer Committee colleagues in particular Dr. Mariam Ali Abdulmalik and Professor Alexander Knuth for their front line roles in delivering improvements in care. Of course it should be noted that none of this could have been achieved without the vision of Her Highness Sheikha Moza Bint Nasser, who initiated work on the National Cancer Strategy 2011-2016.

In 2011, the World Health Organization recommended that all countries should have a cancer control program. Qatar should be proud of the benchmark it set for the Middle East region in developing the National Cancer Strategy 2011-2016.¹ The National Cancer Strategy was the first disease specific strategy for Qatar and formed a key priority within the National Health Strategy 2011-2016. In 2013, two years into implementation, the meaningful progress particularly in reducing patient waiting times, creating a multidisciplinary approach to cancer treatment and fostering international research collaboration was recognised. However, challenges remain in public awareness, cancer prevention, early detection and high quality treatment.²

We now stand at a crossroads. The National Cancer Strategy has provided a foundation from which cancer services can go on to become truly world class. This is no small task. When quality of care is already high, as it is in many services in Qatar, it is that much harder to deliver something better. What has become increasingly clear throughout development of the Framework is that no individual, service or organization can go it alone; the whole health system must be aligned around a clear vision and program of work in order to achieve the desired results.

These challenges also bring with them opportunities, new partnerships, technologies and ways of working that have the potential to radically change and improve how services are delivered. Qatar has invested heavily in the technology, equipment and research facilities to support improved cancer services. Beyond this, it has invested in people, recruiting and training some of the most capable staff in the region, if not the world. It is now beholden on the health system to justify this investment, not just in terms of lives saved, but also in improvements across the entire care pathway. For this reason, it is more important than ever that we can robustly and objectively, monitor and measure our performance and quantify the improvements delivered.

With the support of the academic health system, cancer services in Qatar have a unique opportunity to bring together clinicians, researchers, academics and educators to achieve a step-change in service delivery. Access to genomic data, world-class facilities and cutting edge technologies must be enabled by highly trained and specialized staff, vigorous external challenge and assurance and a commitment from all partners, locally and internationally, to be relentless in our pursuit of excellence.



Executive Summary

The National Cancer Strategy 2011-2016 (NCS) launched under the patronage of Her Highness Sheikha Moza Bint Nasser, has been a driver for significant improvements in cancer services in Qatar.³ Its 62 recommendations have laid a strong foundation for continuing the path to excellence. While the NCS was a complete strategy, setting out the vision for cancer care for the future, this National Cancer Framework 2017-2022 (NCF) is a collection of 1) nine Domains that represent the Patient Pathway and the enablers to cancer care, 2) a guide of recommended activities and 3) Success Measures that will be further developed into a series of detailed program implementation plans and measured outcomes.

The collaborative efforts led by the Ministry of Public Health (MOPH), Hamad Medical Corporation (HMC) and Primary Health Care Corporation (PHCC) have resulted in wide-ranging improvements that directly impacted and improved patient lives. These efforts have been supported by growing collaboration across the academic health system, the tremendous efforts of the Qatar Cancer Society (QCS) and greater engagement with the private sector.

Her Excellency Dr. Hanan Mohamad Al Kuwari, the Minister for Public Health, recognized the importance of formally reviewing and capturing the achievements of the NCS and commissioned the 'NCS Five-Year Review: The first step on the path to excellence'.⁴ The NCS Steering Committee, comprised of senior leadership from HMC, PHCC, MOPH, Sidra, the private sector and charitable organizations, was formed to support this review.

The review recognized the wide-ranging achievements delivered by the NCS and supported the delivery of the following key milestones:

- The first Patient Pathway Coordinators and Multi-Disciplinary Team Coordinators employed within cancer services
- Provision of Positron Emission Tomography – Computed Tomography (PET-CT) at HMC
- Implementation of minimally invasive surgery
- Introduction of advanced Clinical Nurse Specialists
- Population based breast and bowel screening service delivered by PHCC
- Introduction of urgent suspected cancer referrals
- Specialist Multi-Disciplinary Teams (MDTs) for 14 cancers
- Specialist designed Supportive and Palliative Care Unit opened at the National Center for Cancer Care and Research (NCCCR)
- Establishment of the National Cancer Registry (QNCR)
- The publication of 14 clinical management and screening guidelines
- Advanced treatment technologies, treatments and procedures

In recognition of the achievements of the previous five years and to mark the publication of the NCS Five-Year Review, a forum was held for the health care professional community working in cancer.⁶ The event marked the transition between acknowledging the successes of the past strategy and focusing on the future landscape of cancer care. The participants were asked to vote on key areas of focus along the Patient Pathway to inform the next six years and the results are represented throughout this Framework.

Looking at the Future

The achievements of the NCS have made cancer care in Qatar among the best in the region, but there is more to do. The burden of cancer will rise as Qatar's population ages, and awareness and identification of cancer improves. Cancer services are at the forefront of medical research and development; new technologies, procedures or treatments are being developed at a rapid pace. To further develop and improve the quality of care, it is essential that medical services keep up-to-date with these evolving treatments, which can require significant investment, both financially and in terms of resources for training and education.

The following indicators have been established as benchmarks for cancer care in Qatar and should be considered when developing future implementation plans for the NCF from 2017 to 2022:

Global Indicators of Success for the National Cancer Framework

Improved Education Measured by the Cancer Awareness Measure

Reduce the numbers of smokers in Qatar measured by STEPWise

Increase proportion of stage 1 and 2 diagnoses for breast and bowel cancer

Increase in proportion of patients entering the system via screening or urgent referral managed routes

Publication and international comparison of 1 and 5-year cancer survival rates

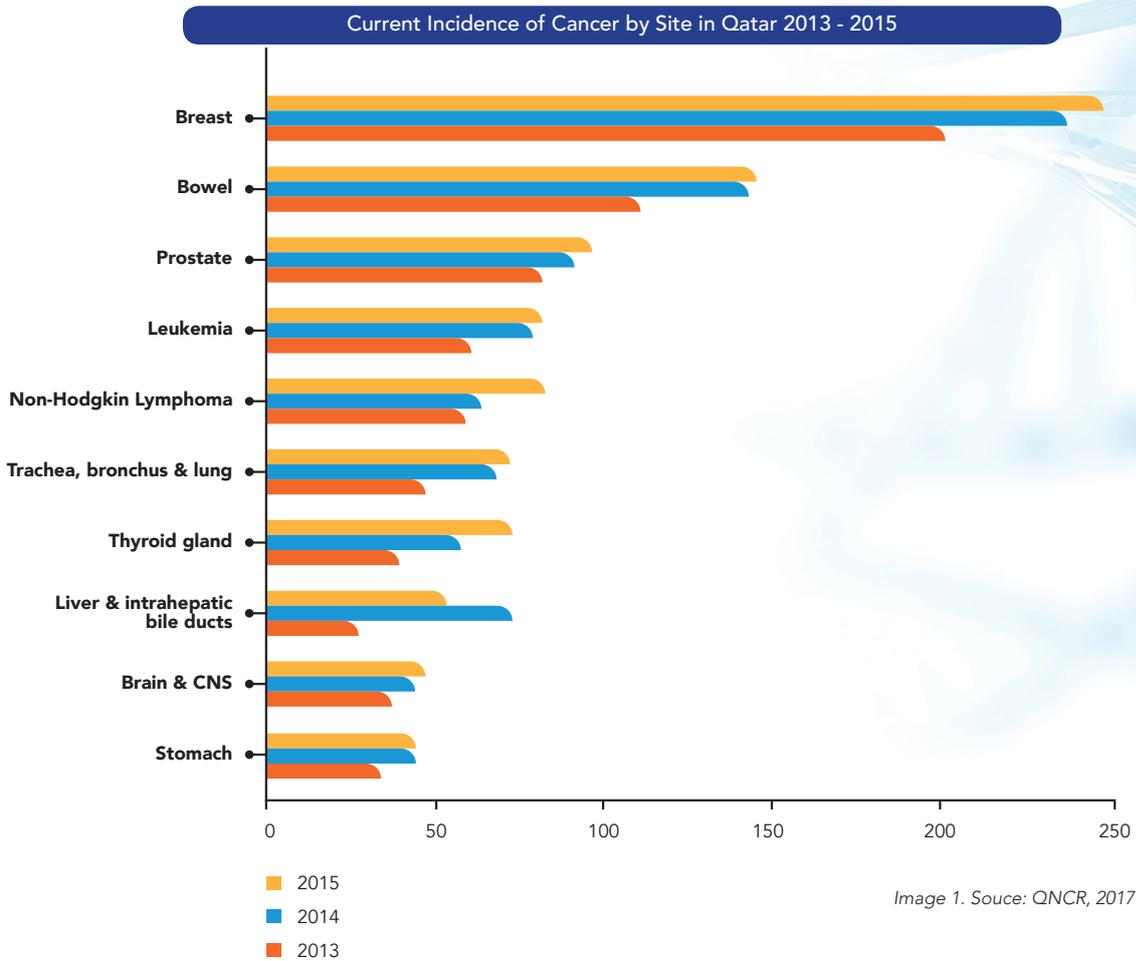
Increase in patients with complete care plans in place across the care pathway

More patients staying in Qatar for cancer treatment

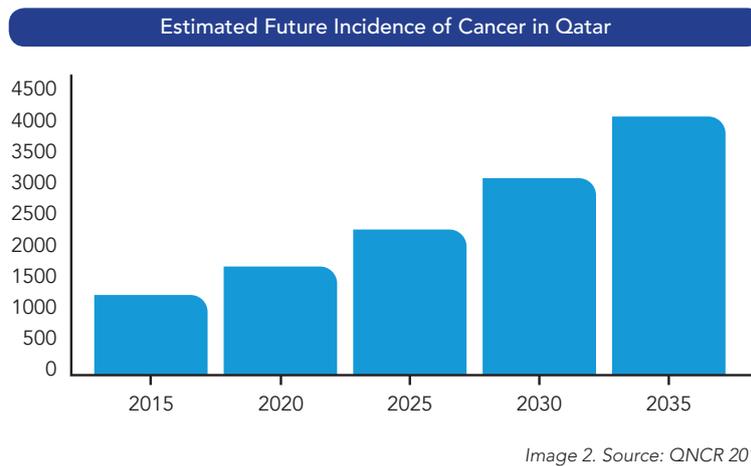
More patients accessing ongoing care in primary care / community settings

Trends In Burden Of Disease

There is a growing trend in cancer incidence in Qatar as indicated by image 2. Also noted, Qatar has the world's second smallest proportion of population aged over 65, but has non-communicable disease rates comparable to developed countries with higher proportions of older people.⁵ Recently released population growth figures suggest that there has been an 8.8% increase in the population of Qatar between October 2014 and October 2015, consistent with growth over the last 7 years.⁶



Future cancer incidence is projected to increase as the population continues to grow and age. By 2025, the projected number of cancer cases for Qatar will be 2,250 per year.⁷



Continuing On The Path To Excellence

Much progress has been made, but the journey is not complete. The vision for the future of cancer care remains unchanged:

- Qatar will continue to pursue excellence in cancer care
- The development complex specialty services and innovative treatments will increase
- New, evidence based drugs and technologies with proven impacts on patient care will be developed
- Improvements in the patient experience will be achieved

The focus will remain on the whole pathway of care (see image 1), which is based upon the WHO Cancer Care Continuum.

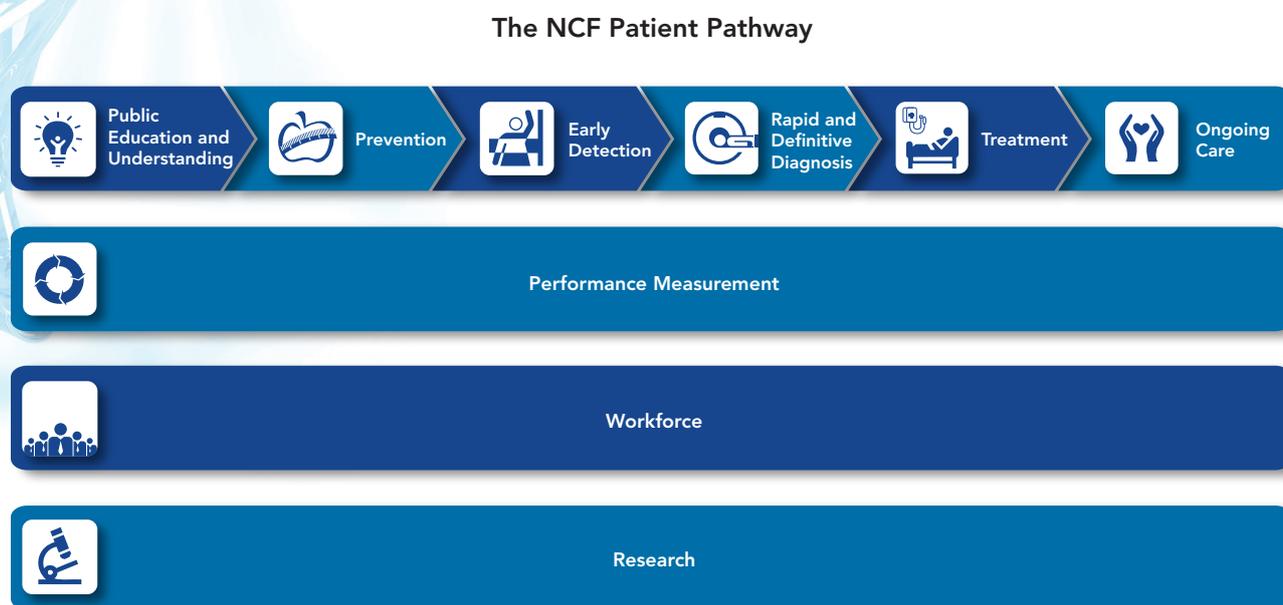


Image 3. Source: MOPH, 2016.

This path to excellence will be supported by the enabling systems of performance management, workforce improvement and research for future innovation. These together constitute the nine Domains of the Framework and will need to be integrated into cancer care provided from now into the future.

Program Activity and Success Measures

These Domains represent the complete Patient Pathway for cancer care and the relevant enablers. Each domain of the Framework has a number of Success Measures, which will be used to demonstrate the efficacy of implementation of the Framework. There are also program activities associated with each domain. The success of the NCF will be measured not by these activities, as they are suggestive in nature; however they are to be considered a guide of recommended activities that can be completed in the process of achieving the Success Measures and outcomes of this Framework.

Each chapter is outlined by:

- A summary of the Domain
- A numbered list of the Success Measures with the lead organization responsible for its implementation
- The priorities identified as integral for the continued success of the Framework
- Recommendations of Guiding Program Activities with suggested lead organizations

For the purpose of this document, the 'lead' organization is responsible for engaging and coordinating the relevant stakeholders to initiate activities in the framework. At the initiation phase for each activity, a clear definition of roles of responsibility for planning, execution, budgeting, and monitoring should be established. For ease of reference, all Guiding Program Activities and Success Measures are also identified in table format in the Annex B and C.

9 Domains

61 Guiding Activities

25 Success Measures





1



Public Education and Understanding

Public awareness messaging regarding the signs and symptoms, and understanding of cancer have formed an integral part of campaigns operated by the MOPH. Various successful campaigns supported by the Cancer Calendar, have indicated, according to the Cancer Awareness Measure (CAM) tool, that the population of Qatar has developed an improved understanding of cancer. More importantly this has resulted in improved awareness that cancer can be cured, if detected early. It is clear that more needs to be done to ensure the population continues to develop an improved understanding to refute the myths surrounding cancer, the benefits of leading a healthier lifestyle and the importance of recognizing and acting upon the signs and symptoms of cancer.

Success Measures 1.1	Improved awareness and reduce stigma (CAM) establish the 2017 baseline and review bi-annually	MOPH
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Priorities

1.1 Cancer Awareness And Myth Refutation Campaigns

The engagement activities, such as the healthcare professional survey, that were conducted to inform this Framework revealed that the Cancer Champions Program is the most effective way to increase awareness about cancer (see graph below)⁸

Survey:

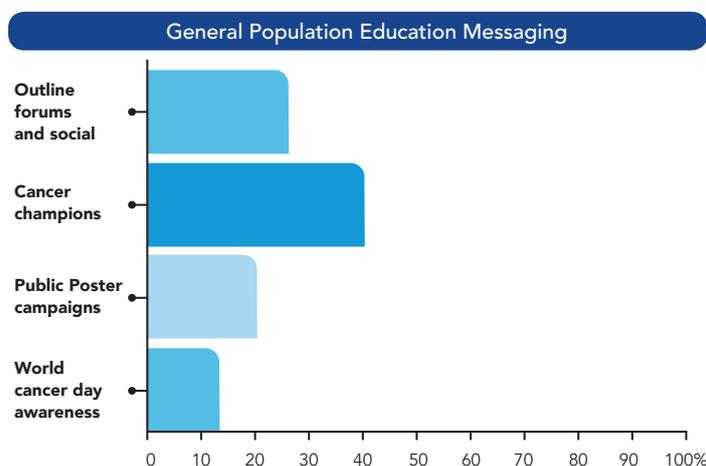


Image 4. Source: Healthcare professional deliberative cancer forum, Qatar 2016.

The influential figures involved in the Cancer Champions Program, which will continue to grow and involve cancer survivors, will play a bigger role in cancer awareness activities. It is important that these programs are made available across various age groups and settings, including schools and universities. Cancer Champions have the unique ability to describe what it is like to be told that they have cancer, what it feels like to undergo treatment and what, for many, it is like to adjust back to normal life after treatment. At the NCS Five-Year Review event, patients who had undergone treatment for cancer provided invaluable insights into the patient experience, which has helped shape the future engagement of patients within the NCF. Their voices can be of great influence in educating the wider public in understanding the signs and symptoms in cancer and what to do to help ensure early intervention and best outcomes.

Current perceptions of cancer in the public, in regards to myths and stigmas measure as:

MYTHS	
Cancer is nearly always fatal	83%
Cancer would show as an outer lump on the body	77%
Cancer is more present in poorer countries	75%
Cancer only shows at a late stage	52%
Cancer surgery can make it spread	52%
STIGMAS	
Uncomfortable discussing cancer	79%
Avoid using word cancer	73%
Cancer is a sign of weakness	75%
If I developed cancer I would lose my job	55%
I would not be marriageable if I developed cancer	49%

Table 1. Source: Cancer Awareness Measure tool: Myths and stigmas in Qatar, 2014.

To ensure that all forward-facing programs tackle current perceptions and understanding of cancer, a new CAM baseline will be undertaken and incorporated into the Public Health Strategy (PHS) program for cancer.

The PHS underlines the importance of taking a whole-system approach to public health, involving a wide variety of partners. In fact, the partnership with non-governmental and charitable organizations is already a reality in cancer. Over the past five years, the excellent work of the Qatar Cancer Society, Hayat Cancer Support group, the Ladies of Harley and others have provided supporting platforms to educate the general population and support the cancer population of Qatar.

1.2 Partnership Within The Cancer Community

Formed in 1997, the Qatar Cancer Society (QCS) has been highly influential in developing cancer awareness, education and support for cancer patients in Qatar. The objectives for the organization include:

- Awareness and prevention of cancer
- Financial support for cancer patients who are unable to afford treatment
- Coordination with various stakeholders to organize seminars, courses and conferences
- Supporting research
- Raising awareness of the disease and its prevention

In the next six years, these partnerships will need to grow and develop within a coordinated and collaborative network, ensuring the alignment of messages and the maximization of their impact. The PHS also highlights the need to develop educational programs regarding prevention and understanding of cancer through academic institutions. This will help ensure wherever possible, positive health choices are made and young people are educated about signs, symptoms and the positive developments in the treatment of cancer.

Finally, regular public, "Cancer Awareness Events", which can help connect the various initiatives and cross-stakeholder partners with members of the public, will make a significant contribution to increase awareness. In 2017, the opening of the cancer awareness center at QCS will provide a great platform to develop and further support the ongoing education of the public. To ensure widespread coverage, it is recommended that these events be developed in partnership with the QCS.



PROGRAM ACTIVITIES

Education and Understanding

Lead

1.1	Continue to develop the Cancer Champions myth refutation program in partnership with cancer survivors	MOPH
1.2	Complete the Cancer Awareness Measure and repeat bi-annually	MOPH
1.3	Develop a program of cancer prevention and education targeting academic institutions	MOPH
1.4	Schedule of regular cancer education public health events	MOPH



2



Prevention

Poor lifestyle and environmental factors may be contributing factors in 40% of cancer cases⁹. For these cancers, the ultimate trajectory of incidence will be driven by the success of PHS programs and the effect they have on positively reinforcement of healthy diets, physical activity and environmental health.

The top five risk factors in Qatar for NCDs identified in the PHS are¹⁰:

1. High body-mass index
2. High blood pressure
3. High fasting plasma glucose
4. Ambient particulate matter
5. Low whole grain intake

Additional risk factors also include smoking, high cholesterol and low physical activity and can greatly increase the likelihood of developing an NCD. Promoting public health through the PHS to decrease these risk factors in the population will have an equivalent effect on the incidence of all NCDs, including cancer.

Conversely, a small number of cases (5-10%) are linked to a strong family history of cancer¹¹. These cancers may be the result of identifiable gene mutations. The NCS highlighted the need to develop capacity for genetic testing for gene mutations that have been identified as significantly increasing the risk of developing cancer. The development of this capacity should also continue over the next 6 years.

Success Measures 2.1	Reduction in the number of smokers in Qatar (repeat STEPWise survey)	MOPH
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Priorities

2.1 Address lifestyle risk factors

The PHS has recognized the scale of the issue regarding healthy lifestyle adoption and tobacco cessation and has made clear recommendations to help promote healthier lifestyles and therefore better overall health for Qatar.

Smoking

In Qatar, smoking is still a significant problem. The STEPWise WHO tobacco survey for Qatar in 2013 indicated that male smoking (all tobacco) rates were at 31.9%,¹² compared to 19.5% in the USA¹³. According to GATS (Global Adult Tobacco Survey) data the exposure to second-hand smoke in Qatar within:¹⁴

- Restaurant precincts = 21.2% for men and 32.2% for women
- Workplaces = 13.8% for non-Qataris and 8.3% for Qataris
- Households at least once a month = 16.8% for both Qataris and non-Qataris

Other lifestyles risk factors

The PHS also includes clear objectives to tackle other lifestyle risk factors, summarized in the table below:

Healthy lifestyle objective	Definition
HL 1	Reduce risk factors of chronic non-communicable diseases (unhealthy nutrition and physical inactivity)
HL 2	Increase overall public awareness on the positive health effects of healthy nutrition and engaging in regular physical activity
HL 3	Formulate and promote culturally appropriate and sustainable policies and legislations aimed at food diversity, healthy eating habits and increasing physical activity in the population
HL 4	Stimulate / increase the practice of regular physical activity across the population, with particular emphasis on schools, workplaces and targeted communities
HL 5	Establish wellness services and health coaches in Primary Health Care centers
HL 6	Enhance collaboration with the private sector to promote the importation, production and distribution of food products which contribute to a healthier and more balanced diet

Table 2. Healthy Lifestyle Objectives, Qatar Public Health Strategy 2016.

Evidence from international literature reviews, strongly support the role of the primary healthcare team in delivering population education and prevention advice. Therefore wherever possible, cancer prevention and education messaging will be made available to the network of family physicians at PHCC, private providers of primary care and community pharmacists to support the ongoing education of the community. Primary care physicians are likely to have the most frequent, longitudinal, contact with patients. This regular access gives them great ability to influence positive lifestyle choices and programs such as Very Brief Advice on Smoking and Making Every Contact Count.¹⁵⁻¹⁶ These messages must also be tailored to the needs and culture of Qatar, for instance, enhancing private exercise and recreation areas for women, improved access to exercise facilities in the workplace and greater control of potentially harmful plastic use in food storage.

In 2016, three PHCC wellness centers opened with the vision of empowering people to make positive lifestyle choices to achieve balance in physical, mental and emotional health and to support people to live longer, healthier, productive lives. To achieve the wellness vision, a new range of preventative wellness services will be provided to adults by a multidisciplinary team including physicians, nurses, health coaches and exercise physiologists in a tranquil environment, with both swimming pool and full gymnasium facilities. Wellness services will operate an evidence-based model, linking clinical services to wellness services. To support sustainability of these services, consideration must be given to wellness in the new national Health Insurance provision. It will be used for prevention-related activities, including promoting a healthy lifestyle, smoking cessation, exercise prescription and dietary advice with the aim of improving the health of patients with chronic conditions.

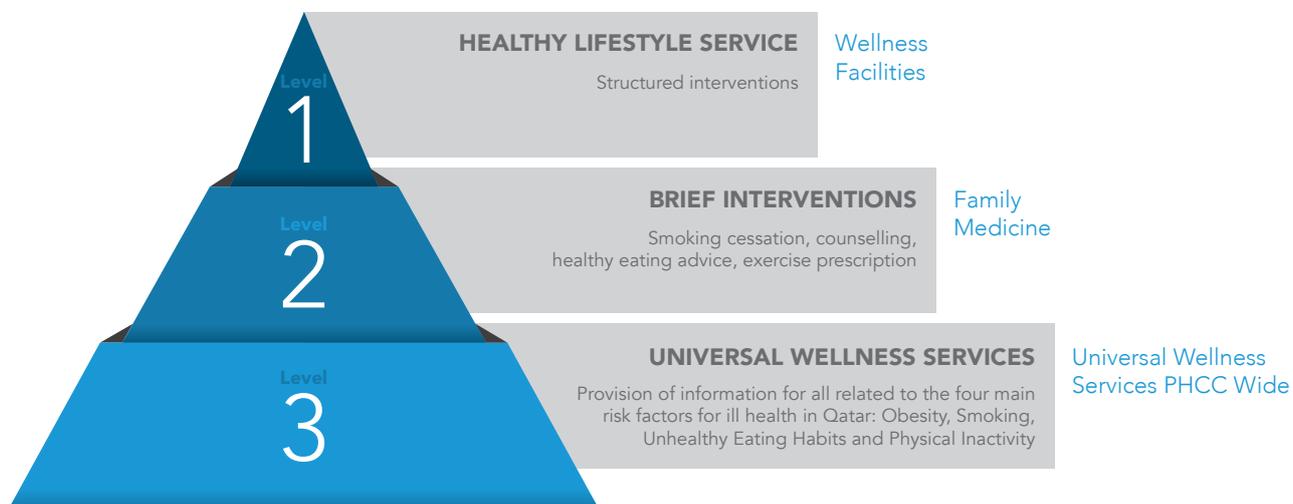


Image 5. Source: PHCC, 2016.

2.2 Access to genetic testing

The Qatar Genome Project has successfully sequenced 3,000 genomes, a significant proportion of the population.¹⁷ Phase Two of the project is due to commence shortly and aims to see a further 7,000 genomes sequenced. This large volume of raw data presents enormous opportunities for the research community in Qatar.

The high-risk breast and ovarian cancer-screening clinic in Qatar was established in March 2013, as a multidisciplinary clinic. It is the first clinic of its kind in the region dedicated exclusively to providing genetic counseling and risk management for women at high risk. Identifying individuals at increased risk for hereditary cancer leads to early detection and prevention opportunities, with the ability to reduce both cancer incidence and mortality. Pre-marital screening is already mandatory for Qataris. There is potentially scope to expand this screening to identify those at high-risk of certain cancers or other non-communicable diseases (NCDs).

Services will be expanded to include gastrointestinal hereditary diseases and other diseases with links to cancer; expanding on existing infrastructure to develop a dedicated medical cancer genetic department. It will be important to work collaboratively to establish this capability, recognizing the significant investment made across Qatar in infrastructure related to genetic testing, sequencing and research.

2.3 HPV vaccine

The major cause of cervical cancer is infection with the human papilloma virus (HPV). The strains of HPV which have been proven to cause cancer can be vaccinated against. In many countries where cervical cancer rates are higher, a vaccination program has been adopted for pre-adolescent children. Although the incidence of cervical cancer in Qatar is low, it could be reduced further with the uptake of this vaccine. Therefore, the HPV vaccine will continue to be made available to those families who wish to vaccinate their children.

PROGRAM ACTIVITIES

Healthy Living

Lead

2.1 Support the implementation of Public Health Strategy Smoking cessation measures:

- Tobacco surveillance system
- Tobacco law enforcement Framework
- Tobacco cessation services including a national quit line and website
- Tobacco cessation services including availability of nicotine replacement therapy and support through PHCC services
- Establish a functional comprehensive tobacco taxation model that includes customs and excise taxes

MOPH
MOPH
MOPH
PHCC
MOPH

2.2 Implementation of the Public Health Strategy Health Living Objectives (HL1 - HL6)

MOPH

2.3 Support primary care providers in the development of wellness services

PHCC

Genetic Testing

Lead

2.4 Expand screening for those at high risk of hereditary cancers

HMC

2.5 Establish a dedicated National Cancer Genetic Service

HMC





3



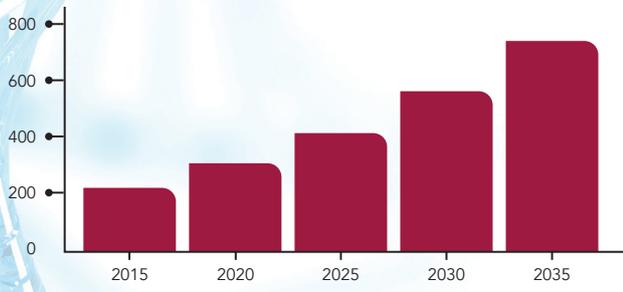
Early Detection

Early detection of cancer is recognized to increase the chance of successful treatment. For example, in bowel cancer cases diagnosed at the earliest stage, more than 9 out of 10 people survive for at least 10 years. However, if diagnosed at a late stage, survival is below 5%¹⁸.

Success Measures 3.1	Increase proportion of stage 1 and 2 breast and bowel cancer screening detected with the QNCR	PHCC
Success Measures 3.2	Increase % uptake and coverage of breast and bowel screening by 2022 with the QNCR	PHCC

Breast and bowel cancers are among the most common in Qatar and the incidence is projected to grow significantly, as illustrated in the graphs below.

Projected number of cases of Breast cancer



Projected number of cases of Bowel cancer

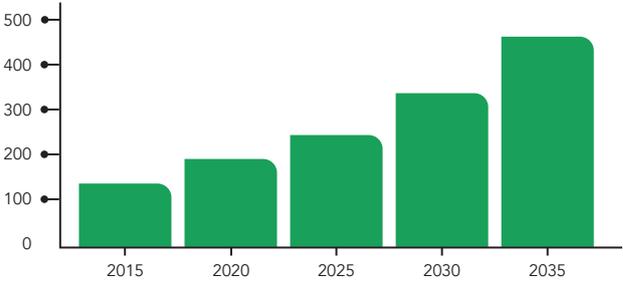
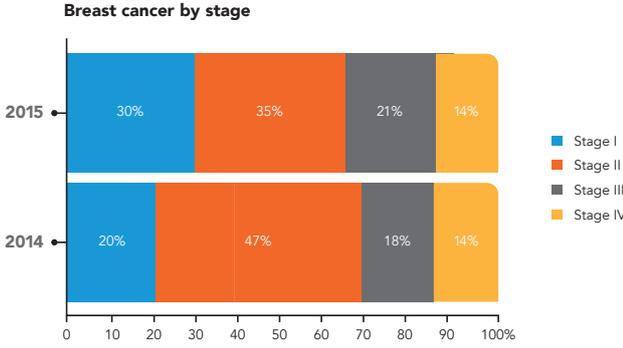


Image 6. Source: The American College of Chest Physicians 3rd Edition (ACCP) Lung Cancer guidelines, 2013.

In 2015, a national population based call and recall-screening service for breast and bowel cancer was launched for Qatar following public consultation. These screening centers feature a custom designed suite to provide services in a safe, comforting environment. The screening program now operates across three PHCC centers, alongside a mobile screening service. This screening is

necessary as figures from recent years demonstrate a trend of increasing numbers of late stage cancer being detected (see graphs below). Enhanced screening should bring down the proportion of cancers detected late, with a direct impact on survival rates.

Breast cancer by stage



Bowel cancer by stage

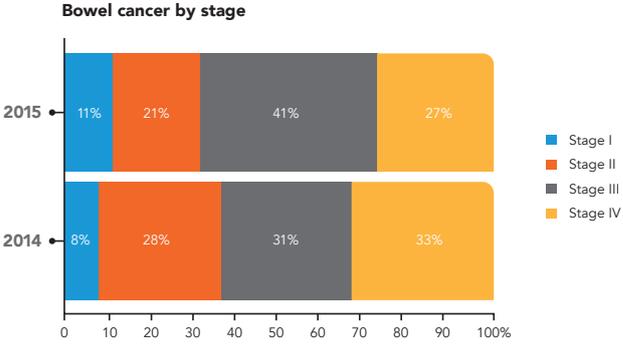


Image 7. Source: QNCR, 2017



Priorities

3.1 Increase awareness of screening

When healthcare professionals in Qatar were asked, ‘What is the single most important factor in delivering comprehensive and effective national cancer screening services?’, 55% responded with community education.⁸

Awareness activities to promote the availability and importance of screening should therefore continue. Utilizing public figures as role models in seeking screening should also be considered. Early cancer screening registry data suggests a positive uptake of screening services considering the relatively recent roll out of this service. Awareness activities must continue to be promoted across the entire health system including public and private providers of primary, secondary and tertiary care. Further utilization of the cancer-screening registry and population data is therefore recommended to ensure screening targets are met.

3.2 Enhance Cancer Screening Services

Qatar begins screening women at an earlier age than many other developed geographies, to account for the earlier presentation of breast cancer in the Qatari population as well as the relative younger population demographic seen in Qatar (see table below). There will be a continued roll out of comprehensive national screening programs for:

- 1 Breast (45-69 years), with three yearly recall
- 2 Bowel Men and Women (50-74 years), with yearly recall

Country/Organization	Recommended age for screening	Frequency of screening
Qatar Cancer Screening Committee	45 - 69	3 years
American Cancer Society	45 - 54, 55+	1 year, 2 years
Canadian task force on preventative health care	50 - 69	2 - 3 years
European Union/ International Agency for research on Cancer	50 - 69	2 years
UK NHS Breast Cancer Screening Program	47 - 73	3 years
US Preventative Services Task Force	47 - 73	2 years

Table 3. International review: Breast cancer screening age eligibility and screening frequency criteria for 2016.

Careful review of baselined data will determine the relative merit of further reducing the age of first screening to 40 years, as well as screening the young adult population (25-40 years). Once concluded, further investigation into frequency of screening should also be considered.

Cervical screening currently operates within Qatar on an opportunistic basis due to the relatively low prevalence of the disease. A situational analysis to understand the evidence base for the adoption of a national population-based cervical cancer screening service in Qatar is currently under evaluation between screening service providers and the MOPH.

Lung cancer is one of the more common cancers within Qatar and significant improvements in the outcomes of detecting lung cancer are now possible with emergence of evidence regarding the clinical and cost effectiveness of offering Low-Dose Computed Tomography (LDCT) scanning to people with a significant risk of lung cancer, due to age and smoking history.¹⁹ This has relevance for Qatar where smoking in older Qatari men is prevalent and about double the amount of Western populations.

The suggested target population would be males, over 45 years of age with a targeted history of smoking. It is estimated that 7,000 males would be offered LDCT screening without contrast and conservative estimates suggest that this could result in 200 diagnoses per year, at an earlier stage when potentially curative surgery is still a treatment option. It is important to account for the fact that for every one cancer detected there are approximately 40 patients who are found to have non-cancerous incidental findings that may lead to unnecessary interventions.

In addition to the above, the concept of population based thyroid screening is also under consideration. Thyroid

cancer is listed as the sixth most prevalent cancer across all nationalities and genders in Qatar, and is listed as the third most prevalent cancer amongst Qatari females⁷.

Under the NCS three screening guidelines for breast, bowel and cervical cancers were developed and published to ensure consistency in the management of screening services. It is essential that the guidelines are adopted fully across all providers; PHCC, HMC, Sidra and private providers of care. Along with the clinical management guidelines for cancer, the screening guidelines will need to be peer reviewed and updated on a bi-annual basis to reflect changes in practices and the projected technological advances in personalized diagnostics. The guidelines should be formally adopted and published as national policy and used as the basis for National Health Insurance reimbursement.

The breast and bowel screening service is now operational and therefore more focus must be placed on monitoring the implementation of the service to ensure targets are met and patient safety is maintained. To provide leadership in the ongoing development of the screening service for Qatar, MOPH in collaboration with PHCC and HMC will introduce a quality and risk management system, continuous improvement initiatives, performance monitoring and surveillance. Operational KPIs for breast and bowel cancer screening programs have been developed and are currently within the shadow-monitoring period, with actual monitoring starting in the second quarter of 2017. The NCF supports the breast and bowel-screening services' aim of consistently achieving 70% coverage and uptake of breast and bowel screening, ongoing adequate resourcing and developing expertise required to support this.

PROGRAM ACTIVITIES	
Screening Awareness	Lead
3.1 Deliver awareness campaigns to promote screening	PHCC
3.2 Embed cancer screening registry and population health data in screening systems	MOPH
Screening Services	Lead
3.3 Assess merit for implementation of population based cervical screening and high risk lung cancer screening programs	MOPH
3.4 Implement and maintain screening guidelines	MOPH
3.5 Review breast cancer screening access eligibility criteria	MOPH
3.6 Develop screening performance monitoring, management and quality assurance program	MOPH



PHILIPS

4

Diagnosis

When cancer is suspected, rapid and definitive diagnosis is of great importance to enable treatment to begin promptly. The NCS introduced a pathway to ensure that patients, who are referred to a specialist with a suspicion of cancer, are diagnosed within 14 days of referral. During the two-week timeframe, it is expected that patients will undergo a combination of pathology, imaging and physical examination to achieve a diagnosis, which can then be discussed and approved at an MDT meeting.

Over the past five years, this pathway has developed significantly, with 73% of patients being seen at a specialist clinic within 48-hours of being seen at PHCC.²⁰ Moving forward, rapid diagnosis and movement along the care pathway must be supported by prompt referrals.

Investment in advanced imaging systems has improved diagnoses, allowing clinicians to plan precise radiation therapies that target cancer cells but avoid healthy cells, as well as monitor the response to treatment. Moreover, all diagnostic images can be viewed across HMC, PHCC and other connected sites.

In the next six years, greater focus should be placed on streamlining the patient experience while travelling along the Patient Pathway. As a first step in recognition of this, a one-stop breast cancer diagnostic clinic has been developed at the NCCCR. This clinic aligns with international best practice in the management of breast cancer diagnosis and affords patients the ability to receive mammography, ultrasound, core biopsy and clinical examination during a single visit. Over the next six years where appropriate, site-specific diagnostic clinics will be developed with capacity to support advances in genetic testing. There are both advantages and disadvantages to centralization of services, therefore the principle of 'localize where possible, centralize where necessary', should be taken into consideration for service development and planning.

Success Measures 4.1	Patients meeting revised time to treat pathway targets (HSPA)	MOPH
Success Measures 4.2	Increase % of private patient's referrals complying with urgent suspected referral process	HMC

4.1 Continue To Monitor And Improve Diagnostic Pathways

Reporting of performance against the 14-day pathway will continue. It is however important to acknowledge that the healthcare system is currently experiencing a significant increase in volume of patients entering the system. For example, between 2014 and 2016, the number of patients referred through this route increased by 45%.²⁰ The demands placed on diagnostic services such as pathology and imaging to continue meeting these targets is well recognized.

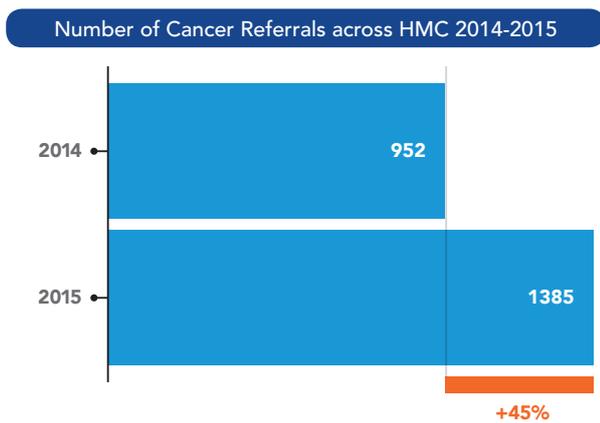


Image 8. Source: Health Service Provider Agreement data, MOPH, 2016.

The implementation of Electronic Medical Records (EMR) systems across public providers has improved the ability to exchange data across the system. However, recruitment of specialist pathology and imaging personnel has not kept pace with the increasing volume of patients. This should be prioritized to ensure continued development of the Patient Pathway and the adoption of new precision diagnostic techniques. The ongoing development of precision medicine at HMC will ensure the comprehensive development of molecular pathology and sequencing, deep sequencing and rapid precision diagnostics for all cancer patients. Facilitating routine diagnostic testing outside of the acute hospital environment into primary care would also help reduce burden. Providing specialist cancer training (Domain 10) in primary care to include

training primary care physicians in procedures such as colonoscopy, ultrasound and radiology would support the diagnostic pathway.

A program of communication skills training has been ongoing and a number of HMC physicians are now certified trainers, who can deliver training to peers as part of ongoing development programs. Over the next six years, this training will continue and influence more physicians to strive to become additional certified trainers. Consistent feedback from patients, trainers and trainees should also be used to regularly review and develop the training program to improve patient experience.

All information provided to the patient should be bi-lingual and developed in consultation with patients who have experienced cancer care in Qatar to help ensure clarity. This information should be consistent across all levels of the health system to ensure standardization of information. In future, the development of communication skills programs coupled with improved patient information will help ensure that patients are empowered to make informed decisions regarding their ongoing treatment in collaboration with their physician. Health literacy in Qatar may be relatively low at present and this will be considered as the program evolves. Tools to support shared decision-making will be developed.

Three key performance indicators were developed in consultation with healthcare professionals and the wider public, for patients with suspected cancer. The indicators are monitored and reported on a quarterly basis to the Health Service Provider Agreements (HSPAs) team at MOPH, who report on KPIs across the health system. The listed three key performance targets are among the most ambitious worldwide:



Description	Operational Standard
Referral to specialist clinics via a standardized process with those for suspected cancer be seen within 48 hours	80%
Once a patient is seen, a definitive diagnosis should be reached within 14 days using a combination of imaging, pathology and physical examination 95%	95%
Treatment should be within 14 days of diagnosis	95%

Table 4. KPIs for Qatar cancer care continuum. Source: HSPAs, MOPH 2016.

PROGRAM ACTIVITIES	
Diagnosis Pathway	Lead
4.1 Evaluate and continue monitoring provider rapid patient access performance - 3 access KPIs	PHCC
4.2 Prioritize recruitment of specialist pathology and imaging personnel as per agreed HMC workforce plans	HMC
4.3 Support the training of primary care physicians in routine diagnostic procedures	PHCC
4.4 Continue to develop communication skills training program using patient experience feedback	HMC
4.5 Continue development and access to patient information and shared decision making tools	HMC



5



Treatment

As first defined in the NCS, treatment must be patient centered. To achieve the very best clinical outcomes, treatment must also be multidisciplinary, specialized, evidence-based and rapid. Over the last five years, the environment in which cancer patients are treated has changed beyond recognition, with the introduction of new facilities and treatments such as minimally invasive surgery, Cyberknife and Hematopoietic Stem Cell and Bone marrow transplants.

HMC has developed 15 cancer site specific MDTs, made up of physicians, surgeons, radiologists, pathologists, nurses and oncologists with specialist knowledge and skills in a specific cancer type. The MDTs focus on the clinical, radiological and pathological features of each individual patient and make recommendations about treatment to ensure care is tailored to individual needs. Patients, as well as being discussed at an MDT review, now have a named Patient Pathway coordinator who guides them through the Patient Pathway. This achievement must now be maintained considering the number of patients discussed at MDT meetings has almost doubled in five years²².

Success Measures 5.1	% of patients with complete electronic data set at diagnosis	HMC
Success Measures 5.2	Publish chemotherapy outcomes including % of patients receiving pre-treatment education; outcomes of chemotherapy; emergency presentation due to side effects of treatment	HMC
Success Measures 5.3	Tumor specific 30/60/90-day outcome post-surgery	HMC
Success Measures 5.4	Proportion of appropriate cancer patients assessed and referred for psychological, cardio-oncology and oral health by 2018	HMC
Success Measures 5.5	Annual publication of 1 and 5-yr survival outcomes through the QNCR	MOPH
Success Measures 5.6	Continuous reporting of the % of cancer patients treated abroad through an Annual Report	MOPH

Cases Discussed at MDI

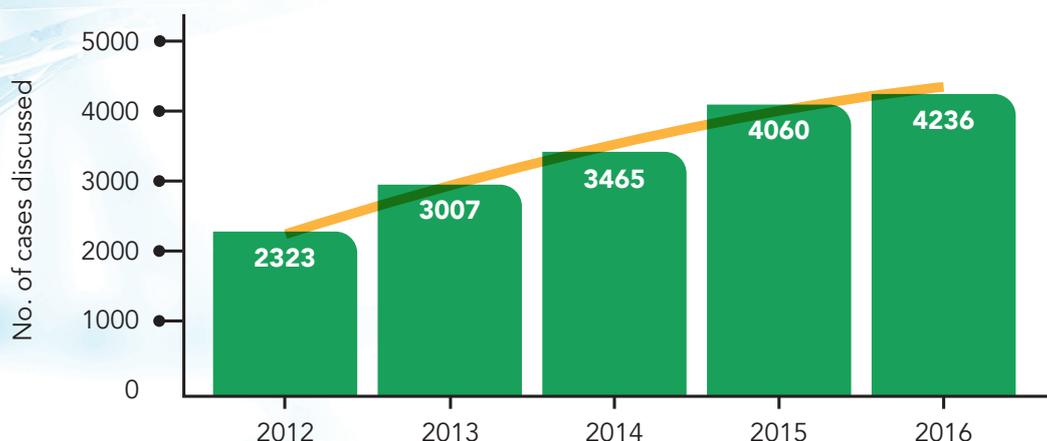


Image 9. Source: HMC cancer services data MDT 2011-2016.

While not complete sub-specialization has been achieved among physicians, supported by the development and recruitment of the new role of Patient Pathway coordinators. Thirteen (13) Advanced Clinical Nurse Specialists graduated from the University of Calgary – Qatar and a further seven are expected to graduate in 2017 and 2018.

To date, 14 guidelines, (11 clinical management, 3 screening and 1 urgent suspected referral), have been developed and published. These guidelines are reviewed on a bi-annual basis to reflect ongoing changes to patient care. The development of guidelines for other specific cancers must continue and an ongoing program of education seminars is required to enhance understanding and adoption of guidelines across the sector. To inform the ongoing development of guideline regulation a compliance audit should be undertaken to assess adherence and implementation of guidelines.

Peer review is a quality assurance program for MDTs that uses 'self-assessment' by teams against national measures and an external review by clinical experts. MDTs are expected to demonstrate specific evidence of meeting required standards. Where standards are not currently being met, the teams are expected to have an action plan in place to work towards compliance in an agreed timeframe, thus ensuring ongoing development of the team and service. The results of the peer review process have been instrumental in driving improvement in relation to complete membership of all MDT teams, including the development of the breast assessment clinic, the publication of patient resources, the ongoing sub-specialization of care and the publication of clinical guidelines.

Similar to rapid timing to diagnosis, the speed with which a patient begins treatment is also important and wherever possible, delays should be avoided. In Qatar, the goal has been for patients to begin treatment within 14 days of definitive diagnosis. Despite these improvements, a small number of rare or complex cancer cases still require overseas expertise, technology or clinical trials to achieve the best outcomes. However, some patients are still traveling abroad for treatment that could be provided in Qatar.

The International Medical Affairs Office (IMAO) has provided significant advances in the management of patients travelling abroad. The IMAO process for approving treatment overseas is now uniform and requires that every application for treatment overseas pass through two layers of clinical decision making. The number of doctors initiating the request for a patient to travel overseas for treatment has decreased from 51% in 2013, to just 7.5% in 2015.²³ The clinical decision making process adopted by the IMAO should be considered by all approving authorities which together, approved over 300 applications for cancer treatment overseas in 2015. The challenge remains to convince patients that the quality of care provided in Qatar is equal to and in some instances, better than the care they are requesting overseas.

Collaborating with international organizations has been instrumental in the development of cancer services over the past five years. The foundations for the success of this partnership are centered on a robust governance Framework with agreed deliverables, which are monitored on an ongoing basis and which, ultimately are linked to payment. The three work streams of nursing, medical oncology and hematology and the department of

laboratory medicine and pathology, have been the focus of the program thus far. Smaller bespoke partnerships have also been established to focus on specific clinical programs and have supported the development of excellent clinical care.

There is a lot of positive momentum to build on, however there is still more to do. Continuing to raise the confidence of patients and their families of the care provided in Qatar will help reduce treatment overseas. Enhanced collaborations not just internationally, but also within Qatar, will improve consistency of service provision across all aspects of the pathway. Qatar must stay at the leading edge of technological and service developments, increasing access to the necessary investment and training to provide new services safely within the country. Where a patient has to be sent overseas, it will be important to ensure it is for the shortest period necessary, with staff in Qatar being fully involved in the process, enabling early return and quality ongoing treatment.



Priorities

5.1 Ensuring Continued Delivery of high-quality Treatment

Multidisciplinary care

As cancer care continues to develop and improve, there is also potential for the structure and role of the MDT to be reviewed and modified. Allowing cancer patients to be managed within the MDT via well developed, tested and internationally benchmarked care pathways, would allow a greater proportion of the team's time to be dedicated to managing more complex, challenging cases. To be fully implemented, it is essential that all providers, including the private sector, are active contributors to MDTs.

A significant program of work is currently underway to digitize the MDT site-specific dataset, which will ensure all information relating to patients is held centrally, rather than on separate electronic viewing platforms. The availability of complete patient data sets will increase efficiency at the MDT meetings and enhance ongoing care once the patient begins treatment, as all diagnostic and staging data will be centrally located. The benefit will also be translated to the patient, as it will ensure all healthcare professionals involved will be fully informed of the patient's status. Being able to digitally access uniform data sets for patients will provide a new opportunity to use that data to inform internal audits, educate, review and improve the working of the MDT. It is not just clinicians who can benefit however and thought should be given to enabling patients to access appropriate data through a digital application. All MDTs will be trained on digital access, entry and analysis of patient diagnostic and treatment data.

Sub-specialization in healthcare professionals

In recognition of the maturation of locally trained cancer nurse specialists, it is recommended that the focus begin to shift from solely on training new Advanced Clinical Nurse Specialists, to develop ongoing further sub-specialization of Advanced Clinical Nurse Specialists. This will enable them to provide excellent care in their chosen specialist cancer field.

While great progress has been made in sub-specialization at both the physician and nurse levels, it is recognized

that more can be done to ensure that all health care professionals are provided with continued professional development opportunities so they too can become site-specific cancer specialists.

Pharmacy

The introduction of Oncology Clinical Pharmacy Specialists as core members of the different cancer specialties at NCCCR, (i.e. breast, lymphoma, leukemia), has enabled patients to receive more comprehensive care. Providing clinic-based, patient-specific counselling by Clinical Pharmacists for cancer patients in NCCCR should improve compliance, enhance response to medications, reduce side effects and deliver cost savings associated with reducing unplanned admissions. It is therefore recommended that other site-specific clinics include Clinical Pharmacy Specialists.

Best-practice pathways /clinical guidelines

Further work will be required to ensure Urgent Suspect Cancer guidelines are fully disseminated and implemented across the healthcare system to ensure all patients are being referred appropriately and in a timely way. Pan disease clinical management guidelines for the treatment of oncological emergencies such as neutropenic sepsis and malignant spinal cord compression and palliative care guidelines need to be developed and disseminated across all health care settings. The treatment management guidelines already developed for tertiary care teams require supporting audit programs.

Peer review and tumor boards

To ensure the continuing validity and value of the peer review, the selection process of international peers should be refreshed and kept under bi-annual review. Selection of peers should be jointly approved and an aligned timeline for publishing work created.

The adoption of the peer review process will continue to be supported by the National Tumor boards. These boards,

comprised of relevant stakeholders across public and private providers, support the development and adoption of international best practices and set standards for each of the disease specific tumor groups. It is recommended that where possible, stakeholder representation and membership should increase to include new and allied partners. These groups will be essential in driving the adoption of peer reviewed recommendations and changes in international best practice. In recognition of the expanded role of these highly specialized groups, it is proposed that they be renamed as National Clinical Advisory Groups (NCAGs). To drive the ongoing development of NCAGs, a program of site-specific international observation visits should be arranged to share best practices and support international collaboration.

Revising the time-to-treatment target

The importance of the patient experience and in particular having time to think about diagnosis and treatment options, cannot be understated. While the current targets have helped drive service redesign and increase the operational standard, there is a need to review the current criteria and introduce a degree of flexibility in the system to support patients who have requested more time to consider their treatment options. It is hoped that this will be achieved with the adoption of a new pathway.

5.2 Introducing Novel Technologies and Services

Understanding technology needs

The treatment environment for cancer continues to rapidly evolve, whether that is latest technology, precision treatment modalities, or access to new drug therapies. To avoid duplication of potentially high cost investment, or investment in unnecessary equipment, a situational analysis of diagnostic, therapeutic and capital equipment in Qatar should be undertaken and assessed against projected needs analysis for the next six years. This should be built on the similar work undertaken for research by Qatar Foundation in the development of the R&D Asset Management Portal which lists all the research equipment available within Qatar to ensure that all researchers have access to it.

HSCT- Cellular therapies and biotherapies delivered through clinical trials

Capitalising on the achievements of the Hematopoietic Stem Cell and Bone Marrow Transplant (HSCT) program thus far, a national, quality assured, accredited service and research facility should be developed. The current program is expanding its operational, clinical and scientific

complexity to meet all levels of international practice in HSCT. Upon completion of this expansion, the program at NCCCR would be able to provide the national leadership, quality and governance platform of HSCT, for all patients in Qatar.

This program is supported by a collaborative network, which includes Oxford University NHS Trust, the Solid Organ Transplant Donation program and registry, the Qatar Red Crescent and other partners. The network aims to integrate relevant institutions with clinical, stem cell processing and banking facilities that can further be developed to their full potential. The program is pioneering a patient and donor awareness project on disease and stem cell donation, identifying eligible donors for patients in need. Qatar has also invested extensively in research facilities, particularly in relation to genetic and genomic programs. A national cancer-specific stem cell program making use of these facilities could be valuable.

Advanced HSCT services provide a platform for the launch of novel therapies through clinical research protocols, two compatible, inter-related and inter-connected components of translational research are proposed:

A. Ex-vivo development of therapeutic strategies based on the exploitation of the power of the immune system leading towards immunotherapies (immune cells against cancer)

B. In-vivo therapeutic interventions based on developed clinical research protocols for human use involving cellular therapies and investigational agents / protocols

Minimally Invasive surgery

Surgery, undertaken by sub-specialist expert surgeons, remains the treatment modality that delivers the largest number of curative outcomes for patients with cancer. This is likely to increase with the successful uptake of population based screening services, which result in cancer being detected earlier where a potentially curative surgery is more likely to be an option. Surgical oncology services, in partnership with the Qatar Science and Technology Park (QSTP), have made considerable strides in sub-specialization. The use of emergent technologies has enabled the provision of a range of sophisticated and minimally invasive techniques in clinical practice, such as those available in Uro-oncology. Minimally invasive surgical options should be further developed, studied, evaluated and formally linked into the research and academic agenda. This will be supported by the reporting of 30, 60 and 90-day post-operative outcomes.

Providing new pediatric and young adult cancer services

The transition between pediatric, young adult and adult services for those with cancer is of vital importance and clear plans need to be made to ensure the transition is smooth. From 2018, Sidra will assume care for this small and highly specialized group of patients. Due to the physical separation of facilities, careful transition of care will require significant collaboration between HMC and Sidra. It is recommended that HMC and Sidra work together to develop clear pathways of care. MDT meetings should be attended by both pediatric and adult providers to act as the forum through which plans of care for individual patients are made. It would also be considered good practice for there to be joint clinic appointments for those transitioning between services in the year prior to transition. Consideration should also be given to ensure support with late effects of treatment for those who have had cancer in childhood or adolescence.

Introducing psychological assessment to understand patient needs

Understanding the ongoing and often changing psychological needs of cancer patients can be challenging. Not all patients will require the same level of support but assessing the needs of individual patients is of critical importance in delivering patient centered care. This program will be based on National Institute of Clinical Excellence guidelines, to provide a structured approach to ongoing psychological assessment of cancer patients from diagnosis, through to ongoing care. Use of the holistic needs assessment tool will be used to support this effort.

Develop a cardio-oncologic assessment program

Cardiovascular events can lead to treatment interruptions which can affect outcomes and cause long-term morbidity and mortality in people living with or surviving cancer. In recognition of this challenge, the new medical subspecialty of Cardio-Oncology has emerged and aims to promote cardiovascular health, while facilitating the most effective delivery of cancer therapy. Therefore, a new cardiovascular oncology service in partnership between the Heart Hospital and NCCCR will be developed, involving the assessment of cardio-vascular health at the point of diagnosis and ongoing treatment to identify those at possible risk of cardiac complications because of chemotherapy.

Develop an oral health assessment program

Cancer and its treatments can directly affect the condition of dental health and the patient's well-being. Those at greatest risk are patients who undergo radiation therapy for

head and neck cancer, hematopoietic stem cell transplant patients and patients who receive chemotherapy. A program of dental and oral health management for cancer patients is under development to provide an ongoing assessment of oral health pre, during and post treatment. This will help ensure effective monitoring and where necessary intervention to ensure continued delivery of cancer treatment and where possible, the prevention of side effects to treatment.

5.3 Treatment Abroad And Collaborative Partnerships

Aligning with Domain 5, the ongoing work of the IMAO should continue and adopted by all approving authorities, based upon the following objectives:

Patients only travel to a defined number of approved international partnered centers

Patients leave with a defined treatment pathway

Qatari and overseas physicians practice according to mutually agreed protocols

Patients return with full treatment record and discharge summary

Overseas treatment data is recorded in the EMR and QNCR

To support these objectives, it is recommended that cost, duration of treatment, patient experience and outcome data be captured and reported to further inform change in this program. Treatment outcome data for both Qatar and international centers should be benchmarked against other developed geographies.

The positive patient experience of cancer treatment in Qatar should spread to the wider population and continue to build trust and confidence in the system, which will ensure the further reduction in patients seeking treatment overseas. To support the work of the IMAO, ongoing education of the community must continue, but it must be led by patients who can describe the positive experience of being treated for cancer in Qatar. The Framework recognizes that changing perceptions and trust is not a straightforward process. A long-term plan will need to be developed and supported to improve perception, celebrate successes and engage with local communities, encouraging repatriation of activity.

The needs and requirements of partnerships will change with the ongoing maturation of services. The number and focus of partnerships will accordingly need to evolve. All partnerships should be reviewed to ensure that the focus will support the recommendations of this Framework.

Any new partnerships should be aligned with international partner centers to foster further collaboration and shared expertise across the pathway of care.

PROGRAM ACTIVITIES

High Quality Treatment

Lead

5.1	Evaluate and continue monitoring provider rapid patient access performance - 3 acc	HMC
5.2	Establish a guideline and pathway compliance monitoring program which will be agreed and monitored through the Tumor Boards	HMC
5.3	Review Peer-Review teams and selection process, develop a process for regular review with an agreed governance structure pre-and post-Peer Review	MOPH
5.4	Rename National Tumor Boards "National Clinical Advisory Groups," review membership and provide administrative support	HMC
5.5	Review the feasibility of a program of regular site specific international observation visits for NCAG leads	HMC
5.6	Review and revise time from diagnosis-to-treatment pathway	HMC

Novel Technology and Services

Lead

5.7	Audit all diagnostic, therapeutic and research capital equipment in Qatar, model a 6-year capital equipment plan and conduct gap analysis to inform investment plans	MOPH
5.8	Develop a national, quality assured, accredited Hematopoietic Stem Cell and Bone Marrow Transplant facility	HMC
5.9	Develop a National Hematopoietic Stem Cell Donor Registry linked with regional and international stem cell registries	HMC
5.10	Development of minimally invasive and robotic surgery	HMC
5.11	Agreed guidelines, pathways and protocols in place for patients transitioning from pediatric to adult services to include late treatment effects for childhood cancers	MOPH
5.12	Where indicated, expand psychological, cardio-oncology and oral health assessments for cancer patients	HMC

Treatment abroad and partnerships

Lead

5.13	Record and report clinical, cost, duration of treatment and patient experience data associated with treatment overseas to further inform change	HMC
5.14	Deliver targeted education and awareness campaigns, promoting cancer services available in Qatar with a communications plan	MOPH
5.15	Review all current international partnership arrangements, conduct assessment of partnership needs, gap analysis and amend partnerships accordingly	HMC
5.16	Develop a retrospective anonymous patient experience feedback program targeting Qatari patients receiving treatment overseas	MOPH





Ongoing Care

Getting the right treatment is vital, but it must be supported by ongoing care. The growing prevalence of cancer, coupled with the greater number of survivors is increasing pressure upon follow up services. The current model of care centralizes cancer patients into secondary and tertiary care, but once treatment is successful, or even in between treatment, community and primary care services need to be fully incorporated into an integrated care pathway, allowing patients to be supported irrespective of where they are in the pathway.

Some progress has been made to develop interventions to support people living with and beyond cancer. This includes the establishment and evolution of the mobile healthcare service, bringing more advanced care into people's homes and work by PHCC to develop a model of community nursing to support the family medicine model. HMC has also invested significantly in palliative care services however there are still significant gaps in the patient care pathway. Improving community services to enable cancer patients and survivors to continue to be effective and productive members of their families and community, is an essential goal for both the NHS 2017-2022 and for the improvement of cancer services across the country.

The movement of patients through the pathway is often referred to as 'transitions of care'. There is a need to clearly define what and whom this encompasses from a patient, healthcare professional and system perspective. It is essential that the key Domains of transitional care include risk stratified follow-up, transition between services (i.e. pediatric to adult services) and the management of long-term effects of cancer or its treatment.

Success Measures 6.1	Cancer survivors with treatment summaries and risk stratified tumor specific ongoing care plans available to primary care providers	HMC
Success Measures 6.2	Increase # of transition models of follow up care; and pathways for transition	MOPH
Success Measures 6.3	Increase % of end of life patients who die in their preferred place of care outside of tertiary care	HMC

6.1 Develop Risk Stratified Transition Care Pathways

In May of 2016, healthcare professionals working with cancer were asked how the growing population of cancer survivors in Qatar could be most effectively assisted with returning to normal life. An indicative

85% said that funding community based, physician-led or survivor-led programs would be most effective in the ongoing management of these patients.

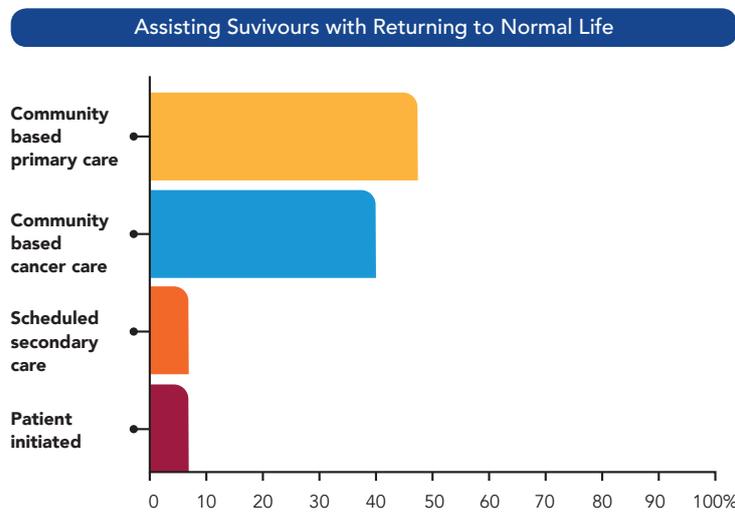


Image 10. Source: Healthcare professional deliberative cancer forum, Qatar 2016.

It is therefore recommended that Qatar establish programs to support and educate cancer survivors, with a clear program to identify champions, supporting their communities and those with cancer.

In recognition of this significant agenda for change, MOPH will lead in the development of a National Transition Framework. A team of cross stakeholder professionals, in consultation with patient representatives and the QCS, will firstly define the program of work to include models of follow-up care, clinical pathways between services and agree the management of long-term effects. The NCAGs will have an essential role in the development of this program, as the needs of each cancer site will be different. The adoption of health lifestyle goals, articulated in Domain 2 are also of great significance in the development of the Transition Framework. There is increasingly strong evidence supporting the long-term benefits of exercise programs for survivors in secondary prevention and improving quality of life measures, and therefore should

be a central focus of ongoing care programs.

The Framework will seek to ensure a pathway of care across all clinical service and organizational boundaries, public and non-public services. Care plans, self-management, improved access to care, evidence based lifestyle and survivorship support systems to increase healthy living will all serve to enhance quality of life for survivorship. Treatment summaries at the end of primary treatment will be important for primary care providers to support monitoring and recognition of late effects or recurrence. It will also be necessary to enhance access to counselling and psychological support, in primary care which can include the development of support groups for site specific tumours.

It will be essential that all outpatient ongoing care services are developed in alignment with the ongoing implementation of the family medicine model across PHCC centres.

The Family Medical Model (FMM) PHCC

Family medicine is the health care specialty which provides continuing and comprehensive health care to individuals and families, integrating biological, clinical and behavioural sciences. Its scope encompasses all ages, genders, every disease entity and each organ system.²⁴ The Family Physician is broadly educated in the family practice medical specialty. They possess unique attitudes, skills and knowledge which qualify them to provide continuing and comprehensive medical care, health maintenance and preventative services to all family members regardless of the age, gender or type of problem the individual presents.



Services integrated and non-continuous, provided by individual health care professionals with no clear relationship to the patient/family

Services integrated, focused on continuity of care, provided by an inter-professional team, with a clear relationship to the patient/family

The range of services available at a FMM health centre will be divided into three broad categories, but in general will either be:

1) Foundation services: essential and integral components of any primary health care service, which should be delivered by the core FMM interdisciplinary team and considered family medicine's full range of services and scope. Foundation health center services are provided by the primary care interdisciplinary core team and can be integrated in a team approach.

2) Health center-based services: still considered as fundamental primary care services. However, due to demand, resources or required expertise are stretched, but are available to all of the health center teams. These might also comprise additional services required to meet the needs of the registered patient population and community.

3) Regional services: considered important to high quality primary care services, but are not required in each and every health centre, but rather will be offered regionally, through internal referral protocols. Service provision for more specialized services that are not needed per health centre will take into account a hub and spoke method of delivering regional services from larger, centralized health centres with clear patient referral and discharge pathways in place.

6.2 Develop patient-centred end of life care

End-of-life care "helps all those with advanced, progressive, incurable illness, to live as well as possible until end of life. It enables the supportive and palliative care needs of both patient and family to be identified and met throughout the last phase of life and into bereavement. It includes management of pain and other symptoms and provision of psychological, social, spiritual and practical support".²⁵

In 2014, the NCCCR opened the 10-bed supportive and palliative care unit, which provides a tranquil environment, conducive to providing end of life care. However, not all patients will need, or want to be treated on an inpatient basis and in some instances, could be better cared for at home. To support this, the NCCCR has collaborated with the mobile healthcare service to provide end of life care within the home. The NCCCR is currently supporting the education and development of palliative care skills and knowledge for the mobile healthcare service nursing staff and this is recommended to continue.

When healthcare professionals at the forum in May 2016 were asked, "What would you consider to be the best setting for delivering excellence in end of life care / palliative care?", it was revealed that delivering supportive end of life care can and should be delivered in different

settings. The results showed that 42% reflected that home would provide the best setting, 35% said a community type hospice and 25% would advocate specialist hospital based palliative care. One of the most important factors in developing supportive care is clearly understanding the needs of patients and their families. International literature review suggests that the common factors, which are important to patients and families at the end of life, include:

- Symptom management
- Preparation for the end of life
- Spiritual care
- Good relationships between patients
- Family members
- Healthcare providers

This evidence is applicable to the local context and it is therefore recommended that work be undertaken to understand and agree the principles of end of life care for Qatar. The WISH End of Life report published in 2013 indicates international principles of 'how to die well', which can be viewed in the development of Qatar's own principles for end of life care.

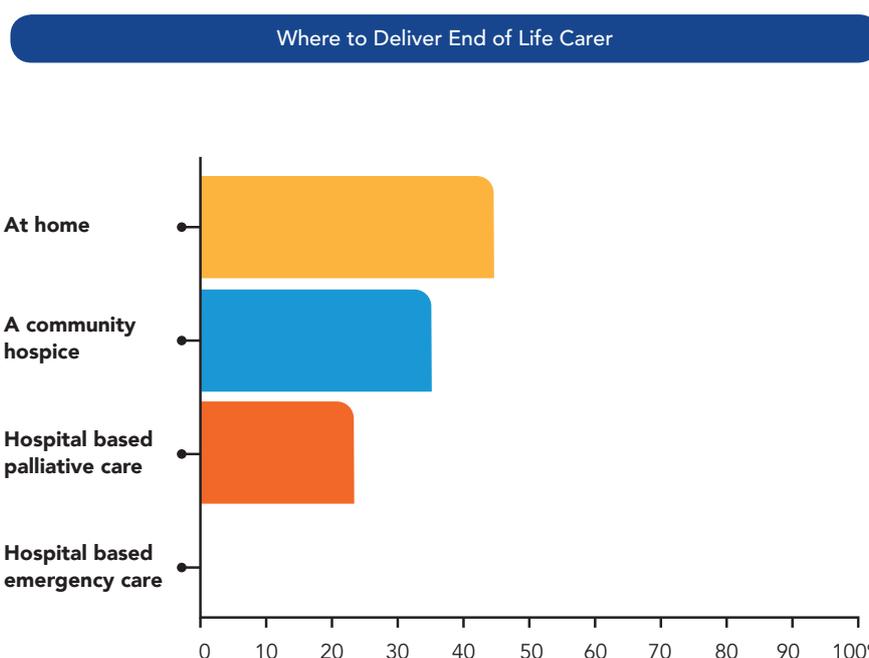


Image 11: Source: Healthcare professional deliberative cancer forum, Qatar 2016.



Image 12. Source: World innovation Summit, 2013.

In addition to this, attention should be paid to the ongoing development of good communication skills for healthcare providers, as well as ensuring the ongoing development of skills required to accurately diagnose dying symptoms. Consideration should also be given to the development of advanced care planning tools for those approaching the end of life.

The WISH End of Life report also highlighted the five steps which can dramatically improve end of life care.²⁶ It is recommended that the five steps underpin the future development of supportive care services in Qatar. The avoidance of maximal treatment, the adoption of patient

advanced care directives on end of life decision making and the adoption of the WHO list of essential medicines and the elimination of overly restrictive regulation have been highlighted as key objectives in the delivery of excellent supportive and end of life care for patients. It is important to note that to support this initiative, collaboration and partnership must be developed with organizations already providing similar services in Qatar or internationally. While being cognizant of the needs of the Qatari population and its cultural imperatives, it is important not to over-medicalize all elements of the pathway and encourage participation from nongovernmental organizations.

5 Steps to Improve End of Life Care

STEP 1: MAKE CARE OF THE DYING A PRIORITY FOR ALL

- Produce a national strategy for end-of-life care.
- Include palliative and end-of-life care as part of healthcare for all diseases.
- Monitor the scale and need for end-of-life care locally.
- Sign the Prague Charter and recognize that access to palliative and end-of-life care is a human right.
- Set up a national initiative using online tools and innovative campaigns to encourage people to learn and communicate more about death and dying.
- Encourage the use of advance care directives, so that patients can make their own end-of-life wishes and expectations known beforehand, rather than under pressure at a time of crisis.

STEP 2: REDUCE UNNECESSARY SUFFERING

- Adopt the WHO Model List of Essential Medicines and eliminate overly-restrictive regulations banning the use of opioids for palliative and end-of-life care.
- Ensure essential medicines are nationally available in central medical stores, licensed appropriately, and distributed effectively through existing distribution channels where possible.
- Ensure the appropriate use of opioids and other essential medicines.

STEP 3: IMPROVE KNOWLEDGE AND USE DATA TO DRIVE INNOVATION

- Invest in research and development in palliative and end-of-life care.
- Form partnerships between national, regional, and international palliative care organizations to carry out research and publish high-quality reports.
- Capitalize on knowledge gained from research outcomes to lower costs and improve care.
- In places where Western medicine has not been fully adopted, engage with traditional healers to improve end-of-life care.

STEP 4: MAXIMIZE RESOURCES

- Engage the local community in end-of-life care.
- Utilize telemedicine and technology-based innovations to improve access to end-of-life services, especially in rural and remote areas.
- Empower patients through better access to knowledge about end-of-life care choices and availability.

STEP 5: IMPROVE SKILLS

- Include palliative and end-of-life care training in all professional healthcare undergraduate and postgraduate programs.
- Include bereavement support in palliative and end-of-life care training programs.
- Share global learning to enable all countries to build palliative and end-of-life care services.
- Access or develop e-learning training modules for staff and volunteers.

Image 13. Source: World Innovation Summit, 2013.



PROGRAM ACTIVITIES

Ongoing Care

Lead

6.1 Develop and implement National Cancer Transition Framework:

- Develop models of follow-up care
- Develop pathways for transitions of care
- Guidelines for management of long-term effects of cancer

MOPH

End of life care

Lead

6.2 Continued development of end of life care service provided between NCCCR and Mobile Health Service

HMC

6.3 Develop and publish principles and guidelines for end of life care in Qatar

MOPH





Measuring Performance and Using Data

With the Patient Pathway clearly defined, it is important to ensure key aspects of delivering care along are monitored and assessed.

Effective performance management will be achieved via three main channels:

Utilization of patient experience measures to affect change

Publication of KPI targets to monitor and regulate the performance against pre-defined outcomes

Full integration, development, and reporting of the Qatar National Cancer Registry

Success Measures 7.1	Produce an Annual Report of the patient experience by all measures across all providers of care	MOPH
Success Measures 7.2	% of cancer patients comprehensively recorded in the QNCR	MOPH

It is only through collecting, using and publishing data, that performance can be transparently measured.

When the NCS was first launched, the majority of patient information in Qatar was paper based in files and manually accessed or edited. This posed problems across a wide range of areas, from patient experience, quality of care, to pharmacy management. HMC, PHCC and Sidra have now all gone live across their facilities with a common EMR system, which can now facilitate the comprehensive collection of data to support the performance management efforts.

Accordingly, this represents a tremendous opportunity to deliver improvements in patient experience in things that patients notice like scheduling and follow-up. More tools are now available to clinicians in Qatar for more complex areas that can directly affect the provision of care, access to diagnostic or lab results, understanding of care plans for patients with co-morbidities, or access to genetic family records. Of course it is not only clinicians who can make use of this data, most advanced health systems are empowering patients by providing them access to relevant data and Qatar should explore the potential of a digital application in this area.

Performance management is further supported by the QNCR, combining information on both incidence and screening. Of course, having access to data is just the start, developing sophisticated analytics capabilities to turn data into knowledge, is a challenge most advanced health systems are still facing. The importance of transparency in reporting cannot be underestimated. All providers should be encouraged to actively report on KPIs, which can be used positively to continue to support improvements in cancer care.

The size of Qatar and appetite to exploit this new field means that significant improvements should be delivered over the coming six years. Use of EMRs, supported by a connected e-Health system, the cancer registry and evolving collaborative networks represent a tremendous opportunity to deliver significant improvements in patient care.





Priorities

7.1 Patient Experience and Patient Voice

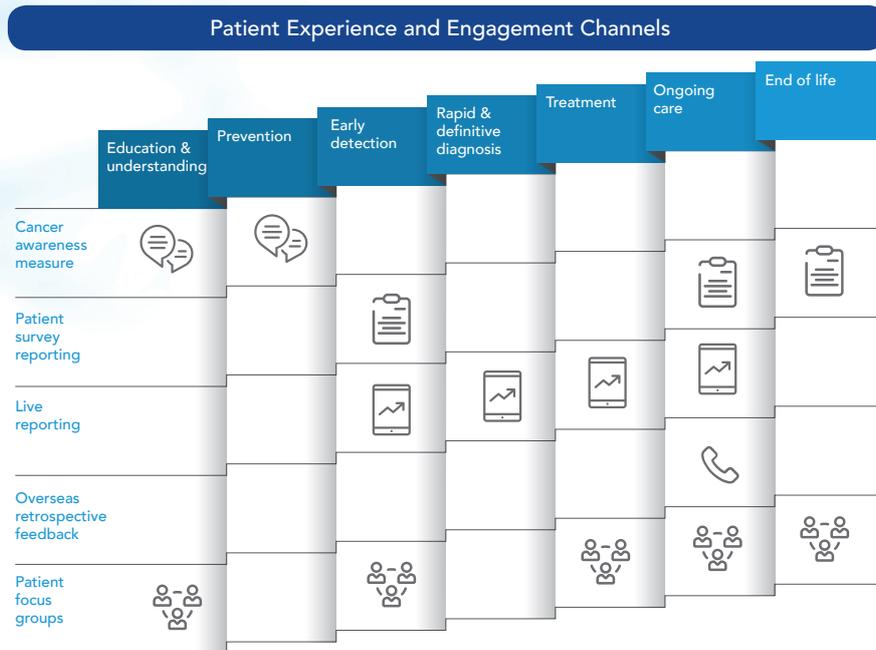


Image 14. Source: MOPH, 2016.

With the patient at the center of the cancer continuum of care, capturing patient experience is vital in delivering excellence. The best way to measure and continue to develop excellent patient-centered care is to ask the patient. There will be five main methods for gathering information on patient experience across the seven stages of the cancer care continuum:

- Cancer Awareness Measure tool
- Patient survey reporting
- Live reporting
- Retrospective feedback
- Patient engagement groups

Advanced health systems monitor outcome measures not solely based on registries and databases but reported by patients themselves. Patient reported outcome measures could be a powerful tool for improving services.²⁷ The QNCR can also be used to capture the experience of patients who have travelled overseas. Patients should have easy and routine access to this information, as informed partners in developing cancer services.

Future development in technology and innovation will allow for increased information gathering methods and the resulting outcomes will be fed back into the performance management system to enhance patient care and experience. All major programs of work related to this strategy should include a patient representative within the project team who will play an active role in shaping the future of cancer services along the Patient Pathway. The voice of the patient who has experienced cancer care must be heard, understood and acted upon in the delivery of care.

7.2 New Reporting Measures

To establish quality of services in Qatar, it will be necessary to robustly benchmark and monitor performance both internally and with international peers. A clinical forum for the development of KPIs associated with the Framework must be established to ensure that the process is underpinned by clinical expertise and background knowledge to cancer services provision in Qatar. This will

require development of a comprehensive performance monitoring system covering a suite of indicators, including chemotherapy outcome data, sentinel events and near misses. Independent clinical audits should be routinely conducted, supported by international partners and NCAGs and a culture of transparency should be inculcated in cancer services across Qatar.

Monitoring of cancer recurrence rates could be a valuable tool to assess the impact of follow-up and healthy lifestyle education. The QNCR will enable monitoring of nationwide five-year survivability by 2018. This is a key measure. Used internationally, it takes into account not just the quality of hospital care, but longitudinal care across the whole pathway including regular follow-up of survivors.

Of course, not all determinants of five-year survival rates lie within the control of the cancer services or the broader health service within Qatar. It is therefore important to understand outcomes related to health seeking behaviors (i.e.: uptake of screening services, other societal and behavioral factors). To achieve significant impacts, the whole system must work together, not just within healthcare, but also with other Ministries to create an environment where all national policies consider their impact on health and how this could be improved.

Qatar has invested significantly in cancer services in the last five years. However, budgeting in the public sector is not granular enough to capture all spending related to cancer services. Private sector spending is also not routinely made available to the MOPH. It is important to understand direct costs related to screening or treatment at the NCCCR, and also indirect costs related to broader public health education and awareness messaging.

Granular budgeting, supported by high quality data, can help focus spending and avoid duplication of effort. The NHS proposed introduction of program-based budgets. Cancer is in an excellent position to implement this system and to capitalize from the rigor and transparency this could introduce. The PHS argues for an increase in the proportion of the total health budget allocated to awareness and prevention activities. Program based budgeting can over time accurately demonstrate the long-term value for money these interventions and others such as screening, represent to the overall health economy. Similarly, more clarity on the true costs of cancer care can build investment cases for expanding provision of care in community and primary settings and ensure that those services are adequately resourced and funded.

7.3 Making Improved Use Of Data

Create a national cancer information governance and policy

Systematic secondary collection of cancer data should be justified and governed by rules protecting patient rights and clearly describe data and information governance. A Cancer Data Information Governance Committee should be established to oversee any secondary data collection in Qatar. This multidisciplinary committee will approve the following:

- Establishing a national cancer data policy, which will set policies for:
 - o Data protection, confidentiality and privacy
 - o Data collection, storage, use and sharing
 - o Data ownership
- Requests for establishing any systematic and long-term secondary data collection, excluding collecting data for research that has end points

Create a national cancer information center

With the increased demand of data driven plans and policies, the establishment of the national e-health strategy, and the need to create a cancer service environment based on data sharing and exchange, the creation of the Qatar Cancer Information Center (QCIC) will be one of the milestones of the Framework.

The QCIC will be the national data repository for cancer information. It will have a central database with external stakeholder integration links. These links will specifically connect to the Ministry of Interior for demographic data, the clinical information systems used at HMC and PHCC, and the QNCR for continuity of cancer information flow. Future registries can then be built based on the QCIC, such as the following which are planned for implementation in line with this Framework:

- Cancer Screening Registry
- National Stem Cell Donor Registry
- Cancer Genetics Registry
- Hereditary Cancers Registry
- Cancer Research Registry
- Clinical Trials Registry
- Disease Specific Registries

Strengthening the Qatar National Cancer Registry QNCR

The QNCR is becoming the cancer data warehouse in Qatar and it is actually composed of three registries:

- Cancer Incidence Registry
- Cancer Screening Registry
- Cancer Waiting Time Registry

All three registries systematically collect data on national level. With the infrastructure now in place to capture all epidemiological data for cancer in Qatar, four key uses have been identified to assist in the delivery of comprehensive and informed care:

- QNCR for quality improvement: Utilize the QNCR data to inform KPI measurement, collect information about the burden of cancer, monitor the progress of all cancer related plans and programs, in addition to evaluating the clinical service provided to the public at national level
- Integration with the e-Health system: The QNCR can integrate within the national e-health system, through the linkage with other national databases, enabling both improvements in the quality of care and the preparation of future personalized medicine
- Deliver comprehensive cancer care: Integrated comprehensive data from different sources will create a single dataset and improve information sharing for education, prevention, incidence review and research
- Supporting and guiding clinical research and academia: Using QNCR data in clinical research as a population identification tool and encouraging research on clinical outcomes collected through extended treatment data

Developing a National Cancer Intelligence Network

In accordance to the eHealth system implementation, it is

recommended that the QNCR be linked to other existing national databases, to enhance data collection and support a connected health system.

With the QNCR at the heart, a comprehensive cancer intelligence network will emerge that will benefit of all partners in the country. This platform will combine all data from partners to provide comprehensive information about cancer in Qatar. This network will also provide epidemiological and expert analysis on cancer in the country. The network should have three main components:

- Partners: all stakeholders involved in cancer screening, prevention, care and research
- Website: which fosters information sharing and transparency
- Cancer data and statistics: includes all cancer KPIs collected by the QNCR and other cancer site-specific data and information

Supporting the cancer research agenda

It is suggested to expand data collection to include information about cancer patients included in clinical trials. Data collection regarding treatment, side effects and toxicity for specific cancer diseases can help build the infrastructure for national clinical outcome research. Furthermore, the linkage between the QNCR and Qatar Bio-bank database could represent a significant step towards developing personalized medicine.

PROGRAM ACTIVITIES	
Patient Experience	Lead
7.1 Develop and report on the ongoing findings of the patient experience questionnaire and live reporting application across the Patient Pathway	HMC
7.7 Develop patient engagement groups and include patient representation with the project team across pathway to inform patient led change	PHCC
7.3 Develop Patient Reported Outcome Measures	MOPH
Reporting Measures	Lead
7.3 Implement an ongoing program of internal clinical audit for cancer services	HMC
7.4 Continue development of the Qatar National Cancer Registry to enable monitoring of cancer recurrence and 5-year survival rates	MOPH
7.5 Develop program based budgeting for cancer services	MOPH
Data	Lead
7.6 Develop a National Cancer Intelligence Network	MOPH
7.7 Create the Qatar Cancer Information Center	MOPH





8



Workforce

Quality of care is dependent on the staff providing that care. The NCS clearly identified the need for more staff dedicated to delivering cancer services, and that further training for existing clinicians was essential. Significant recruitment has since occurred across the healthcare system and has resulted in increased sub-specialization at the physician level, the training of 13 MSc advanced clinical nurse specialist and the introduction of new roles including Patient Pathway coordinators. Secondary and tertiary care recruitment was also complimented with recruitment to support the breast and bowel-screening program. In addition to this, Qatari surgeons have previously and should continue to participate in board certified fellowships programs in overseas centers of excellence. This will support the ongoing work of developing Qatari surgeons.

Over the last five years, significant investment has enabled progress in early detection, rapid diagnosis and treatment of cancer. There is a need to demonstrate how further recruitment and staff development will ensure value for the health sector and continue to improve patient experience. It is therefore recommended that advanced practice programs be considered across all levels of healthcare to help ensure continued professional development of retained staff and where applicable the further sub-specialization of allied health professionals.

In order to support new recommendations around the transition of the ongoing care away from specialist acute centers, adequate primary care resources need to be identified, re-deployed and budgeted for to support this multidisciplinary service. Recruitment of healthcare staff is an increasingly globally competitive challenge. Qatar is competing with both established systems and those developing in the region. To attract the best talent, Qatar must ensure that the terms and conditions that can be offered to prospective staff are competitive.

Success Measures 8.1	Complete a workforce review of multi-disciplinary cancer specialists required and develop a recruitment plan	MOPH
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Priorities

8.1 Continued professional Development

The healthcare professionals event survey from May 2016 asked, 'Where do you think future investment could be best placed to deliver excellence in cancer care?' The results showed that 68% thought that investment would be best placed in primary care and the community.

To manage the increasing volume and complexity of patients in secondary and tertiary settings, care should, where appropriate, transition to the primary and community setting. A key factor in the successful implementation of this plan will be adequate resourcing of facilities and most importantly the ongoing education of and take on a greater role in caring for cancer patients. These education programs represent a good opportunity to collaborate between providers and could be supported by existing programs, such as those run by the Qatar Cancer Society.

Increasing the scope of primary care physicians places a significant and sometimes added responsibility to be familiar with all types of cancer symptoms, the latest advances in diagnosis, clinical care pathways and the most appropriate specialists for referral. This will become even more important in the future as more cancer services move into the community.

To support the developing role of primary care in the diagnosis and management of cancer patients it is recommended that a Qatar Council for Healthcare Practitioners (QCHP) accredited professional development program be developed and rolled out to all physicians with a specialist interest in cancer. Currently PHCC have identified and trained 20 Family Physician cancer champions located in centres around Qatar. The aim of this program would be to focus on increasing the role of these family physician champions to be the patient's ongoing point of contact, pre- and post-treatment for cancer. The scope of license for key diagnostic roles such as radiologists and ultrasound technicians should also be reviewed and expanded to develop primary care diagnostic services that would further decrease the burden observed the secondary care setting.

Where possible, further sub-specialization of care continues to ensure delivery of excellent care. Sub-specialization is an ongoing process that reflects the changing perspectives of diagnostic, treatment and management of cancer patients. In support of continual professional development, the oncology fellowship program at NCCCR has received accreditation from the Accreditation Council for Graduate Medical Education International and the Hematology fellowship program should be next.²⁸ Upon completion of the program and wherever possible the graduates of this program should be placed into roles within the Qatari health system to ensure these highly skilled physicians are retained in the country. It is also recognised that where appropriate collaborative education programs with international partners should continue to share and develop best practice.

The successes delivered in the NCS from a nursing perspective in the development of the Masters in Nursing program should continue. This will ensure ongoing delivery against the recommendation to develop locally trained clinical nurse specialists and that every patient has access to a nurse who is specialized in their type of cancer. In addition to this, the frontline nursing workforce at NCCCR will continue to be developed as cancer nurses. Consideration should be given as to how those nurses working with cancer patients across the wider health system can also have their cancer knowledge developed.

Delivering excellent cancer care can only truly be achieved with a specialist cancer workforce. To achieve this there needs to be increased focus in the development of all healthcare professionals working in cancer to enable specialization across the clinical workforce. This program will focus on providing development opportunities for retained staff and will involve a combination of local bespoke training, international development programs as well as one to one (1:1) mentoring programs.

8.2 Recruiting appropriate workforce

The need to accelerate and prioritize recruitment for specialist staff that can provide comprehensive diagnostic and pathology services is covered in Domain 5. However, these are not the only disciplines where challenges with recruitment pose a risk to development or continued delivery of high quality cancer services. As Qatar is competing in a global market to fulfil these requirements and must also focus on developing the staff currently in the system, particular attention should be paid to Qatari nationals.

To facilitate the improved management of patients living with cancer it is recommended that the skill mix required to deliver multi-disciplinary ongoing care be reviewed. Recruitment of hard to fill positions, or where significant staffing gaps exist, should be prioritized, based on projections of future activity. These trends must however take into account the desire to shift the burden of care towards primary and community settings. There will be opportunities to share expertise across the acute and primary healthcare settings and wherever possible this program of knowledge transfer should be developed.

With significant investment, having already occurred in cancer care, there needs to be a transition in focus to retaining and developing the skills already in country by providing the opportunity for more health care professionals across all levels of healthcare to be able to grow, develop and assume new roles.

PROGRAM ACTIVITIES

Continued professional Development

Lead

8.1 Undertake an assessment of required staffing and resource to shift balance of care for cancer to primary and community settings	MOPH
8.2 Support extending the scope of primary care licenses for key diagnostic roles	PHCC
8.3 Develop training programs, both accredited and non-accredited for all existing staff	ALL



9



Research

The Qatar National Cancer Research Strategy (QNCRS) was launched in 2012 to complement the NCS. These two strategies will now be integrated and aligned within this NCF.

Comprehensive cancer care, provided within an academic health system can only be realized with seamless integration across clinical, research and academic Domains and with close collaboration between academic health partners in Qatar and beyond.

Steady progress has been made in cancer research within Qatar over the last five years and the recommendations identified within the QNCRS remain pertinent, timely and important. The recommendations have therefore been reviewed and reiterated in the NCF with some minor revision to reflect the achievements and progress made.

In general, the people of the Arabian Peninsula remain underrepresented in multi-center studies, clinical trials and international registries. The population has a unique genetic profile and patterns in disease presentation and incidence, including familial clusters that presents significant research opportunities and partnership with international investigators. Qatar has a relatively small population, which allows research to be undertaken on a national scale across the whole population. It offers the unique opportunity to strategically coordinate cancer research in a focused and effective manner. Capitalising on this will lead to exceptional insights into cancer and its management for the benefit of the population of Qatar and the wider cancer community.

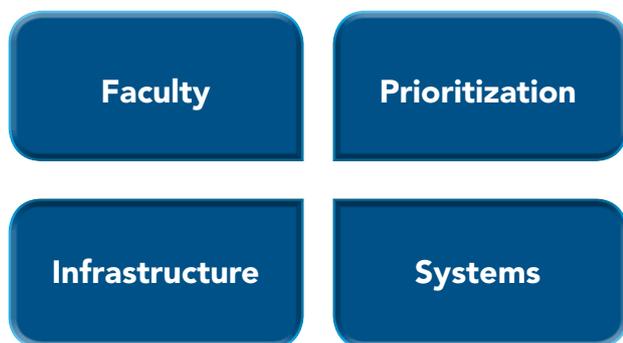
Success Measures 9.1	Number of staff graduating/completing Qatar based cancer research and fellowship training programs	QCRP
Success Measures 9.2	Long term (5 year) cancer research budget agreed	QCRP
Success Measures 9.3	# of investigator initiated and sponsored cancer clinical trials conducted in Qatar	QCRP
Success Measures 9.4	Number of cancer research grants awarded to member organizations of QCRP	QCRP
Success Measures 9.5	# of co-operative cancer research partnerships in research between Qatar research centers and laboratories	QCRP
Success Measures 9.6	Increased % quality and quantity of cancer research publications, patents and business development	QCRP
Success Measures 9.7	# of cancer CPD/CME accredited conferences/workshops/seminars held in Qatar	QCRP

Priorities

9.1 Enhancing Cancer Research

Implementation of research programs will be overseen by the Qatar Cancer Research Partnership (QCRP). The QCRP will be responsible for ensuring coordination across all clinical and research organisations. It will provide focus for increased internal, external academic and commercial collaborations and identify emerging technologies and platforms required for cancer research to become internationally competitive. The QCRP will report quarterly to the MOPH via the National Cancer Committee.

Significant investment has been made to recruit exceptional research talent and develop clinical research facilities and technologies, such as the Qatar BioBank and the state-of-the-art technologies within the Radio-oncology department, including PET- CT and CyberKnife. The National Vision for Qatar 2030, the National Research Strategy and the NHS support the recommendations outlined in the QNCRS. There is an unrivalled opportunity to collaborate with other research sectors within and outside Qatar, such as the environmental, technological and material and social sciences sectors. The key recommendations and deliverables for research within the NCF are focused, as in the original strategy, on the following areas:



Faculty: People and training

The QNCRS acknowledged that in order to establish an internationally competitive research environment there is an ongoing need to develop specialist cancer research capacity and capabilities. Clinical and non-clinical cancer fellowships are required across the research specialties and healthcare sectors, including primary care and public health. A comprehensive research career pathway will include internationally competitive Ph.D. programs and graduate schools, doctoral fellowships, post-doctoral training opportunities and exchange programs including the provision of longer-term senior academic appointments.

Prioritization: Increased investment and focused basic and translational cancer research

In order to ensure the best return on investment, funding must be targeted towards areas that are likely to have the biggest impact, which have been identified as Qatar’s cancer research priorities and grand challenges.

Epidemiology, cancer genomics, precision medicine and the immune regulation of cancer are examples of areas where Qatar can excel and provide the biggest return on research investment locally and regionally. Resources are required to support core research infrastructure and support services, such as data management, data monitoring, registries and governance systems.

In order to maximize the potential of existing resources and expertise within Qatar a baseline mapping of current capabilities and capacity across its research partners should be undertaken to identify gaps and avoid duplication. This review should encompass existing expertise, talent, networking and data sharing capabilities, technology, core resources and equipment.

Infrastructure: Clinical and translational research facilities and networks

A national Clinical Trials Unit (CTU), supported by translation research capabilities, should be established

to secure Qatar's position as the leading local, national and regional hub, to deliver access to the best treatment options for patients. This is a prerequisite to qualifying for international clinical trials. Partnerships should be sought with international clinical trials groups and consortia, in line with the identified national cancer research priorities.

The development of a world class Clinical Trials Unit able to undertake the full range of clinical and translational research requires a co-located comprehensive Translational Research Institute to enable focused basic and translational cancer research for seamless transfer from the patient's bedside to the laboratory bench and back to the patient.

A database of cancer related research and trials in Qatar should be established in collaboration with the QNCR. Further development of coordinated national collaborations and partnerships across clinical and academic institutes will ensure the best use of existing resources. With the core bioinformatics and data-mining capabilities already in existence in the country, we are in the best position to leverage research opportunities. Qatar Foundation's Research and Development Asset Management equipment database is an excellent example of how collaboration can ensure duplication or gaps are avoided.

The Qatar BioBank provides an excellent resource, which needs to be expanded to include a tissue repository. This should be aligned with the CTU and clinical studies. The existing analytical biomarker laboratory facilities need to be optimized for alignment with Good Clinical Laboratory Practice analysis, a WHO accepted standard. The Qatar Science and Technology Park provides an excellent supporting resource for increasing commercial opportunities and technology transfer to further develop research.

In addition to the anticipated impact offered from collaboration between cancer research partners within Qatar, participation in wider national and international cancer research and public networks should be enhanced. For example, links are envisaged for epidemiological research programs, with international organizations such as the International Agency for Research on Cancer (IARC), and the WHO. There is also a need to increase communication and education regarding research with both patients and the people of Qatar.

Systems: Research governance and research information

In addition to reporting through the NCF, a governance structure and reporting mechanism will be embedded within the QCRP.

The QCRP will showcase the outcomes of cancer research in Qatar through the coordination of cancer research conferences, workshops and seminars to maximize engagement and benefit for all. There will be clear linkage with international and regional conferences to promote the research agenda and raise the viability of opportunities.

Public, patient, charitable and community involvement and engagement in cancer care and research is essential. Public information and awareness programs will be developed. In addition, a road map for recruiting patients into all phases of cancer clinical trials and research will be developed.

PROGRAM ACTIVITIES

Research

Lead

9.1 Work with the academic partners and funders to identify and establish clinical and non-clinical multidisciplinary research programs and fellowships	QCRP
9.2 Develop a research career pathway to include doctoral fellowships, postdoctoral training opportunities and exchange programs	QCRP
9.3 Ensure that workforce planning for cancer clinicians and allied health professionals includes the capacity to allow for protected time for research and academic activities	QCRP
9.4 Undertake a baseline assessment of current research capacity and capability across Qatar	QCRP
9.5 Develop long term (5-year) budget for research infrastructure, facility and workforce	QCRP
9.6 Identify a set of high impact research priorities	QCRP
9.7 Establish collaborations across the healthcare research sectors and the wider non-health research communities	QCRP
9.8 Establish a clinical trials infrastructure to support the full range of clinical trial activity	QCRP
9.9 Set up a centralized imaging and radiotherapy within a translational research center	QCRP
9.10 Develop the existing BioBank to include a tissue repository	QCRP
9.11 Develop a relationship with QSTP to maximize technology research, technology transfer and commercialization possibilities	QCRP
9.12 Develop with MOPH a comprehensive data register of Qatar cancer research activity, outputs and outcomes	QCRP
9.13 Establish collaborative network to support implementation of the research components of the strategy, ensure strategic alignment across all the academic partners and support a coordinated approach to future planning and development	QCRP
9.14 Ensure coordination in the planning of cancer research conferences, workshops and seminars	QCRP
9.15 Engage with the cancer community to include a range of patient and public information and awareness raising activities	QCRP

10

Governance

As part of the transition from the Supreme Council of Health to the Ministry of Public Health, a revised governance structure has been established to facilitate efficient and transparent decision-making and to provide accountable and robust reporting for cancer services.

Cancer Framework Reporting Within the Four Committee Governance Structure at MOPH

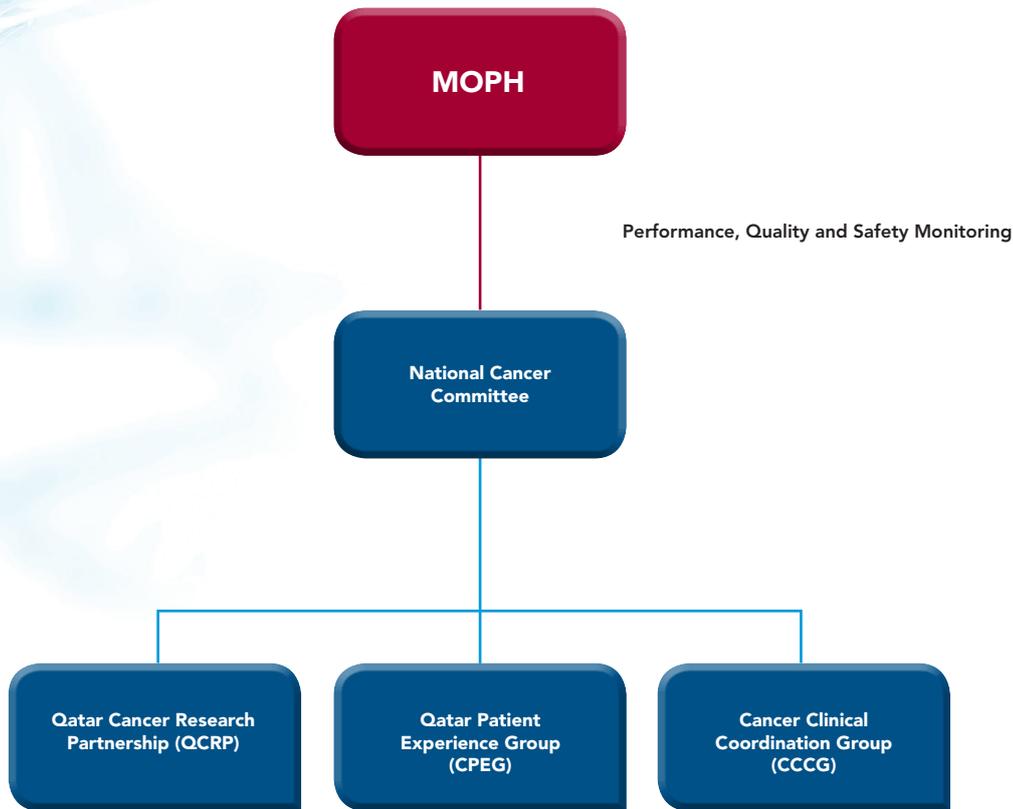


Image 15: Source: MOPH, 2016.

All provider performance monitoring will be presented on a quarterly basis as a combined quality and performance report to the MOPH. It is anticipated that additional measurement KPI's be developed as part of the implementation planning phase which will be presented for approval to the MOPH.

The majority of activities will be implemented across the provider organizations, some with cross provider responsibility. To ensure sound ongoing collaboration and joint reporting for these activities and measures the Qatar Cancer Research Partnership, Cancer Patient Experience Group and the Cancer Clinical Coordination Group will report quarterly into the National Cancer Committee. Each group will include multidisciplinary representation from MOPH, PHCC, HMC, Private Providers, Sidra as well as QCS, charitable and patient representation.

The importance of collecting expanded cancer data for Qatar has been articulated throughout the Framework. As data becomes more widely available across providers and at the Ministry it is essential that all data is shared, especially with the clinicians generating the data. A direct request from clinicians working in cancer has been to ensure full data availability to their teams, to assist them in monitoring outcomes of the care they provide. In the next six years, this Framework will ensure that the following data will be re-producible; five-year survival, treatment and side effect outcomes, volume and outcomes of patients who travel overseas, as well as numbers and outcomes of patients involved in clinical trials. To conclude, all reporting mechanisms will collate and present data but will also receive data back to drive informed change and continue to improve the patient experience.

11

Next Steps

An Evolving Framework

This National Cancer Framework 2017-2022 represents a transition from the National Cancer Strategy 2011-16, which was focused predominately on building infrastructure and expertise within the secondary and tertiary setting, to focusing on building the expertise and capacity of primary care. This new focus will have a greater role in prevention, the detection of cancer, and most significantly, the ongoing care of cancer patients following treatment and survivorship.

There is a more developed understanding of the need to work with patients and caregivers to drive change for their benefit, all the while being able to ensure and demonstrate that the changes implemented have represented good value for money. For the future of the NCF, integration of communication, services and programs among all

stakeholders will also be crucial to enable success. It is beholden of the public healthcare system to engage all stakeholders, inclusive of private providers to provide integrated care throughout the system.



Image 16: Source: MOPH, 2016.

This Framework has identified 61 guiding activities under 9 Domains with 25 Success Measures aligned to 8 global indicators of success. Detailed and costed implementation planning will be required to develop robust project plans, supported by governance, budgets and resources to enable delivery of these programs of work and to obtain the indicated outcomes. In some cases, baseline data

may not be available for several years as e-Health systems develop. It is recommended that as a priority, baselines and targets be established along with appropriate tools to support the monitoring and reporting of performance against the measures for the Public Health Committee, National Cancer Committee and NCF annual report.



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* Population projections were calculated using the current incidence for each five-year age band, applied to population growth projections for those age band. The current incidence was calculated as the average over 2013 and 2014, to account for random variation due to low numbers. The population growth projections were obtained from the United Nations (United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision - Special Aggregates*, DVD Edition.

ANNEX A

Abbreviations

CAM	Cancer Awareness Measure
CTU	Clinical Trials Unit
EMR	Electronic Medical Record
FMM	Family Medical Model
GATS	Global Adult Tobacco Survey
HL	Healthy Lifestyle Objectives
HMC	Hamad Medical Corporation
HPV	Human Papilloma Virus
HSC	Hematopoietic Stem Cell And Bone Marrow Transplant
HSPA	Health Service Provider Agreement
IMAO	International Medical Affairs Office
IARC	International Agency For Research on Cancer
KPI	Key Performance Indicator
LDCT	Low Dose Computed Tomography
MDT	Multidisciplinary Team
MOPH	Ministry Of Public Health
MSc	Masters Of Science
NCAG	National Clinical Advisory Groups
NCCCR	National Center For Cancer Care And Research
NCD	Non-Communicable Disease
NCF	National Cancer Framework
NCS	National Cancer Strategy 2016-2011
NHS	National Health Strategy 2016-2011
PET-CT	Positron Emission Tomography – Computed Tomography
PHCC	Primary Health Care Corporation
PHS	Public Health Strategy
QCHP	Qatar Council For Healthcare Practitioners
QCRP	Qatar Cancer Research Partnership
QCS	Qatar Cancer Society
QNCR	Qatar National Cancer Registry
QNCRS	Qatar National Cancer Research Strategy
QSTP	Qatar Science and Technology Park
WHO	World Health Organization

ANNEX B

National Cancer Framework 2017-2022 Guiding Program Activities

DOMAIN 1 - PUBLIC EDUCATION AND UNDERSTANDING

Education and Understanding

Lead

1.1	Continue to develop the Cancer Champions myth refutation program in partnership with cancer survivors	MOPH
1.2	Complete the Cancer Awareness Measure and repeat bi-annually	MOPH
1.3	Develop a program of cancer prevention and education targeting academic institutions	MOPH
1.4	Schedule of regular cancer education public health events	MOPH

DOMAIN 2 - PREVENTION

Healthy Living

Lead

2.1	Support the implementation of Public Health Strategy Smoking cessation measures: <ul style="list-style-type: none"> Tobacco surveillance system Tobacco law enforcement Framework Tobacco cessation services including a national quit line and website Tobacco cessation services including availability of nicotine replacement therapy and support through PHCC services Establish a functional comprehensive tobacco taxation model that includes customs and excise taxes 	MOPH MOPH MOPH PHCC MOPH
2.2	Implementation of the Public Health Strategy Health Living Objectives (HL1 - HL6)	MOPH
2.3	Support primary care providers in the development of wellness services	PHCC

Genetic Testing

Lead

2.4	Expand screening for those at high risk of hereditary cancers	HMC
2.5	Establish a dedicated National Cancer Genetic Service	MOPH

DOMAIN 3 - EARLY DETECTION

Screening Awareness

Lead

3.1	Deliver awareness campaigns to promote screening	PHCC
3.2	Embed cancer screening registry and population health data in screening systems	MOPH

Screening Services

Lead

3.3	Assess merit for implementation of population based cervical screening and high risk lung cancer screening programs	MOPH
3.4	Implement and maintain screening guidelines	MOPH
3.5	Review breast cancer screening access eligibility criteria	MOPH
3.6	Develop screening performance monitoring, management and quality assurance program	MOPH

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National Cancer Framework 2017-2022 Guiding Program Activities

DOMAIN 4 - DIAGNOSIS

Diagnosis Pathway

Lead

4.1	Evaluate and continue monitoring and reporting provider rapid patient access performance - 3 access KPIs through the HSPA	MOPH
4.2	Prioritize recruitment of specialist pathology and imaging personnel as per agreed HMC workforce plans	HMC
4.3	Support the training of primary care physicians in routine diagnostic procedures	PHCC
4.4	Continue to develop communication skills training program using patient experience feedback	HMC
4.5	Continue development and access to patient information and shared decision making tools	HMC

DOMAIN 5 - TREATMENT

High Quality Treatment

Lead

5.1	Review end-to-end process for accessing new cancer drugs and develop rapid access protocols as necessary	HMC
5.2	Establish a guideline and pathway compliance monitoring program which will be agreed and monitored through the Tumor Boards	HMC
5.3	Review Peer-Review teams and selection process, develop a process for regular review with an agreed governance structure pre-and post-Peer Review	MOPH
5.4	Rename National Tumor Boards "National Clinical Advisory Groups," review membership and provide administrative support	MOPC
5.5	Review the feasibility of a program of regular site specific international observation visits for NCAG leads	HMC
5.6	Review and revise time from diagnosis-to-treatment pathway	HMC

Novel Technology and Services

Lead

5.7	Audit all diagnostic, therapeutic and research capital equipment in Qatar, model a 6-year capital equipment plan and conduct gap analysis to inform investment plans	MOPH
5.8	Develop a national, quality assured, accredited Hematopoietic Stem Cell and Bone Marrow Transplant facility	HMC
5.9	Develop a National Hematopoietic Stem Cell Donor Registry linked with regional and international stem cell registries	HMC
5.10	Development of minimally invasive and robotic surgery	HMC
5.11	Agreed guidelines, pathways and protocols in place for patients transitioning from pediatric to adult services to include late treatment effects for childhood cancers	MOPH
5.12	Where indicated, expand psychological, cardio-oncology and oral health assessments for cancer patients	HMC

Treatment abroad and partnerships

Lead

5.13	Record and report clinical, cost, duration of treatment and patient experience data associated with treatment overseas to further inform change	HMC
5.14	Deliver targeted education and awareness campaigns, promoting cancer services available in Qatar with a communications plan	MOPH

ANNEX B

National Cancer Framework 2017-2022 Guiding Program Activities

5.15 Review all current international partnership arrangements, conduct assessment of partnership needs, gap analysis and amend partnerships accordingly	HMC
5.16 Develop a retrospective anonymous patient experience feedback program targeting Qatari patients receiving treatment overseas	MOPH

DOMAIN 6 - ONGOING CARE

Ongoing Care	Lead
6.1 Develop and implement National Cancer Transition Framework: <ul style="list-style-type: none"> • Develop models of follow-up care • Develop pathways for transitions of care • Guidelines for management of long-term effects of cancer 	MOPH
End of life Care	Lead
6.2 Continued development of end of life care service provided between NCCCR and Mobile Health Service	HMC
6.3 Develop and publish principles and guidelines for end of life care in Qatar	MOPH

DOMAIN 7 - MEASURING PERFORMANCE AND USING DATA

Patient Experience	Lead
7.1 Develop and report on the ongoing findings of the patient experience questionnaire and live reporting application across the Patient Pathway	HMC
7.2 Develop patient engagement groups and include patient representation with the project team across pathway to inform patient led change	PHCC
7.3 Develop patient reported outcome measures	MOPH
Reporting Measures	Lead
7.4 Implement an ongoing program of clinical audit for cancer services	HMC
7.5 Continue development of the Qatar National Cancer Registry to enable monitoring of cancer recurrence and 5-year survival rates	MOPH
7.6 Develop program based budgeting for cancer services	MOPH
Data	Lead
7.7 Develop a National Cancer Intelligence Network	MOPH
7.8 Create the Qatar Cancer Information Center	MOPH

ANNEX B

National Cancer Framework 2017-2022 Guiding Program Activities

DOMAIN 8 - WORKFORCE

Continued Professional Development

Lead

8.1 Undertake an assessment of required staffing and resource to shift balance of care for cancer to primary and community settings	MOPH
8.2 Support extending the scope of primary care licenses for key diagnostic roles	PHCC
8.3 Develop training programs, both accredited and non-accredited for all existing staff	ALL

DOMAIN 9 - RESEARCH

Research

Lead

9.1 Work with the academic partners and funders to identify and establish clinical and non-clinical multidisciplinary research programs and fellowships	QCRP
9.2 Develop a research career pathway to include doctoral fellowships, postdoctoral training opportunities and exchange programs	QCRP
9.3 Ensure that workforce planning for cancer clinicians and allied health professionals includes the capacity to allow for protected time for research and academic activities	QCRP
9.4 Undertake a baseline assessment of current research capacity and capability across Qatar	QCRP
9.5 Develop long term (5-year) budget for research infrastructure, facility and workforce	QCRP
9.6 Identify a set of high impact research priorities	QCRP
9.7 Establish collaborations across the healthcare research sectors and the wider non-health research communities	QCRP
9.8 Establish a clinical trials infrastructure to support the full range of clinical trial activity	QCRP
9.9 Set up a centralized imaging and radiotherapy within a translational research center	QCRP
9.10 Develop the existing BioBank to include a tissue repository	QCRP
9.11 Develop a relationship with QSTP to maximize technology research, technology transfer and commercialization possibilities	QCRP
9.12 Develop with MOPH a comprehensive data register of Qatar cancer research activity, outputs and outcomes	QCRP
9.13 Establish collaborative network to support implementation of the research components of the strategy, ensure strategic alignment across all the academic partners and support a coordinated approach to future planning and development	QCRP
9.14 Ensure coordination in the planning of cancer research conferences, workshops and seminars	QCRP
9.15 Engage with the cancer community to include a range of patient and public information and awareness raising activities	QCRP

ANNEX C

National Cancer Framework 2017-2022 Success Measures

DOMAIN 1 Public Education and Understanding

Success Measures 1.1	Improved awareness and reduce stigma (CAM) establish the 2017 baseline and review bi-annually	MOPH
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DOMAIN 3 Early Detection

Success Measures 3.1	Increase proportion of stage 1 and 2 breast and bowel cancer screening detected with the QNCR	PHCC
Success Measures 3.2	Increase % uptake and coverage of breast and bowel screening by 2022 with the QNCR	PHCC

DOMAIN 5 Treatment

Success Measures 5.1	% of patients with complete electronic data set at diagnosis	HMC
Success Measures 5.2	Publish chemotherapy outcomes including % of patients receiving pre-treatment education; outcomes of chemotherapy; emergency presentation due to side effects of treatment	HMC
Success Measures 5.3	Tumor specific 30/60/90-day outcome post-surgery	HMC
Success Measures 5.4	Proportion of appropriate cancer patients assessed and referred for psychological, cardio-oncology and oral health by 2018	HMC
Success Measures 5.5	Annual publication of 1 and 5-yr survival outcomes through the QNCR	MOPH
Success Measures 5.6	Continuous reporting of the % of cancer patients treated abroad through an Annual Report	MOPH

DOMAIN 2 Prevention

Success Measures 2.1	Reduction in the number of smokers in Qatar (repeat STEPWise survey)	MOPH
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DOMAIN 4 Rapid and Definitive Diagnosis

Success Measures 4.1	Patients meeting revised time to treat pathway targets (HSPA)	MOPH
Success Measures 4.2	Increase % of private patient's referrals complying with urgent suspected referral process	MOPH

DOMAIN 6 Ongoing Care

Success Measures 6.1	Cancer survivors with treatment summaries and risk stratified tumor specific ongoing care plans available to primary care providers	HMC
Success Measures 6.2	Increase # of transition models of follow up care; and pathways for transition	MOPH
Success Measures 6.3	Increase % of end of life patients who die in their preferred place of care outside of tertiary care	HMC

ANNEX C

National Cancer Framework 2017-2022 Success Measures

DOMAIN 7 Measuring Performance

Success Measures 7.1	Produce an Annual Report of the patient experience by all measures across all providers of care	MOPH
Success Measures 7.2	% of cancer patients comprehensively recorded in the QNCR	MOPH

DOMAIN 9 Research

Success Measures 9.1	Number of staff graduating/completing Qatar based cancer research and fellowship training programs	QCRP
Success Measures 9.2	Long term (5 year) cancer research budget agreed	QCRP
Success Measures 9.3	# of investigator initiated and sponsored cancer clinical trials conducted in Qatar	QCRP
Success Measures 9.4	Number of cancer research grants awarded to member organizations of QCRP	QCRP
Success Measures 9.5	# of co-operative cancer research partnerships in research between Qatar research centers and laboratories	QCRP
Success Measures 9.6	Increased % quality and quantity of cancer research publications, patents and business development	QCRP
Success Measures 9.7	# of cancer CPD/CME accredited conferences/workshops/seminars held in Qatar	QCRP

DOMAIN 8 Workforce

Success Measures 8.1	Complete a workforce review of multi-disciplinary cancer specialists required and develop a recruitment plan	MOPH
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